NAVAL AVIATION NEWS

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DOWN

DOWN

DOWN

Free falls are a frequent sight at the Naval Parachute Unit, El Centro, California, where men test flight equipment and clothing. Helmets, jackets, boots, and any other special gear are tested as well as parachutes. At times, the parachutist (above) wears special clothing to make it easier for observers to follow him. These photographs show free falls being made over a desert area reclaimed by irrigation.

PARA-SHOOT

A WAY of escape! One minute he was flying smoothly at 38,000 feet. Seconds later he was being hurled downward at sonic speeds. There was a way out! This is what happened!

On that (for him) memorable day in June 1955, Lt. Stanley Gregory participated in an exercise off Cape Henry, Virginia. At 38,000 feet, Gregory suddenly found himself in a sonic dive. Using a ship as visual reference, he broke through Mach, slowed down, went through Mach again. He pulled out at 25,000 feet.

At that point, he lost sight of the ship and tried to find a visual horizon. Finding none, he went to his instruments. His gyro-horizon whirled around the bar, so he transferred to needle and ball indicator. This was indicating from right to left and simply would not hold still.

All this time, the altimeter was unwinding, the speed building up. At 7,000 feet, Gregory got a glimpse of the ship. It looked close. There was no chance that the plane could be brought under control, so he ejected—at 3-4000 feet.

AUTOMATIC LAP BELT DISCONNECT AT LEFT

TEST IS MADE AT AIR CREW EQUIPMENT LAB

DEVICE WORKS ¾ SEC. AFTER CLEARANCE

He ejected smoothly. He freed himself from the seat and his parachute opened immediately. He noticed severe pain in his right leg at the time and then lost consciousness. Coming to, and finding himself under the water, he inflated his life vest and bobbed to the surface.

After inflating his life raft, he used both smoke signals and dyemaker, but because of haze, these were not seen. About five hours after the accident, a destroyer found him and he was taken to the Naval Base at Norfolk.

From 38,000 feet to surface, Gregory had made it, and proved again—though it hardly needed proof—that seat ejection can save a pilot's life.

Gregory is just one of many pilots, some 300 in all, who have hit the silk in the modern fashion—a high speed catapult into the air while still attached to the seat. Based on years of research, engineers have developed a type of emergency ejection which enables pilots to get out of their planes in split seconds and with a minimum of effort.

Before WW II, most of the emergency situations occurred at altitudes and speeds that presented no major obstacles to getting the pilot out safely. He simply made sure that the canopy was open, his seat belt unfastened, and went over the side. This escape was called the bail-out.

But by 1943, a survey revealed that 12.5% of parachute jumps were fatal and 45.5% involved pilot injuries. One important fact stood out: the greater proportion of deaths and injuries were caused by collision with the aircraft structure. It was clear that the pilot was going to have to be sent out fast enough and high enough to eliminate the chance that he would be hit by his own plane's structure.

The first country to evolve a satisfactory seat ejection design was Germany where scientists began their research in 1939. By 1944, designers were equipping Me-163's and 212's with seat ejection. By the end of the war, the Germans had recorded 60 seat ejections.

The Swedish Air Force was also in the field early and had, by 1945, a pilot ejection seat for the J-21 fighter.

British research in this field by the Royal Aircraft Establishment and Mr. James Martin of the Martin-Baker Aircraft Company, Ltd., began in 1944. Mr. Martin, following, though he was probably not aware of it, down the paths of research the Germans had tried, evolved a simple upward ejection seat. This was first tested in 1945 in ground tests and in flight with the use of a dummy. The first live test took place in July 1945 at an indicated air speed of 320 mph at 8000 feet.

After investigating the Martin-Baker ejection seat in the fall of 1945, the U. S. Navy purchased one of the test towers and some seats in order to conduct a series of experiments at the Philadelphia Navy Yard in 1946. The first live ejection took place on October 30, 1946 at NAS Lakehurst, the test subject being Ltjg. A. J. Furtek in a JD-1. (See pages 4 and 5 for recent low ejection pictures.)

The years of research and development have proved what was abundantly clear right from the first test ejection shot: there is nothing simple about high speed ejection. The speed of the catapult, the weight of the seat, the need for separating the seat from the pilot, the type of controls, the type of aircraft are only some of the matters that must be taken into account. Every bit of equipment must be studied in terms of its practicability.

Research in the field of high speed escape from an aircraft in an emergency is never static. It is complicated by the fact that even while one solution for a particular problem is being found, new problems are arising because there are still faster planes going into production. In some cases, a new type of plane, such as the vertical take-off fighter is designed. It has special problems.

The ejection seat is not the last word. Probably the same may be said for the capsule that goes out with the pilot and protects him for all or part of the way down.

At first, there was a certain amount of opposition to ejection seats. This was rooted in the fact that the seat had to be propelled out of the plane high and fast. To do this, catapult action was required, and the cartridge made the catapult, when loaded, a hazard if by any chance it was

fired at the wrong time. Like a loaded gun, it may be used under the right circumstances for increased safety; but let it be triggered inadvertently and it spells extreme jeopardy. But time has proved that a properly saftied catapult is not as dangerous as some critics feared.

Scientists of the Bureau of Aeronautics decided to take a conservative route. They would develop a two-movement sequence to guard against inadvertent ejection which might occur if all the control were placed in one handle. The first movement consisted of operating a pre-ejection lever to jettison the canopy or move it aft to an emergency open position; the second movement, pulling the face curtain to fire the catapult.

Outstanding advantages of the face curtain method of firing are that it:

- Aids the pilot in maintaining proper ejection position.
- Supports the upper body.
- Can be actuated by using either hand or both hands.
- Helps the pilot to retain his helmet and oxygen mask.
- Is a different control from any other in the cockpit and therefore is less subject to inadvertent operation.

To make sure that the seat would not be catapulted until the canopy was jettisoned, an interlock was developed between the seat and the canopy. This mechanism prevented firing the catapult unless the canopy was off. Then the problem arose as to what would happen if the canopy were jammed and, because of the interlock, the catapult could not be fired. To solve this, an alternate means of removing the interlock was incorporated in the seat head rest to permit ejection through the canopy.

As time went on and it appeared that the two-movement sequence should be incorporated to facilitate faster ejection, all control was put in the curtain. It made it simpler for the pilot just to do one thing—pull the curtain. The initial pull jettisoned the canopy and full extension fired the seat catapult. The interlock was still retained.

As actual instances of pilot ejection indicated the scope of the problem, it became evident that the more that could be accomplished automatically, the higher would be the rate of survival. Automation would save lives.

Once the pilot was out and away from the aircraft, he had to release himself from the seat. Unfortunately, under certain circumstances, pilots failed to unfasten the lap belt. BuAer set about to remedy this type of emergency brought about by the pilot's being too stunned or confused to effect separation.

Initial tests were made of a mechanical disconnect system using a static line that actuated the lap belt disconnect as the seat left the guide rails. However, later tests showed that immediate separation of pilot and seat was not always desirable. A delay in the lap belt disconnect provided the best separation characteristics over a wide speed range, since the parachute and pararaft kit were protected by the seat from the initial wind blast at high speed. In view of this, all Navy ejection seats are equipped with automatic lap belt disconnects operated by a time delay cartridge.

