

NAVAL AVIATION

NEWS



ANNIVERSARY ISSUE

JANUARY 1961

THIS issue of Naval Aviation News contains references to names and events which highlight the astounding progress of Naval Aviation's first half century. In addition to praising the feats of our familiar aviation pioneers, I would pay tribute here to the many behind-the-scenes heroes in the ranks and officer corps whose devotion to duty and inspired efforts made all of our past achievements possible.

New developments or new records are usually credited to individuals whose vision and initiative start, or whose industry and perseverance guide, such projects to successful completion. However, behind every record or successful departure, there are always many man-hours of team effort before the initial vision reaches final accomplishment. I would like to give credit to the hard-working anonymous members of the team.

In looking at the accomplishments of the last five decades, we do well to consider the rapid acceleration and the present velocity of our technical advance. For many generations, man's speed and range were a simple function of the capabilities of the horse, the oar and the sail. Within the last 50 years—a tiny fraction of man's time base—we have entered a new dimension: flight. In this new element, the gentle incline of the speed-versus-years curve has become nearly vertical. Man's speed has increased tenfold in the last 40 years.

This breakthrough in speed is only an easily citable example of the acceleration of advance throughout the whole scientific spectrum. There is every indication that this acceleration will continue in both discovery and application.

That scientific advance will continue exponentially seems foreordained by our recent entrance into a new operational medium: space. We are roughly at the same point in space exploration that we were in aviation 50 years ago.

If we in the Navy are to keep pace, we must fulfill our space age responsibilities with the same fervor as that of our predecessors who so effectively met theirs.

As development and exploration continue, we undoubtedly will produce space age heroes. But, as before, the real heroes will be those devoted civilians, enlisted men and officers who, without glamour or public recognition, make the achievements possible.

There are all kinds of jobs necessary to the Navy's continued growth and success in the space age. We have always had a strong tradition of devotion to the task at hand, regardless of its nature. Just as 50 years of progress in the air can be credited to the dedication of every member of the Navy team, so it should now inspire each of us to rededicate himself to the task of making our first 50 years in space a time of even greater achievement.



Vice Admiral, USN
Deputy Chief of Naval Operation (Air)

ANNIVERSARY EVENTS

Kick-off event for the commemorative year will be the Naval Aviation Ball at the Sheraton Park Hotel, Washington, D. C., on 25 January.

The Norfolk Area celebration to be held 10-16 April will coincide with the annual Azalea Festival.

Navy participation in the Armed Forces Day events at Andrews AF Base, Washington, D. C., 13-14 May, will emphasize the Fiftieth Anniversary.

The Navy League Convention and Symposium at the Sheraton Park Hotel, Washington, D. C., 23-26 May, will have for its theme the development and potential of U.S. Naval Aviation.

The Naval Aviator's Reunion, 6-11 June, at Pensacola, Fla., will coincide with the annual civic observance, 'Fiesta of Five Flags.'

'Skyorama,' sponsored by the city of Baton Rouge, La., 2-4 July, will be dedicated to Naval Aviation.

The New York Daily Mirror's Model Meet, 8 July, will honor Naval Aviation.

The Academy of Model Aeronautics will hold its annual Model Meet this year at Naval Air Station, Willow Grove, 29-30 July.

Highlight of the national convention of the Institute of Aeronautical Sciences, which starts 20 August in San Diego, will be the re-enactment of the first flight of the Curtiss A-1 across the bay. For this event, a replica airplane is being built.

Many other programs and open houses, scheduled by Naval activities and the Navy League with the cooperation of the aircraft industry, will be held all over the country throughout this year. Naval Aviation News will keep its readers informed as the final plans and details of programs develop.

■ COVER

The 50th Anniversary Emblem will become familiar as the year goes by. Symbolic of the Golden Year of Naval Aviation, it will be seen at commemorative events and in advertising all across the country and around the world. The blue and gold design on the cover is the work of James M. Springer, Art Director for Naval Aviation News.

NAVAL AVIATION NEWS

FORTY-SECOND YEAR OF PUBLICATION, JANUARY 1961

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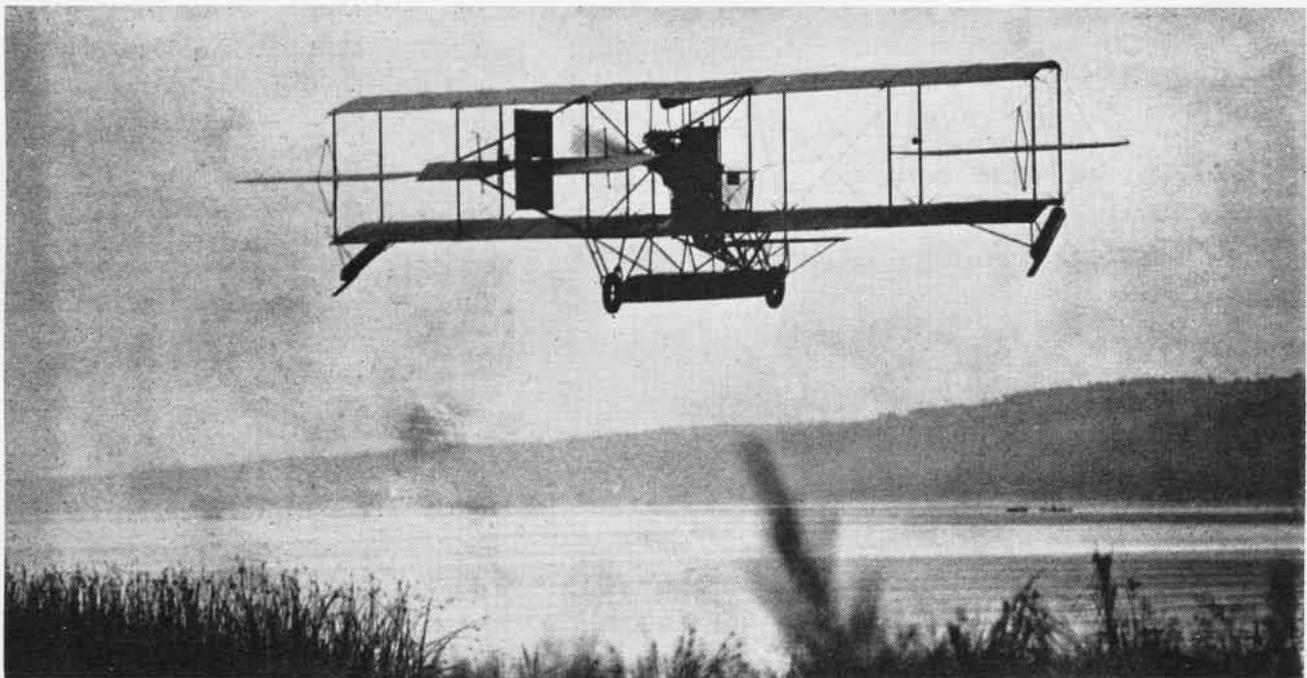
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NAVAL 1911



As we put this Anniversary Issue to bed with its capsulated chronicle of the first half century of U. S. Naval Aviation, our sights are pointed in many directions. Out West, a unique project named Caleb being conducted by the Naval Ordnance Test Station foreshadows the possible use of a standard carrier-based jet in still another role—platform for an air launch of satellite payloads. Viewing this combination of the inherent mobility of the carrier and the wide selection of payloads which could be carried, we are prone to undog the rhetorical hatch on new 'eras' and 'con-

AVIATION 1961



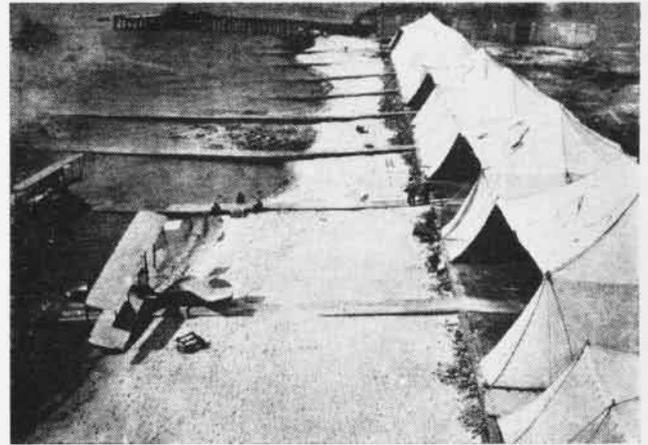
cepts' while the ink is still damp on the old ones. In still other directions, we are made mindful of Missileer, the coming trials of the W2F-1 Hawkeye, and we keep our usual eye on Mercury and the fact that a Naval Aviator may be the first Astronaut to log flight in outer space. The record of past accomplishments, however, the Calebs and Mercuries of yesterday, proves a fitting introduction to this special edition; and with pride in these triumphs we present the story of Naval Aviation prepared by A. O. Van Wyen, historian for DCNO (Air), and Lt. Moriece Gleason, USNR.

Pioneers set out to show Navy 'flying machines' can go to sea

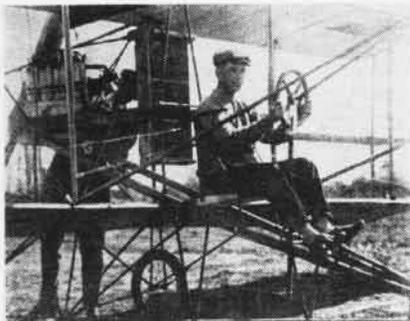
THE DATELINE was Washington, D.C., January 10, 1914. A Navy news release informed the press and the public:

The Secretary of the Navy [Josephus Daniels] has decided that the science of aerial navigation has reached that point where aircraft must form a large part of our naval force for offensive and defensive operations. Nearly all countries having a navy are giving attention to this subject. This country has not fully recognized the value of aeronautics in preparation for war, but it is believed that we should take our proper place.

On that date two ships, USS *Mississippi* and USS *Orion*, were heading southward, bound for Florida. Ar-



ITS AIRCRAFT so near its tents, Pensacola in 1914 in its pioneer setting was a far cry from the modern spacious air station today.



NAVAL AVIATOR NO. 1, Lt. T.G. Ellyson, at the controls of the Curtiss "D" aeroplane.



GLENN H. CURTISS and Lt. John Towers, later an Admiral, ready to fly 1910 Curtiss.



LT. P.N.L. BELLINGER, Naval Aviator No. 8, later Vice Admiral, at controls of AH-3.

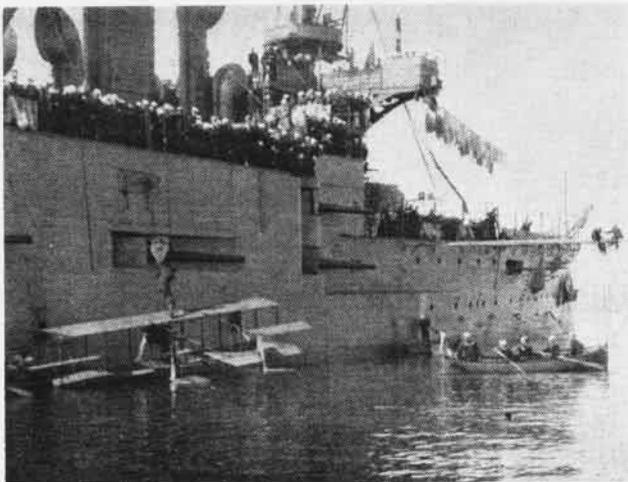
iving at the old Pensacola Navy Yard ten days later, these ships began unloading and sending ashore not only the conventional appurtenances of a naval activity but also a collection of strange contraptions, with their attendant gear. Enthusiastic young officers introduced the inhabitants to a new and odd vocabulary of struts and ailerons, stabilizers and air foils. The Navy Yard had become the Naval Aeronautic Station to which thousands of young men were

destined to come in order to attain and to hold that "proper place" of which Secretary Josephus Daniels spoke.

As early as 1898, Assistant Secretary of the Navy, Theodore Roosevelt, impressed by Professor Samuel Pierpont Langley's success with flying models had speculated upon the role of aircraft in war. Not until 1910, however, did the Navy take its first hesitant step, the appointment of Capt. Washington Irving Chambers, USN, to answer correspondence on aviation and to keep himself informed of what was going on in the field. Although not a flier himself, Capt. Chambers was a product of the revolution which was creating a new American Navy.

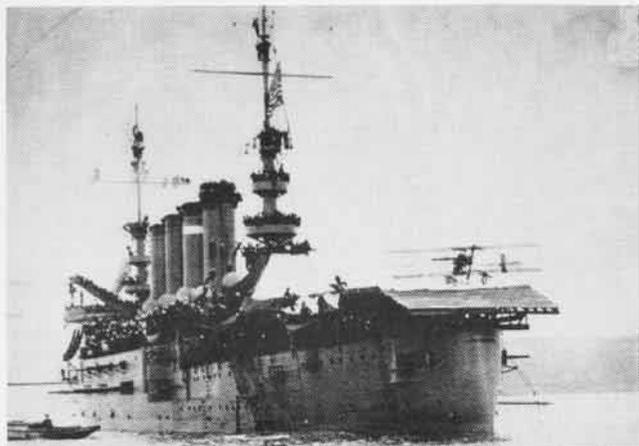
Having met Capt. Chambers at air meets in the autumn of 1910, airplane builder Glenn Curtiss set out to convince the Navy of the practicability of aircraft. At his urging, a civilian pilot, Eugene Ely, flew a Curtiss biplane from a specially built platform on the cruiser *Birmingham* on November 14, 1910. On January 18, 1911, scarcely two months later, Ely followed this feat by landing his aeroplane aboard the armored cruiser *Pennsylvania* in San Francisco Bay, turning it about and flying back to shore. A month later on February 17, 1911 at San Diego, Curtiss brought his hydro-aeroplane alongside the same *Pennsylvania* and arrived on deck with the help of the boat crane. An interested spectator was Lt. T. G. Ellyson who had arrived at the Curtiss aviation camp on North Island a few weeks previously in obedience to orders dated 23 December 1910—the first issued by the Navy ordering an

(Continued on page 6)



CURTISS TAXIED his hydro-aeroplane alongside USS *Pennsylvania*, used boat crane to get to deck, then returned to surface and took off.

When Ely did it first 50 years ago, it began a new era in sea power



THE 120-FOOT PLATFORM, built on the stern of the USS Pennsylvania, was the forerunner of today's flight deck on Navy's aircraft carriers.

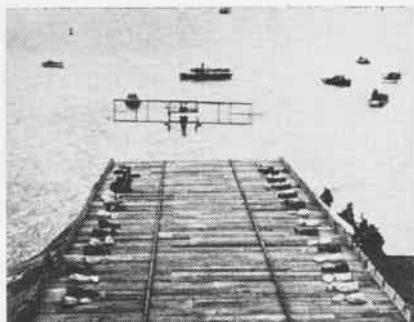


THE LANDING Eugene Ely successfully made took place in San Francisco Bay on 18 January 1911 with the spectators at all vantage points.

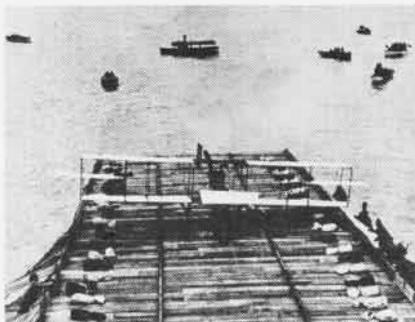
AN EPOCH-MAKING event took place 50 years ago, 18 January 1911, when Eugene Ely, flying a Curtiss biplane, landed on and took off from the USS Pennsylvania. Capt. C. F. Pond,

the battleship skipper, said, "I desire to place myself on record as positively assured of the importance of the aeroplane in future naval warfare." It was going to take great effort to combine

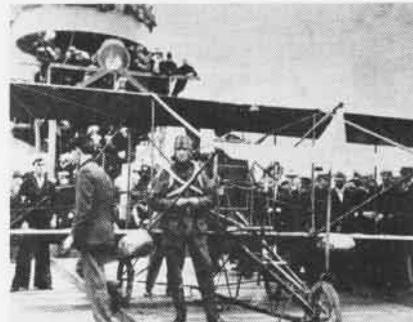
sea power and air power, but by showing that they could be united, Ely portended an era that was to produce many years later such great ships of the line as the Forrestal-class today.



SAND BAGS and ropes were primitive arresting gear compared with much later innovations.



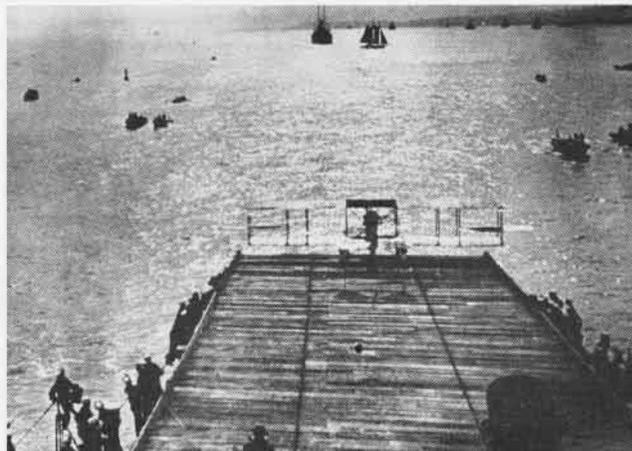
LANDING WAS swiftly effected and came off without a hitch and thrilled the observers.



PILOT ELY is posed beside his "flying machine," according to the original caption phrasing.



CAPT. C. F. POND, commanding officer of the USS Pennsylvania, when Ely landed, was quick to congratulate the daring pilot on his arrival.



THE CURTISS biplane was then turned around, and Ely took off, repeating the launch he'd done two months earlier from USS Birmingham.

In 1911 the Navy purchased one Wright, two Curtiss 'machines'



FASHIONS FOR PILOTS: Lt. Marc Mitscher at controls of a 50-mph plane at Pensacola; Lt. Gordon Gray who flew nearly 700 mph in 1955



in an A4D Skyhawk, and Cdr. John F. (Jeff) Davis who made 1390 mph in 1960. Speed and altitude required new flying apparel.

officer to flight instruction. The stage was being set.

Secretary George von L. Meyer decided to go ahead, and in 1911 the Navy purchased one Wright and two Curtiss machines. Each manufacturer agreed to train a pilot and a mechanic. It fell to the lot of Lt. John Rodgers and Lt. John H. Towers to become Naval Aviators 2 and 3. By September the two new pilots had mastered what was then known as the art of flying, and with Ellyson, Naval Aviator number 1, moved to Greenbury Point, near Annapolis, where they set up camp. V. D. Herbster, Naval Aviator No. 4 also reported there.

The following year the Marine Corps became interested in the development of aviation. In 1912 Lts. A. A. Cunningham and B. L. Smith reported for flight training, to become Naval Aviators 5 and 6 respectively.

It was evident that much remained to be done before aircraft could accompany the Fleet to sea. Chambers, therefore, from the very beginning of Naval Aviation, directed his small group of fliers to concentrate on the technical aspects of aviation and to avoid unnecessary

aerobatics. To obtain better floats for hydro-aeroplanes and hulls for flying boats, to devise means of launching aircraft from ships and instruments for their navigation over the water, Chambers turned to the technical personnel of the Navy and particularly to the Corps of Naval Constructors. In this way, William McEntee, H. C. Richardson, and J. C. Hunsaker were drawn into aviation and played a distinguished role not only in the Navy, but also in turning aeronautics from an art into a science. They received support from established naval laboratories and testing activities and especially from the Bureau of Construction and Repair, after the farsighted RAdm. David W. Taylor became its Chief, late in 1914.

The period from the purchase of the first aircraft in 1911 to the beginning of 1914 was an experimental one. The Navy concentrated on aeroplanes capable of operating from the water, and on the devices necessary to launch them from ships, dropping for the time being the interesting possibilities opened by Ely's use of land-type planes from specially constructed decks on the Navy's battleships.



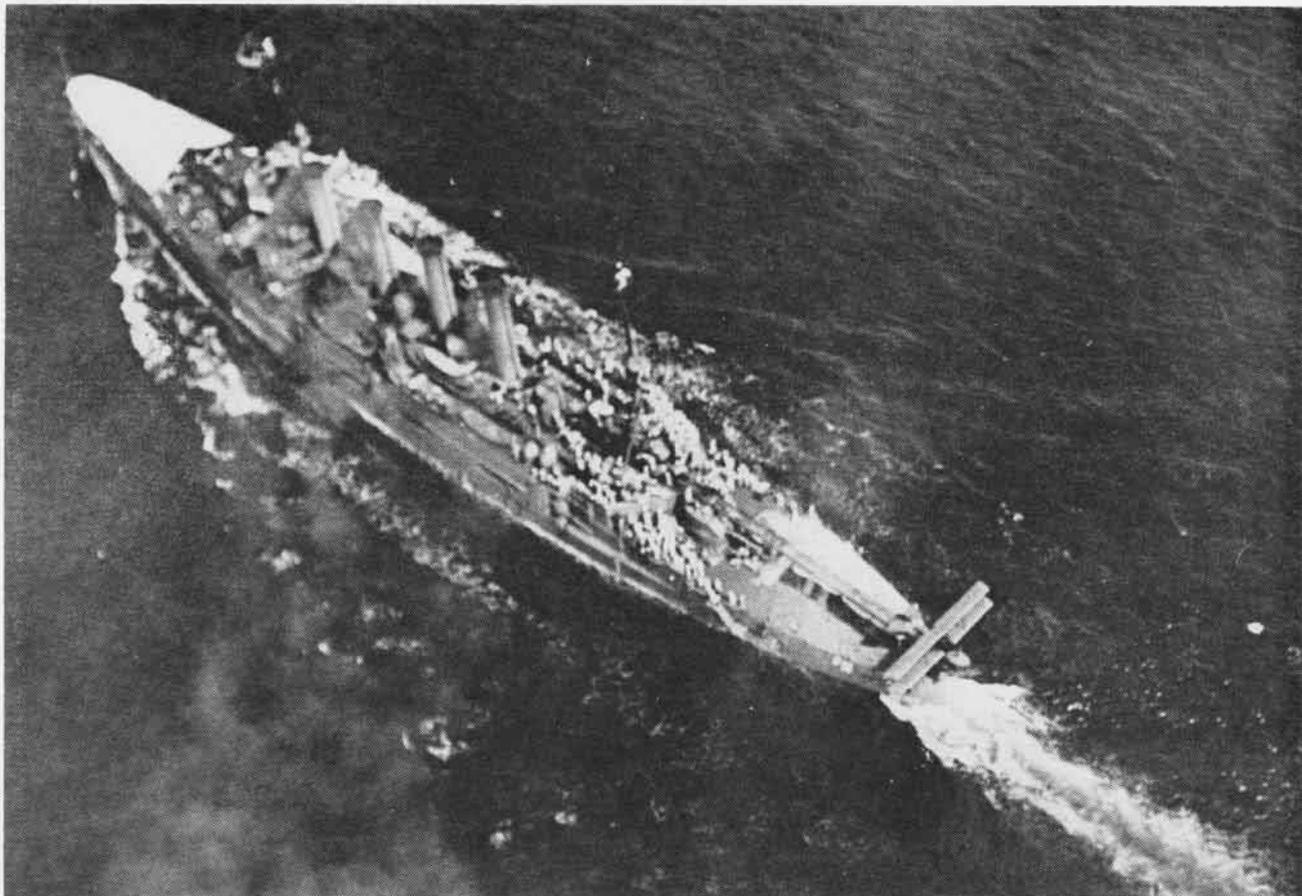
CATAPULT DOLLY (1912), once flying boat was successfully launched, went on its way.



FUSELAGE OF H-16, early aircraft built at Naval Aircraft Factory, was omen of future.



A TWO-PLACE training plane for WW I, the F-boat, became familiar sight at Pensacola.



A SIGNIFICANT STEP was taken when the Navy outfitted a few ships with catapults and planes. Above, a seaplane is shown leaving the

catapult of the cruiser, USS Huntington, while underway. Aerial view of this operation was taken from a kite balloon on 25 June 1917.

Deployment of a small group of Navy fliers on Fleet winter maneuvers at Guantanamo, January 1913, demonstrated operational abilities of the aircraft, and stimulated interest in aviation among Fleet personnel.

From the primitive aircraft of 1914 to the triumphant carrier task force of 1944 there lay twistings and turnings, false starts and deluded hopes as well as great advances and significant achievements. The Navy never lost sight of its objective—the adaption of aviation to warfare at sea.

The first test in this adaptive process revealed certain deficiencies in existing planes when the aviators took their machines to Vera Cruz in the spring of 1914. They did, however, perform useful services, and on one occasion Lt. P. N. L. Bellinger returned to base with holes from hostile bullets in his airplane, the first combat damage received by any American aircraft.

Aside from this episode, the years 1914 to 1917 were relatively quiet. The Navy concentrated on the problem of taking aeroplanes to sea on existing types of war vessels, repudiating for the time being the construction of special plane carriers or "garage ships." The Navy did outfit a few ships, including *North Carolina*, *Huntington* and *Seattle*, with catapult and planes. It also made an effort to keep up with and absorb the lessons being learned in Europe after war broke out in that area.

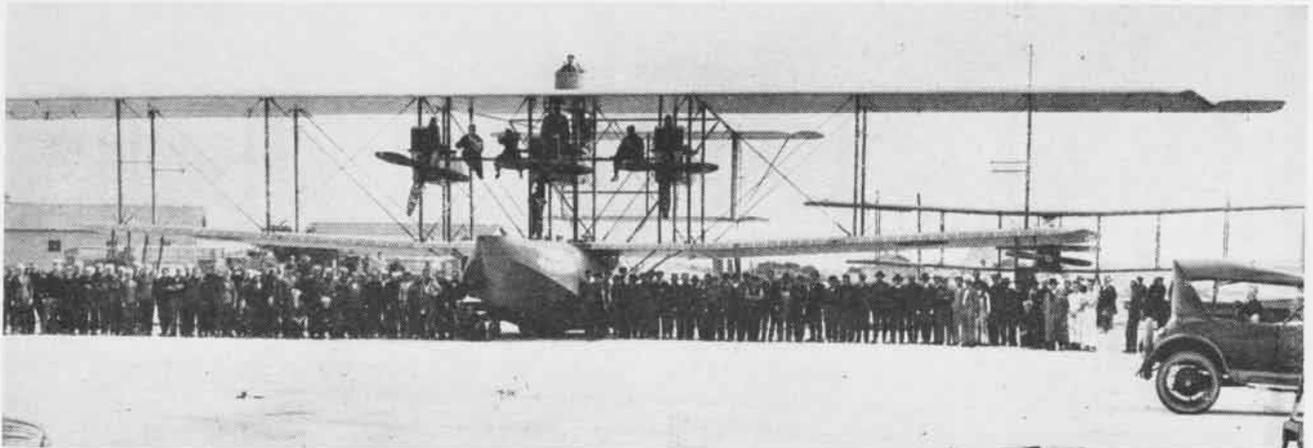
A look at the record shows the very considerable effort the Navy expended on its nascent air force during World

War I. There was a steady increase of men and equipment: flying boats and seaplanes increased from 51 to 1865, land planes from 3 to 242, officers from 48 to 6716, and men from 239 to 30,693. Our forces abroad involved 570 of our own aircraft, as well as the use of French and British airplanes, and 18,000 officers and men, located at 20 patrol



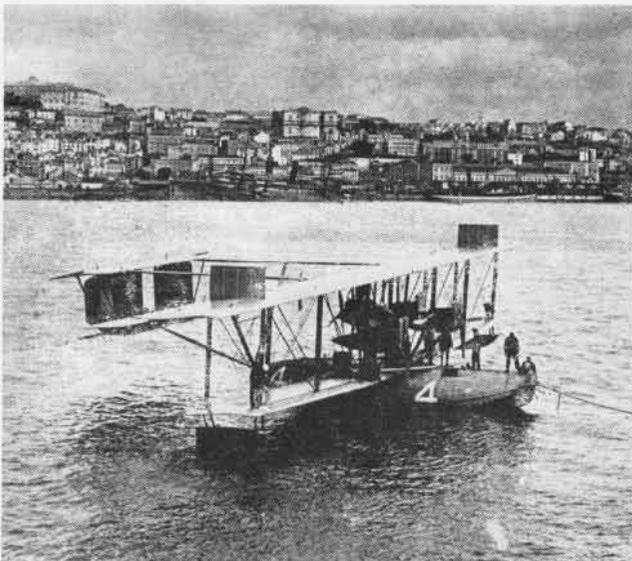
MODERN COMMUNICATIONS have replaced the carrier pigeon used in WW I and right up to WW II. Navy had some of world's finest racers.

In 1919, Navy determined to fly across Atlantic first—and did!



THE CURTISS NC-1, sister ship of the NC-4, carried 51 persons aboard for the first time in aviation on a flight from Rockaway Beach, N.Y.,

in 1918. Its three Liberty motors on this historic flight developed a maximum of 1200 hp and yielded a cruising speed of 80 miles per hour.



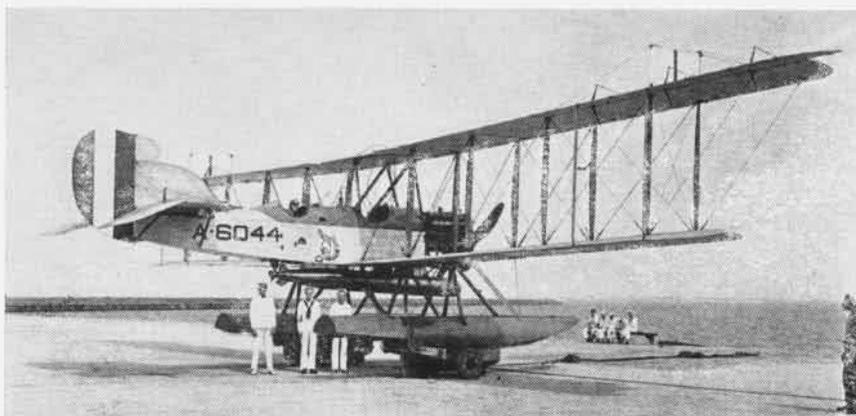
FIRST AIRCRAFT to cross Atlantic was the Curtiss NC-4, commanded by LCDr. A.C. Read. Though not non-stop, the flight opened a new era.

bases in Great Britain, France and Italy, one in the Azores and two in Canada. Aircraft logged 791,398 nautical miles on patrol and bombing missions, dropped 126,302 pounds of bombs on German submarine bases and military targets and attacked 25 German submarines and sank or damaged 12 of them. Another 2,455,920 nautical miles were flown on patrol from 12 U.S. coastal stations.

It is interesting to note that two future Assistant Secretaries of War for Air, F. Trubee Davison and Robert A. Lovett (who later was also Secretary of Defense), two Assistant Secretaries of the Navy for Air, David S. Ingalls and Artemus L. Gates, and the first Secretary of Defense, James Forrestal, all won their wings as Naval Reserve Aviators during World War I.

Technically, the outstanding product of the war was the long-distance flying boat, so necessary to antisubmarine warfare. Numerous types appeared, beginning with such models as the F-boat for training and progressing through the HS-1 and H-16 to the F5L, which was an American adaptation of an English original, that in turn could trace its ancestry to the early experiments of Glenn Curtiss.

The culmination of this development, the NC-boats, arrived too late to participate in the conflict. Originating



ANOTHER PRODUCT of the Naval Aircraft Factory, a major facility in early days, was this patrol torpedo plane. It possibly belonged to the very first VT squadron in the U.S. Navy.



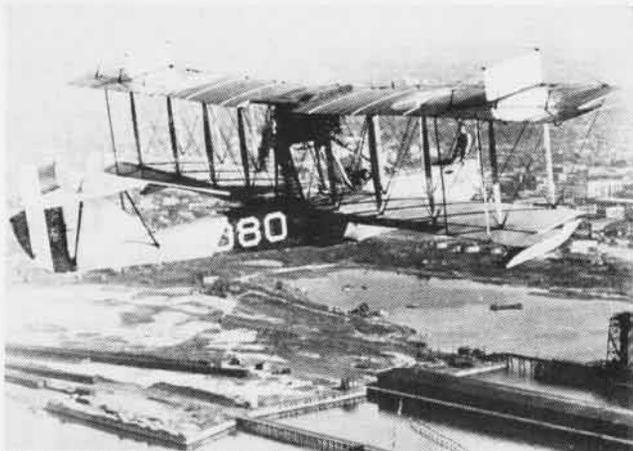
A TORPEDO bombing test on 14 September 1930 proved the feasibility of this new tactic.

in the mind of RAdm. David W. Taylor, who saw the need for an aircraft capable of long overwater flights and indeed of flying across the ocean if necessary, the NC's were designed by three Naval Constructors, Richardson, Hunsaker, and Westervelt, in collaboration with Curtiss. The first of the big planes with its wing span of 126 feet and its hull 68 feet long, equipped in the beginning with three and later with four Liberty engines, was ready for flight in October 1918.

Deprived of the opportunity to use the NC's in combat, the Navy determined to try their ability to cross the Atlantic. Three NC's with Cdr. J. H. Towers in charge took off from the Naval Air Station, Rockaway Beach, New York, on May 8, 1919. They proceeded to Trepassey, Newfoundland, where they waited until May 16 to continue their journey. Of the three, only the NC-4 with LCdr. A. C. Read commanding and Lt. E. F. Stone of the Coast Guard as pilot reached the Azores directly. Distances had been carefully calculated, engines checked, aircraft put in first rate condition, but there remained problems of over-water navigation. Both the NC-1 with Bellinger and Mitscher on board, and the NC-3, with Towers and Richardson, came down on the surface to check their position and both ran into trouble. Towers sailed the NC-3 into the Azores, but the aircraft was so greatly damaged it could not continue. The NC-1 capsized and sank when taken in tow by a passing steamer.

After waiting several days, NC-4 finally got away to Lisbon on 27 May where it completed the first aerial crossing of the Atlantic. To make the record complete, it flew on to Plymouth, England, where on May 31, Read and his crew came ashore at the spot from which the Pilgrims had left 300 years before.

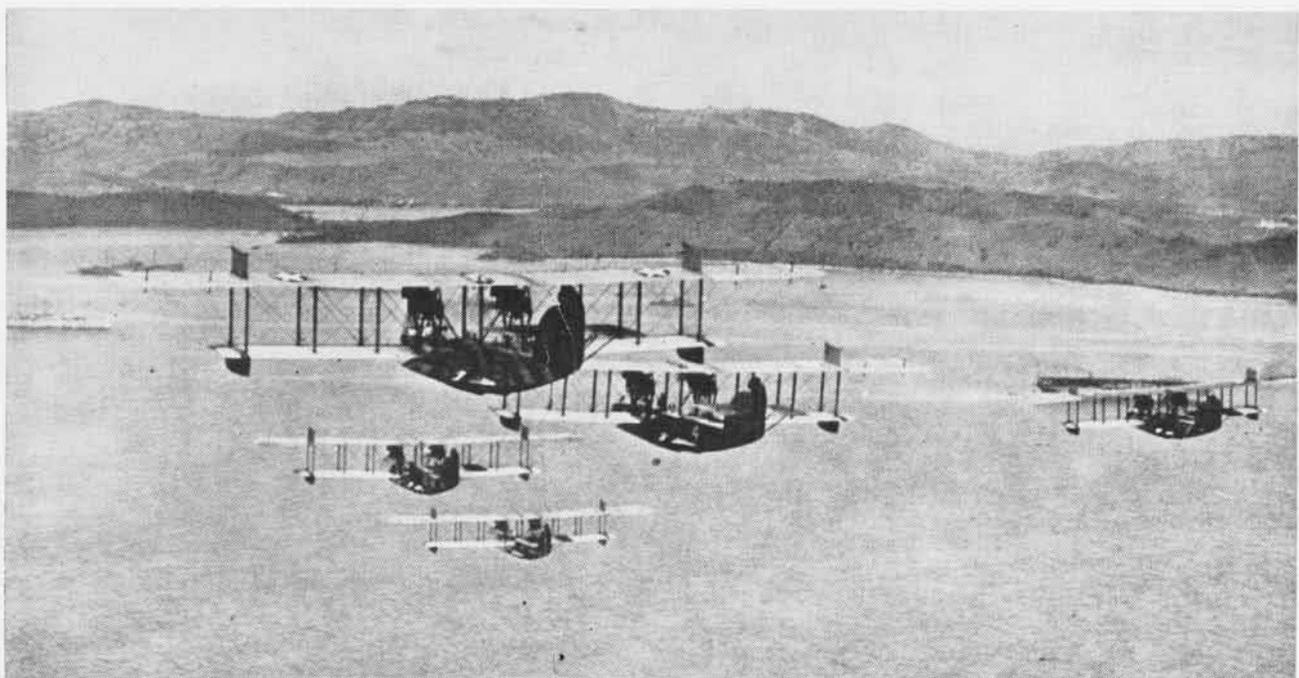
While the usefulness of seaplanes or airships was not denied, the best informed naval opinion, even as WW I



UNTIL MANY carriers joined the Fleet, flying boats were the heart of Naval Aviation. This HS-2-L flew over Pensacola in 1922.

ended, was swinging toward the specially constructed carrier with its wide, unencumbered deck, such as those with which the Royal Navy was already experimenting. In 1919, Congress authorized the conversion of the collier *Jupiter* into a carrier to be named *Langley*. Commissioning of this vessel took place March 20, 1922.

Later that year, the first take-offs and landings were made on USS *Langley* with *Aeromarines* and Vought VE-7's equipped with improvised hooks and somewhat strengthened for the purpose. The lessons learned on *Langley* were incorporated in *Saratoga* and *Lexington* which were being converted from battle cruiser hulls and destined to be commissioned late in 1927. A signal improvement in deck handling was the abandoning of the longitudinal wire of the arresting gear, so that the roll of the planes



A SQUADRON OF F5L'S returns to its base after maneuvers with the Fleet in 1924. The F5L was something of an international venture,

for it was an American adaption of an English original that, in turn, could trace its ancestry back to the early Curtiss experiments.

Navy continued to find ways to unite air power and sea power

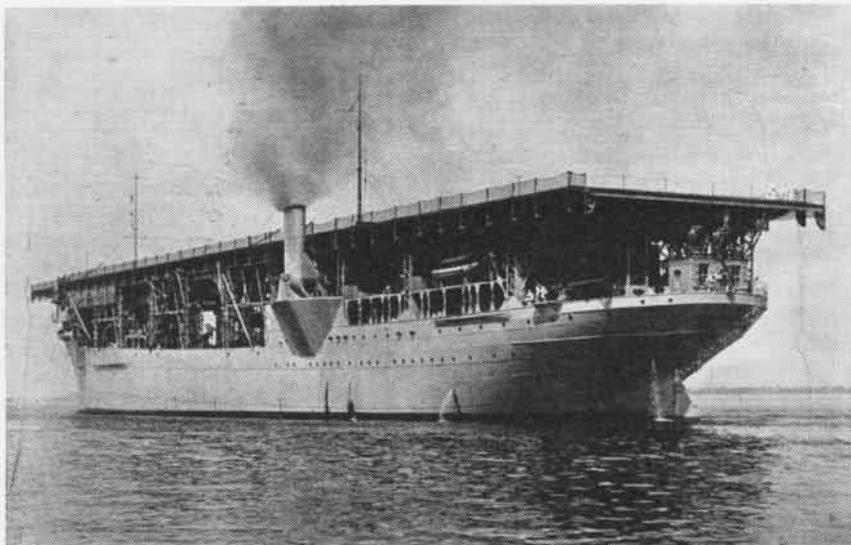
was checked first by weights attached to the ends of the wires and later by hydraulic cylinders.

Accompanying this shift in emphasis were changes in the organizational status of aviation in the Navy. In 1921 Congress established a Bureau of Aeronautics and RAdm. William A. Moffett became first Chief. Even before this, provisions had been made for aviation commands in the Fleet, and in 1926, the position of Naval Aviation was further secured with the creation of an Assistant Secretary of the Navy for Air, a post first held by Edward P. Warner and then David S. Ingalls. The authorization the same year of a five-year procurement program for naval aircraft established immediate goals and a basis for orderly expansion.

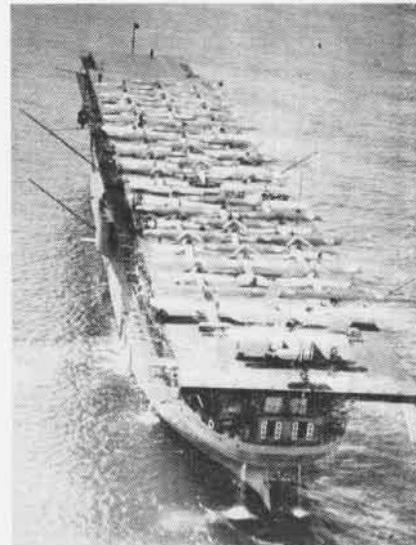
Under the leadership of Adm. Moffett, the Bureau of Aeronautics had grasped the need for basic development



AN AIRCRAFT of this type, the Aeromarine trainer, was the first to land aboard the USS Langley, the Navy's first aircraft carrier.



A CONVERTED COLLIER, USS Langley, went into commission 20 March 1922 to begin her useful life as an aviation guinea pig. From the Langley, valuable facts were gleaned for later design.



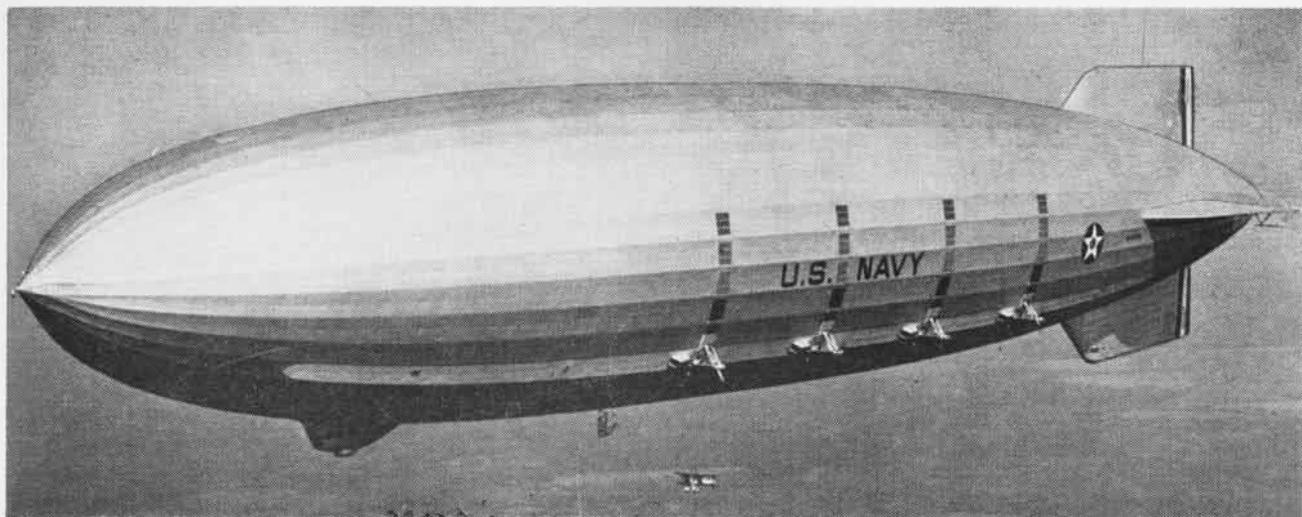
HER FLIGHT DECK, 534' x 64', about the size of World War II's famed "baby flattops."

if aircraft were to play an important role in war at sea. From slender funds, it paid for the first satisfactory American radial engines, purchased better instruments, urged on plane designers, sought more satisfactory radios, and encouraged the Bureau of Ordnance in its efforts to obtain a truly accurate bombsight from the firm of Norden and Barth. When disarmament was the order of the day, the Navy converted the uncompleted hulls of two battle cruisers into carriers. In order to adapt aircraft to operations from existing ships, the Bureau developed a turntable catapult, activated by compressed air and later by a powder charge. Experimental development of large patrol planes was continued.

In 1925, Cdr. John Rodgers attempted to fly a patrol plane from San Francisco to Hawaii. Although not successful, he established a world's distance record for seaplanes, and the ability of the metal-hulled PN-9 to hold the sea indicated that the Navy was working along the right lines. As the commissioning of *Saratoga* and *Lexington* in late 1927 neared, development of carrier type air-



IN 1923, possibly operating on the theory that it pays to advertise, planes, like this VE-9, bore the name of the carrier in huge letters.



THE MACON is shown in full flight as its fighters prepare to book on. It was not only the losses of our dirigibles in storms that ended

the Navy's program along this line, but also the fact, shown in maneuvers, that the airplanes could not protect the big airship.



THE 33,000-TON SARATOGA, Navy's third carrier, made its debut on 11 January 1928 when LCdr. Marc A. Mitscher made the first landing.

craft was emphasized. The basic need for aircraft to serve as fighters and torpedo planes had already been established while experiments pointing to the development of dive bombers were also conducted.

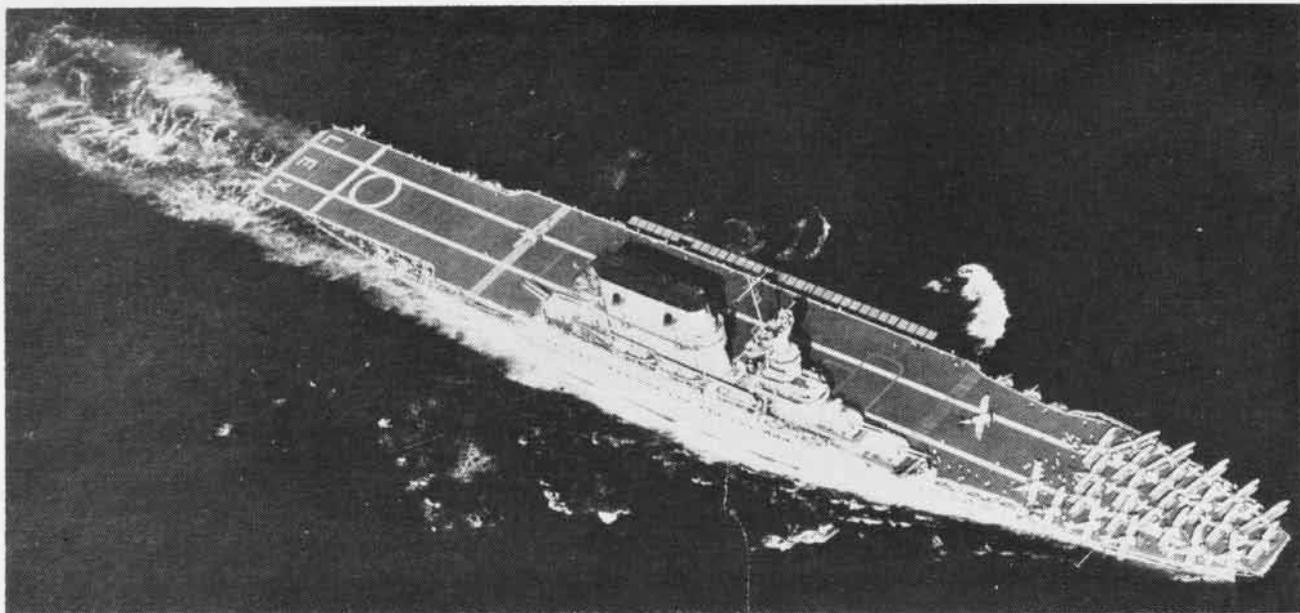
During the next decade, the sign posts were up and the Navy knew pretty well the direction it had to travel. Only perhaps in the lighter-than-air field had it stumbled into an unprofitable alley by devoting practically all the funds available for this purpose to the development of rigid airships. Whatever the commercial practicability of the large Zeppelin type, its military value as demonstrated in Fleet exercises was doubtful. Undoubtedly more might



NAMED FOR CV-3, Saratoga, CVA-60, second ship of the Forrestal-class and twice as heavy as the early Sara, incorporated latest developments.

have been accomplished if the same money had gone into non-rigids and the proper gear for antisubmarine work. Otherwise the Navy had a steady but not uneventful course.

The 1930's were characterized by the use of increasing masses of aircraft, the translation of what had been individual feats into squadron and even larger exercises. For example, the NC flight of 1919 had involved three aircraft, and the attempt of Rodgers to reach Hawaii in 1925, two. In 1934, a whole squadron, VP-10, flew from San Francisco to Pearl Harbor. What were innovations in 1926 had become doctrine ten years later, and thus dive bombing



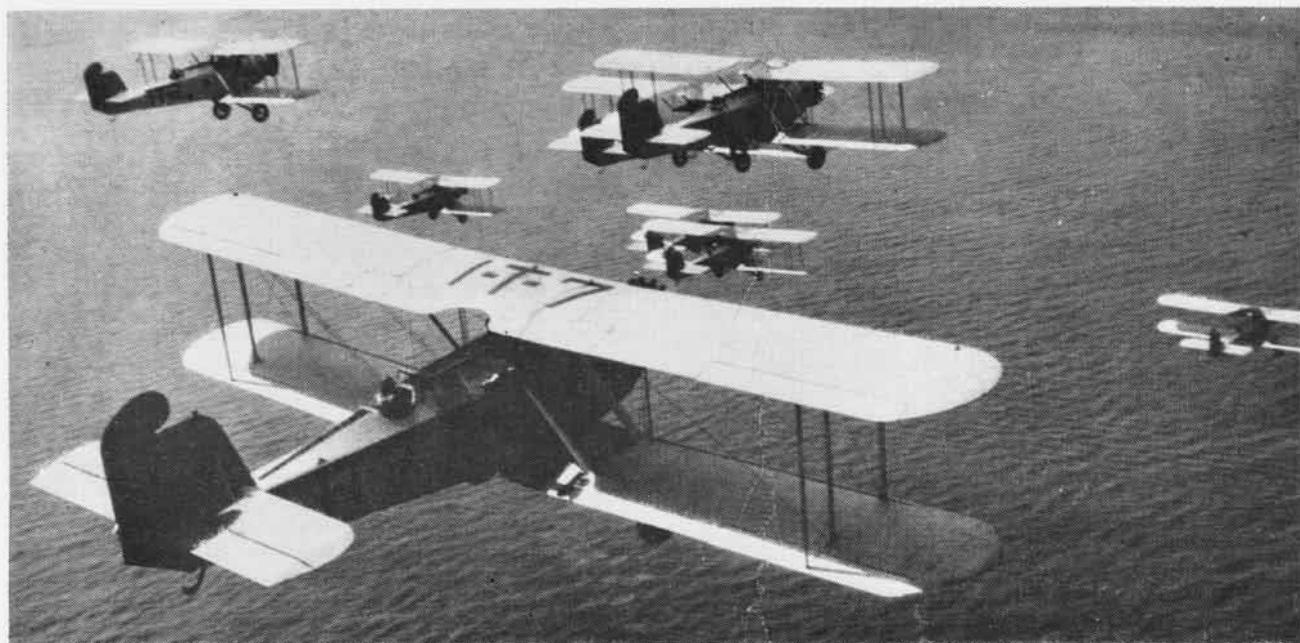
WHEN TWO BATTLE cruiser hulls were condemned in accordance with terms of the Washington Disarmament Treaty in 1922, Navy converted them to Lexington (CV-2) and Saratoga (CV-3). These ships, beginning of our carrier fleet, were launched in 1925, commissioned in 1927.