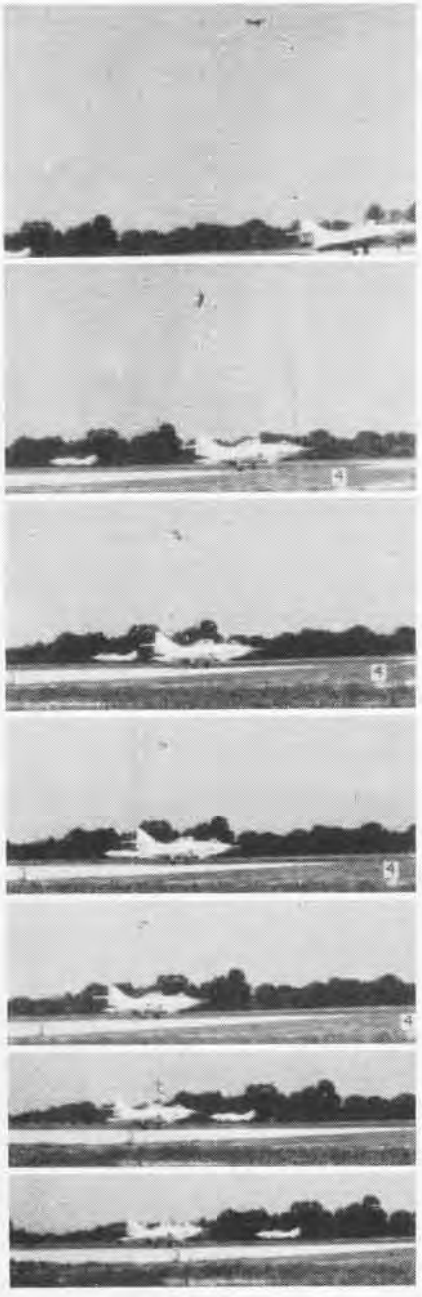
Still another problem has been the question of whether to provide footrests on ejection seats. Pilots have often failed to use the footrests and still made successful ejections. Furthermore, studies conducted on the cyclic centrifuge at Naval Air Development Center, Johnsville, show that under high accelerations a considerable amount of the time required for ejection might be spent in trying to pull the feet back to the footrests.

In the light of this, A4D and F8U ejection seats have been designed without footrests, but with a special type of seat cushion to provide support for the thighs during ejection. These installations are now being evaluated. Thus far, films taken during high speed sled tests of the A4D ejection seat do not show undesirable leg movement in dummies.

One of the main problems has been the design of an acceptable light weight ejection seat and designers have managed to whittle away pounds and ounces. In terms of total airplane weight, a light ejection seat is an advantage, but it appears to have been realized at the expense of the pilot since the drag/weight ratio of the present seat-man combination is higher than it has been in the past with the heavier seats. This is a disadvantage to the pilot when escape is made at high speed. While some of the drag/weight differential is brought about by additional personal equipment the pilot wears, the greater part is due to the change in seat design in the last few years. *(Continued on page 6)*

A3D MULTIPLE BAILOUT CHUTE IS FITTED BY ITS DESIGNER

VAH-5 CREWMAN ILLUSTRATES USE OF MULTIPLE ESCAPE CHUTE



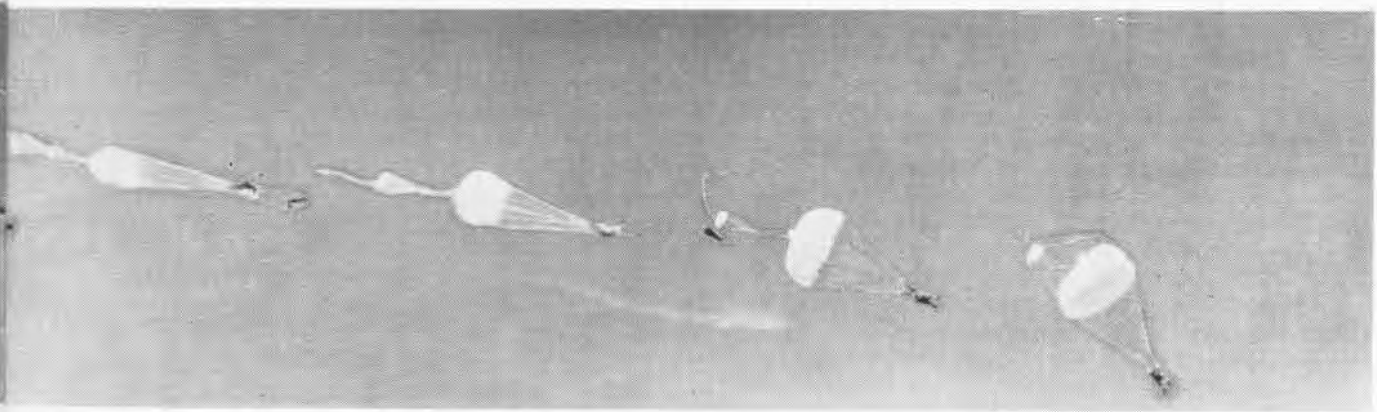
GROUND LEVEL ESCAPE

RAF LT. SYDNEY HUGHES (INSET) MAKES FIRST U. S. GROUND LEVEL EJECTION

Described as "the greatest thing in aviation safety since the parachute," the first live, ground level escape demonstration in this country occurred on 28 August at Patuxent River.

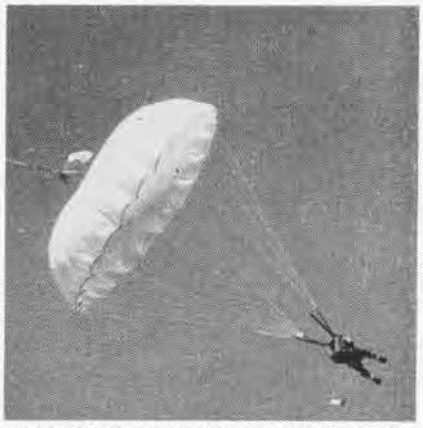
The demonstration, employing a "Mark-A5" ground level ejection seat designed by the Martin-Baker Company, Limited, of England and installed in a Grumman F9F-8T Cougar, was the second ground level test using a live ejectee, the first having been made in England prior to acceptance of the fully automatic rig by the RAF.

In the accompanying peripheral sequence, the twin-seat Cougar piloted by Grumman test pilot, Ernie Von der Heyden, hugs runway at 120 knots as Flight Lieutenant Sydney Hughes, RAF, triggers the triple charge which catapults him clear of aircraft and releases two drogue chutes. After completing somersault (top), second drogue is streamed followed by simultaneous streaming of main chute and seat separation. This occurred at an approximate altitude of 101 feet. Free of seat and still travelling laterally, canopy of 24' chute billows as Hughes grabs risers and gets set for dramatic conclusion of five-second demonstration.



GRUMMAN F9F-8T'S WILL BE FIRST NAVY JETS EQUIPPED WITH MARTIN-BAKER SEATS

STIFF SHOT SENDS HUGHES UP 101 FEET



MAIN CHUTE OPEN, HUGHES STARTS DOWN

FULL ROLL-OUT FOLLOWS NORMAL LANDING

This problem is hard to solve. Addition to the seat for the sake of weight is impractical, for there seem to be, at present, no items of sufficient weight available in the airplane for incorporation in the seat without increasing bulk to an unacceptable degree.

A special ejection seat had to be developed for the VTOL airplane, the Convair XFY-1. This aircraft, which rises vertically, pushes over for horizontal flight and then returns to vertical flight to land, poses new problems.

The most critical period for escape from VTOL aircraft is during the landing when the airplane is at low altitude (about 200 feet) in a nearly vertical altitude with a horizontal velocity of about 60 feet per second. Since the velocity of the seat as it is ejected from the airplane is approximately 60 fps in a line nearly perpendicular to the direction of the flight, the actual airspeed of the seat as it leaves the airplane is approximately zero. It is almost impossible to land safely with standard escape systems since more than the minimum 200 foot altitude is required.

The Naval Parachute Unit at El Centro has designed and developed a unique escape system to bring the pilot safely to earth after ejection during this critical period. If a VTOL aircraft is being flown, this is the procedure:

1. The ejection seat is fired.
2. The pilot's lap belt opens as the seat rises.
3. The seat is snubbed after it moves out of the cockpit.
4. The parachute pack is opened by a static line.
5. The parachute inflates by natural force of air.

Separation of the pilot from the ejection seat is normally the result of differential drag between the man and the seat. However, during the landing of the VTOL airplane, the airspeed is so low that drag is negligible. Accordingly, to insure separation under the no-airspeed condition, the lower rear corners of the seat have been connected to the structure of the airplane with nylon ropes. Once the seat is ejected, the ropes pull the seat away from the man.

A new fast-opening parachute has been developed to save the pilot if he ejects himself at an altitude of 200 feet or higher. His manual ripcord automatically opens the parachute as the man separates from the seat.

But the difficulty is that this parachute, which opens so fast at low altitude, is not suitable for high speed conditions. The maximum speed at which the special parachute can be used with the static line attached is about 250 knots. With the static line disconnected and a short delay in pulling the manual ripcord, safe ejection should be possible up to the maximum speed of the VTOL aircraft.

One company, in an attempt to solve the problem of low level ejection, has developed a device called RESCU—Rocket Ejection Seat Catapult, Upward.