Aircraft carriers added battle strength to the Fleet in the Thirties

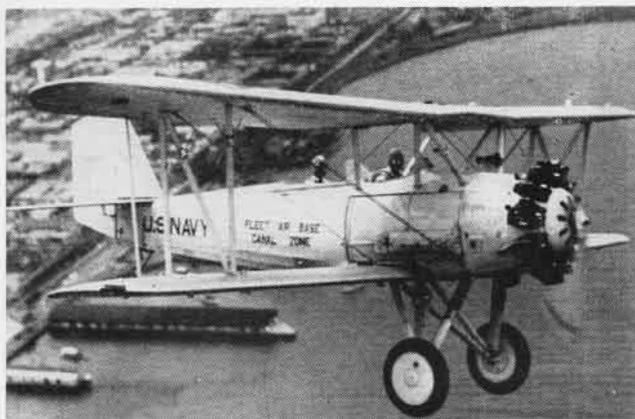
grew from an individual effort into a coordinated attack. With the direction relatively fixed, development could proceed rapidly, and improvements came tumbling forth almost faster than the record could take them down. The most obvious change was the transition in all types of heavier-than-air from biplane to single wing.

In one respect, at least, the generalization about mass

failed. Even the addition of the *Ranger*, the first carrier designed as such from the keel up, in 1934, and of the *Yorktown* and *Enterprise* in 1937 and 1938, respectively, left the Navy with a small carrier force. No commander prior to World War II had operated more than two carriers in exercises, and on no occasion do they appear to have been encompassed within a single protective screen.



IN THE TWENTIES, Glenn Martin had entered the torpedo plane field. Here a squadron of T4M's pass in review. The Martin T4M, the first torpedo plane to be widely used aboard carriers, was one of the largest airplanes to conduct routine operations from aboard ship.



THIS CHANCE VOUGHT O2U-3 plane, assigned to Fleet Air Base, Canal Zone, represents the scout-observation types used in 1928-1933 period.

As early as 1916, Cdr. Mustin had predicted that the air force which developed coordinated tactics would enjoy immense advantages in combat. Such prescience received ample vindication in WW II. At the beginning, the Navy had perforce to operate its carriers in ones and twos, but it paid the price by losing four of these in the first year of conflict. From experience grew wisdom, and when the



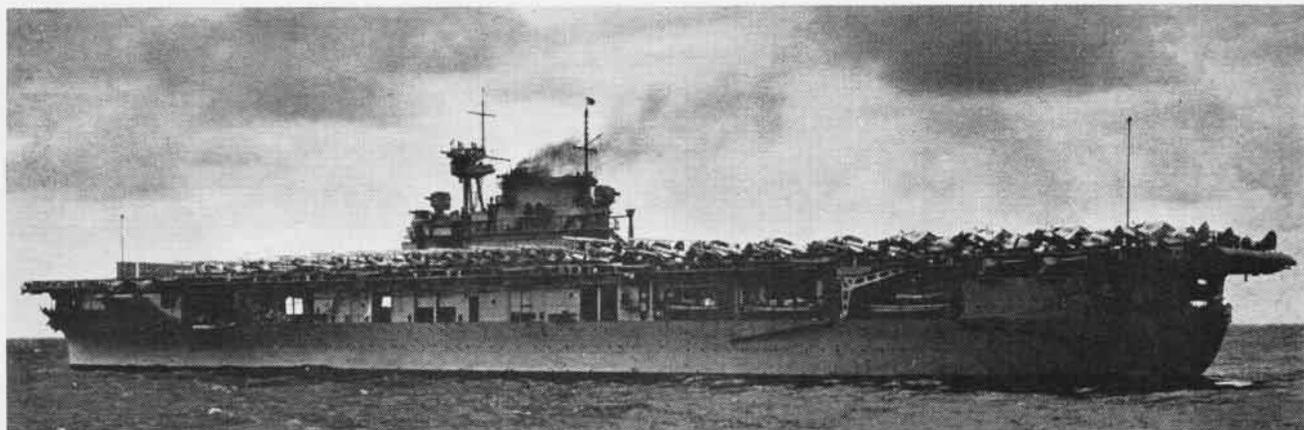
DELIVERED in 1933, the Grumman FF-1 was the first of an illustrious line and the first Navy fighter equipped with retractable landing gear.

new *Essex* and *Independence* classes of carriers became available in numbers, they were operated in groups of three and four within a single screen, both to increase their coordinated power for offense and to provide for mutual protection. The operation of several groups in close proximity compounded their effectiveness and made it possible to take and use at sea effectively a 1000-plane air force.



THE 14,500-TON RANGER was the first ship to be built as an aircraft carrier from the keel up in contrast to its predecessors which were

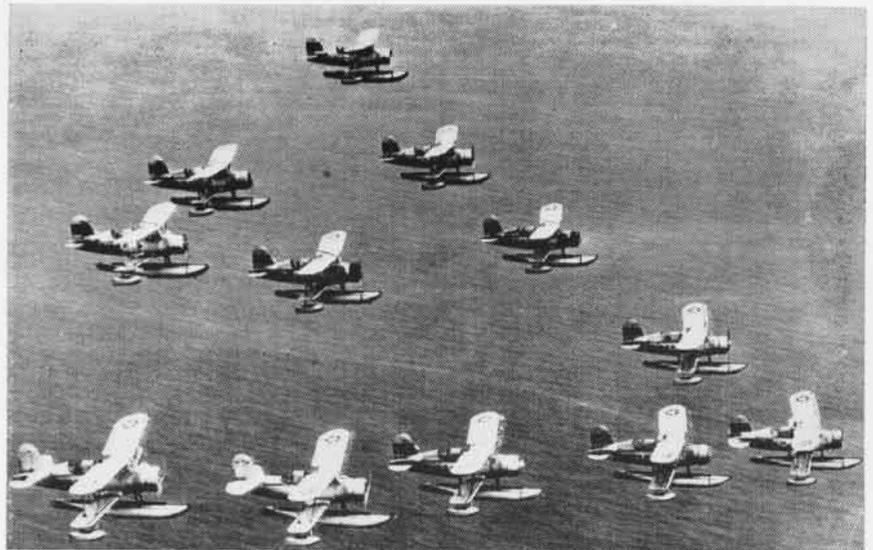
make-do conversions. USS Ranger's keel was laid in September 1931, and three years later, in 1934, she joined the Navy's aircraft carriers.



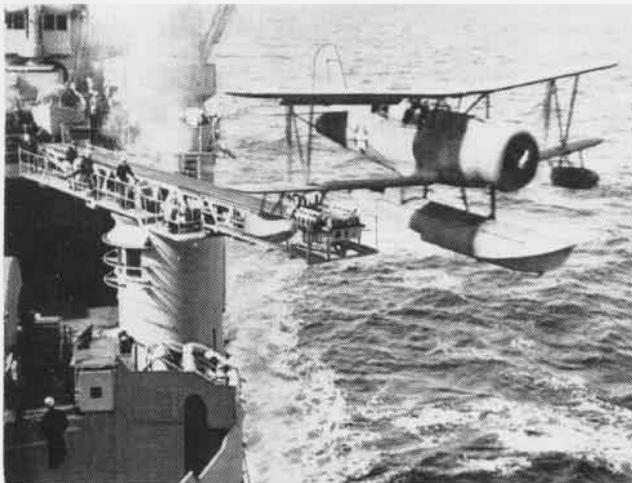
LEGENDARY BIG E, USS Enterprise, launched on 3 October 1936, was beaded for glory. Winner of 20 battle stars during WW II and Adm.

William F. Halsey's flagship, she was the ship the Japanese wanted most to sink. Six times they announced her sunk! CV-6 sailed on.

*What had been done
before had its battle
test in World War II*



THESE CURTISS SOC-1 Seagulls of Scout Squadron Six, flying in formation, date back to 1934. About 305 were turned out in 1935-39 and about 70 of them remained in action until late 1945.



OFF SHE GOES! With a breath-taking burst of speed, a Navy SOC is catapulted off a Navy cruiser for a reconnaissance flight in 1943.



ELEVEN YEARS later, in 1954, USS Hancock showed the modern steam catapult in action for the first time by launching a Grumman S2F.



USS ESSEX, her flight deck loaded with fighters and bombers, introduced in 1943, was to prove a worthy leader of a formidable class.



NATS DELIVERED the goods that kept WW II on schedule. By August of 1945, it was flying 39,700,000 ton-miles per month with 430 aircraft.



THE FAST CARRIER Task Force of WW II, typified in this air armada executed by more than 1000 airplanes of Adm. Halsey's famed Third

Fleet, justified the early proponents of aircraft carriers who had the vision and initiative to see the possibilities of air seapower.



'**MURDERERS ROW**,' some called it, knowing the power and fury these fast attack carriers of WW II could unleash on the enemy. Framed by

Hellcats, the carriers at Ulitbi are (left to right): USS Wash (CV-18), USS Yorktown (CV-10), USS Hornet (CV-12), and USS Hancock.



FLIGHT OF SBD Dauntless over Saipan is made prior to bombing air-drome. These Douglas monoplane dive bombers were also used as scouts.



MARTIN MARINER, a twin-engine, gull-wing seaplane, was used for ASW patrol, convoy guard, over-water reconnaissance and cargo carrier.

Unique contributions of Naval Aviation were mobility, surprise



A CORONADO BOMBER casts its menacing shadow over Japanese merchant ship off Cboven.



THE FAST CARRIER Force's ability to surprise the enemy caught Japanese aircraft on ground at Roi-Namur in January 1944. Right, dive bombers follow fighter sweep and crater airstrips.



BADLY DAMAGED under attack, this Japanese carrier maneuvers violently to escape more blows from Avengers, Hellcats and Helldivers.



A SMALL JAPANESE oiler starts to sink after being hit by an Avenger 15 miles north of Saipan three days before U.S. troops landed there.

TO ACCOMPLISH all this required radar and vastly improved communications. It also called for newer, heavier aircraft to carry the equipment, and it demanded many changes and improvisations. The young men of the twenties had grown older with experience and had lived to check the Japanese advance at the Battles of the Coral Sea and Midway, to roll back the tide at Guadalcanal, and to seize the ebb and turn it into the flood which flowed across the Central Pacific from Tarawa and Kwajalein to Saipan and Leyte Gulf, to Iwo Jima and Okinawa, and finally to the home islands of Japan and at last into Tokyo Bay itself.

The recital of accomplishments of the fast carrier task force should not obscure the other elements of Naval Aviation: the escort carriers, designed for antisubmarine work, which soon proved their ability to cover amphibious landings and even to engage in combat against heavy naval forces; the patrol planes on search or reconnaissance, passing long hours looking for submarines over a deserted ocean; the aircraft catapulted from battleships and cruisers; the



IN JULY 1944, vengeance is spelled with rockets as this Avenger rides the skies, bound on a battle mission against the Japanese.



F4U-4 CORSAIRS which played a great fighter role in WW II were again in action at the opening of the Korean War, 1950. Armed with high velocity rockets and 500-lb bombs, they are shown here on the flight deck of USS Sicily (CVE-118) for "sunrise serenade" over Korea.



ON THE DECKS of big attack carriers, flight officers swing into action again and signal Navy fighters to take off on strikes against Korea. This Corsair, armed with rockets, takes off from USS Philippine Sea whose planes flew 12,000 sorties in the Korean conflict.

airships over the convoy routes; the utility planes providing numerous services. All these did their part. By WW II, aviation had been woven into the fabric of the Navy; air power had gone to sea, ready to play a major battle role.

The WW II record of Naval Aviation included 161 Japanese warships sunk and a share in sinking 26 others; 447 merchant ships sunk, and a share in sinking 39 more. Naval Aviation accounted for 63 German submarines sunk



MISSION OVER, a famed PBY Catalina returns to its base. Navy's principal patrol bomber at the beginning of WW II, the big planes operated both in the Atlantic and Pacific. Painted to hide them in the night, Black Cats played intruder role and scored heavily.

Jet power, a world distance record, new techniques—then Korea!



THE TRUCULENT TURTLE, a P2V Neptune, commanded by Cdr. Thomas Davies, set still standing record in 1946 by flying from Australia, over 11,000 miles, to Columbus, O., without refueling.



THE RECORD-BREAKING "Turtle" had its insignia emblazoned on either side of its nose.

and helped to sink 20 more, as well as 13 Japanese submarines sunk and a share in sinking seven others. Its more than 40,000 aircraft delivered 223,166 sorties against land targets, 36,021 against enemy shipping, and 14,308 against enemy aircraft. The force that numbered a little over 19,298 officers and men at the beginning of the war numbered 437,524 at the end, of which 60,747 were pilots.

Parallels may be dangerous, but they are often illustrative. Just as the Navy tried out the culmination of its WW I patrol plane development by flying the NC-4 across the Atlantic, so did it demonstrate its achievements during WW II when the P2V *Truculent Turtle* took off from Perth, Australia, on September 29, 1946, and came down more than two days later in Columbus, Ohio, 11,235.6 miles away, the longest aircraft flight without refueling on record. Just as the *Langley*, a converted collier, appeared as an experimental carrier in 1922, so did the *Norton Sound*, a converted seaplane tender, commence service as an experimental guided missiles ship in 1948. In the same manner, it is not perhaps too far-fetched to

compare the first successful operation of the jet F4U Corsair on the *Franklin D. Roosevelt* in 1946, to the original experience aboard the *Langley*.

Besides the introduction of jet aircraft in the post-war period, other new elements appeared. Helicopters replaced the float planes which had served so long and so well aboard battleships and cruisers. Airborne early warning equipment and the techniques of its use extended the range of radar. Flights at unprecedented heights and speeds brought forth new flight clothing and automatic means of bailing out of damaged aircraft. Advances in ordnance, navigational gear, and in electronic sighting devices changed tactical doctrine, and guided missiles combined with nuclear weapons threatened to change the whole course of naval and naval air development.

In the summer of 1950, communist aggression burst through the curtain in Korea with flames of open conflict. Forces already in the western Pacific went into action immediately. On the same day that the President ordered the support of South Korean forces, Navy seaplanes began



THESE F9F PANTHERS from Fighter Squadron 24 are shown in flight formation after a strike over Korea in May 1952. The Panther was the

first Navy jet to be mass-produced. A dozen units were in operation in June 1950 just in time to introduce Navy's jet power in conflict.



HELICOPTERS were put to limited use by U.S. Coast Guard in WW II, but in the fifties they were in action even in Antarctica.



ONE OF THE GREAT uses of helicopters is in the field of air/sea rescue. This rescue is one simulated in an exercise held in 1956.



IN ANTISUBMARINE warfare, helicopters especially designed for search are proving themselves, as typified by this HSS-1, skilled participants.

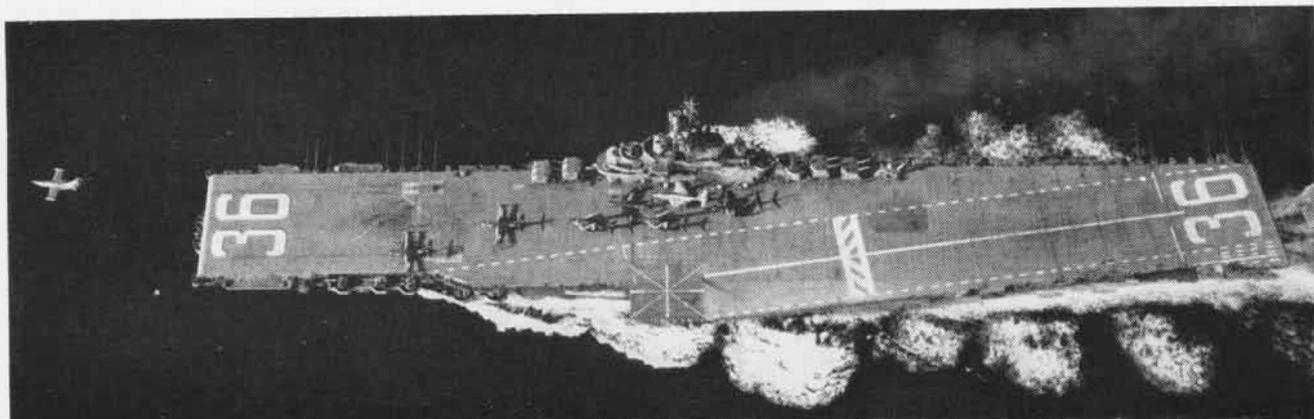


THE WORLD'S largest amphibious helicopter, the HSS-2, is a turbine-powered, all-weather aircraft developed for the Navy by Sikorsky.

their patrols. First combat action came on 3 July when Air Group Five from *Valley Forge* blasted railroad yards and bridges in Pyongyang, capital of North Korea. Before another month had passed, two fast carriers, and two escort carriers, the latter with Marine fighter squadrons aboard, were actively engaged. The First Marine Aircraft Wing, alerted at El Toro, Calif., on the same day that Air Group Five went into action, flew its initial sorties the first

week of August. Other elements of Naval Aviation were on the way. Before the year was out, naval air strength in Korea was equal to any reached during the entire war.

In comparison with WW II experience, the total Naval Aviation force employed in Korea was small, but its achievement in some respects surpassed the efforts of that conflict. The sortie rate, for example, was higher,



USS ANTIETAM (CVA-36) has the great distinction of being the first carrier in the world on which the angled deck was installed. Shown

underway off the Virginia Capes in 1953, she proved the operational suitability of angled flight decks. Now all attack carriers have them.

The race for superiority brings angled deck, more experiments

the combat employment of carriers was on a more continuous basis, and the ordnance expenditure not only exceeded the per flight delivery but force expenditure was also higher. Month in and month out, from the opening of hostilities until the end of the war, Navy and Marine Corps aircraft flew more than one third of all the combat sorties flown by the United States air forces in Korea.

Naval Aviation in Korea from 25 June 1950 to 27 July 1953, engaged in 275,912 sorties and made 850,114 runs on targets. It expended 176,929 tons of bombs, 271,890 rockets and 73,888,000 rounds of ammunition. At the end of the conflict in Korea, Naval Aviation consisted



FLEET AIR Gunnery Parade in flight over San Diego area in 1958 in formation: FJ-4B in lead, F4D-1 on left, A4D-2 on right, F8U-1 in slot.

of 23,193 pilots, 5664 ground officers and 187,174 enlisted men.

Conversion of the WW II *Essex* class carriers produced ships better adapted to the handling of higher speed and heavier aircraft. Two significant advances contributing to this were the steam catapult with its tremendous power, and the angled decks on carriers.

Installation of the Mirror Landing System in 1955 on the USS *Bennington*, and later on all carriers, increased safety and enhanced operating flexibility. These and other structural and technical refinements were embodied in the design of *Forrestal*-class carriers, built to meet existing operating requirements with a margin to accommodate needs of the future. First of six ships of this class was commissioned 1 October 1955.

Deteriorating international relations following the truce in Korea developed into a series of tense situations in which the traditional practice of deploying naval forces



THIS FORMATION features an array of Navy jet fighters over NATC Patuxent River: bottom to top, F7U-1, F2H-2, F9F-2 and F6U-1.

to troubled spots of the world acquired new importance. When repeated acts of armed aggression focused world attention on southeast Asia, strong naval forces built around aircraft carriers were dispatched to the area. On different occasions, these forces evacuated refugees, patrolled troubled waters, provided support to menaced nations, and presented strong defensive bulwarks between the aggressor and the oppressed.

On the other side of the world, carriers and patrol aviation in the company of naval forces deployed to the eastern Atlantic and to the Mediterranean, as they had been since WW II, also served the Nation's purpose on that international front. Their routine operations and training exercises, often in combination with other naval forces, provided the traditional show of strength and brought closer our relations with other nations in NATO.

During these years, weapons and tactics were constantly reappraised. Further improvement in carrier aircraft capability was realized through successive modifications of existing models and the orderly development



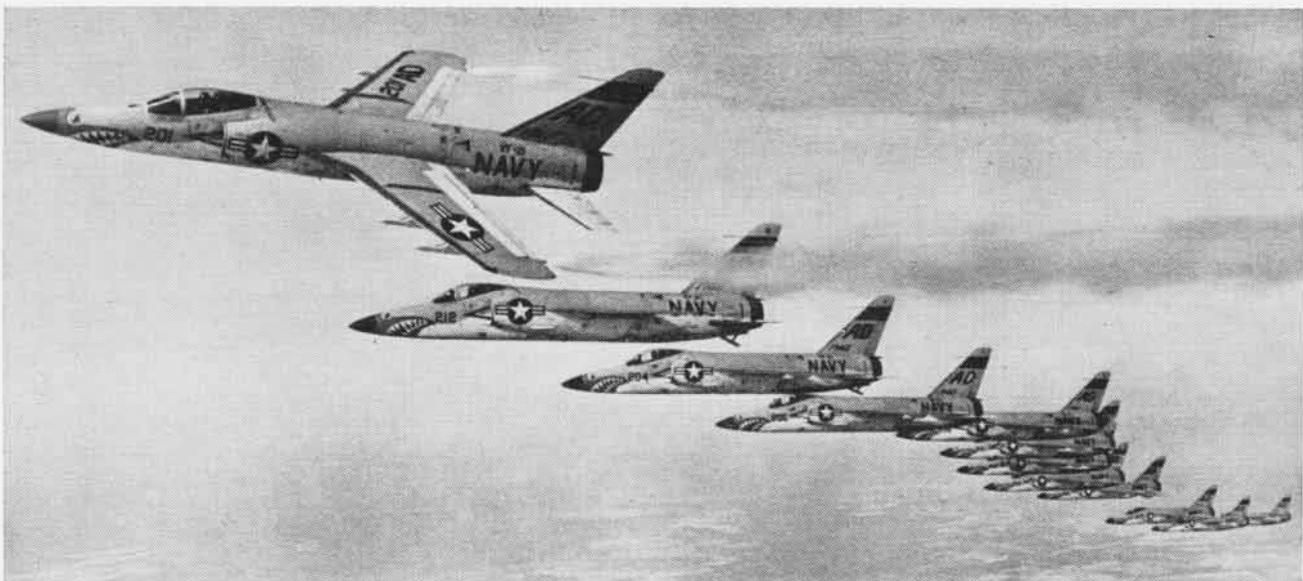
WITH THE SIXTH FLEET in the Mediterranean, A4D Skyhawks of VA-172's Blue Bolts stand ready on the deck of USS *Franklin D. Roosevelt*.

of new and advanced designs. These improvements were marked by the introduction of a single aircraft to perform both search and attack functions of antisubmarine warfare previously requiring separate aircraft. Their success was also demonstrated by such outstanding performances as the world speed record of 752.943 mph set 3 October 1953 by the new F4D *Skyray* carrier fighter; by the world record for 500 kilometers of 695.163 mph set by the A4D *Skyhawk* carrier attack plane on 15 October 1955; and by the 1015.428 mph performance of the F8U-1 *Crusader* on 21 August 1956 in winning the Thompson Trophy.

Navy experiments with vertical rising aircraft were the first to promise success in the endeavor to reduce landing area requirements. The practical application of boundary layer control was another important advance. Jet power was successfully applied to seaplanes. Use of power of the future was clearly begun by carrier aviation when on 4 February 1958, the keel for the nuclear-powered carrier, USS *Enterprise* (CVAN-65), was laid at Newport News, Va.



IN 1954, appeared a snub-nosed hunter/killer plane for antisubmarine warfare. The S2F Tracker carries a full load of modern ordnance.

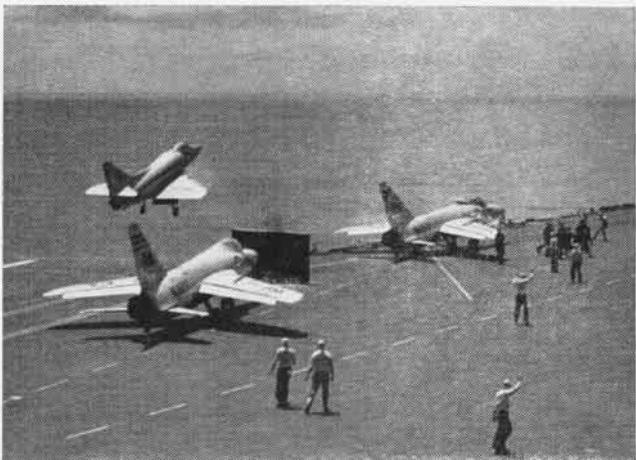


FIGHTER SQUADRON 21 pilots in Grumman F11F Tigers demonstrate the "new look" which is characteristic of Navy's striking power in

the jet age. After successful carrier qualifications aboard USS *Hancock* (CVA-19) the Tigers commenced operations with the Fleet in 1957.

Emphasis on the antisubmarine warfare mission mounted as the operating capability and the destructive potential of the underwater opponent increased. Development of electronic detection and location devices, of destructive weapons, and of weapons delivery equipment, steadily enhanced the defense against submarines at sea. Fleet forces felt the emphasis; in 1953, certain attack carriers, first of a number to follow the same change, were redesignated CVS and assigned to antisubmarine missions. ASW was reinstated as the primary mission of patrol aviation and at this time was assigned as the primary objective of Naval Air Reserve. New task groups of special air and surface units appeared in the Fleet in 1958, providing a means of developing and learning improved antisubmarine tactics and establishing forces in being capable of going into immediate action, should that become necessary.

A new era began in 1954 as new guided missiles became operational. In the vanguard was the 500-mile *Regulus I* bombardment missile, assigned operationally to



WHILE AN A4D Skyhawk is launched from angled deck, two F11F aircraft are readied for launching from port cat on USS *Forrestal*.

Designs for the jet age open the Sixties in missiles and aircraft



NOT A MIRACLE—but the crowd at Oakland had a thrill when Naval Weekend Warriors at the Naval Air Station, flying on jets, came in at low altitude with propellers feathered and their engines secured in their P2V Neptune, a proved stalwart of ASW missions.



WEATHERMEN have had for several years a sturdy ally at sea, the Navy's WV-2, a Lockheed Super Constellation which can ride out a storm. Fully equipped with electronic gear, it is virtually a flying laboratory for meteorologists and is used by the Hurricane Hunters.



FROM ANY ANGLE, Navy's Douglas Skywarrior is a powerful weapon in the Free World's arsenal. The carrier-based A3D weighs 70,000 lbs.

cruisers and carriers, but with demonstrated ability of operating from a variety of platforms, including submarines. Air defense missile *Terrier* appeared in the same year, participating in fleet exercises from the experimental missile ship *Mississippi*. In two years *Terriers* were operating from two cruisers and a destroyer, converted as a special missile ship. In 1956 *Sparrow I* was delivered to carrier squadrons, the first air-to-air missile assigned to US combat units. In the same year, another interceptor, the *Sidewinder*, was added to the carrier missile arsenal, and *Petrel*, air-to-ground missile designed for use against ships, was opera-



SUNDAY PUNCH for the Sixties on the 60, USS Saratoga! Initial carrier trials last July proved the carrier suitability of the super-sonic, versatile, twin-jet, attack bomber, North American's A3J-1 Vigilante. In the trials, NATC pilots put it through all its paces.



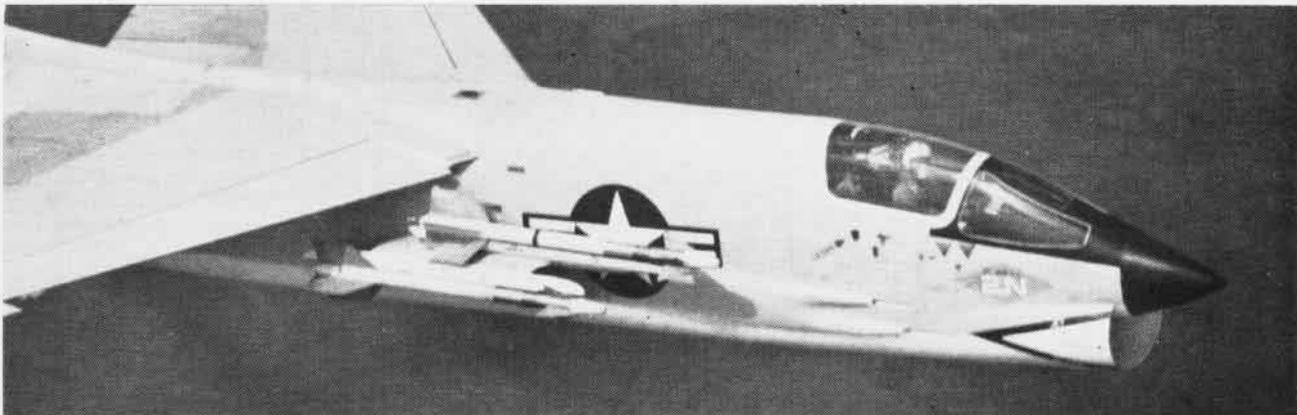
MARTIN'S BULLPUP on Fury is first missile to require no check from factory to firing.



SPARROW III, built by Raytheon, is long, has four controlled wings, four fixed tails.



SPARROW III heads toward an F9F target drone after a four-missile "ripple" firing.



THE AIR-TO-AIR SIDEWINDER is another powerful weapon now in operational use in the Sixth and Seventh Fleets. A boost-glide missile

weighing 155 pounds, the Sidewinder is guided by an infra-red or heat-seeking device. It lives up to its name with deadly accuracy.

tional in patrol aviation. Others to follow shortly, Sparrow III, Bullpup, Talos, Tartar, and the Fleet Ballistic Missile Polaris, were in various stages of development and test.

The years that have passed since the Navy purchased its first aircraft represent only a brief span of history. It is but a short lifetime since Secretary Daniels informed the press that "aerial navigation has reached that point where aircraft must form a large part of our naval forces for

offensive and defensive operations." It can no longer be said that "this country has not fully recognized the value of aeronautics in preparation for war." In this age of jet propulsion, supersonic speed, guided missiles, atomic power, fearsome destructive capability, and the extension of man into space, the Navy faces the future confident that aviation has and will hold its "proper place" as an integral, dynamic, and effective element of United States sea power.



GRUMMAN'S A2F INTRUDER, a two-place, twin-jet, subsonic, carrier-based aircraft was designed for close support. It is the first Navy

low-level attack bomber which can deliver nuclear or conventional weapons to targets completely obscured by weather or darkness.

CHAMBERS TO BLUE TO DANIELS

BACK IN 1913, a few short years after the official marriage of Aviation and the Navy, instructions with forwarding endorsements began to appear recommending regs, rules and requirements of the Navy's newest and most adventurous arm.

One of these, unearthed recently, dated April 4, 1913 has as a subject, "Instructions Concerning Aviation and Navy Air Pilot Certificates."

Prepared by Capt. W. Irving Chambers, USN, then with the Bureau of Navigation, the basic correspondence was approved by RAdm. Victor Blue,



AVIATION OWES MUCH TO CAPT. CHAMBERS

Chief of the Bureau of Navigation, and Josephus Daniels, Secretary of the Navy.

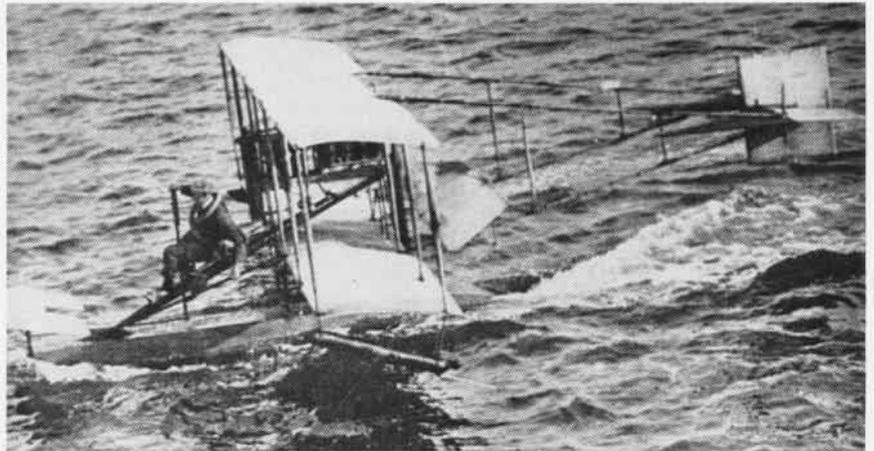
In urging the adoption of the attached recommendations, Capt. Chambers wrote:

1. I forward herewith a letter, drawn up after careful consideration and after consultation with the Navy Aviators, containing instructions concerning Aviation and the issue of Navy Air Pilot Certificates.

2. The requirements for a Navy Air Pilot are different from those of the land pilot and are purposely made more exacting than those of the "license" issued by the International Aeronautical Federation.

The historic document, probably the first of countless instructions dealing with the selection and testing of aviator candidates, contained some pointed and interesting guidelines.

The following instructions, concerning Aviation and the issue of Navy Air Pilot Certificates are issued for the benefit of Command-



A PIONEER PUSHER, THE CURTISS 'TRIAD' HYDROPLANE, WAS PURCHASED IN EARLY 1911

ing Officers and applicants for instruction in Aviation.

INSTRUCTION IN AVIATION

An officer desiring instruction in Aviation must make official application through his Commanding Officer. A Senior Officer Present may act immediately upon such request, if away from an Atlantic home port and facilities exist for carrying on the instruction

herein specified, the issue of such certificates being duly noted on the records of these officers and appropriately entered in the Navy Register, with the dates of qualification, against their names.

To qualify for such a certificate, an officer must first make official application, such application being approved by the senior qualified aviator present. The application must be accompanied by a brief written report, by the applicant, embracing the following topics, taken from notes made by him during his course of instruction and revised at the time of application.

- a. The principal causes of accidents in aeroplanes and the applicant's personal views as to the best means for providing safety in flight.
- b. The advantages and disadvantages of high speed, of wide range in speed, of flying over land and of flying over water.
- c. The relative locations of the center of



RADM. BLUE HEADED BUR. OF NAVIGATION

under his command.

Before any officer receives practical instruction in Aviation, he must first pass the physical examination prescribed by the Bureau of Medicine & Surgery, Circular Letter No. 125-221, dated October 8, 1912, a note of which will be entered on his record. A Senior Officer Present is authorized to order the examination.

NAVY AIR PILOT CERTIFICATE

Navy Air Pilot Certificates will be issued by the Navy Department to all officers who qualify in accordance with the conditions



JOSEPHUS DANIELS, SECNAV, 1913 TO 1921

pressure and the center of gravity in a hydro-aeroplane or airboat, the location of the lines of thrust and resistance, the effect on the center of pressure of changes in the angle of attack, the effect of longitudinal changes in the center of gravity, the necessity for "banking" and the causes of "skidding" or "side slipping."

d. The phenomena commonly known as "air holes" and the precautions to be observed in turning an aeroplane in a strong wind.

e. The precautions necessary when making a forced landing, in a hydro-aeroplane, both before the wind and against it.

f. The advantages and the disadvantages of the different types of aeroplane motors of which he has knowledge and the principal precautions to be taken in the care and handling of such motors.

The Senior Officer forwarding this application, if all the terms have been complied with and facilities exist under his command, may order a Board of at least two qualified officers to conduct the test for qualification, during which the following conditions must be fulfilled:

1. Attain an altitude of 2500 feet, as recorded by a maximum altimeter or barometer, adjusted to local conditions before starting, there being no restrictions as to the load carried.

2. Carry, to a height of at least 500 feet, a weight strapped to the passenger seat, equivalent to that which, combined with the weight of the aviator will total 275 lbs. During this maneuver, the motor being cut off at an altitude of at least 500 feet, execute a *vol plane* to the water on which a landing must be made, within 150 feet of a designated mark or buoy, without upsetting. Then with the power shut off and the propeller at rest, the machine must be started again, made to rise from the water and, after a short flight, must be made to land on the water, from a low altitude, within fifty feet of a mark. Power being shut off only on landing, the test is made to show accuracy in landing using the power.

3. Make a flight, attaining an altitude of at least 1000 feet, then throttle the motor to the lowest point and make at least one complete circle or spiral to a normal landing, without further use of power. Before this test the muffler should be removed, if one has been provided.

4. Make a straight course flight in the air, over water, by compass, at an altitude of at least 500 feet, between two designated points, out and back, at least 5 miles apart, with the wind blowing across the course at least 15 miles per hour, as recorded by anemometer at the starting point. The atmospheric conditions existing at the time of the test will be taken into consideration by the board in judging whether the courses made were sufficiently straight.

5. Make a reconnaissance flight of 20 miles, ten miles out and ten miles back, at a minimum height of 1000 feet along shore,

in sufficient proximity to smooth water to enable a safe *vol plane* to be made at any time. During this flight, which is to test the aviator's faculty for observing, navigating, and control simultaneously, such observations must be made and recorded, mentally or otherwise, as will enable him on returning to make a sketch chart of his track together with the location of prominent objects both ashore and afloat, including any object or objects that may be located by the Board without his knowledge, such for example, as a body of men, a bonfire, or a boat with some distinctive mark. This chart will accompany a report of the flight to the Board.

6. Any of the tests may be repeated to satisfy the Board.

7. The Board will make its report to the Navy Department forwarding the reports of the applicant, with recommendations as to the issuance of a Navy Air Pilot Certificate.

WINGS OVER PENSACOLA

"Instruction in Aviation" and the requirements for "Naval Air Pilot Certificates" have been a prime concern of Naval Aviation throughout its 50 years. Responsibility in this vital area has rested with the Naval Air Training Command and its predecessor organizations. While training operations have spread across the country, training always has been identified with Pensacola—where the Chief of the Naval Air Training Command still maintains headquarters.

Methods, equipment and organization have changed through the years, but the high standards of training and the product have not. The purpose also remains the same—to provide the Navy and Marine Corps with skilled pilots who comprise the very heart of Naval Aviation.

Training aircraft have advanced through the years, though not always at the same pace as combat types. Some trainers have served a decade or more. At times trainers have been supplemented by other types for special needs, and sometimes by obsolescent combat types for the advanced phases.

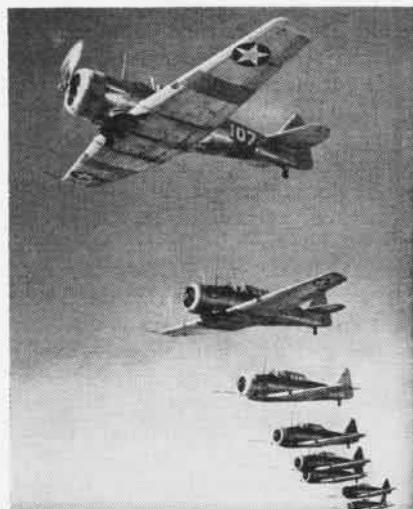
Representative of the trainers used by the Navy are those shown at the right, which depict the transition from the "stick, wire and fabric" biplane to the modern jet aircraft. The T2J-1's introduce the jet to the future Naval Aviators who will be flying the F4H's and A3J's from the attack carriers of the Fleet—adding their part to the accomplishments of Naval Aviation in the years ahead.



THOMAS-MORSE SCOUTS, WW I TRAINER



MAJOR WW II TRAINERS, N25 AND SNJ



SNJ'S SERVED PRIMARY, BASIC, ADVANCED



JET TRAINERS INCLUDE T2V-1 AND T2J-1



GRAMPAW PETTIBONE

Lost Warrior

A ferry pilot made a hurried pre-flight check of the AD-6 he planned to fly from NAS DALLAS to NAS NORFOLK. He was anxious to get on the road, for he had been delayed excessively during delivery of another plane to Litchfield.

Soon after take-off on the first leg to Birmingham, Ala., he realized the ARN-6 DF was completely out of calibration and unusable, and the gyro compass was inoperative. He would have to rely on the wet compass plus dead reckoning, using WAC charts to reach his destination. He kept on and arrived with no difficulty at Birmingham, Alabama.

His next hop would be to Norfolk, two hours and 45 minutes en route, basically a night VFR hop. Again he would have to rely on wet compass and chart reading alone.

He got off at 1600 CST, hit Atlanta right on schedule, then Athens, Georgia, and had his last visual fix over the town of Anderson, S.C. It was beginning to get dark.

Stricken, he realized he was in bad shape! The regular instrument and running lights were O.K., but the wet compass light was out! There went his only navigational aid! He remembered his flashlight—safely stowed in the baggage compartment. Furthermore, to compound it a bit more, there was no portable or detachable light in the cockpit!

Visibility dropped to five miles in



haze, making map reading and orientation difficult. He was lost! The pilot now switched on his IFF and called GCI for a fix. Two stations answered up, but even after identification turns had been made, they were unable to pick up contact on him.

With an hour and 45 minutes of fuel remaining, he suddenly passed over a fairly large town with a lighted runway south of town. After a couple of 360° turns and a low pass down the runway convinced him it was short but suitable, he notified GCI he would land there.

He flew a good landing pattern, estimating his height above the unknown terrain and rolled into final at 95 knots. He touched down right on the numbers but hit hard and bounced



high. He poured throttle on for a waveoff, but the AD-6 started a violent torque roll to the left. Immediately retarding throttle, he relanded but in a violent swerve to the left. This he was unable to control with right rudder and brake, the aircraft left the runway, smacked into some trees, and stopped, a strike. The pilot escaped with bad bruises.



Grampaw Pettibone says:

Great jumpin' Jehosaphat! This lad was lucky, even though he acted like he'd had his brains stomped out.

He gets more flight time per month than the average pilot and practically ALL of it cross-country! A flashlight is a MUST on a night hop, and you've gotta be mighty light-headed to head out with no radio nav aids AT ALL!

His acceptance test of this machine must have been confined to "Does she run?" The outfit that turned a miserable machine like this over to a ferry pilot better do some soul-searchin' too.

Dead Heat

A TV-2 departed its home station at 0715 one morning on a scheduled instrument instruction hop. It was one of those GO-NO-GO mornings with 4000-5000 feet broken, a high overcast, lightning and rain showers off in the distance, and towering cumulus in all directions. A line of small thunderstorms predicted to cross the air station by 0700 had not materialized, so the hop was launched as scheduled.

Departure was filed and the entire hop was conducted VFR at 20,000 feet on top of broken clouds in the local area.

Returning at the planned ETA, the instructor pilot took the TV down to 4500 feet in a clear area and called the tower for field weather and clearance in. The tower cleared him but reported a heavy rain storm was moving toward the station. The ceiling now was 500 scattered, 2500 broken, visibility two miles in rain, and a 10-knot crosswind from the right.

En route from initial to the break, the tower called to ask if he had the field in sight. The pilot replied he had "the end of the runway in sight."

It was a dead heat. As the TV-2 hit the break, the rain storm rolled over the field! The pilot continued his break, but because of reduced visibility (rain on the windshield), he overshot turning final and had to S turn back. Touchdown was right on speed but 3000 feet down the soaking wet runway!

Raising the flaps and cutting the throttle to idle, he commenced slow steady braking action. Below 80 knots the canopy was cracked open. Suddenly the pilot realized he was running out of runway and began hard braking, but with no apparent effect.

Alerting the dual pilot, he shut down the engine, cut all switches, and tried to hit the overrun as straight as possible. As they braced themselves, the TV-2 slammed into the field boundary fence and slid to a stop on the highway bordering the airfield.



Grampaw Pettibone says:

Son-of-a-Gun! When you pull a stunt like this, you've only yourself to blame! A good solid 180-degree turn back to that clear area would sure have saved a lot of anguish later. Most storms lose their fury in 20 minutes at the outside, and he could have made a better approach without the first wild gusts to contend with.

NASA at Langley Field did a fine project on braking action on wet runways. With one inch of water on the runway at over 80 knots, you've got NOTHING! Under 80 knots its marginal, maybe only half effective.

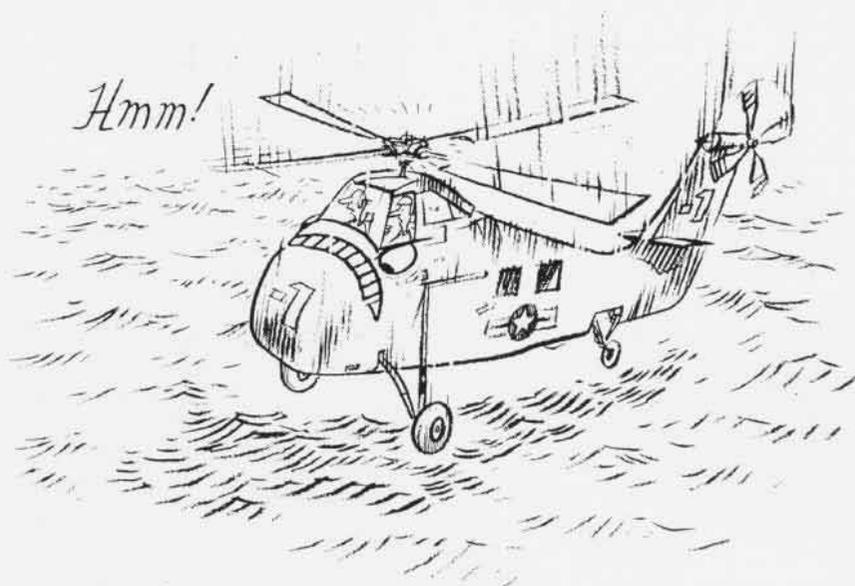
Unless you've got a hook to drop and a wire to catch, you need ALL the runway and a Pax River size strip at that to take care of our present aircrafts' touchdown speeds!

Fuel Fools

Gramps has been writing so many yarns these past years of the exploits of real "can do" helo pilots, thought you might like a tale from the other side of the ledger. Gather 'round, here's a dinger.

A couple of helo lads, each with over 400 hours in the HUS-1, departed their home field on a VFR cross country flight to the East Coast.

The first leg of the hop, to Patuxent River, was uneventful, taking 2.2 hours with 2.5 hours rotor time. Just



prior to landing the fuel warning light came on. The aircraft was refueled and required 242 gallons. This represented a fuel consumption of 561 pounds per hour for the first leg and meant he had only 119 pounds remaining after landing.

They filed their flight plans and departed on the second leg, reaching their final destination, New York, uneventfully. Again the HUS-1 was refueled, this time taking 190 gallons for a fuel consumption of 525 lbs. per hour. As at the previous stop, the plane captain reported the gallons of fuel used to the pilots. The relatively high fuel consumption either did not impress the pilots or was ignored by them. No fuel checks had been made in flight.

The next afternoon, after a pleasant RON, and figuring to return by the same route, they filed for NAS PATUXENT RIVER, listed 3+30 fuel aboard and headed out. Thirty-seven minutes later they returned to New York to pick up some forgotten baggage, spent six minutes on the deck, and took off again, finally on their way.

They flew blithely along, making one very rough fuel consumption check exactly one hour after initial rotor engagement. They figured they were burning only 430 pounds per hour, and had no apparent problems until suddenly, only 25 miles out of Patuxent, the fuel low-level warning light came on! Still no real concern, for right beside the light a placard read—"Light ON—30 MIN FUEL."

As they reached the shore of the Chesapeake Bay, there was the field,

only 10 miles away! One mile out from the runway's end the pilot evidently realized it was getting tight, for he called the tower and requested permission to land on the end of the runway owing to critical fuel state. Almost immediately thereafter, he had a complete power loss and made an autorotative ditching in the drink just 6000 feet short of the runway. All three of the crew got out safely.



Grampaw Pettibone says:

Great balls of fire! At the time of power failure the elapsed rotor time was two hours and 54 minutes. Use of the smaller of the two fuel consumption figures of the previous day (525 lbs/hr) indicates that two hours and 54 minutes was the maximum time the engine could be expected to run. That's all the go-juice there is! Normally, the "fuel on board" figure of 3 plus 30 is based on an average fuel consumption by the HUS of 445 lbs per hour. So is the 30 minute low fuel warning light.

First thing we oughta do after the hangin'—is pull off that low fuel light placard and put in one that simply says "LIGHT ON—LOW FUEL."

Next, this outfit and every other helo outfit better make sure their pilots are keeping real accurate fuel consumption and flight logs on all cross-country hops.