This rocket ejection seat is actually a combination of cartridge ejection and a small rocket. When the cartridge is fired the seat and pilot start up the track. Heat from the cartridge ignites a rocket in the seat-half of the firing tube. This rocket is so positioned that it exerts force through the exact center of gravity of the pilot and seat which prevents spinning.

It imparts not only upward thrust but also forward thrust. The upward thrust insures that the pilot will be thrown well clear of the vertical stabilizer and the forward thrust exerts a force against the terrific force of the slipstream, lowering the rate of deceleration to a point that the human body can stand without injury.

Whether the pilot is to get out alive depends on the swiftness of parachute action and seat trajectory height.

To meet a stringent time requirement, a completely automatic system is used. A lap belt and shoulder harness opens automatically just one second after seat ejection. Upon separation of the occupant from the seat, an aneroid timing device deploys the parachute in one second if the occupant is below 15,000 feet. In three seconds, the lap belt opens, the man is separated from the seat, and the parachute deploys.

If the seat is ejected at a velocity that does not permit slowing down to a safe parachute deployment speed within this time, the parachute may be so damaged as to produce a fatality. If time delays are increased, the extremely low altitude ejections will be fatal, because the man will hit the ground before parachute deployment. For this reason, rocket ejection is used to provide a seat trajectory sufficiently high to allow greater time delays between ejection, parachute deployment and ground contact.

While much work remains to be done on rocket ejection, a design has been tried which permits a supersonic speed of Mach 1.10 (sea level) without imposing excessive G on the occupant. Higher thrust rockets are conceivable when the right kind of torso harness is used.

BuAer has also studied the use of escape chutes where there are several crewmen in high performance aircraft. Such a chute slants down and aft from the pilot's compartment at an angle of approximately 45 degrees. At the time an escape chute was first specified for the F3D airplane, the decision was based on the fact that while normal bail-out over the side was inadequate, multiple ejection seat installations were not yet generally acceptable.

The escape chute has been flight-tested by bail-out of personnel at speeds up to 440 mph. It has been used for three emergency escapes; once in level flight when the airplane had to be abandoned because of fuel exhaustion at night, and twice during a spin after loss of airplane control. An escape chute is also being installed on the A3D high speed multi-place attack plane.

Another special ejection seat configuration under investigation is a combination of a seat and canopy actuated by a single propulsion means. Since cockpit space is at a premium, designers are considering making catapult tubes part of the basic seat structure.

In the last few years, BuAer has developed two types of capsule escape.

1. For the single place aircraft, a cockpit capsule which encloses the pilot in a pressurized and insulated unit containing the normal cockpit instruments.

2. For the multiplace aircraft, a seat capsule which encloses the seat and a crew member.

Thus far, the Navy cockpit capsule research and development program has covered complete static testing of a prototype unit, ejections into a net and from a high speed sled test vehicle, water impact and stability tests as well as air drops to determine the capsule characteristics during descent under a parachute. Since these tests indicate that a cockpit capsule is a practical means of escape, specifica-

tions for this kind of installation are now being prepared.

The original design of the cockpit capsule was in the form of a pod resting in the fuselage. However, additional studies have indicated that a nose type capsule which closely resembles the pod type may be preferable.

The seat or individual capsule, where the number or location of crew members precludes use of the cockpit capsule, will provide protection from windblast and low temperatures, additional flak protection and a survival unit for use on ground or water. The capsule will weigh approximately 500 pounds, including the crew member and equipment. It will be catapulted from the aircraft.

High speed track tests of full scale dynamically balanced seat capsules were recently completed at NOTS CHINA LAKE. The seat capsule was ejected while the sled was traveling at Mach 1.0. The tests were satisfactory and BUAER has embarked on the construction and evaluation of an operational capsule.

At the present time, the ejection seat is limited to conditions approximating those at Mach 1.0 at sea level and corresponding speeds at higher altitudes. These limits may be extended somewhat by developing ways of slowing down the aircraft before the pilot ejects or by modifying the seat to improve stabilization and deceleration characteristics of the seat system.

No immediate plans have been made for the incorporation of seat capsules, but a recent directive from the Chief of Naval Operations indicates the trend. The directive stipulates that design studies of capsule type escape be made for all airplanes capable of performance which would be accompanied by dynamic pressures of 1500 pounds per square foot or more. These studies are to determine whether the capsule type escape can be installed in these aircraft without too heavy a penalty to the aircraft.

Not many months ago, the varied possibilities of escape ejection systems were dramatically demonstrated when Lt. Norman L. Sothan made an underwater ejection after he and his F4D-1 plunged off the USS *Essex* following Sothan's fourth (mirror) carqual.

An extremely hard impact stunned the pilot momentarily. The glass canopy was shattered upon impact and water flooded the cockpit. The pilot unlocked the manual canopy release, reached for the face curtain, pulled it with no difficulty and fired the ejection seat.

He does not recall any excessive force of the ejection and believes that the automatic lap belt release functioned normally. He first tried to get rid of the seat "as if I were sitting on it," but with that unsuccessful, managed to roll out of it. One crisis solved, another loomed.

In total darkness, he wondered which way to swim, but "nature took care of this" and he was carried to the surface by the buoyancy of his parachute pack. During the underwater period, he was carried through the turbulence of the ship's wake. Once he emerged, some 1000 feet astern of the *Essex*, he was picked up by a helicopter.

The helicopter pilot noted the large bubble of the ejection charge and timed the period to the pilot's appearance at 45 seconds. To him it seemed like "three weeks."

BUAER and the aviation industry are continuing with the development of Martin-Baker seats. They are making good progress in incorporating ground level and high speed escape systems equipped with rocket catapults. P6M, A4D, F8U, T2J and all future aircraft will use this system.

The amount of man hours that goes into research and development of pilot ejection is almost beyond comprehension. "Not only must the very best system be built into the new plane before it joins the fleet," says the BUAER project officer, "but we are working to improve the system even after the new plane is operational."

FROM ZERO ALTITUDE, ZERO SPEED, A T2J ROCKET CATAPULTS TEST DUMMY SAFELY

GRAMPAW PETTIBONE

Dear Grampaw Pettibone:

Looks as though Grampaw read more into—or out of—that accident (captioned "Timber-r-r" in your August column) than originally was written into it. Visions of a big R5D boondoggle, complete with dancing girls, must have gone thru the old man's double-dome head.

How about it, Dad, let's stick to the facts, and just give a good comprehensive analysis of the accidents and leave the conjecture to the pilot's wife.

Seems to me that it is the commanding officer's prerogative as to which fields *his* pilots use for refueling stops.

—LT., USN

Grampaw Pettibone Says:

Son, your old Dad likes your spirit and the way you express yourself, but then there's the story about the kettle that called the pot black. Gramp had merely stated that he was a suspicious cuss and suspected that the pilot or a passenger wanted to be closer to town and thus brought a bunch of troubles on himself when he landed at the civil airfield instead of at NAS DALLAS which was just a few miles away.

As for the CO's prerogative concerning fuel stops, CNO's message 041756Z of September 1957 clearly states a concept of efficient and economical operations which has been recognized by most commands for quite some time.

Power to you for calling 'em as you sees 'em. My old hide's pretty tough and thick, and if nobody threw any barbs, I'd think I was over the hill.

Dear Grampaw Pettibone:

Ref your article (page 6 of June 1957 issue of NAVAL AVIATION NEWS) about the Memphis to Dallas S2F flight. Admittedly, every pilot should conduct a thorough pre-flight inspection before each hop. However, pilots *should* be able to assume servicing and *some* other functions properly performed. If every pilot personally checked everything (gas tanks, oil

tanks, hydraulic tanks, air pressures and a thousand and one others) we would need about twice as many pilots for the present amount of flying.

Why not put the responsibility on the civilian contractor or the station? Whoever heard of leaving gas caps off after fueling? What if it rains? How about sparks from tractors? Is a pilot guilty until proven innocent? Do *you* always check each tank?

—CDR., USNR

Grampaw Pettibone Says:

While stroking my beard over this pilot's plight—
This victim of syphoning gas one night,
Whose plane was fueled by a civil crew
That left his gas cap all askew—
I was sadly reminded of poor Tim O'Shea
Who died defending his right o'way—
Old Tim was dead right as he drove along,
But he's just as dead as if he'd been wrong!