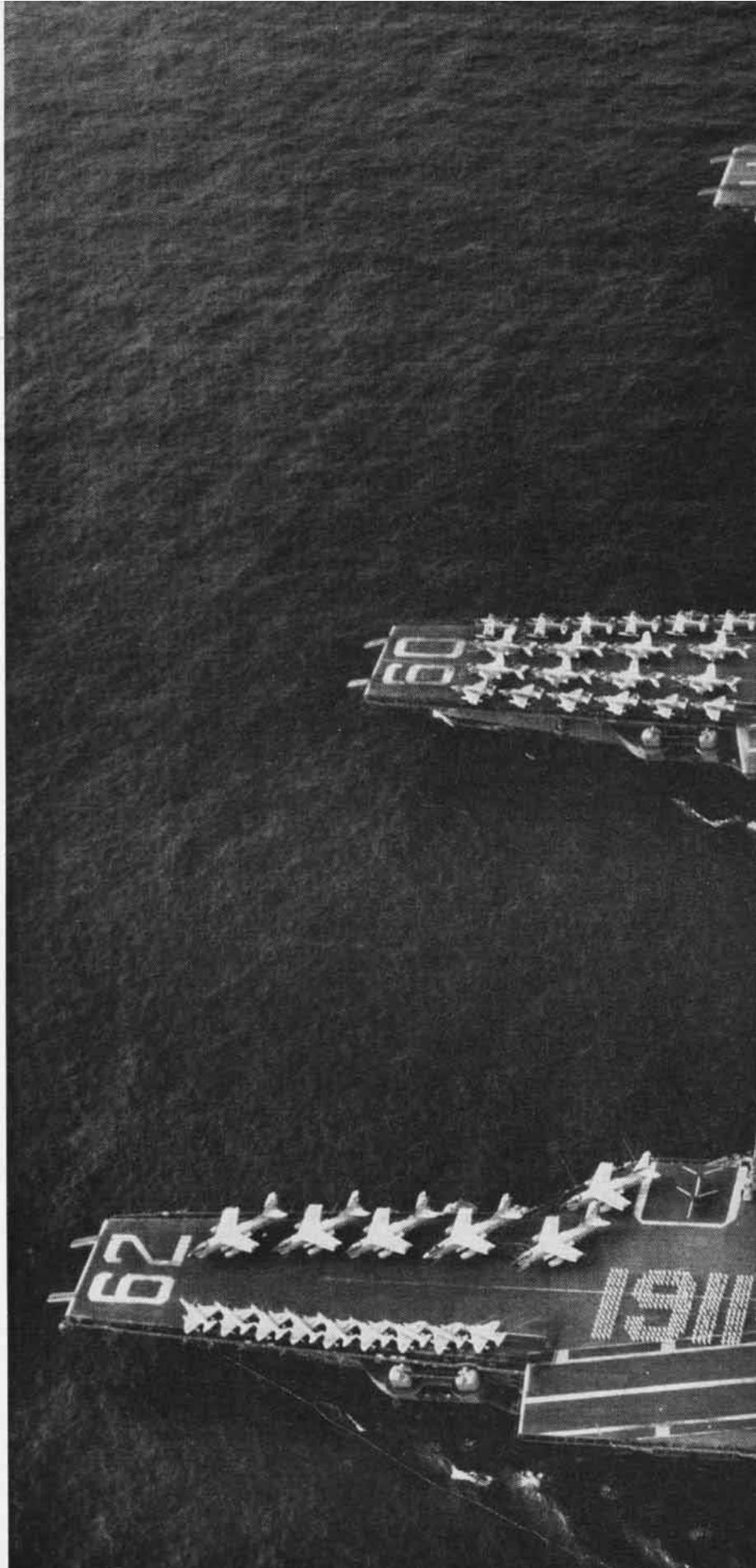
Last, in a helo it's a h--- of a lot easier on the nerves and saves a lot of explainin', to set it down in some farmer's field and holler for fuel, than to think up some plausible excuse for the AAR Board. Those sessions are ALWAYS grim!

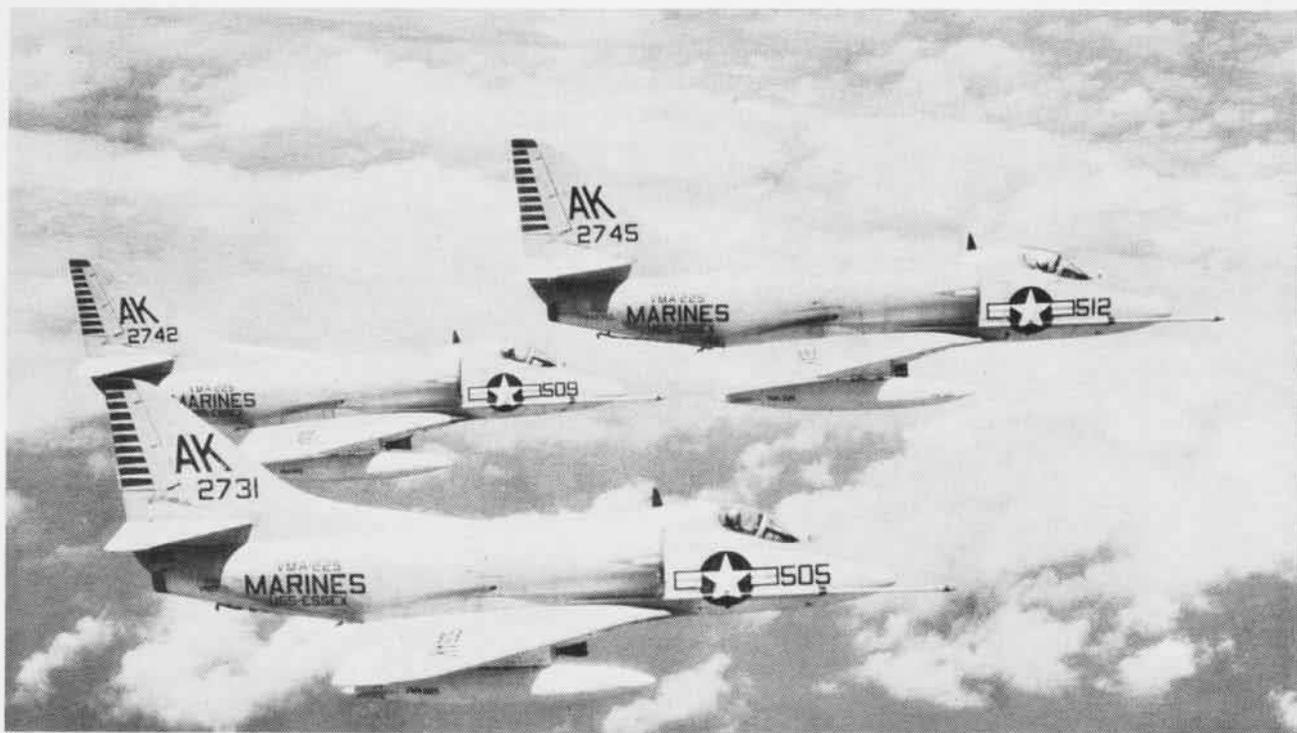


USS INTREPID

USS SARATOGA

USS INDEPENDENCE





MARINE CORPS AVIATION

MARINE CORPS AVIATION dates its beginnings from 22 May 1912, when Lt. Alfred A. Cunningham reported to the Naval Aviation Camp, Annapolis, Md. The following July, he was ordered from Annapolis to the Burgess Company plant at Marblehead, Mass., where actual flight training was conducted. He soloed on 1 August 1912, after two hours and 40 minutes of instruction. Thus Lt. Cunningham, Naval Aviator #5, became Marine Aviator #1.

As early as 1913, he was made a member of the Chambers Board, composed of six naval officers and himself. The Board convened to draw up "a comprehensive plan for the organization of a naval aeronautical service," assuring the Marines of a representative in Naval Aviation almost from the beginning.

Naval Aviation's early development owed much to its Marine members who participated in some of the earliest experiments—bombing from a naval plane (Bernard L. Smith); taking off by catapult from a battleship underway (Alfred A. Cunningham); and looping a seaplane (Francis T. Evans).

When the United States entered WW I on 6 April 1917, Marine Aviation consisted of only six Marine officers designated Naval Aviators, one warrant officer, and 45 enlisted men. Six months later, the First Marine Aeronautic Company was organized. It was destined to make history by becoming the first American flying unit of any service to go overseas completely trained and equipped. On 9 January 1918, the Company of 12 officers and 133 enlisted men was transferred to Ponta Delgada, on the island of Sao Miguel, for duty. It flew seaplanes on antisubmarine patrol

in the Azores area throughout the remainder of the war.

Back in the States, Marine Aviation was mushrooming. After flying from Mineola, Cape May, Lake Charles, and Coconut Grove, the Marines finally got their own field in April 1918. The Curtiss Flying Field at Miami was renamed the Marine Flying Field, the first in Marine history.

With the move to Miami came the formation of the 1st Marine Aviation Force composed of a headquarters detachment and four landplane squadrons. This organization, commanded by Capt. Alfred A. Cunningham, was ordered almost immediately to prepare to sail for France. By 30 July 1918, three Marine squadrons, comprising 101 officers and 657 enlisted men, arrived in France, followed by the fourth in October. Upon their arrival, the Marine squadrons became the Day Wing of the Northern Bombing Group while two Navy squadrons made up the Night Wing. That was the first instance of wing and group organization in Naval Aviation. The group, however, was the higher echelon whereas in WW II the order was reversed.

While the Marine pilots awaited delivery of their planes, they were assigned to British squadrons where they got their first taste of combat in DeHavilland aircraft (DH's). On 23 September they received their first DH in France.

Although the Armistice came soon after Marine Aviation arrived, the Marines performed creditably. They shot down at least four, possibly as many as 12, German planes. They performed the first recorded food-dropping mission when they replenished a French regiment isolated for several days in the front lines on the Western Front. For that accomplishment three pilots were awarded Distinguished Service

Medals. Their observers received Navy Crosses, at that time a lower rated decoration. Medals of Honor were awarded 2nd Lt. Ralph Talbot, a reserve pilot, and his observer, GySgt. Robert Robinson, for shooting down two enemy planes against overwhelming odds.

In WW I, 282 officers and 2180 enlisted men served in Marine Aviation. About half of them went overseas.

Marine Air began demobilizing shortly after its return from France. The 1st Marine Aviation Force was disbanded at Miami in February 1919, and the following month the First Marine Aeronautic Company, which had served in the Azores, was dissolved. Remaining personnel at Miami were transferred in the summer of 1919 to Parris Island and Quantico, and the Marine Flying Field at Miami was abandoned on 25 September. The following year, Marine Aviation had but 67 pilots aboard. Further reduction occurred in 1921 when its pilot strength dropped to 43.

Yet between World Wars the Marine Corps with its aviation was the only U.S. military service that saw combat. Marine Air served in Santo Domingo from February 1919 until July 1924; in Haiti from March 1919 to August 1934; and in Nicaragua from 1927 to 1933.

Throughout those years, the handful of Marine pilots were not only experiencing combat; they were contributing new tactics to ground and air warfare. In Nicaragua, Marine pilots led by Maj. Ross Rowell were the first to use dive bombing, a technique earlier developed by Lt. L.M.H. Sanderson, against an organized enemy (Sandino's rebels). Again in Nicaragua, they were the first to employ air-to-ground communications in combat; and they were the first to transport troops and supplies by air.

Marine pilots evacuated wounded in Haiti and Santo Domingo in the early 1920's, flying two modified DH's designed by a Marine aviator. The best known evacuation mission occurred during the fighting in Nicaragua when Lt. Christian F. Schilt made ten hair-raising flights under fire on 6-8 January 1928, landing on a makeshift airfield in Quilali to rescue 18 seriously wounded Marines who had been ambushed by the enemy. For his "almost superhuman skill," Schilt was awarded the Medal of Honor.

The first time Marine Air ever served in the Pacific was when ten pilots and 90 enlisted men of Flight L, 4th Squadron (later designated Observation Squadron 1-M), reached

Guam on 17 March 1921. Those Marine pilots performed outpost duty on Guam for ten years, flying seaplanes. However, most of this squadron had its Guam service interrupted for duty even farther West when in early 1927 a Chinese civil war threatened foreigners in Shanghai, Peking, and other cities.

Elements of the Guam squadron were shipped to Shanghai in April and were joined the following month by Marine fighter elements dispatched from San Diego. These units eventually became Fighter Squadron 6-M and Observation Squadron 10-M. Marine pilots flew 3818 reconnaissance sorties around Tientsin during the next 18 months, keeping watch on the Chinese antagonists. Personnel of the Guam squadron returned to that island after the threat to foreigners had abated, and the other air units returned to the States.

At home during those years of so-called peace, Marine Aviators labored to increase their knowledge and improve their proficiency in aeronautics. They flew record-breaking flights, established speed records, won safety awards, dispatched medicine and supplies to areas stricken by earthquakes and hurricanes, and experimented in blind-flying, aerial cartography and photography.

It was not until 1925 that Marine Aviation appeared at all in the annual schedule of the Naval Aeronautical Organization although it had been considered from its creation as an integral part of the naval forces. As naval tactics changed, it became necessary for the Marine aeronautical organization and aviation tactics to change also. From 1931 to 1934, VS-14M and VS-15M, the first Marine squadrons to become part of the fleet air organization served aboard the carriers *Saratoga* and *Lexington*.

A step of vital importance was taken on 8 December 1933 when the Fleet Marine Force was organized as part of the U.S. Fleet. The development of the Fleet Marine Force brought about many changes in the organization of Marine Aviation. One of these was that less stress was laid on expeditionary duty and more on the seizure of advanced naval bases in the event of war.

The next organizational change of importance to Marine Aviation came in 1935 when the Aviation section was divorced from the Division of Operations and Training and became an independent section under the Major General



1ST LT. B. L. SMITH WAS BOMBING PIONEER



LT. ALFRED A. CUNNINGHAM, MARINE AVIATOR NO. 1, AT CONTROLS OF CURTISS AH-2

Commandant. On 1 April 1936 it became a division under a Director of Aviation.

The director of the new division served as an adviser to the Commandant on all aviation matters, and as a liaison officer between the Marine Corps and the Navy's Bureau of Aeronautics. Unlike the Marine Corps infantry and artillery, who drew equipment from both Army and Navy (in addition to supplying much of its own), Marine Aviation depended solely on the Navy for its aircraft and all other aviation equipment.

On 30 June 1939, 210 officers and 1142 enlisted men were on active duty with Marine Aviation. By June 1940 the number had risen to 1860. In June 1940, Congress authorized the Navy's 10,000-plane program of which Marine Aviation was allotted 1167. Plans were made for the establishment of four groups of 11 squadrons each. Following landing exercises in 1941, it was estimated that a single division making an amphibious landing would require 12 fighter, two observation and four utility squadrons. But so great a number of squadrons was a long time materializing.

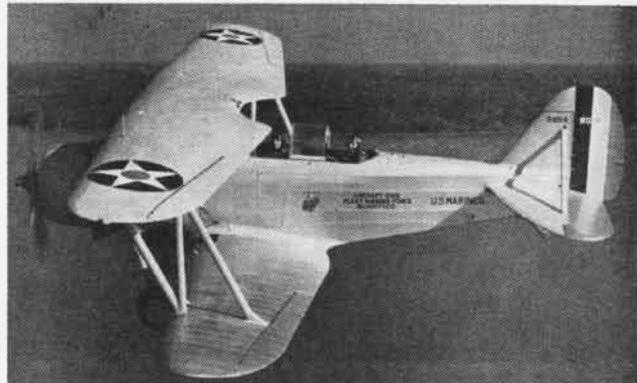
Although the 1st and 2nd Marine Aircraft Wings were commissioned in July 1941, when war came five months later there was still only one group in each wing—Marine Aircraft Group 11 at Quantico and Marine Aircraft Group 21 with some units at Ewa, and others at Wake Island.

The Pearl Harbor attack liquidated all but one of the 48 Marine aircraft at Ewa. The one that escaped was a transport sent to Ford Island for repairs. Personnel of Marine Aircraft Group 21 organized and directed the defense of their field so well that they were able to keep it open throughout the attack, thus rendering assistance to Army and Navy aircraft unable to reach their own stations for servicing. They downed a Japanese plane with a ground gun, and they had a lower percentage of battle casualties (four killed, 13 wounded) than any other field or station under attack in the area.

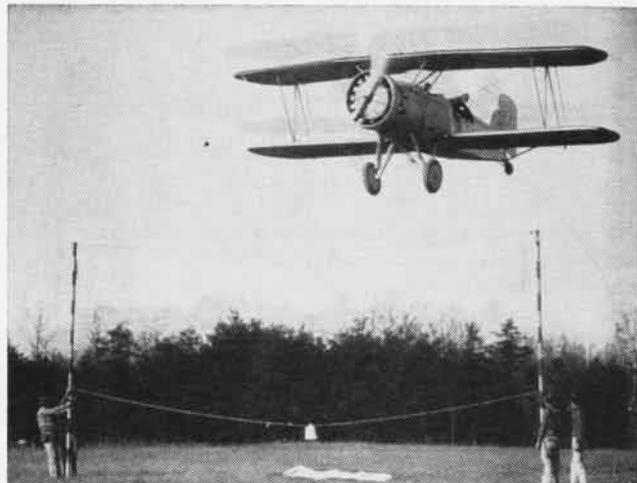
The last of the 12 Marine planes at Wake was destroyed on 22 December. Yet with a maximum of only five planes, seven having been destroyed in the initial attack on 8 December, Wake pilots sank the destroyer *Kisaragi* and shot down seven planes before their last aircraft was destroyed. The 20 un wounded survivors of the squadron's complement of 61 joined the ground troops and fought as infantrymen.

Shortly after mid-December, 17 Marine SB2U *Vindicators* of VMSB (Marine Dive Bomber Squadron)-231, led by a Navy PBV, reached Midway after a spectacular flight of less than ten hours from Pearl—the longest mass overwater single-engined flight on the books up to that time. Midway received its first fighters on Christmas Day, 1941, when 14 Marine F2A-3 Brewster *Buffaloes* of VMF-221 joined the dive bombers there.

Except for a skirmish of four Marine pilots with a reconnaissance plane from the Marshalls, which they shot down, Midway was in the doldrums until the following June when the Battle of Midway was fought. Outnumbered and outclassed by the Japanese *Zero*, Marine pilots were unsurpassed in valor. They met the first savage onslaught of Japan's superior aircraft with inferior planes. Of 25 fighter pilots, only 10 survived the first brief encounter; 13 of the 27 dive bombers and their crews were lost. Capt. Richard E. Fleming posthumously received the Medal of Honor for diving his flaming bomber onto the



BG-1 BOMBER WAS USED FOR BOMBING TRAINING IN THE 1930's



MESSAGE PICK-UP TECHNIQUE WAS PERFECTED 26 JANUARY 1932



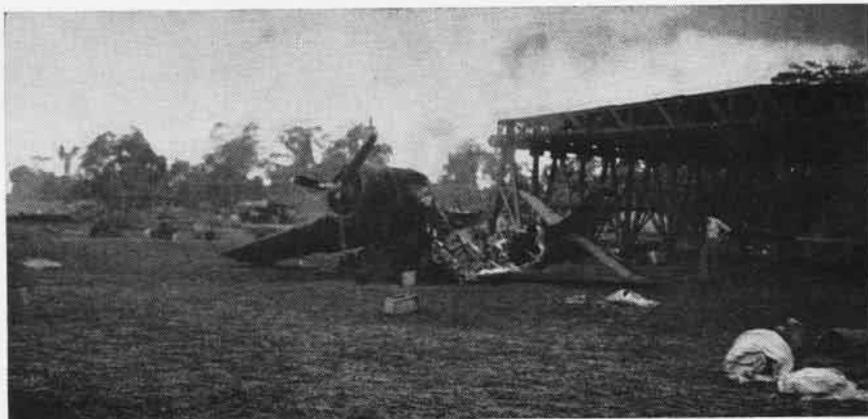
BOEING F4B-4 WAS FIRST LINE MARINE CORPS FIGHTER IN '33

deck of the Japanese cruiser *Mikuma*. He set fires which so badly crippled her that Navy carrier-based aircraft later sank her.

The importance of aviation to Marine tactics was shown at Guadalcanal where one of the first objectives of the assault was a partially completed Japanese airfield, later renamed Henderson Field. Appalling shortages of everything earned Guadalcanal the name Operation *Shoestring*. Despite the great inadequacies characteristic of that period, Marine aircraft based on Henderson Field devastated overwhelming numbers of the highly-vaunted Japanese air force and exploded the myth that the Japanese pilots and



MAJ. 'PAPPY' BOYINGTON, GUADALCANAL



ENEMY BOMB DAMAGE AT GUADALCANAL SHOWS THE WRECKAGE OF MARINE F4F FIGHTER



FIGHTER PILOTS AT THE 'CANAL' WEAR BASEBALL CAPS SENT THEM BY MAJOR LEAGUERS



CAPT. JOE FOSS BAGGED 26 ENEMY PLANES



SBD DIVE BOMBER LANDS AT GUADALCANAL



MACHINE GUNS IN F4U ARE BORESIGHTED



BOMBER PILOTS CORK OFF IN QUONSET HUT

Zeros were invincible. U.S. pilots 'didn't get the word.'

Marine planes winged their way upward from Guadalcanal, shattering every Japanese-forged link in the Solomons chain: the Russells, New Georgia, Vella Lavella, and Bougainville, from whence they bedeviled "impregnable" Rabaul until none of its five airfields was operable.

Through the Gilberts, Marshalls, Carolines, Marianas, and Palaus, the thunder of the Marine *Corsairs*—the Japanese called them "Whistling Death"—pursued the enemy.

From carriers they first hit the Philippines. Later, four Marine Aircraft Groups supported Army troops there.

In February 1945, Marine carrier-aviation supported its

own troops at Iwo Jima for the first time in history and struck Tokyo itself from carriers. From Okinawa, the Emperor's own backyard, came the final blow.

Marine pilots of WW II shot down their first enemy plane at Wake; their last at Okinawa. Between those dates Marine Aviation scored 2355 kills and produced 121 aces, five of whom downed 20 or more aircraft—Boyington, Foss, Hanson, Walsh, and Aldrich.

During WW II, the Marine Corps had as its peak number of units, five air wings, 31 aircraft groups, and 145 aircraft squadrons. The largest number of personnel assigned at one time to Marine Aviation was 125,162.



SBD DAUNTLESS BOMBERS PASS OVER VOLCANO AT BOUGAINVILLE



NIGHT SHIFT MECHANICS READY A CORSAIR FOR MORNING FLIGHT

The airfield at Yokosuka was occupied on 7 September 1945 by Marine Aircraft Group 31, which became the first Marine Air unit to deploy on Japanese soil. Marine Aviation units in the Philippines moved to North China shortly after the surrender to carry out their peacetime mission of occupying the country. Some units remained until January 1949. But it was not too long afterward—18 months—that Marine Aviation was back in the Pacific to fight a new enemy.

Meanwhile, in the short-lived peace between 1945 and 1950, Marine Aviation returned to the task of peacetime preparedness. Chief of the many phases of training that went on was familiarization with operations from carriers, a duty actually introduced to Marines on a routine basis late in WW II. The helicopter at this time revitalized and reshaped the role of Marine Aviation in amphibious warfare in the nuclear age. Once again Marine Air introduced a new type of aerial war—this time in Korea.

Korean hostilities began 25 June 1950 and by 5 July Marine Air Units were alerted for combat duty. Elements of MAG-33 were already in Japan by the end of July. On 3 August the first Marine Aviation mission against the new enemy was flown by a carrier-based squadron.

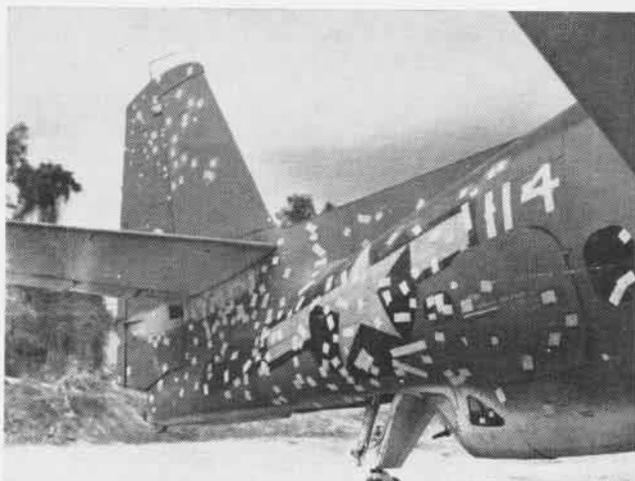
Marine Aviation went into action in support of the 1st Provisional Marine Brigade in the Pusan Perimeter. Next came the Inchon landing by the 1st Marine Division with squadrons of the 1st Marine Aircraft Wing flying close air support from carriers during the amphibious assault, and later based at Kimpo Airfield. After overcoming North Korean resistance in early October 1950, air-lifted elements of the 1st Marine Aircraft Wing occupied the seaport town of Wonsan. During the latter part of November and early part of December 1950, when the 1st Marine Division was fighting its way through hordes of Chinese Communist Forces from the Chosin Reservoir area to Hamhung, aircraft of the Navy, Air Force, and Marine Corps supplied the Division by airdrops and evacuated more than 5000 casualties. Marine aircraft, aided by those of the Navy, provided close air support, an important factor in the 1st Marine Division's breakout of the enemy trap and its fighting withdrawal to Hamhung.

Between August 1950 and 27 July 1953, units of the 1st Marine Aircraft Wing flew more than 118,000 sorties, of which more than 39,500 were close-support missions. Helicopters evacuated nearly 10,000 in the same period.

Since the end of the Korean War, elements of the 1st



ANTI-AIRCRAFT TRACERS PAINT THE SKY DURING NIGHT ATTACK



THIS TBF TOOK 400 HITS BUT WAS READY TO FLY NEXT MORNING



MARINE PANTHER JET MAKES NAPALM BOMB RUN IN KOREAN WAR



HELICOPTERS EARNED THEIR PLACE ON MARINE TEAM IN KOREA

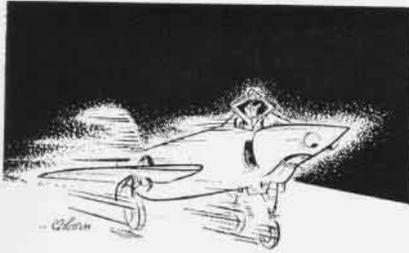
Wing have remained on station in the Far East where they bolstered the air defense of Taiwan in the latter part of 1958. The 2nd Marine Aircraft Wing, stationed at Cherry Point, N.C., has regularly provided squadrons for duty aboard carriers of the Sixth Fleet in the Mediterranean. These units, as well as Marine helicopters and airlift transports, were part of the Marine Corps force-in-readiness in the Lebanon operation in the summer of 1958. The 3rd Wing remains in El Toro, training carrier squadrons.