Lassoed Panther

The pilot of an F9F-5 was assigned a routine gunnery tow mission for a group of F2H-3's. During recovery from the nose-high attitude assumed in launching the tow banner, the pilot found he could get no effective elevator movement. Checking the rear view mirror, he noted the cause of the control restriction—the tow line was entangled between the horizontal stabilizer tip and the elevator. He had caught his *Panther* by the tail.

The pilot pickled the switch in order to drop the tow line, but stick movement remained limited to about three inches, even when the pilot used both hands and rocked the stick back and forth in an effort to regain effective control of the airplane.

With his jet in a near-vertical dive, the pilot reported on tactical radio frequency that the tow line was wrapped around the controls and that he might have to eject. In the pilot's words, "The plane did a slow and smooth roll and a half to the left as I was making the radio transmission.

"As I finished the radio transmission, I saw the altimeter pass rapidly through 8000 feet. Remembering that the terrain elevation was about 4000 feet, I placed my feet in the stirrups and pulled the face curtain."

Immediately after ejecting, the pilot reached for the seat belt, but found that he had already been automatically released from the seat. He pulled the D-ring and the parachute opened with a jolt. Said the pilot:

"As soon as the chute opened, I saw the aircraft burning directly below. It had already hit when I looked down. The outer shell of my helmet came off when the chute opened, but the liner and oxygen mask were intact. I saw my helmet and the seat falling below me, and pieces of the canopy, which I had gone through, were falling around me. The ground came up fast; I hit in the soft sand and rolled over backwards.

Grampaw Pettibone Says:

This lad had a purty narrow squeak. He may have been saved by the fact that he had his *Panther's* flaps full down, thus keeping the speed slightly under 300 knots during the downward plunge. And while it's not recommended as normal procedure, in this case he did right in

ejecting through the canopy—with his *Panther* pointed down, speed was of the essence. But he knew that when you gotta go, you gotta go!

The Right Attitude

At 2000 feet with his aircraft afire, the pilot of an F9F-6 prepared to eject. An excerpt from his statement follows:

"The canopy went off very fast, and as I raised my head I noticed the horizon and realized I ought to be in a level flight attitude. *I immediately thought of the chart published by the Safety Center and discussions on raising the nose prior to ejecting*, especially at low altitudes, and noted that I was at 2000 feet making 200 knots.

"I eased the nose up with stick pressure, and at the same time put in some nose-up trim. I immediately put both hands over my head, got hold of the curtain handle and gave it a firm hard pull forward and down. The windblast was mild and I do not remember releasing the face curtain or parting from the seat.

"I realized I was close to the ground and had to get the chute open. For some reason I can't explain, I don't remember seeing anything from the start of the ejection until the chute opened, except for one glance at the ground. I made a fast grab for the D-ring with my right hand and, not finding it, started searching with both hands. I think I grabbed it with my left hand. There was no difficulty in pulling the D-ring out after I found it.

"Helo pickup was made in minutes."

Grampaw Pettibone Says:

This lad was able to save himself because he remembered that the right attitude can spell the difference in a low altitude ejection. While he had the advantage of an automatic lap belt, he knew he had to rely on manual actuation of his parachute. The pilot had a few bad seconds when he couldn't find the D-ring which was apparently dangling out of its slot on the harness. Except for the Cougar's nose-up attitude at ejection, the delay could have been fatal.

The pilot realized afterward that he could have added a little more gravy by holding that nose-up attitude long enough to convert his remaining excess airspeed into precious altitude.

Whip Splash

The HUP-2 pilot (lieutenant commander) had established a hover over an AVR preparatory to transferring a passenger (chief warrant officer) to the ship's deck. The ship was rolling and pitching moderately, and, as the crewman (a commander and fellow helicopter pilot) informed the pilot that the passenger had landed on the deck, the pilot lost sight of the AVR's radio antenna. Relative movement between the AVR and the helicopter at this moment caused one of the main rotor blades to strike the whip antenna.

Following the collision, the pilot moved the helicopter clear of the AVR and decreased his altitude to put the man in the hoist sling in the water. As intense vibration existed, he elected to ditch while still maintaining some measure of control. On contact with the water, the pilot applied right cyclic to force the rotors into the water and facilitate evacuating the aircraft out the port side.

The CWO abandoned the hoist sling as the helicopter ditched, remained under water for a few seconds to avoid flying debris, and inflated his Mae West.

The commander who had been operating the hoist fared less well. He appeared on the surface momentarily, and then was pulled under by the helicopter as it sank. He had not removed the HRS crewman belt which was secured to an eye on the side of the port main hatch, permitting the user to move approximately four feet from that point. As the commander was pulled beneath the surface, he attempted to remove the belt. However, it incorporates a safety device to prevent inadvertent release, and he was unable to operate it because he was wearing gloves. Furthermore, because he was under water, it was impossible for him to see what he was doing.

"I distinctly recall thinking, 'So this is how I'm going to die,'" he said. "Vaguely I remember reaching for my knife, jamming it under the belt, and taking one cutting stroke with it. This knife was a machete type, about 12 inches long, which I have carried since 1943. Fortunately, it was both sturdy and sharp.

"Personnel on the AVR tell me that when I floated to the surface, my Mae West bottles had been actuated and I still had the knife in my hand. The next thing I clearly recall is the sight of a small section of gray deck directly under my face and wondering who had done all the vomiting."

The aircraft accident board attributed the accident to the pilot's failure to evaluate properly the hazard of collision in hovering over the AVR under the existing sea conditions with a secondary factor being the rough sea which caused the AVR to pitch and roll with resultant extensive movement of the whip antenna. The board recommended that personnel transfers from helicopters to small vessels be attempted only under emergency conditions when the sea state is moderate or heavy and that every chopper pilot and crewman be required to carry, attached to his flight clothing, a sharp knife of sufficient size to be of use in emergencies.

The pilot believed the accident could have been prevented had he maintained sufficient clearance from the antenna or if he had aborted the mission more positively with added power and left cyclic when he lost sight of the antenna. However, he felt that the latter action at the most critical point in the transfer would have resulted in injury to the man in the sling.

Grampaw Pettibone Says:

Well, fellows, an eye on the whip could have spared the dip.

NAVY BERMUDA FLYING CLUB

MEMBERS PROUDLY ADD THE FINISHING TOUCHES TO FIRST FLYING CLUB FLOAT PLANE

THE LEGENDARY sailor who goes rowing in the park on liberty has a real life counterpart in the U. S. Naval Station, Bermuda, pilots and groundcrewmen who fly or maintain aircraft on their days off. These are the members of the Navy Bermuda Flying Club.

The organization recently received its charter from the Chief of Naval Operations, the first club so honored. Presentation of the charter was made by Rear Admiral F. N. Kivette, Assistant Chief of Naval Operations (Air), at a ceremony attended by distinguished military and civilian dignitaries of the United Kingdom and the United States, and several hundred guests. The charter was received for the Club by its president, Robert L. Hodges, ATC.

Admiral Kivette in his address lauded the group spirit which is making the flying club a success and promised to the members a "fellowship of the air than which there is no finer."

The flying club was spawned in the mind of Cdr. Elmer Dee Anderson, XO of VP-49 and chief pilot of the group. Cdr. Anderson believed that such an organization would provide wholesome recreation and stimulate interest in aviation, besides being a lot of fun. He took his idea to Capt. James G. Lang, then commanding officer of the station who offered his enthusiastic cooperation. The club was formed on 12 May 1957 with Capt. Lang as its first honorary president. Several months later when Capt. Harry Badger relieved Capt. Lang, he echoed the enthusiasm of his predecessor.

MRS. HARRY BADGER CHRISTENS L'IL ANDY

COLONIAL SECRETARY ADDRESSES MEMBERS

The Navy Bermuda Flying Club has a total of 30 members each of whom has one hundred dollars invested in the club. They share in the assets which consist at the present time of two Luscombe float planes and accessory equipment. The first of these planes to be purchased was a Luscombe 8A. This 17-year-old aircraft in wrecked condition took over 400 manhours to rebuild. The second plane, which is now going through overhaul at the hands of the members during their spare time, is a Luscombe 8F.

At the recent ceremonies, Mrs. Harry Badger, wife of the Naval Station Commanding Officer, christened the 8A "L'il Andy" in honor of the Flying Club's founder.

The Colonial Secretary of Bermuda, the Honorable Joseph W. Sykes, C.V.O., presented the Air Worthiness Certificate (for the plane) from the Crown Colony to Ens. Bill Schenk, USNR, maintenance officer of the club. The Secretary also presented the Colonial Aircraft Registration Certificate for the Luscombe to Ltjg. Robert P. Olson, USNR, vice-president of the club.

RADM. KIVETTE PRESENTS CNO CHARTER

Wing Commander E. M. Ware, formerly of the RAF and now Director of Civil Aviation for Bermuda, presented Colonial Pilots Certificates to the Club's three instructors, Cdr. Anderson and Ltjg. Olson, and Lt. Brandon of the Coast Guard SAR detachment on the island.

Other distinguished guests at the ceremonies were: Brigadier B. E. Luard, Officer in Command of Troops in the Crown Colony; the American Consul General, Sidney K. Lafoon; Colonel R. M. Cole, USAF, representing Kindley Air Force Base; LCdr. J. M. Burns, RCN Liaison Officer; Captain Charles Lambing, USN, from the office of DCNO(Air) and the CO's of the three Bermuda-based squadrons, VP-45, VP-47, FASRon-102.

TWIN-JET *Skywarriors of Heavy Attack Squadron Two arrive at NAS Cubi Point, Philippines, where they will be based several months to facilitate carrier operations. The A3D's spanned the 7200 mile distance from California in 16 hours, 22 minutes, making three stops.*

PRODUCTION SCHEDULE ALTERED

OWING TO INCREASING costs, technological advances and budgetary limitations, changes in future production rates of new-model aircraft and missiles will be as indicated below. Other contracts will remain unchanged.

F8U-1 *CRUSADER*—A small reduction in the current Chance Vought procurement and a related slow-down in planned production rate has become necessary under reprogramming.

F4D-1 *SKYRAY*—Program remains unchanged except for a schedule stretch-out.

A3D *SKYWARRIOR* — Modifications of the basic Douglas A3D are now being produced at the previously planned rate and are expected to have their first flight tests early next year.

A4D-2 *SKYHAWK*—Program has been affected by a curtailment and accompanying slowdown and stretch-out of deliveries.

A4D-3 *SKYHAWK*—Contract terminated for four A4D-3's.

F9F-8T *COUGAR*—Will be ordered to fulfill requirements for this type trainer.

F11F-1 *TIGER*—Grumman fighter procurement contract remains unchanged.

S2F-3 *TRACKER* — Small initial production quantity of this aircraft is planned.

T2V-1 *SEASTAR* — Procurement was reduced earlier in the year, and no further changes are contemplated.

W2V-1 *LOCKHEED*—Program has been partially terminated. Funds made available by partial termination of this program and termination of the four A4D-3's were required for continuation of other more urgent aircraft programs.

P6M-2 *SEAMASTER*—There has been a small downward revision in the Martin P6M-2 procurements as announced in June. No further reductions are contemplated.

F3H-2 *DEMON*—A minor stretch-out in delivery schedule is the only change in the F3H-2 program.

T2J-1 — This North American trainer program is not affected.

REGULUS I and *II*—surface-to-surface guided missiles. No changes are planned in *Regulus* I and *Regulus* II programs.

SPARROW I — air-to-air guided missile. Procurement is not affected by cutbacks, but planned production is nearing completion.

SPARROW II—air-to-air guided missile (experimental missile). Production program has been previously terminated.

SPARROW III—air-to-air guided missile. This missile is currently going into production and there are no planned cutbacks.

SIDEWINDER—air-to-air guided missile; *Tartar*, *Terrier* and *Talos* surface-to-air guided missiles. No stretch-outs or reductions are being planned.

P2V Flies Mercy Mission

Drops Vital Drug to Ship at Sea

Three hours after an emergency request for medical supplies was received at the Naval Hospital, Jacksonville, in July, a P2V *Neptune* of VP-16 air-dropped drugs to transport USS *Chilton* (APA-38) 300 miles off Miami.

Wave-off Prevents Crash

Neptune Averts Wheels-up Landing

Attention to duty and split-second reaction on the part of the 20-year-old Airman attached to the crash crew at NATC PATUXENT saved thousands of dollars damage to a P2V *Neptune*.

When George N. Klochak, AN, gave a wave-off to the patrol plane, whose pilot was unknowingly coming in for a wheels-up landing, he prevented possible injury or death to the plane's crew and passengers.

Two visiting *Neptunes* from an east coast air station prepared to land at Patuxent. As the first plane crossed the field boundary on final approach, with less than 100 feet altitude, Klochak observed the main landing mounts were up and the nose wheel of the plane partially extended.

Realizing only seconds remained in which to prevent a crash, Klochak signalled a wave-off. The pilot applied emergency power and made a second approach for his successful landing.

VR-3 Moves to McGuire

To Aid 1611th Air Transport Wing

Naval Air Transport Squadron Three has shifted its headquarters to McGuire AF Base, Trenton, N. J. The move follows deployment in the Berlin Airlift, Operation Haylift, the Korean Airlift and NAS MOFFETT FIELD, California.

Flying the R6D *Liftmaster*, VR-3 will operate with the 1611th Air Transport Wing. VR-6 is also stationed at McGuire. Both units get logistic support from Lakehurst.

VR-3 has been commanded by Capt. Irvin L. Dew since July 1955. It will continue to live up to its motto at its new base: "Always ready to transport anything, anywhere, anytime."

WAR IN 'LAND OF MORNING CALM'

LEGENDARY BATTLE *of Carlson's Canyon resulted in levelling of all new construction at spans shown above. Strikes formed background for motion picture, "The Bridges of Toko-ri." Other Korean incidents are detailed in new book, "Sea War in Korea," by Cdrs. Cagle, Manson.*

NAVAL AVIATION built a lot of history in Korea, Land of the Morning Calm.

It accomplished more than 35 percent of all combat sorties flown by United States aircraft; dropped as many tons of bombs as it did in WW II; used more rockets and fired half as much ammunition.

The intensity of this effort is remarkable when it is realized it was achieved with a smaller force than that of the WW II Naval Aviation.

Exploits of this force have been compiled for the first time in a book, *The Sea War in Korea*, published by the U. S. Naval Institute. The historical treatment confirms a considerable number of the familiar legends while revealing some new ones.

In this latter category as one of the now-it-can-be-told variety, is the chronicle of the savage attack by VF-54 aircraft from the USS *Essex* on the secret communist headquarters at Kapsan.

Secret guerrilla information had been received that on a certain day in late October, 1951, a high level meeting of the Communist hierarchy would be held in the village of Kapsan in northeast Korea. Here is the account of that raid in the words of Commander Paul N. Gray, CO of VF-54, better known as the Navy's "Bald Eagle" and the most-rescued airman of the Korean war (four times).

"On 29 October 1951," said Gray, "Admiral John Perry received a request from the Eighth Army to make a raid on the headquarters of the Chinese Communist party at Kapsan in North Korea. Guerrillas had reported that there was to be a meeting of all high-level party members of the North Korean and Chinese Communist forces at Kapsan at 0900. This city was located about 60 miles northwest of Songjin, in mountainous terrain.

"On receiving this request, Admiral Perry ordered photos made from a high altitude by our photo reconnaissance planes. The photography was done at high altitude in order that the enemy would not be aware of our intentions.

"The target itself was a compound slightly east of the city of Kapsan. In this compound was a records section which contained all Chinese and North Korean party records, a security police headquarters and a barracks. The meeting of high-level Communists was scheduled at nine o'clock. We were ordered to strike between nine fifteen and nine twenty to be sure that all members had reached their seats.

"The armament carried on the flight was as follows: two 1,000-lb. bombs, of which one had a proximity fuze and the other an instantaneous fuze. Each plane carried one napalm bomb and eight 250-lb. general purpose bombs. The 20-mm machine gun ammunition was half incendiary and half high explosive.

"On the morning of the strike the weather was clear and cold.