The message from the Director of Aviation at Headquarters Marine Corps on the 48th anniversary of Marine Air

is quoted in part: "Today, Marine Aviation is a modern, balanced tactical fighting force, organized and equipped to perform the function of air defense, offensive air support, assault airlift and air control in support of our Fleet Marine Forces. It rounds out the Marine air-ground team as a complete tactical package. We cannot rest on our past record. In these times of rapid technological advances, austere budgets, rising costs and lowered personnel ceiling, the Marine Corps must face the challenge presented by these and other changes if it is to continue its role as a modern force-in-readiness." ★★★



COMBAT-PROVED AND GREATLY PERFECTED SINCE KOREA, HELICOPTERS NOW PLAY MAJOR ROLE IN MARINE VERTICAL ENVELOPMENT



X000th LANDINGS

Aboard USS *Antietam*: number 80,000 arrested (no. 102,000 for all types of landings), by Capt. C. H. Turner, then ship's C.O., and LCdr. C.V. Merrell in a TF; no. 85,000 by Lt. Jerry B. Reinhardt of VT-28; no. 86,000 by Reserve Ens. John M. Mojean of Seattle in a T-28C.

Aboard USS *Coral Sea*: number 88,000 (3,324th since recommissioning), by Marine 1st Lt. L. H. Hill of VMA-324 in an A4D.

Aboard USS *Essex*: number 101,000 by Ltjg. Lawrence O. McGovern of VS-34 in an S2F.

Aboard USS *Hancock*: number 37,000 by Marine Capt. T.E. Bradley of VMF(AW)-115 in an F4D.

Aboard USS *Independence*: number 17,000 by Cdr. R.H. Jester, C.O. of VF-84, in an F8U-2.

Aboard USS *Intrepid*: number 43,000 since recommissioning, by Lt. Francis D. Roberge of VA-65 in an AD-6; no. 45,000 by Ltjg. James B. Aucoin of VA-76 in an A4D-2.

Aboard USS *Kearsarge*: number 70,000 by Cdr. William M. Pardee in an S2F; no. 71,000 by LCdr. Warren H. Lockwood, also in an S2F.

Aboard USS *Midway*: number 86,000 by Ltjg. Ronald E. Fidell of VF-21 in an F3H-2.

Aboard USS *Oriskany*: number 45,000 by Ltjg. N.J. Pettinati, no. 46,000 by LCdr. G.W. Myer, and no. 47,000 by Ltjg. P.W. Henson, all of VA-146 and all flying FJ-4B *Furies*.

7th Fleet Men Commended Capability and Discipline Lauded

VAdm. Charles D. Griffin, Commander of the U.S. Seventh Fleet, has commended the men under his command as "the finest type of youth serving the Fleet today and the most intelligent."

He pointed out in a message to major commands that Fleet personnel prove their capability and disci-

pline "daily in their work with highly complex electronic equipment aboard ship and by their impeccable conduct ashore."

He stressed that officers and enlisted men attached to the ships of the Fleet had enjoyed liberty in Far East ports on more than 2½ million occasions during a one-year period.

"Less than one man in 300,000 has been tried for misconduct in nations visited," the Admiral pointed out.

VAdm. Griffin emphasized that men of the Seventh Fleet have long been known as good will ambassadors throughout the Western Pacific area.

Reliability Conference Held Design and Maintenance Discussed

BUWEPs-Industry Board on Reliability and Operational Design Requirements of Aeronautical Material, usually called BIMRAB, held a conference in Washington in November which was attended by 500 people. Of this number, 350 represented industry.

Work of the conference revolved around the theme of reliability. Some 25 papers were presented. In addition off-the-record talks were given by RAdm. J.T. Hayward, Deputy Chief of Naval Operations (Development), and the Hon. C.P. Milne, Assistant SecNav (Material).

Ways and means of improving maintenance and increasing reliability in weapons systems were the central substance of BIMRAB's latest meet.



CDR. CARL H. YEAGLE, commanding officer of Attack Squadron 165, climbs down from his AD-6 Skyraider after making the first flight in the newly commissioned squadron's history. VA-165 is based at NAS Jacksonville, Fla.



WORKING MODEL of a two-piece lunar exploration suit is tried out on a moon-like hill on Long Island. Developed by Republic Aviation, the suit is meant to be the astronaut's working clothes once he reaches the moon.

VF-74 Has 3 Musketeers Trio Hits 1000 Hours at Same Time

Three Naval Aviators serving in Fighter Squadron 74 aboard USS *Intrepid* appear determined to re-establish the legend of the Three Musketeers. Their latest joint feat-in-arms was to complete 1000 hours of flight time while airborne in the same type aircraft from the same carrier at the same time.

Lt. John Baals and Lt. James Evans took off in their F4D's in the same launch. Before they returned, Lt. Nathaniel Dyer, Jr., was launched. At take-off, Lt. Baals had 998 hours, 54 minutes; Lt. Dyer had 999 hours, 6 minutes, and Lt. Evans had 998 hours, 24 minutes.

The three began their Navy careers as classmates at the Naval Academy, where Lts. Baals and Dyer were roommates. They all room together now aboard the *Intrepid*. They were all married within two weeks of each other. After being designated Naval Aviators, all three flew from Kingsville. Lt. Dyer reported to VF-74 in 1958, two months earlier than the others.

Lt. Baals claims carrier landings on two more carriers than the others.

VF-74 is scheduled to become the first Atlantic Fleet fighter squadron to receive F4H-1 aircraft this year.

F.A.I. Fixes Space Rules World Record Details Announced

The *Federation Aeronautique Internationale* has announced the regulations for establishing world records in outer space.

F.A.I. stipulates that "the flight plan must be submitted to and be approved by the F.A.I. prior to the record attempt.

"The contest event, in its entirety, must be verified as to accuracy by instrumentation, on the ground or in the vehicle, sanctioned and approved by the F.A.I.

"The vehicle component reaching the maximum performance and in which the pilot has been present from the initial thrust at the earth surface position must return to earth's surface with the pilot (astronaut) alive."

Other details include a report on type, number, and thrust of rocket engine(s) used, time and date of launching, location and name of launching site, report on boosters to assist lift-off or other special apparatus installed to assist control and landing, evidence and report of any accidents, and the weight of vehicles and appropriate parts.

World records now available can be claimed on the basis of duration of flight, altitude without earth orbit, altitude with earth orbit, and greatest weight lifted 62 miles or higher.

Announcement was made by F.A.I. Director General, H.R. Gillman. The 48 member countries in F.A.I. include all NATO countries, and all Communist bloc nations (except East Germany and Red China), Russia and four associated groups in Guatemala, India, southern Rhodesia and Cuba. The rest of the members are from Latin America, Africa and Asia.

F.A.I. was established in Brussels on 10 June 1905. A Frenchman, a German and a Belgian are credited with suggesting such an organization for the establishment of world records.

Transport Glider Proposed Will have 211-Foot Wingspread

Huge gliders with over 100,000 pounds capacity, providing capability for transport of the new space age rocket stages such as the large multi-engine *Saturn*, have been proposed by scientists of the Lockheed Missiles and Space Division.

The proposed 211-foot-wingspread craft outspans the largest of our modern transport craft by more than 30 feet, yet is designed to be towed by these planes.

One Lockheed engineer says the towed glider concept may prove to be one of the most economical systems devised for transporting bulky rockets because the gliders could operate satisfactorily from existing airfields.

Carrier Contract is Awarded Newport News to Build CVA-66

The Newport News Shipbuilding and Dry Dock Company, Newport News, Va., has received a contract having a total fixed-price of \$156,500,000, subject to material and labor escalation for the construction of the conventionally powered aircraft carrier in the Navy's 1961 shipbuilding program.

This ship will be an advanced *Forrestal*-class design, with many of the electronic improvements of the nuclear-powered carrier *Enterprise* (CVAN-65), including also the automatic landing system and an improved radar system, which will have a greater range than radar equipments in *Forrestal*-class ships. It will also have the *Terrier* medium-range missile system with two twin launchers.

CVA-66 will be the eighth full modern carrier. Six *Forrestal*-class aircraft carriers and one nuclear-powered aircraft carrier, the *Enterprise*, have been previously authorized. The Newport News firm is currently constructing the *Enterprise* and has previously completed the *Forrestal* (CVA-59) and the *Ranger* (CVA-61).

Jax Traffic Officer Hero Patrolman Wins Helo Rescue Pin

A Duval County traffic patrolman, John Britts, has received an honor scroll and "rescue pin" for participating in a helicopter rescue. Awards were made to the traffic officer, and to Lt. Frank Heggood, pilot of the helicopter, by the Kaman Aircraft Corporation, makers of the helicopter used in the rescue.

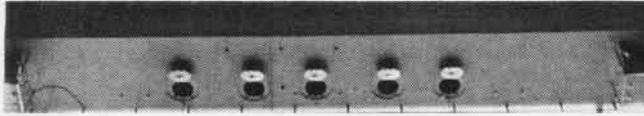
It all started with a Jacksonville area Labor Day Weekend traffic safety program conducted by local radio stations, safety organizations and the Navy. Patrolman Britts was in the hovering helicopter making an "on the spot" broadcast of traffic conditions for relay through local radio stations.

Meantime, retired Navy Chief Robert Walker, fishing off the coast, was stricken with a heart attack. Lt. Heggood was advised of the situation by Jax Tower and sped to the rescue.

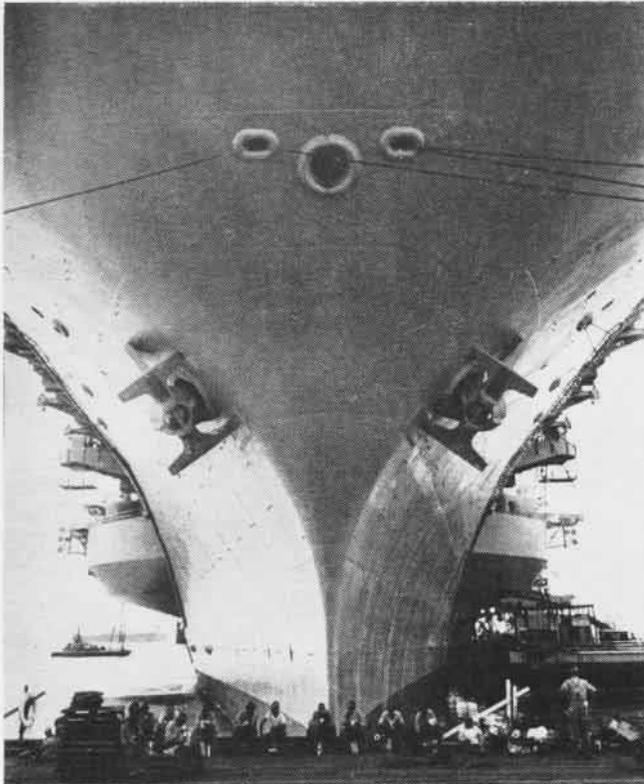
On the way Pilot Heggood briefed Patrolman Britts on the use of the helicopter rescue hoist. The stricken Chief was deposited on the lawn of Baptist Memorial Hospital and was last reported in satisfactory condition.



A NEW DOCKING FACILITY at NAS Pensacola for the USS *Antietam* was dedicated on 29 October 1960. Present at the ceremonies were the Honorable Bob Sikes, Congressman from Florida, Capt. H.G. DeLong, Commanding Officer of the air station, Capt. P.E. Hartman, C.O. of USS *Antietam*, and Capt. T.L. Jackson, representing the OinC of Construction, Bureau of Yards and Docks. The dock will make it possible to load supplies directly aboard the big training carrier.



CARRIER CLASSICS



The men who go down the world's oceans in carriers, the versatile airplanes which are operated from these ubiquitous floating airfields, and the sensational action which is commonplace to men of Naval Aviation are the subjects of an unusual pictorial compilation entitled, 'Flat-top.' The author, Barrett Gallagher, has shot and collected carrier photos for almost 20 years. During WW II, as a Lieutenant, USNR, Mr. Gallagher was directed by CNO to go aboard ships and stations at will to contribute to the photographic record of the Navy at war. In particular, he found the carrier and the men who manned her fascinating subjects. Prepared as a tribute to Naval Aviation, the following scenes from 'Flattop' are reprinted with the permission of the author and Doubleday & Company.



FORRESTAL, FIRST OF A NEW CLASS, EXTENDED NAVY'S REACH



RANDOLPH, 1945: VADM. MARC MITSCHER, COMMODORE BURKE



RANDOLPH, 1956: RADM. R. B. PIRIE, ENS. R. B. PIRIE, JR.



CARRIER PILOT IN FULL REGALIA



LAKE CHAMPLAIN'S COMBAT INFORMATION CENTER



WORLD WAR II INDEPENDENCE LAUNCHES HELLCATS



ONE GONE, CAT OFFICER 'WINDS UP' ANOTHER F9F



BRIDLE PARTY FOR AN A3D



FOAM FRIEZE FOR A BURNING BANSHEE



IT TAKES TEAMWORK TO TOP A TIP TANK



IN KOREA, NAVY EXPENDED 176,929 TONS OF BOMBS, 271,890 ROCKETS, 73,888,000 AMMO ROUNDS

★

★

★



'ANGEL' OVER USS CORAL SEA. RESCUE HELOS RAISE SAFETY OF CARRIER OPS IMMEASURABLY



F4D SKYRAY RESPONDS TO WAVE-OFF, CLIMBS TO MAKE ANOTHER PASS



A GRUMMAN COUGAR TRIES FOR WIRE



A3D SKYWARRIOR APPROACHES CARRIER



ON TRAILER, TARGET WITH JATO BOTTLE

Test Flight at White Sands Beechcraft Missile Target Flown

First flight of a new *Beechcraft* missile target has been made at White Sands Missile Range, New Mexico.

Designated *Beechcraft* PD 75-4-1, the new remote-controlled target vehicle is similar in configuration to the Beech-built KDB-1 now operational with the U.S. Navy and U.S. Army for weapon systems evaluation and training. It is powered by a 145-hp Continental four-cylinder engine, as opposed to the KDB-1's six-cylinder 120-hp McCulloch, mounting a *Beechcraft* constant speed propeller.

Besides projected performance gains, the PD 75-4-1 has a gross weight considerably heavier than the 600-lb. KDB-1. Other than the engine installation, the dimensions of the two target vehicles are virtually identical.

New Fly-in Record is Set C-130 Reaches Antarctica in 6:49

Cdr. Elbert B. Binkley averaged better than 308 mph in setting a new speed record for the 2100-mile flight from Christchurch, New Zealand, to McMurdo Sound, Antarctica, on the initial fly-in of a C130BL. He carried a five-ton load of spare parts and ground support equipment and flew at 24,000 feet.

The C130BL has been praised by RAdm. David M. Tyree, Task Force Commander, and Capt. William H. Munson, Squadron Commander of VX-6. It permits heavy payloads to be flown to remote stations in the interior of the continent. Its skis allow on-site landings for unloading cargo, eliminating the need for air-drops.

The plane has a maximum gross weight of 135,000 pounds, of which 31,400 is payload. VX-6 received four C130BL's last August. Earlier, the Air Force had flown seven modified versions on *Deeph Freeze* missions.

Two Missile DD's Ordered To be Built in Seattle Shipyard

The Navy has awarded a \$29,190,000 fixed price contract (subject to an escalator clause for labor and material) for the construction of two guided missile destroyers to the Todd Shipyards Corporation, Seattle Division, Seattle, Wash.

The contract price obtained from Todd represents a cost reduction of approximately one million dollars per ship under contract prices obtained for any previous guided missile destroyers.

The two ships will be armed with *Tartar* surface-to-air missiles, anti-submarine rockets and torpedoes and conventional five-inch guns.

Their armament and modern communications, radar and sonar equipment will fit the new guided missile destroyers for a versatile role offensively in antisubmarine warfare, air defense and amphibious operations.

Mission of VT-31 Changed Will Train in P2V-6's and P5M's

Training Squadron 31, formerly the multi-engine instrument training squadron at "Mainside" Corpus Christi, has turned in its last SNB and has been given a new mission. The squadron

will now give final preparation in fleet type aircraft for multi-engine students slated for patrol squadrons.

In preparation for its new mission, VT-31 has received the first of ten P2V-6 *Neptunes* and expects to get ten P5M *Marlins*. This will mark the return of seaplanes to Corpus Christi Bay after a year's absence.

Rubber Test Tank Raised On Gulf of Mexico Floor 5 Months

The Navy's experimental 50,000-gallon rubber undersea fuel tank has been raised from the floor of the Gulf of Mexico and towed to the Houston shipyard for inspection. The collapsible tank, which has been anchored under 50 feet of water for approximately five months, measures 20 feet by 68 feet when full.

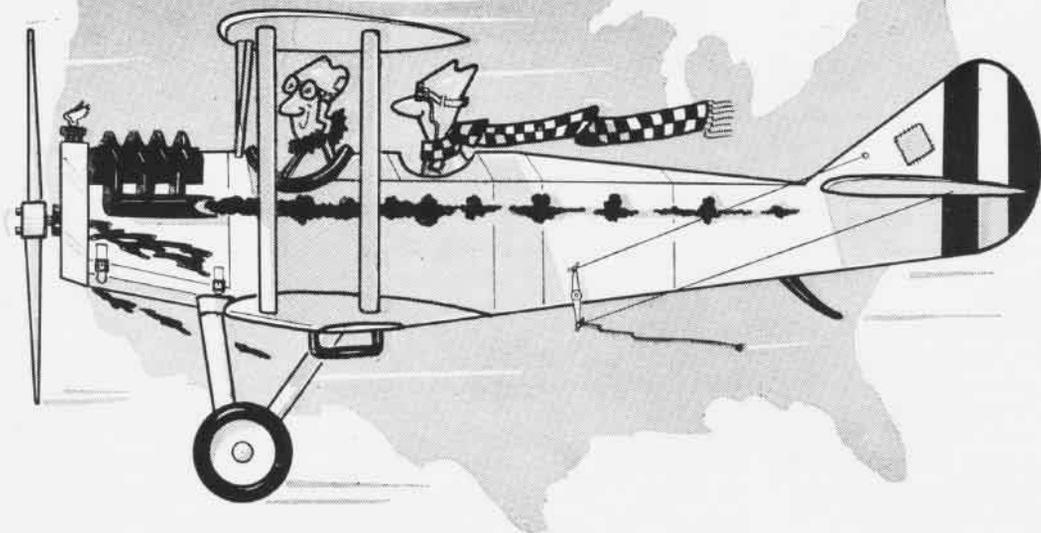
The rubber tank, one of the largest ever made, is a prototype for one cell of a proposed undersea fuel storage system. Plans envision a system of million-gallon containers interconnected to a common header holding enough fuel for several destroyers and smaller craft.

If this prototype tank proves successful, it may be the forerunner of future undersea tank farms strategically placed in the world's oceans.



AMERICANS NOW! It was a great day for three Marines, a Navy seaman and 139 other aliens when they became naturalized citizens of the United States in special ceremonies aboard USS *Bon Homme Richard* in San Diego. Afterwards, the servicemen posed with District Court Judges, J.M. Carter (2nd from right) and Jacob Weinberger. Men (from left): Cpl. L.R. Mena, Mexico; Cpl. F.L. Liaiga, Samoa; Cpl. J.E. Richter, Indonesia; D.R. Salan, SN, Philippines.

AROUND THE UNITED STATES IN 47 DAYS



Illustrated by
Lt. Neil O'Connor

Time was when airmanship made requisite a number of attributes. The pioneer Navy stick and throttle jockey often had to be a mech, aerologist, woodsman, railroader, accountant, diplomat and, as evidenced in this replay, well beed. Discovered in the files of the National Archives, the flight log of Lt. B. H. Wyatt, USN, from which the following excerpts are taken, brings to light some interesting comments concerning a round-trip, transcontinental flight of two Navy DeHavilland airplanes in 1922.

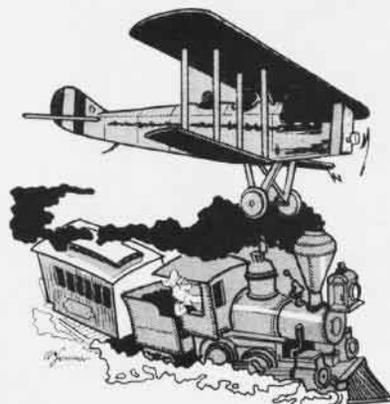
October 14—7:35 A.M. left North Island, San Diego, in DH-4B 1/11, accompanied by DH-4B 2/12 piloted by Lt. G.T. Owen, USN, J.N. Jackson and Aviation Chief Electrician F.M. Linder, passenger and mechanic, respectively. Course 90 degrees true en route Yuma. Thick stratus clouds over mountain tops east of San Diego. Climbed 6000 feet to clear fog and mountains.

8:30 A.M.—Over Imperial Valley; clear, many open spaces below in case of emergency landings.

9:15 A.M.—Yuma. Landing field at south edge of city, just off highway leading east. Best landing north or south. Sufficiently large for landing and take-off. No supplies at field, but by wiring Standard Oil Company ex-

pected time of arrival and amount of gas, oil and water needed, no delay will be met with. Not necessary to land at Yuma, so proceeded to Tucson, Arizona, following along Gila River and S.P.R.R.

11:45 A.M.—Landed at Tucson; landing field three miles south of city, alongside of highway running north and south. Field in good condition, but no supplies available. After considerable delay Standard Oil truck was dispatched to landing field, where we took 200 gallons of gas in five-gallon



lots. On completion of gassing it was 6:30 P.M. Secured planes for the night.

October 15—Up at 4:00 A.M.

7:00 A.M.—Left Tucson. Difficulty experienced in starting cold motors. Country mountainous and practically no emergency fields in sight until Douglas, where a good field with hangars is maintained. An occasional dry basin afforded a good landing, but the open plains were covered with a thick underbrush termed "mesquite," which is so dense that it would throw a plane over on its back.

10:20 A.M.—Landed at Fort Bliss, Texas; good hard field, very large; altitude 4000 feet. Fort Bliss is easily located, northeast of city at fork of mountains. The landing field in front of the dirigible hangar is no longer available; use field by hangars near large radio towers. Due to the hardness and elevation of the field, considerable difficulty is experienced due to the tendency to ground loop after landing. The field is large and the only remedy is a liberal use of the slip stream of the motor.

2:00 P.M.—Left Fort Bliss en route Sanderson. At Marfa, heavy rainstorm was encountered. The clouds covered the tops of the mountains on either side of the railroad. The extent of the storm was such that it was impractical to go around it, and it was

impossible to get above the disturbance. The only alternative left was to go through the storm and follow directly over the railroad. This we did, with 2/12 closing up so as to keep well in sight. The altitude of the railroad at this point is 6000 feet, while the mountains on either side of the railroad average from 7000 feet to 10,000 feet. Clouds kept forcing us downward until we were at times not more than 50 to 100 feet from the ground. The visibility ahead was very poor, but the ground directly below was clearly visible, so we managed to stay directly over the railroad and knew we were safe as long as the railroad didn't run into a tunnel, which it did not.

4:55 P.M.—Landed at Sanderson, Texas, in a drizzling rain. The field at Sanderson is a very difficult field to get into and out of, but with care can be safely made.

The field is located two miles northwest of the village, near the railroad. Altitude of field 4000 feet. There are two hangars where gas and oil may be had. No facilities for repair work are available. The Army keeps three men at the post for refueling ships. It is a two-way field. The best approach is from the southwest, landing up-grade toward the hangars.

The field proper is located between two ranges of mountains which rise on either side of the field abruptly from 70 to 100 feet, so that in case of even a light wind, great care must be exercised in the approach to stay near the windward side of the mountains, in order that the bumps may be up instead of down; especially is this necessary in the turn, where the wing may be close to the ground. In blimping the motor, care must be taken not to scare up any of the cows sleeping in the bushes, as on rising suddenly they are likely to shove a horn through your wing. In my case I had sufficient speed left to lift the wing clear.

October 16—Up at 4:00 A.M. Left Sanderson at 6:35. 7:40 cleared up. About the best that can be said of this country, as far as the aviator is concerned, is that it will make a Christian out of any heathen, unless perchance he is equipped with one of the latest McCook Field seat pack parachutes.

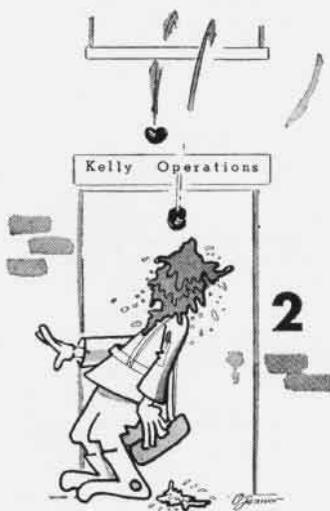
9:47 A.M.—Landed at Kelly Field No. 2, San Antonio. Checked over

motors; gassed; oiled. Received most courteously by Army Officers.

1:25 P.M.—Left Kelly Field. Too bad the railroad stations don't paint the name of the town on the roof of the stations. Succeeded after second trial. Set course for Ellington Field at Alcott.