"The pilots were myself, Ltjg. Shugart, Ens. Aillaud, Ens. Masson. The second division was led by Lt. Evans, with Ltjg. Gollner, Ens. Strickland and Ens. Kelly. (Ltjg. Gollner and Ens. Kelly were both killed on later strikes.) We requested no fighter

AUTHORS LOOK OVER THEIR BOOK

Authors of THE SEA WAR IN KOREA are Cdr. Malcolm W. Cagle (right) and Cdr. Frank A. Manson. Cdr. Cagle, who is now attending the National War College, served as a fighter pilot in WW II and received the Navy Cross, DFC, and other awards.

In 1950, Cdr. Cagle was given additional duty with the late Capt. Walter Karig to co-author Vol. VI of Battle Report. He is now writing a book on U. S. Carrier Operations in WW II.

Cdr. Frank A. Manson, another WW II veteran, has collaborated on three volumes of the Battle Report series. He was command historian when Adm. Robert B. Carney was Commander-in-Chief, Southern Europe. He is now in the office of the Chief of Naval Operations in Washington.

Both authors participated in the Korean War and gathered on-the-spot information.

The account of the Kapsan Raid is to be presented on television in January on Navy Log.

VA-55 SKYRAIDERS *figured prominently in action, and 7th Fleet aircraft achieved "firsts," including VF-781 tangle with Vladivostok Migs.*

REDS PUT *price on heads of Kapsan raid pilots: Ltjgs. K. L. Shugart, L. S. Ellison, VF-54 CO, Cdr. P. N. Gray, Ens. A. V. Masson, Lt. F. J. O'Malley.*

escort because we felt a fewer number of planes involved would give us the maximum possibility of surprise.

"We were launched about 100 miles east of Wonsan, at 0730. After rendezvous, we proceeded to the coast, staying as low as possible all the way. From a study of the maps we found valleys available all the way to Kapsan in which we could fly and thereby avoid radar detection.

"As we flew farther and farther north, the height of the mountains increased and the terrain became extremely rugged. Directly east of Kapsan was a 6,000-foot range of mountains. We approached from behind this range, made a rapid climb to 8,000 feet, crossed over the top of the mountains and commenced our attack.

"At approximately 0913, eight proximity-fuzed, 1000-lb. bombs exploded above the compound of Kapsan. We rendezvoused in a climbing turn, made another attack and dropped the 1000-lb. instantaneous fuzed bombs. All eight of these again landed within the compound. On the next run half the planes dropped napalm and the other half strafed. Most of the compound was set aflame by the napalm bombs, and those portions that were not ignited were set afire on the next run when the remaining four napalm bombs were dropped.

"The remainder of the attack consisted of strafing the compound and pinpointing the 250's on those sections that had not been completely destroyed. The final runs were made by our camera planes at tree-top level.

"When we left the target, there was nothing left but a smoking mass of rubble. Pictures showed every bomb except one inside the compound and there was only one wall standing.

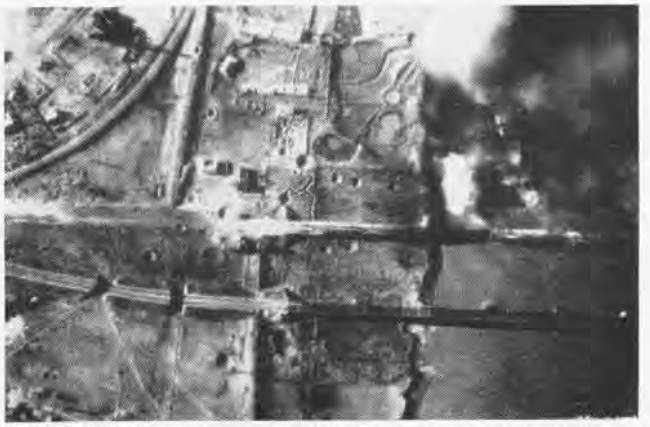
"Any antiaircraft located at Kapsan evidently was destroyed on the first attack by the proximity fuzed 1000-lb. bombs, because no reports of accurate anti-aircraft fire were received and no planes received damage. We returned to the ship without incident, although extremely low on fuel due to the long hop and the long time spent on the target.

"Within two days, an Army report was received from one of the guerrillas who had been posted on the side of the hill overlooking Kapsan and who had watched the whole attack. He reported 509 high-level Communist party members were killed in the raid and that all records of the Communist party in North Korea had been destroyed.

"The remarkable thing which the post strike pictures showed was that no part of the city had been damaged, except the compound itself.

"This raid must have really hurt the Chinese and the North Koreans, because the next week the North Korean radio put a price on the heads of all the members of the strike and called us 'The Butchers of Kapsan.'"

WONSON OIL *Refinery was blasted in a savage attack made upon it by VF-53 and VA-55 in July 1950. Smoke could be seen 60 miles at sea.*



SINUIJU BRIDGE *crossing on the Yalu River was target of attacks and subject of squadron songs. Such attacks are included in new history.*

Friendly Versatility

STORY OF THE GUPPY

THE GUPPY LEADS 'EM HOME. IN THIS CASE IT'S TO THE CARRIER WASP AFTER TRAINING, IN OTHER CASES THE JOB VARIES

by LCdr. Benjamin C. Hail, USNR

MENTION AD5W to some aviators and you will observe them shudder, wince, or otherwise wish that the topic of conversation be switched. It may seem that this aversion to the aircraft is well founded, for the AD5W looks little like one of the proud sleek line of Douglas *Skyraiders* which earned fame over the past 12 years. Instead, the 5W model is a hulk of an airplane with a flounder-like empennage and a bulging radar dome slapped on the underside, squeezed between the landing gear.

The AD5W has wings, but for the most part, it looks like a bullfrog just ready to belch. It certainly isn't the airplane pictured on the NavCad posters. But don't distrust this craft because of its looks. The *"Guppy,"* as it is called in familiar circles, has a variety of missions it is capable of performing, any one of which could just lighten your burden on a future flight. A few pertinent facts about the plane and the men who fly it might aid your understanding.

The *Guppy* is a propeller-driven, radar-configured member of the "Tailhook" Navy, carrying a crew of three —pilot, controller and radar technician. At present the AD5W is the tactical weapon of Carrier Airborne Early Warning Squadron 11 on the West coast and VAW-12 on the East coast. NAS NORTH ISLAND's VAW-11 and NAS QUONSET POINT's VAW-12 pilots are put through intensive training in all weather and instrument flights, qualifying for day and night carrier attack operations.

The controller and his technician are likewise trained thoroughly in all weather and low-visibility intercept work. So much for the general mission. What, with all this configuration and training, can the *Guppy* and its crew do? What special jobs can it perform? What needs can it easily meet that warrant its employment alongside the speedier jet models?

These functions can be divided into two groups: those of a tactical and those of an emergency nature. Here are some actual reports on both.

A major role of the *Guppy* in dealing with other forces is that of pathfinder. On just such an exercise in the not too distant past, the *Guppy's* role consisted of leading a flight on an aerial mining mission to the vicinity of the target area and then setting them up on the proper approach heading from at least 20 miles away from the initial point. This allowed the mining planes to make the last part of the flight at low altitude (50 feet) and gave them time to set up any desired drop formation. The flight leader took over to call the drops. After each run the drop planes took individual evasive action to clear the target area.

VA pilots were enthusiastic about these runs, admitting that in bad weather or other reduced visibility such a run would be virtually impossible without radar assistance. They maintained that even under good visibility conditions the drops were easier to set up properly with the radar plane coaching them to the drop heading from a comfortable distance.

On another pathfinder exercise, jet photo planes were assigned a small island 412 miles from the force as a target. The controller in a *Guppy* located the island on his radar, gave the jets accurate ranges and bearings until the pilots held it visually, then informed them when to commence their descent to the desired altitude. The jet planes were thus expeditiously positioned over the island by the *Guppy* and the mission was completed without loss of time.

Because of jet fuel consumption on such an extended flight, the time saved in locating and photographing the target is of particular importance.

In another instance, a *Guppy* sta-

tioned 100 miles offshore vectored jet aircraft to targets on the beach under simulated low-visibility conditions. The strike aircraft received a "mark on top" of target with an average accuracy error of one mile on coastal targets and two miles on inland targets (dead reckoned from the coast).

Besides leading or vectoring attack aircraft toward a stationary target, there have been instances where the *Guppy* has detected a moving "hostile" fleet force, such as in a mock war held recently between two carriers in the Pacific. This "war" was to last over a 21-hour period. At the start of hostilities, the two ships had to be at least 360 miles apart, with the calculated guess being 460 miles. At the stroke of noon, the "war" started with two *Guppies* and six AD-6 *Skyraiders* being launched to find the enemy, to hit her early, and to throw her off balance.

The search plane obtained fairly positive identification of the enemy force (a five-ship formation was seen) at 185 miles, near the expected 450-mile position. A vector was given to the prop strikes, then about 90 miles from the target. At this point, had she been looking, the enemy carrier would have seen only a rear-end view of the *Guppy* as it started sweating out the homeward journey.

Final results revealed demolishment of the "enemy" flight deck two hours after zero hour and ignorance by the "enemy" concerning the position of the friendly force.

The *Guppies*, while airborne, are always alert to aid other aircraft with an emergency, as well as to assist in search and rescue at any time. During Task Force operations a land-based AEW plane had been scheduled to report the returning AD strikes when they penetrated the Task Force Air Defense Identification Zone and to give them a steer to the carrier. Due to "marginal weather," the land plane didn't get airborne, so on one of these "HOLD - EVERYTHING - BUT - LAUNCH - THE - GUPPY" type events, the *Guppy* was catapulted from a pitching deck into the middle of Typhoon "Jean."

Alone and buffeted by winds, the *Guppy* methodically set up a search barrier 50 miles from the typhoon's eye. Somewhere out in the surrounding blackness, the returning AD's were entering their seventh hour of flight at 500-800 feet. They had been flying on instruments constantly.

When the *Guppy* controller detected the first returning group, they were 150 miles from the carrier in a rather dangerous condition. Shifting winds were throwing the pilots' navigation off, a powerful low frequency station on the beach was distracting their homers, and the carrier—trying to outrun the typhoon—was 40 miles off Position and Intended Movement. The controller, with a scope cluttered by sea return and typhoon weather, was under the hood for almost two hours picking up the returning groups and giving them correct ranges and bearings to the carrier.

On a similar occasion, a *Guppy* crew was on an AEW Barrier off the California Coast during a First Fleet exercise when it heard an AD pilot trying to inform his carrier that he was lost and low on fuel. The *Guppy* picked him up on radar and immediately gave him a steer to his carrier where he managed to land safely.

The *Guppy* is of great help in coordinating SAR through the use of radar and radio relay as was exemplified during a recent Operational Readiness Inspection when a *Guppy* and an AD5N *Gator* were on a night ASW flight. After the *Guppy* had vectored the *Gator* in for the kill, the *Gator* dropped a flare to light up the submarine. However, the flare hung in the flare chute, forcing the pilot to ditch. The *Guppy*, though 30 miles away, was able to pinpoint the ditching by radar and direct a destroyer to the rescue. In ninety minutes, the dunked *Gator* crew was safe aboard ship.

Under a different circumstance, the *Guppy* and *Gator* worked together to effect rescue of an F2H *Banshee* pilot. The *Guppy's* controller vectored the *Gator* in for a searchlight run to locate the pilot in the water. After the pilot was found, the *Guppy* orbited overhead giving radio directions to a rescue destroyer until the ship could locate the pilot with its own light.

These are all routine jobs for the *Guppy* and its employment. Its special capabilities and its trained crew make the *Guppy* ready to assist you in completing your mission and in easing the sting of an emergency. Those who know about the AD5W don't avoid it. To them, the *Guppy* may not be very pretty, but it is a good friend in the air! And the *Guppies?* They're happy to be of service to you in the Fleet.

AD5W GUPPY, LATEST MODEL IN VERSATILE TAILHOOK SERIES

INFORMATION PROVIDED BY GUPPIES IS PLOTTED IN CIC ROOM

STATISTICS HIGHLIGHT SERVICE

THE BONNY DICK'S RETURN AT THE END OF ONE OF ITS WESTERN PACIFIC TOURS

WHAT HAPPENS to a ship in two years? What results from the time and the effort expended in building her?

The USS *Bon Homme Richard* in its angled deck reincarnation (CVA-31) was two years old September 5. Since her recommissioning at the San Francisco Naval Shipyard after a $67 million reconversion, these facts and figures have been compiled:

The *Bonnie Dick* traveled 95,955 miles, or almost four times the distance around the world. On the ship's first anniversary of recommissioning it steamed into Tokyo Bay, beginning its first Western Pacific cruise with the Seventh Fleet. Its second anniversary was again spent in Western Pacific waters, this time at sea near Okinawa.

In two years the BHR has seen just under 8000 landings on its flight deck. Actually, the 8000th landing was made the day after the birthday. A number of these landings were made by the A3D *Skywarrior*, the F4D *Skyray*, and the F8U *Crusader*. The *Bon Homme Richard* was the first *Essex*-class carrier to operate the *Skywarrior* and *Crusader*. During the first two years the BHR was the launching ship for the initial transcontinental carrier to carrier flight of two *Crusaders* and two *Skywarriors* flying non-stop to the USS *Saratoga* (CVA-60) off Jacksonville, Florida.

Her crew of nearly 3000 men was paid over $16 million in payroll by the disbursing office. Funds taken in from the three ship's stores and two soda fountains have resulted in $39,000 being poured into the Enlisted Recreation Fund. This money was used for sports equipment, partial payment for last year's cruise book, and two ship's parties as well as a number of substantial contributions to selected charities.

More than 2184 meals, at which nearly 3000 men were fed, were prepared in the galley. In addition to these regular meals each day, night rations were served to watchstanders at midnight while at sea. During the first two years, at least 4,709,380 half-pints of milk were served to the crew, while 1,196,000 pounds of potatoes were consumed.

The medical department treated about 24,000 cases ranging from a hangnail to surgery. In the dental department, 5000 cases were treated, using 20,000 separate procedures caring for the teeth.

The Information and Education Office administered 8000 tests and distributed about 1000 USAFI courses.

Ship's servicemen accounted for the sale of about 291,200 soft drinks in the ship's automatic dispensers, the manufacture of tons of ice cream, and the cutting of about 159,120 heads of hair in the crew's barber shop.

It takes tons of paper work to administer a huge attack carrier and in the two years 43,680 stencils were run off using 3744 reams of paper. The library checked out 8422 books and received and processed about 6760 magazines for use in the crew's lounge.

DURING two years of operation the BHR worked with Carrier Air Group 21 aboard and is now operating with Carrier Air Group 5.

The *Bon Homme Richard* has operated with the Seventh Fleet on each of its cruises and has been Flagship for Commander, Carrier Division Seven and CTF-77.

The past two years haven't, however, been all cold facts and figures. The two years have included night replenishment off the Philippines and 'round the clock air operations off San Diego, underway training, and Operational Readiness Inspections, the Seventh Fleet change of command ceremony in Buckner Bay, Okinawa, and a visit by Miss Universe Contest contestants in Alameda, California.

They were days of liberty in bustling Hong Kong and a lonely boiler watch on the sixth deck. But most of all it meant several thousand tweets on the boatswain's pipe. Boy, that guy really had a very busy pipe!

TWO TELEVISION SETS *are presented to the Fuji National Hospital in Iwakuni City, Japan by members of VQ-1. Squadron personnel saw the hospital's need for recreational facilities, then the crew gave money for TV sets.*

MARINES PRACTICE ENVELOPMENT

SECOND DIVISION MARINES RUN SINGLE-FILE TOWARD THE OPEN DOORS OF HR2S HELICOPTER TO BEGIN ENVELOPMENT PROBLEM

FIVE 80-man waves of combat Marines landed behind enemy lines, raced from their big HR2S helicopters in 20-man teams and assaulted the guided missile site with clockwork precision. By late afternoon, the attacking Leathernecks had swept defending troops away from the objective and were proceeding with the five-day exercise.

It was the first time a Second Division unit had used the big whirlybird in an envelopment maneuver and the first time Marine Helicopter Transport (Medium) Squadron 461 of MCAS NEW RIVER had operated with Division troops.

Dependents and passers-by saw the battalion embark in copters on Camp Lejeune's main parade ground, then take off to land on Bogue Field, an abandoned WW II airstrip.

Behind "enemy" lines, the copters discharged their 20-man teams in less than a minute and scurried back for further loads. Attackers were members of the Second Mar-Div's Third Battalion, Second Regiment. Members of the division's Reconnaissance Company acted as enemies.