4:10 P.M.—Ran into Galveston Bay, but still no place to land. Observed railway station, and again played hide-and-seek with the trees, station, and telegraph wires. After several attempts saw that station had no nameplate over the door; decided to write to the railroad president about the matter. Getting dark and no place to land. Flew up and down the street, but the only sign in sight read "Polarine," and that wasn't on my map. Picked up another town on the Bay Shore railroad; road name on station—"Sea Brook." Felt a great relief. The other town then must be Webster, and Ellington was three miles back over the course I had just flown. Headed back, picked up water tower and building which I thought was the manufacturing plant. Circled around tower, saw a large field heavily overgrown with weeds and an auto road running across it. At 4:40 landed and was told the place was Ellington Field. Such a relief.

October 17—At 6:30 A.M. under way for New Orleans. Good places to land at Lake Charles, Lafayette and Baton Rouge, but for the intervening country decided I'd like to have a plane equipped with wheels and flanges to fit the railroad track, or pontoons for the swamps.



... received courteously by Army.



Met by American Legion—and others.

10:45 A.M.—Landed at New Orleans. Met by the American Legion delegates . . . and a few others of more or less importance.

October 18—Made necessary calls on Commandant of District and American Legion Officials.

October 19—1:20 P.M. Left New Orleans en route Pensacola, bucking 30-mile northeast wind. Many open spaces below in case of emergency landing.

4:10 P.M.—Landed Pensacola; made necessary report to Commandant.

October 22—Received wire from Secretary of the Navy authorizing return via Washington, D.C. Lt. Owen tested 2/12 and reported her ready. Unable to get any information whatever on landing fields to north, so decided to stop at Americus, Ga., to get information. Was informed that Americus was closed, so decided to go to Montgomery, a trifle out of our way but apparently necessary.

October 24—1:30 P.M. Took off en route Montgomery—just succeeded in getting off at edge of water. Circled field waiting for 2/12. After ground-looping twice to prevent going into bay, Owen decided he would be unable to get off. Landed. Found trouble with 2/12 to be due to clogged gas lines.

October 25—8:30 A.M. left Pensacola en route Montgomery. 8:55 A.M.—2/12 landed, due to failure of gas, in plowed field at Brenton, ground-looping near end of run to prevent running into fence. Circled around field, which appeared soft and very short. Owen signalled, "Must disassemble, proceed, report." Returned to Pensacola, landing at 9:45. Owen in conversation over telephone

reported the field too short to get out of and too soft for a JN. Decided to leave immediately by train for Brenton.

2:00 P.M.—Arrived with Linder, the mechanic, at Brenton. Traced trouble to carburetor; returned by auto to Pensacola, arriving at 11:45. Slept in fire-house.

October 26—Obtained JN and two new carburetors and left for Brenton in rain. 10:10 landed alongside 2/12 at Brenton, stopping in 15 paces due to softness of ground. Removed carburetor from 2/12; found



Obtained two new carburetors . . .

trouble to be a sticking needle valve. Placed new carburetor on 2/12, tested her and found to be O.K. Laid down fence in order to get off.

4:30 P.M.—Took off in JN to return to Pensacola. When just off and over tops of trees, motor cut out. Dropped left wing and kicked plane around in effort to get back to field. Left wing caught in top of tree, but cleared as plane straightened out. Tail skag hit wire fence, severing four wires. Right flipper hit fence post. No damage to post. Straightened flipper, drained water off gas.

5:05 P.M.—Off for Pensacola. At 5:20 motor cut out due to water in gas. At 5:30, dusk, but off again and able to follow auto road into Pensacola.

6:15 P.M.—Landed, after dark, on field at Pensacola. Gave thanks.

October 27—8:15 A.M. left Pensacola en route to Montgomery, Ala. At 10:40 landed in Montgomery. Landing field Montgomery in excellent condition, large, near river. Excellent repair facilities available. At 1:50 left Montgomery. At 3:45 arrived Americus, Ga. Landing field overgrown

with brush, but otherwise in good condition. Post will be closed in immediate future.

October 29—At 10:30 A.M. left Columbia, S.C., after working for three hours to start motor of 2/12. 5:05 landed at Anacostia, D. C.

November 10—10:55, left Anacostia, en route to Moundsville, W. Va. Country as a whole very bad to fly over; mountainous and practically no prominent landmarks. Navigation very difficult due to absence of prominent landmarks.

1:30 P.M.—Landed at Moundsville, West Virginia. At 3:25 left Moundsville en route to Dayton, Ohio.

5:00 P.M.—Getting dusk, sighted Army plane three miles ahead apparently making for Dayton. Decided to trail him as I was sure he was familiar with the country. At 5:30 P.M. after bearing consistently to South picked up R.R. Station. Army plane circled and dove at Station. Decided to part company with him as I knew he was lost. Set compass course for McCook Field.

5:35 P.M.—Picked up McCook Light-house. At 5:45 P.M. landed after dark at McCook Field. Night landing lights on McCook Field—excellent.

November 11—11:45 A.M. At request of President Harding, left Dayton for Marion, Ohio, to carry best

wishes of President to citizens of his home town. At 12:25 landed at Marion, returning to Dayton at 4:40.

November 16—12:45 left Chanutte Field. At 2:34 plane 2/12 made forced landing in freshly planted wheat field near San Augustine, Ill. Found trouble with 2/12 to be a shorted battery switch, but field too short and too soft to take off. Found it necessary to wait until morning, when field would be frozen, in order to get off.

November 17—At 1:40 2/12 made forced landing in open field. Found trouble to be due to poor quality of gas. Returned to Des Moines to obtain better gas. At 2:30 landed Swaney Aviation Field, which we located after considerable difficulty. The field is small, no hangars available, no gas or other supplies available.

November 18—At 12 o'clock left Des Moines. At 1:50, landed at Fort Crook, Omaha, Nebraska.

November 19—At 8:15 left Fort Crook. At 8:30 generator on plane 1/11 burned out, threw off one switch and ran for three hours and 45 minutes on battery. At 12:16 landed at U.S. Mail Field at North Platte, Neb. Mail people changed generators in plane 1/11, checked and serviced plane. At 2:30 left North Platte en route Cheyenne. At 2:45 generator on plane 1/11 burned out, also plane began to throw



Landing field overgrown with brush, but otherwise in good condition . . .

oil. Shifted switches to throw on fresh battery. Continued course.

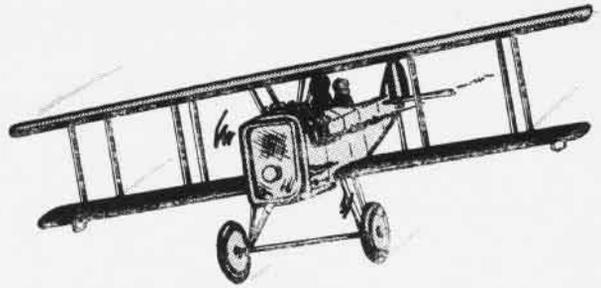
3:30 P.M.—Plane 1/11 began to throw oil very badly and to misfire. Ground below covered with two feet of snow, so decided to continue on course as long as oil pressure held up. At 5:00 great relief was felt when Cheyenne was sighted, as about four cylinders of plane 1/11 had decided to go in reserve.

5:25 P.M.—Landed at Cheyenne. The landing field at Cheyenne was covered with 18 inches of snow; the altitude of the field is 6200 feet, and the field is rough and rolling, so that considerable care must be exercised on landing. Circled field carefully before landing.

November 20—Delayed Cheyenne to make necessary repairs on motor of planes 1/11 and 2/12. Generator on 1/11 changed, trouble traced to breaker points. Oil cap on forward end of cam shaft had worked loose and oil was coming through this opening. Three cylinders changed in motor of 2/12 due to warped valves and burned seats. Work done promptly and efficiently by Mail Service, under direction of Asst. Superintendent Eddie Richards.

November 22—At 8:35 left Rock Springs (Temperature 2 degrees Fahrenheit), en route to Salt Lake. At 11 o'clock passed over mountains and dropped into the valley of the Great Salt Lake, with fog and smoke hanging very low, so that it was difficult to pick up any definite landmarks. At 11:20 landed in field on side of mountain south of Salt Lake to inquire about locality. At 11:50 made way through fog, flying about 50 feet off the ground, dodging smokestacks and telegraph poles, until finally the landing field was picked up at 12:15.

November 25—At 7:15 left Crissy Field. Weather overcast, foggy and heavy—cumulus clouds lying on top of mountains. At 11:10 plane 2/12 made forced landing in hay field west of Oxnard, Calif. Found trouble with 2/12 to be due to improper shifting of gas valves causing lines to become airbound. At landing 2/12 blew right tire and broke Sampson cord. At 11:15 landed in plane 1/11 to determine the trouble with 2/12. In taxiing back to 2/12 ran into ditch and cracked two bottom longerons of fuselage and broke tail skag. Obtained gas from Standard Oil Company and



... field is rough and rolling, so ... circled field carefully before landing.

repaired damages to 2/12, but found it necessary to leave 1/11 on field until next morning when repairs could be made. Proceeded in 2/12 to San Diego, arriving at 4:15.

November 28—Returned to Oxnard to repair 1/11. Repairs completed, returned to San Diego, arriving at 1:25 P.M., November 29.

THE FOLLOWING suggestions are submitted for discussion:

The Standard Navy Compass was found to be very accurate. However, as a check, and for convenience in steering, there should be a compass mounted in each cockpit. Rand-McNally charts were found to be the most accurate and reliable for use in the plane.

Some means should be found for taking an accurate bearing of landmarks, cities, etc. Also a good drift indicator should be provided, as well as an instrument to give the speed over the ground. As an aid to navigation, if the names of the towns were painted in large letters on the roofs of the railroad stations, a most difficult problem for the aerial navigator would be solved.

In flying through rain, it was found by experience that if one stays just under the base of the nimbus cloud, considerably less difficulty will be experienced, due to the fact that the rain drops have not formed at this

altitude, and the rain appears as a heavy mist. Vision straight ahead is not good, but directly downward and ahead to about 15 degrees from the vertical is always clear. The glass windvisor provided in the DH-4B is not sufficient protection against rain. The celluloid wind visor taken from the JN-6 was found to be a very good protection.

Some means of visual signals should be provided between planes. This was found to be most essential, especially in cases of a forced landing.

The use of two batteries in the ignition system was found to be a distinct advantage. The Holt landing flares on wing tips were found to be inadequate for landing, although very good for taxiing.

The drain-cock on the Lunkenheimer gas manifold should be piped over the side so that gases will not be drained in cockpit. In this connection, it is essential that the gas manifold be easily accessible from the pilot's seat.

In extreme cold weather, difficulty was experienced in keeping up the oil pressure on warming up the motor. Great care must be exercised to see that oil is thoroughly warm before motor is turned up to any speed, otherwise the pump will pump oil faster than it will flow through the system, causing the oil pressure to drop and the oil line to become air bound.

ConElRad System Up-Dated Wire Services Will Spread Alert

The nation's ConElRad (Control of Electronic Radiation) alert system has been updated to the missile age under an agreement signed recently between the Air Force, the FCC, and the two major wire services, AP and UPI. The agreement makes the news facilities available as an alert system in the event of attack.

Under the new system, virtually every radio station in the country can be notified in three to eight minutes. The old procedure, using telephone communications, took up to an hour.

A single man in the U.S. Air Defense Command in Colorado Springs can trigger an alert to the two wire service news centers. Thousands of wire service machines will immediately alert radio stations throughout the nation to go on a ConElRad alert.

At 19 Years a Veteran Pilot Private Aims at a Flying Career

Many pilots might envy the 1850-hour flight record held by a 19-year-old Marine of VMA-311.

Private First Class Donald L. Squires, who hails from Arkansas, started his flying career at the Central Flying Service early.

Flying a Taylorcraft BE-65 plane for his first lesson, Squires learned fast and made his first solo flight after

seven hours of instruction. He acquired his student's license at 16 and one year later had his private pilot's license.

His first job as a pilot was with a crop dusting service in Little Rock. He remained there, flying a Stearman aircraft until 1959 when he joined the Marine Corps.

Squires has been at El Toro since May 1960 and is still improving his flying skills by devoting many weekends to flying rental aircraft at the Fullerton airport.

He has applied for training in the Marine Corps' Aviation Cadet program to continue his aerial ambitions.

Development Clinic Held Navy, Industry meet at Pensacola

The Navy Research and Development Clinic, held at NAS PENSACOLA, opened 1 December for two days. It brought together industrialists, researchers, engineers, and scientists for a cooperative effort.

Aim of the clinics was to have them help the Navy to solve some of its technical problems through panel programs and discussions by leading specialists. Panels included such subjects as electronics and instrumentation, energy conversion and chemicals, properties of materials, data processing and control systems, and space medicine.

RAdm. Rawson Bennett, Chief of Naval Research, addressed first session.

The Latest in Pilot Apparel Mk. 5 Anti-Exposure Suits Tried

Mark 5 anti-exposure suits, latest in combat toggery, have been issued to pilots of VMA-311 at MCAS EL TORO for evaluation.

The suit is rubberized and elastic and has a quilted-rayon, ventilated inner liner. Suit and liner together weigh approximately eight pounds.

A snap-on, inflatable, head hood increases the insulation potential, so that a downed pilot wearing the suit may reasonably expect to remain alive in 28° F waters.

VMA-311 is now wearing the suit to determine its durability and comfort. Thermal boots and Iron Age (steel-toe) leather boots are also undergoing tests. The thermal boot provides better insulation and protection in cold waters while the leather boot gives additional protection to pilots who are forced to parachute from their crippled planes.



BUETTNER, BOOHER AFTER SETTING RECORD

'13' Proves a Good Number Marine Squadron High in Safety

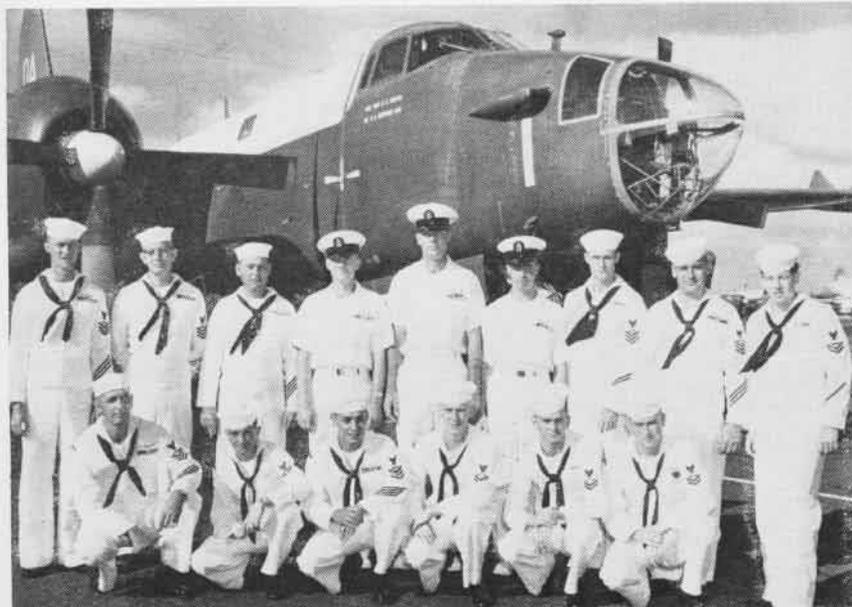
Marine Headquarters and Maintenance Squadron 13 at MCAS KANEOHE BAY, Hawaii, is the third squadron of Marine Aircraft Group 13 to complete successfully 10,000 accident-free flying hours.

VMA-212 and VMA-214 had previously reached the 10,000 mark.

Maj. R.H. Buettner, C.O. of HAMS-13, and Lt. R.B. Booher established the new safety record for their squadron while flying an F9F Cougar.

The squadron uses five different types of aircraft, including the F9F, FJ-4B Fury, the FSU Crusader, the two-engine R4D, and the four-engine R5D transport.

Pilots of the squadron have not had an accident since June of 1958.



GOLD AIRCREWMEN WINGS were given 15 men in VP-22 by Capt. A.L. Gurney, Commander of FAW-2, at NAS Barber's Point. The 15 aircrewmembers have completed VP-22's rough and diversified Aircrewman Training Program. There are 57 men now enrolled in this volunteer training.

VENERABLE ESSEX REPORTS 100,000 ARRESTED LANDINGS

USS *ESSEX* has passed another historic milestone in Naval Aviation. Operating off the coast of Norway north of the Arctic Circle, *Essex* achieved her 100,000th arrested landing, the first combat carrier in history to reach six figures in the total landing column.

Ltjg. Tinley Olton of Detachment 45, VAW-12, flying the venerable AD-5W, caught the wire for the history-making landing the night of 20 September after a cold, dark three-hour ASW flight in support of NATO exercise, *Sword Thrust II*. With him in the airplane were observer Ens. Phil Shoemaker and his crewman, Dean Hoelting, AT3.

The "fightin'est ship in the Fleet" became also the "landin'est" in June 1960 when *Essex* C.O., Capt. Richard L. Fowler, brought an s2F *Tracker* aboard for the 98,550th landing. Capt. Fowler's catching the wire topped the old *Saratoga's* mark of 98,549, a record which, at the end of World War II, seemed destined to stand unchallenged forever.

Placed in mothballs at the end of WW II, *Essex* seemed no logical contender to reach the first *Sara's* mark. In fact, with the old *Lexington*, *Hornet*, and other famous carriers of the Pacific War all gone, the record looked as good as Babe Ruth's 60 home runs.

Upon recommissioning at the outbreak of the Korean conflict, *Essex* had 48,000 landings to her credit. These had been gained in WW II,



ESSEX IS FLAGSHIP OF COMMARNDER, CARRIER DIVISION 18 AND HAS CV5G-60 ABOARD

starting with the first landing in 1943 by LCdr. (now Vice Admiral and Deputy CINCLantFlt) Fitzhugh Lee. In the course of these landings, she had also destroyed 1423 enemy planes, sunk 226 ships, and earned 13 engagement stars and the Presidential Unit Citation.

Two Korean cruises and guard duty off the China Coast during the evacu-

ation of Dien Bien Phu and the Tachen Islands earned *Essex* the Korean Service Medal, the China Service Medal, the Korean Defense Medal, and the Navy Unit Commendation for Korea. Meanwhile, in 1953 off Korea, Lt. Robert Bergner of VC-35 made the 50,000th landing. In 1957, now an angled deck attack carrier, *Essex* returned to the East Coast for the first



PLEMONS MANS STATION IN CAT SHACK



MITCHELL HAS 250,000 MILES IN ESSEX



SHEARING IS ONE OF THE CATAPULT CREW



S2F TRACKERS OF VS-39 FLY IN FORMATION

time in 14 years, still 20,000 landings shy of her present record.

Two Mediterranean tours with the Sixth Fleet, active duty in the Lebanon crisis, and a quick trip east to the Formosan crisis of 1958 added to her record as a fighting ship and to the total landings.

In the spring of 1960 the new record

was within "spitting distance" when *Essex* embarked on a new and important phase of her career. In May, CVS-9 became the flagship of Commander Carrier Division 18 and Antisubmarine Group 3. Instead of jets and *Sky-raid*ers, her complement changed to helicopters and s2f's. Her Air Group was now CVSG-60 with HS-9, VS-34, VS-39, and Detachment 45 of VAW-12 embarked, and her homeport, Quonset Point.

Many of the men who were instrumental in achieving her enviable record are still with *Essex*. Cdr. William J. Moran, X.O., is a veteran squadron commander on *Essex*, having commanded VF-23 from March 1953 to July 1954. William Plemons, AB3, made two Far Eastern cruises on *Essex*, and has served under seven different commanding officers of *Essex*. Jack Groehl, FT1, has served on *Essex* in every ocean of the world except the Antarctic. When the ship anchored off Bangkok, Thailand, in 1955 he had circumnavigated the globe with her.

John W. Shearing, AB1, has served in the Arresting Gear gang for close to 30,000 of the ship's 100,000 landings. In the Black Gang, Chief Machinist's Mate Carl L. Mitchell has travelled more than 250,000 miles



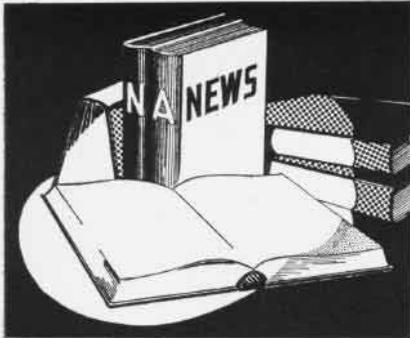
CREW IS CONGRATULATED BY CAPT. FOWLER

aboard *Essex*. And he has averaged seven knots 24 hours a day for the last 1000 days.

Even while this article is being written, *Essex* is embarked on another deployment to far places and the miles are adding and the carrier landings building up. The records she sets may well stand unchallenged even longer than those set by the USS *Saratoga*,



IN JUNE, S2F TRACKER, PILOTED BY CAPT. FOWLER, ESSEX C. O., SET NEW COMBAT CARRIER RECORD FOR ARRESTED LANDINGS



Aviation Manual Issued

Basic Theory and Application of Transistors, NAVWEPS 00-89T-86, is considered by many authorities to be the best presentation available on transistor know-how. It has been issued by the Office of the Chief of Naval Operations, Aviation Training Division. Personal copies of the 263-page manual may be purchased for \$1.25 from the Government Printing Office, Washington 25, D. C.

'Golden Wings'

Random House has published a 232-page picture history of Navy and Marine Corps aviation, entitled *Golden Wings*, by Martin Caiden. Nearly half the book is devoted to WW II.

The author traces in photographs the evolution of Navy planes from the first take-off from USS *Pennsylvania* to current operations aboard a *Forrestal*-class aircraft carrier.

Photographs in the book are said to represent three years of research at the Naval Photographic Center, as well as private collections and aircraft industry files.

Mr. Caiden has written more than 20 books on military aviation, space, and rocketry. *Golden Wings*, his latest, was released on Navy Day, 1960.

Air Force Now Uses Bullpup Put in Operation at Nellis AFB

GAM-83 *Bullpup* air-to-surface missile became operational with the Air Force in November. Pilots and crewmen of the 522nd Tactical Fighter Squadron ended an intensive training period at the Fighter Weapons School at Nellis AF Base to gain battle capability with the *Bullpup*.

Flying the F-100, the squadron then reported to its duty station at Cannon AF Base, New Mexico, where pilots will continue to sharpen their ability to handle the GAM-83 *Bullpup*.

Airmanship Highly Praised Navy Exchange Pilot Commended

LCdr. Richard Miller, USN, serving as an exchange pilot aboard HMS *Ark Royal*, has been commended for outstanding airmanship.

Miller, Senior Pilot of 820 Squadron aboard the British carrier, was flying at 400 feet under a hood simulating instrument flying conditions when the main rotor clutch of his *Whirlwind* helicopter failed. In these difficult circumstances, he executed a successful auto-rotation and ditching. None of the three occupants of the helicopter was injured.

The commendation, known as "a Green Endorsement," was presented to LCdr. Miller by RAdm. R.M. Smeeton, RN, Flag Officer, Aircraft Carriers.

\$26 Million Fund for Eagle Super Missile for F6D Missiler

The Navy has awarded a \$26-million contract to the Bendix Corporation for continued development and evaluation of the *Eagle* missile system.

Eagle will be a long-range, air-to-air, interceptor guided missile designed to destroy any enemy aircraft or aerodynamic guided missile expected in the foreseeable future. It is also designed to attack enemy targets at all operating altitudes at greatly increased ranges under all tactical conditions.

The *Eagle* missile is to have peak performance while the subsonic *Mis-*

sileer launching aircraft is designed for endurance and firepower. Bendix will work closely with the Douglas Aircraft Corporation which is building the F6D *Missiler* aircraft.

Catches His 400th Wire Lands on 16 Carriers in 14 Years

LCdr. James T. Peddy, Jr., Executive Officer of VA-66, scored his 400th carrier landing and came within four hours of his 3000th accident-free hour aloft when he set his A4D *Skyhawk* down on USS *Intrepid*.

Since he made his first carrier landing in 1946 aboard the old *Ranger*, he has caught wires aboard USS *Randolph*, *Kearsarge*, *Wasp*, *Wright*, *Franklin D. Roosevelt*, *Independence*, *Philippine Sea*, *Coral Sea*, *Saratoga*, *Leyte* and *Midway*.

He also has landed on the British carriers HMS *Ark Royal*, *Victorious*, and *Eagle*. He flew from the USS *Lake Champlain* during the Korean action.

VMA-343 is Reactivated Was Out of Service for 15 Years

Marine Attack Squadron 343 has been re-commissioned after 15 years of inactivity. It was reactivated at El Toro and armed with A4D-2N's.

Known as the *Flying Bantrees* from 1943 to 1945, the current VMA squadron was then designated Marine Scouting and Bombing Squadron 343. It operated in the Hawaiian Sea Frontier and at Midway Island in WW II.



NEW SOUND ABATEMENT building at North American, built at cost of \$¼-million to reduce sound level of jet engine run-ups by more than 90 percent, has been put into use. It is built of reinforced concrete with walls from 12 to 18 inches thick and will be used to permit flight line crews to perform their work with the A3J more effectively. The 76x336-foot structure will house the rear section of the A3J's fuselage in which two GE-J79 turbojets are mounted.



THE SQUARE ANGELS of Helicopter Utility Squadron One use four helicopters, two HTL's and two HUL-1's. Flying in the lead position is Cdr. W.F. Culley, HU-1 skipper. On his left is Tom Simone, and on his right, Ltjg. John Burritt. In the slot position is Ltjg. Bud Smith. The performance includes a fly-over in diamond formation, a square on deck, and then proceeds for about 10 minutes of square dance maneuvers to music, complete with calls by Ltjg. Weber.

100th Weather Rocket Fired Sends Back High Altitude Data

The Navy made the 100th successful launching of an upper atmosphere meteorological research rocket at the Pt. Mugu headquarters of the Pacific Missile Range in November with the firing of an *Arcas*.

The small rockets are fired to an altitude of approximately 200,000 feet in order to obtain data on temperatures and winds. Two types of vehicles are used: 92-inch *Arcas* and 72-inch *Loki* rockets.

The *Arcas* rocket releases a parachute attached to its body by metal lines which permits tracking by the long-range radar at Pt. Mugu. As it drifts back to earth, a battery-powered transmitter sends out a continuous signal, the strength of which is dependent upon the temperature's effect upon an exposed resistor.

The less-complex *Loki* vehicles only measure wind currents. When these reach maximum altitude, they explode and send strips of metal foil drifting back to earth. The foil serves as radar targets and permits determination of the air currents.

Information on the temperature of the upper atmosphere is vital to space programs, because the temperature of the air affects the density of the air and the reentry of a space vehicle.

According to LCdr. Colin L. Armstrong, Meteorological Coordinator, Pt. Mugu is probably the Navy's only base prepared to answer the question, "What are the winds at 200,000 feet today?"

Rockets permit studies of the atmosphere at a much higher altitude than that reached by weather balloons, which are limited to about 120,000

feet. No attempt is made to recover them, but many of those fired from Pt. Mugu have been blown back over the coastline and returned to the Navy by individuals finding them.

The rockets have been fired from Pt. Mugu during every season of the year since October 1959. In addition to obtaining data for long-range studies, some of these have served an immediately useful purpose by obtaining information on prevailing high altitude winds often required by nearby Edward Air Force Base for the X-15 manned rocket ship.

Aviation Pioneer Retires 42 Years at Philadelphia Post

Mr. John S. Kean, Technical Director of the Aeronautical Structures Laboratory at the Naval Air Materiel Center, Philadelphia, has retired after 42 years of service at the Center.

He began his government career at the Naval Aircraft Factory, predecessor of NAMC, at the age of 20 as a "special helper."

In the 1920's he was chiefly concerned with engineering problems involved in the "wooden" or stick and wire aircraft. He was the project engineer in charge of design and construction of VE-7, UO-1 and certain training plane floats. With carriers then coming into use, Mr. Kean was in charge of modifying planes for catapult and arresting gear use. He was also in charge of modifying and equipping planes for the first Byrd expedition.

He also designed the original airplane and dirigible hook-on equipment for landing airplanes aboard the rigid dirigibles, *Akron* and *Macon*. In WW II, he was back building wooden air-

planes, while acting as Head Engineer of one of the laboratory groups.

He supervised the design and production of the world's first operational "guided missile," the TRD-1 attack drone.

On his retirement, Capt. J.D. Arnold, C.O., NAMC, presented Mr. Kean with his retirement certificate. In the picture below, Capt. R.B. Woodhull, Director of the Aeronautical Structures Laboratory, looks on.



CAPT. ARNOLD GIVES MR. KEAN CERTIFICATE

AF Goes to Navy School Leadership Problems Appear Alike

Air Force officers and master sergeants from nearby Oxnard AFB are enrolled in the Navy leadership school at Point Mugu, Calif.

It began when Col. Vernon Henderson, commander of the 437th Fighter Interceptor Squadron, took his men to Pt. Mugu for survival training. He wanted to know what else the Navy had to offer and was told about the leadership school which was set up as a result of General Order 21.

The presence of personnel from two services is said to be advantageous during informal discussions. The men find that leadership problems of the two services are basically the same.

VMA-212 Claims a Record Accident-free Flight for 23 Months

In October, Marine Attack Squadron 212 during landing qualifications on the USS *Oriskany*, completed 23 months without an accident.

MGen. A.R. Kier, C.G., First Marine Aircraft Wing, said in his message to VMA-212: "On October 25, 1960, you attained a record of 13,000 accident-free hours, which represents . . . hard work, professional flying, and sound planning."

The attack squadron is normally based at Hawaii and went aboard USS *Oriskany* for qualification purposes.

FINE ART OF AIR REFUELING

By Arthur B. Nehman and Allan M. McKenzie, Bureau of Naval Weapons

Time: Now. Place: The Mediterranean. Situation: A supersonic Navy jet fighter has completed its flight and is approaching its parent carrier. The pilot learns that the decks are fouled and he cannot land. Running low on fuel, he does not panic. He knows that within minutes a tanker will be launched to refuel his plane in flight—giving him several more hours endurance.

Time: Yesterday. Place: WestPac. Situation: A tiny jet attack bomber is launched from an aircraft carrier on a simulated strike mission. It carries a maximum bomb load, but is intent on a long-range mission. Its range is assured by another plane of the same type carrying not a bomb load but an air refueling package.

Time: Tomorrow. Place: Anywhere. Situation: An operational commander flashes an urgent plea for additional fighter and attack aircraft to meet an immediate need. The nearest spare planes are perhaps thousands of miles from the area—beyond their maximum flight range. They can be launched, and pronto, because a large tanker plane can be sent from another point to rendezvous with, and refuel, the short-ranged jets en route to their destination.

THESE EXAMPLES are plucked from thin air, but the Navy's ability to refuel its planes in flight and under practically any circumstances is real.

Several models of aircraft have been designated as operational tankers, and a large majority of the Navy's fighter and attack type airplanes are capable of receiving fuel while in flight. Mid-air refueling of fleet aircraft is approaching the status of a routine operating procedure and has become an accepted part of the training syllabus of fighter and attack plane pilots.

This capability has come into being through a continuing development effort in which the Airborne Equipment Division of BUWEPs has played a major part.

The need for air refueling became imperative when jet aircraft entered military operations. The turbojet engine has such a huge appetite for fuel that designers of high performance aircraft have had to exert a great deal of in-

genuity in finding spaces for ever-increasing fuel tank requirements. External tanks became a virtual necessity on many models, and still the available range and endurance fell short of that needed to meet global requirements.

The Navy has developed no special aircraft as tankers. Instead, planes designed for other missions have been converted to tankers by means of either a refueling package or the use of externally carried stores or kits.

There are three basic types of tankers in use today:

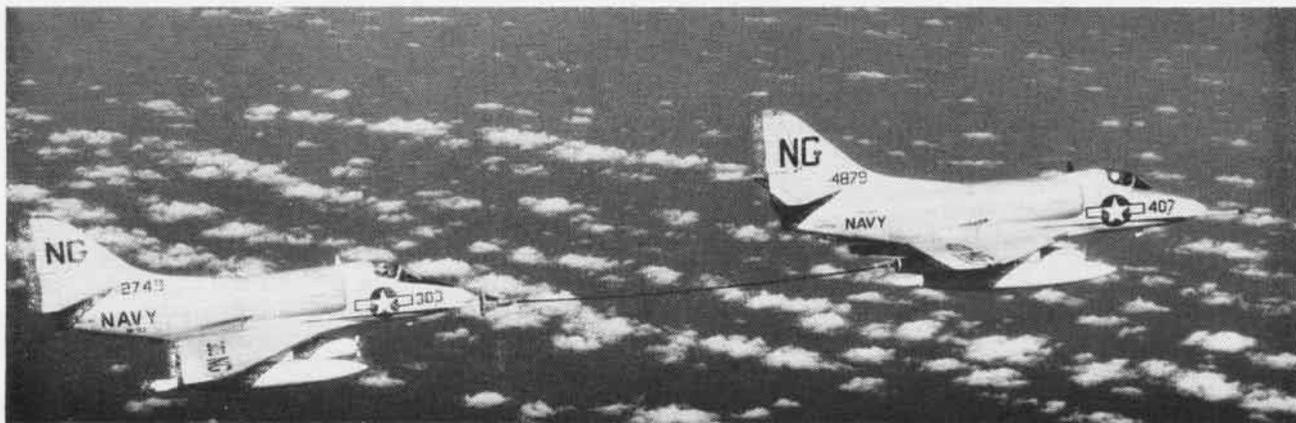
Carrier-based Strike Tankers, known as "buddy" tankers, represent the largest operating group. Their main purpose is to extend the range of aircraft such as the A4D and FJ-4B. This mission requires the buddy tanker to be similar in speed and altitude performance to the planes that require fuel. In a typical buddy mission, two airplanes are launched close together and fly formation to a designated location. The tanker delivers fuel to the other plane and returns to the carrier, leaving the receiver aircraft free to continue its flight to a distant target. The Navy was the first service in the world to use buddy rigs.

Carrier-based Sustaining Tankers, such as the AD-6 or AD-7, are used for emergency refueling. The basic requirement for a sustaining tanker is that it be fairly small, easily launched, capable of long endurance, and be quickly convertible to the tanker configuration.

Shore-based Tankers may be land or water based. Their jobs include extension of strike range, extension of time in the combat area for aircraft in ground support operations, and refueling of aircraft on long range over-water ferry flights. The new Lockheed GV-1 is an example of the shore-based tanker. It can deliver 25,000 pounds of fuel to a point 1000 miles from its base, then fuel two jets simultaneously at a rate of 300 gallons per minute.

Navy tankers use the "probe and drogue" system which is well suited for single place tanker aircraft in that it eliminates the need for a refueling operator.

When the jet requiring fuel approaches the tanker, the tanker pilot reels out a section of hose with the drogue (resembling an inverted funnel) at the end. The other



BUDDY REFUELING BY A PAIR OF A4D SKYHAWKS PROVIDES EXTENDED RANGE. LEAD PLANE RETURNS TO CARRIER, OTHER CONTINUES



ORIGINAL NAVY TANKER WAS AJ-1 SAVAGE, SHOWN REFUELING FLIGHT OF VF-14'S F3H DEMONS IN 1958. AJ HAS BEEN RETIRED

plane approaches from behind and below the tanker, and its pilot maneuvers carefully until his probe is inside the tanker's drogue. To avoid use of radio during refueling, the receiver pilot watches progress of the operation by observing colored lights on his panel.

Once a connection is made, the tanker pilot begins to pump fuel. Slack hose, which could become dangerous if it were allowed to flap wildly about, is avoided by two factors; automatic tension on the take-up reel pulls the hose toward the tanker, while normal air drag pulls the hose toward the plane being refueled. The flow of fuel stops automatically when the previously selected quantity has been pumped or when the receiver's tanks are full.

The refueled plane reduces its speed and drops back until the hose is fully extended. The pull on the hose then becomes great enough to disconnect the probe from the drogue. The line then is wound back onto a storage reel.

Great care has been used to guarantee standardization of equipment. As a result, each tanker in the Navy can refuel all other Navy aircraft which are equipped to receive fuel. This compatibility extends across service lines to the point where Navy and Air Force Tactical Air Command planes can refuel each other.

The air refueling program in the Navy has been characterized by an effort to get operating systems into service in the shortest possible time. With substantial experience now logged, the major effort is being directed toward simplification. A current development involves elimination of the hose reel and its hydraulic components. The hose reel which has been a basic part of all Navy air refueling systems would be replaced by a pulley and boom rig which puts the drogue in position by mechanical action.

Another area of study is aimed at greater vertical separation between airplanes. This will put the receiver pilot in a more comfortable flying position. The most practical solution appears not to be the use of a longer hose (weight and stowage problems would result), but to have the trailing drogue ride lower beneath the tanker.

Helicopters have come into the inflight refueling act. A new concept of operation is being worked out in view of their slow speeds and the hazards of rotating blades. Even space refueling is being studied. The idea might seem to be science fiction at present, but not many years ago the notion of pumping fuel between two airplanes traveling over the seas at 500 knots would have sounded strange.



NEWEST ADDITION TO NAVY/MARINE TANKER FAMILY IS BIG GV-1

HE HAS A COUGAR BY THE TAIL

THE SWEATING pilot dropped into a chair in the ready room mumbling, "I think I've still got a position report to make, but I don't know whether to telephone it in or just write a letter."

There was nothing special about him. He was another normal FRP (Fleet Replacement Pilot) who had just completed his final instrument check in the Instrument Flight Training Department of VA-126, based at NAS MIRAMAR.

VA-126, skippered by Cdr. C.J. Lee, provides, along with the jet light attack syllabus, the jet instrument training and F9F-8T "check-out" program for Naval Aviators in the southern California area. The Instrument Flight Training Division under LCdr. V. L. Thompson has a complement of 16 officers and 28 F9F-8T *Cougars*, two of which are maintained for use by CVG-12 staff pilots. The primary mission is, of course, to provide a current jet instrument refresher course for both fleet pilots and the fleet replacement pilots, and secondarily, to provide a basic jet "check-out" program for Navy pilots who have had no previous jet experience.

The "student" aviator, upon checking in at IFTD, soon discovers that he is going to be busier than a ladder salesman at a hotel fire during his two-weeks stay in VA-126. The instrument syllabus consists of approximately 18.5 hours of ground school dovetailed with 10 instrument flights, providing an average of 15 instrument hours per pilot. The pilot also has an opportunity to perfect his flight procedures on the ground while flying the five-hop Link Trainer syllabus.

In order to have a well-rounded and balanced flight course, the first three flights are concerned with basic air-work only, and the fourth flight is an introduction to TACAN to show the student the many capabilities he has in the ARN-21 TACAN equipment. The next five flights are night round-robin TACAN navigational hops, two of which are combined in a cross-country flight to a strange field and return.

The 10th flight is the final check which, depending on weather conditions, allows the instructor to cover almost every conceivable situation that

may develop on an actual IFR flight. The ground training course is regarded not only as a refresher course; it also helps keep fleet pilots informed of up-to-date procedural changes in the FAA rules and OpNav Instructions.

The jet "check-out" course acquaints the pilot with the basic problems that he will encounter in high performance, sweptwing, jet aircraft. After a series of three aircraft systems lectures and five OFT hops, the student is given three dual check-out flights and three solo flights in the F9F-8T. A more extensive ground and flight syllabus along the lines of the previous JTTU OLATHE, Kansas, is in its formative stages and includes 30 hours of ground instruction and 20 hours of flight instructions.

The instructors in IFTD with an average experience level of 2300 flight hours are all highly skilled instrument pilots and instructors. The high level of proficiency maintained by frequent refresher and standardization flights, periodic quizzes on aircraft systems, standardization, and IFR procedures

has been instrumental, along with excellent maintenance, in establishing an outstanding safety record.

An unusual facet of VA-126 IFTD is that of expert in the instrument flight field. This has developed because various Fleet squadrons and staffs now tend to look to IFTD for decisions concerning IFR flight. In response to fleet interest in their opinions, IFTD is eager to produce still better procedures for jet aircraft. Suggestions are usually "talked over" with the local NAS MIRAMAR RATCC FAA personnel. When sound, compatible ideas are presented, they are forwarded to CNO with recommendations for inclusion in the pertinent instructions.

The IFTD of VA-126 is proud of its past record and is enthusiastic about its future. The instructors are confident that if IFTD has the field experience in regard to military IFR flight, then they can, by liaison with CNO, contribute materially to the improvement of procedures. If this is true, then IFTD has paid its way as a valuable segment of Naval Aviation.



LT. J.A. SMITH "has a Cougar by the tail." As an instrument flight instructor for Attack Squadron 126, he tugs on a line attached to the F9F-8T, assisted by four Cougar plane captains.



VF-21, COMMANDED by Cdr. D.D. Engen, was provided a three-plane detachment of WF-2's by Airborne Early Warning Squadron 11, for air intercept training at NAAS Fallon in June and September. GC1 controlled VF-21 Demons around the clock while the airborne control provided by VAW-11 was conducted at night. Advantage of this training was that controllers, pilots and aircraft who trained together will be working together during their Far East deployment.

Likes His Mother-in-Law Flies 10,000 Miles to Visit Her

Some husbands wouldn't cross the street to visit their mother-in-law but Robert S. Farrell, ADC, travels from New Jersey to New Zealand to see his. The chief is in VR-3 which airlifts Navymen and scientists to Kiwiland for further transportation to the Antarctic in *Deep Freeze*.

Farrell met the Wilson-Travis family of Auckland during WW II. At the time, he didn't pay too much attention to their daughter Shirley. But Shirley grew up, came to the States to work in the United Nations, and got in touch with the Chief.

They were married and now have a two-year-old son, Robert, Jr. Farrell is a flight engineer in VR-3.

Rescue Pilots Kept Busy MAG-16 Copters Provide Fast Help

Search and Rescue pilots of Marine Aircraft Group 16 had a busy day when a Marine truck overturned in the northern training area of Okinawa and a Ryukyuan woman was reported critically ill on Izena Shima 20 miles north of Motobu Point, Okinawa.

Proving that speed doesn't always kill, eight helicopters of MAG-16 within 25 minutes lifted the 17 Marines injured in the truck accident to the Army Hospital, Camp Kue, and to Camp Schwab Dispensary. The men belonged to First Battalion, 9th Marines, Third Marine Division.

They were injured when a 2½-ton truck overturned with 22 persons aboard. Within five minutes of re-

ceiving the report of the accident, six helicopters were on their way. Four went to the crash scene, one picked up Ryukyuan Armed Services Police, and one picked up the C.O. of the 9th Marines. Two other helicopters on training missions were called in by radio to evacuate the injured.

With their mission swiftly completed, the helicopters returned to base. The second call came later in the day to go to Izena Shima for a Ryukyuan woman suffering from malaria and a kidney infection.

The MAG-16 SAR helicopter, piloted by Lts. Newell S. Ely and Neil E. Vanleeuwen, risked a murky overcast to evacuate the woman to Kadena Air Base where an ambulance met her.



CENTURIAN R. C. HOGAN is also the first U.S. Air Force exchange pilot to become jet carrier qualified in the Naval Air Basic Training Command. Capt. Hogan made his 100th landing leading a VT-4 student to the USS *Antietam*.

Father's Skill Is Honored PMR Head Gives Son Patent Paper

At the Headquarters of Pacific Missile Range, RAdm. Jack P. Monroe recently presented ten-year old John Slezak with a patent to a device his late father helped originate.

The boy's father, Lt. Robert W. Slezak, USN, was killed in 1955 while attempting to crash-land a jet after a flame-out. The patent covers a means of loading missiles onto folding-type aircraft wings used on carrier-based planes.

The boy's mother, Mrs. Jean Valine, accompanied him to PMR headquarters, Pt. Mugu, California.

All rights to the invention have been assigned to the U.S. Government.



WIDOW AND SLEZAK SON, RADM. MONROE

Copter Contracts Awarded Sikorsky & Kaman Types Ordered

Two contracts, totaling more than \$23 million have been received by Sikorsky Aircraft for S-58 helicopters for use by the U.S. Marine Corps and the Navy. Still another contract for \$21 million has been awarded Kaman aircraft for the production of HU2K *Seasprite* utility helicopters for Navy.

The Marine Corps contract, amounting to about \$19 million, is for HUS-1 troop and cargo helicopters which will be delivered to helicopter transport squadrons during 1962. The Navy contract covers certain spare parts and technical publications for the HSS-1N helicopters to be used in antisubmarine operations. They are scheduled for delivery during 1961.

Production and fleet delivery of the Kaman *Seasprites* is to begin in 1962. The *Seasprite* is equipped with advanced navigational and electronic equipment and is capable of carrying submarine detection and attack equipment. Its compact size permits operation from a wide variety of ships.

LETTERS

SIRS:

One dreary morning after landing at Kimpo, Korea, we were sauntering back to the ramp from the operations office wiping the sleep from our eyes and exchanging the normal round of sea stories. After listening to the ole salt's latest tale without getting seasick, I casually made the remark: "I wonder how many places this tired looking Bird 514 has been."

This brought a spark to the A.C.'s eyes, and he proceeded to give me part of 514's history.

Ole 514 entered the Naval service as a R5D-3 Buno 56495 on 11 March 1945 from Douglas Aircraft Corporation at Chicago, Ill. Upon being accepted by the Navy, she alternated between VR-3 at Pax River, VR-4 at Moffett Field, and VR-1 at Hawaii until March 1949. Later that year she was assigned to O&R CORPUS CHRISTI, Texas, with intermittent tours in VR-3 and VR-6.

On 12 December 1954, the aircraft was assigned to VR-23 at Atsugi and has been in Japan since that date.

Upon commissioning of VR-7 Det A, she was assigned as one of the four aircraft and redesignated as an Air Force C-54D, 42-72515 on 30 June 1958.

Although I wasn't able to confirm the ole salt's story on where the aircraft has been in the past from the Aircraft Log, I did find one very interesting item. It seems the ole bird has done a lot of work since she was first commissioned back in 1945. She has flown 21,888 hours and 3,939,840 air miles since her tour started. This averages out to a little over 120 hours per month, and she is still piling up the time flying back and forth between Japan and Korea.

LTJG. S. C. LINDSAY
VR-7, Det. Alfa

SIRS:

On page 22 of your October issue under "X000th Landings," in the paragraph pertaining to 16,000th landing aboard the aircraft carrier USS *Lexington*; the last line is in error.

Instead of reading, "in attaining 16,000 landings, *Lexington* has qualified 715 aviators, etc.," credit should have gone to CVG-12. The fact is that CVG-12 has used all of AirPac's carriers in setting this mark.

LCDR. R. L. MURPHY
PIO, ComNavAirPac

SIRS:

I was very interested to see the pictures of the A31-1 in the October issue of Naval Aviation News. I should like very much to have these for use in the next issue of JANE'S *All the World's Aircraft*, of which I am editor

May I add how much I admire the continuing splendid quality of your journal, which is always full of interest.

JOHN W. R. TAYLOR

Surrey, England

READERS' SCRAPBOOKS

During this Anniversary year NANews plans, in addition to its usual reporting on the present happenings and future aspects of Naval Aviation, to devote a portion of each issue to highlights of the past 50 years of the Golden Wings.

To our readers who possess personal photographs or accounts which they believe might embellish our presentation of significant past events, we invite submission of such material to the Anniversary Editor, Naval Aviation News, Op 05A5, Navy Department, Washington 25, D. C.

Please furnish full identification of each photograph. All material will be returned to the sender. Be sure to include your correct address.

SIRS:

On page 22 of your October, 1960, issue you initiated the "X000th Landings" column, which we are pleased to read.

However, you listed Ltjg. Ralph Richter, Jr., who made the first night landing and the 14,000th arrested landing aboard the mighty *Independence*, as a member of VA-175. You also called him a "Sunday Punch."

Actually, Ltjg. Richter is one of the VA-75 "Sunday Punchers." Attack Squadron 75 is a part of CVG-7, presently deployed to the Mediterranean Sea area with the Sixth Fleet.

I might point out that you will soon hear more from VA-75. We recently earned a Certificate of Achievement from the Commander of the Atlantic Fleet for operating during fiscal 1960 without a single aircraft accident. Actually, we have completed two calendar years without an accident of any kind, a total of 13,000 consecutive flight hours. We will soon break the all-time Navy accident-free record for an operating fleet squadron, and are proud of it, too. These flight hours include a heavy schedule of sea duty, too.

So look out.

LT. WILLIAM W. MELETTE
VA 75 Public Information Officer
We'll have an accurate eye peeled.

Randolph Loses Her E's But the Crew is Not Concerned

The USS *Randolph* (CVS-15) lost her hard-earned efficiency E's which marked her superiority in competition with other ships of her class. But the loss was of no concern to the officers and men, for it occurred as part of the overhaul the carrier is undergoing during a six-month period scheduled to end about 1 April.

The chipping and painting of the entire superstructure, which erased the

E's, are only a small part of the extensive overhaul and modernization occurring aboard the *Randolph*. The life of the ship will be extended by five years as obsolete equipment is replaced with gear that will keep up with the demands of modern warfare.

Greatest changes will be in the Combat Information Center and in Communications. A new CIC will give the ship increased ASW capability. Electronics workshops are being enlarged.

Other overhaul and repair items include new planking for the flight deck, a redesign of the crew's galley, and, of course, brand new painted E's.

Rocket Soars to 131 Miles In NRL Nocturnal Airglow Study

A Navy *Aerobee-Hi* rocket recently soared 131 miles up into the New Mexico night sky as part of a Navy study of night airglow. Naval Research Laboratory scientists fired the rocket from the White Sands Missile Range.

The rocket nose cone contained two spectrographs—instruments for forming and photographing the spectrum—and equipment for telemetering information to ground stations.

NRL scientists, pioneers in rocket astronomy, have been studying the causes and effects of nocturnal airglow since 1955. Irregular and unstable airglow layer covers the globe like a loose fitting skin 50-70 miles above the surface. Sun radiation during the day causes this layer to give off a faint glow at night.

Boeing-Vertol 107 Tested FAA Checks Twin-Turbine Copter

The Boeing-Vertol 107, the first twin-turbine helicopter, has made its first flight at Morton, Pa., in the flight portion of the FAA commercial certification program.

The 107 can carry 26 to 30 passengers or troops at a cruising speed in excess of 155 mph.

Military missions which the 107 can perform include missile site support, drone recovery, fire fighting, rescue and disaster control.

By installing an appropriate package of equipment, the 107 can be readied within one hour for such Navy missions as antisubmarine warfare, towed sonar, minesweeping, towing, plane guard, fleet utility, A/S rescue.