INSIDE HELICOPTER, MARINES BEGIN 'LONG WAIT' FOR ACTION

BEHIND 'ENEMY' LINES, 20-MAN TEAM OF ASSAULT TROOPS RUSH FROM COPTER AND FAN OUT TO ATTACK MOCK MISSILE SITE

Beechcraft

TWENTY-FIVE YEARS OF PROGRESS

★ ★ ★ ★

The story of Beech Aircraft is the eleventh in the current series of feature articles on companies which have built and are building aircraft for the United States Navy.

★ ★ ★ ★

BEECH PLANT I IN WICHITA, KANSAS, GREW FROM ORIGINAL 30-FOOT-SQUARE SHOP

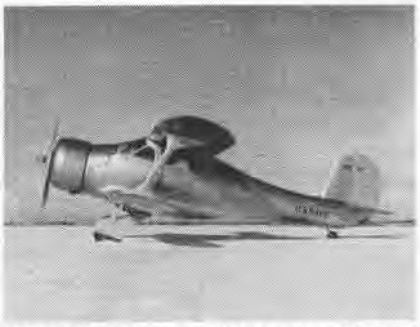
BEECH AIRCRAFT is a name of distinction in Navy circles. The actual number of Navy pilots who have received instrument instruction, multi-engine transition and proficiency training in the Beechcraft may never be known, but few Naval Aviators are strangers to the SNB cockpit. Today every young man who embarks on a flying career with the Navy begins his pilot training in a Beechcraft T-34B *Mentor*.

Twenty-five years ago the country was at the very depth of the worst economic slump in U. S. history. Investment money was almost non-existent. Unemployment had reached an all-time high. Business, prices and people's spirits were at rock bottom.

Yet in the face of this gloomy prospect, Walter H. Beech, his wife Olive Ann Beech, and a handful of equally optimistic associates organized Beech Aircraft in April 1932. Mr. Beech was a man with a purpose, and Mrs. Beech, who became president and director in 1950, shared her husband's conviction that the airplane was here to stay.

Less than a dozen employees were on the payroll when Beechcraft embarked on its first project in a small depression-closed plant. Today, Beechcraft employs some 8,000 skilled workers, owns three main factories in Wichita, and leases facilities in Herington and Liberal, Kansas, and at Boulder, Colorado. The six manufacturing sites occupy nearly 2,000,000 square feet of floor space, a far cry from the little 30-foot-square shop where the first Beechcraft, built largely out of hopes, began to take shape a quarter of a century ago.

Walter Beech had a name as a designer before he started Beech Aircraft. He had been part of the management of the Swallow Airplane Corporation in Wichita, and in 1925, he had founded the Travel Air Manufacturing Company. Shortly after that company merged with Curtiss-Wright, Beech decided to return to Kansas and start a new business, Beech Aircraft.



NAVY VERSION OF MODEL 17 WAS THE GB-1

SNB-1, BOMBING AND GUNNERY TRAINER

The first design was one of the most famous planes of its day, the Beechcraft Model 17, a single-engine cabin biplane. A distinctive characteristic was its negative stagger wings, a design which provided extra visibility as well as other important aerodynamic advantages.

On 4 November 1932, the Model 17 made its first flight. Powered by a Wright *Cyclone* engine, it flew to a

top speed of 201 mph, an excellent performance for a commercial plane of those days. This same Beechcraft Model 17 won the Texaco Trophy race at Miami in 1933. Reliable, versatile and successful, the Beechcraft Model 17 series remained in production until 1948. All told, more than 20 military and commercial configurations were produced.

When World War II broke out, modified versions of the Model 17 became the GB-1 and 2. The Navy used these aircraft as personnel transports and utility planes throughout the war.

Meanwhile, Beech had seen the need for a business transport larger than the single-engine planes then available, but smaller than airline transports. Model 18 was the result. On 15 January 1937 test pilots flew the twin-engine, eight-place Model 18 for the first time, and only two weeks later it

ROWS OF SNB'S FORM FAMILIAR PATTERN

was shown at the National Aviation Show in New York.

The military were quick to realize the 18's adaptability to a wide range of missions. The basic configuration of the all metal, low-wing monoplane was incorporated in the designs of the JRB and SNB series, which have served the Navy since 1940.

Early configurations of the SNB were used to train navigators and bombardiers and, of course, multi-engine pilots. The JRB, also powered by two 450-hp Pratt and Whitney engines, was utilized for photo reconnaissance and as a control plane for radio controlled drones and in support of such World War II developments as airborne radar.

After the war, over 1,200 of the planes were returned to the Beech factory for complete rebuilding to insure continued good performance and service life. Last February the SNB-5 was replaced as the advanced multi-engine trainer, but both the SNB and JRB have been integrated in other training phases.

Although production was suspended several years ago, in all probability these Beechcrafts will operate for many years to come. The SNB and JRB series have been exposed to a greater variation of pilot ability and flight purposes than any other type flown by naval aviators through the long years.

LATEST NAVY PRIMARY TRAINER IS T-34B

Two months after World War II, Beech rolled out its first postwar commercial Model 18. In December 1945, a distinctive new business plane, the *Bonanza*, took to the air, and this was followed by the successful *Twin-Bonanza* and its military counterpart, the Army L-23. In January 1954, the company unveiled its largest business plane, the Beechcraft Super-18 executive transport. The newest plane is the four-place, twin-engine *Travel Air*, first flown in August 1956.

Early in the post-war period the Beechcraft T-34 *Mentor* trainer was developed as a private venture and offered as an "off-the-shelf" trainer of an advanced design which had the capability of meeting new military requirements. First flown 2 December 1948, the Navy selected it in June 1954 as an aircraft which would meet training demands. The T-34 is now the standard primary trainer of both the Navy and the Air Force.

The *Mentor*, powered by a six-cylinder, 225-hp Continental engine, cruises at 110 knots and has an initial rate of climb of 1100 fpm. The maximum speed at sea level is 162 knots; the design dive speed 242 knots. It has no acrobatic restrictions and is designed to a positive limit load factor of at least six G's and a negative limit load factor of three.

In the Navy's primary training

XKDB-1 DRONE IS THE FIRST MISSILE STEP

schedule at NAS PENSACOLA, each plane flies about 100 hours a month. The introduction of the T-34B, with its simplified operation, made it feasible to reduce the length of the primary phase since it permits early determination of a student's ability.

Beechcraft has also developed a jet trainer of its own design, the tandem *Jet Mentor*, which first flew in December 1955. It is being offered to the armed forces as an "off-the-shelf" turbojet primary trainer and reconnaissance craft.

The Navy XKDB-1 medium performance target aircraft is Beechcraft's first step into the guided missile field. Power is supplied by a 120-hp turbo-supercharged six-cylinder McCulloch engine. It is designed for operational altitudes of 40,000 feet and speed up to 320 mph, and may be ground, ship or air-launched. The proposed Model 1013 photo and television recon drone, a modification of the XKDB, will have the alternate capability of delivering supplies to isolated combat units.

As a major subcontractor to other airframe manufacturers, Beech is also a large volume producer of assemblies, parts and components for high performance jet combat planes. In the area of scientific research and development, the company is working on a number of classified projects involving aerodynamics, electronics, propellents, missiles and new weapons systems. Beech also developed a new in-flight fueling system for McDonnell jet fighters.

The 17-year Navy-Beechcraft association has been a happy one. Indications are it will continue to be for many years to come. The SNB has been so long a part of training that the story of Beech Aircraft is also part of the story of thousands of men who have earned Navy Wings of Gold.

THESE SLEEK FOLLAND GNAT FIGHTERS WERE MANUFACTURED IN ENGLAND FOR INDIA

ONE OF THE NEW AIRCRAFT HIGHLIGHTED AT

SAUNDERS-ROE 53 IS POWERED BY ONE SPECTRE ROCKET ENGINE AND ONE VIPER JET

FARNBOR

The 18th air display, stage
Constructors, was held at Farn
Some 350 manufacturers, a doz

Aircraft were arrranged on a
moved to far end of airfield fo
took on new color with the in
precision formations. A formati
Sea Hawks won applause, and
put on a special display of acr
flying, speeds of aircraft were

ROLLS-ROYCE IS USING A HAWKER HUNTER TO TEST-FLY ITS THRUST REVERSAL UNIT

HEAD ON VIEW OF THE SHORT SC1 VTOL

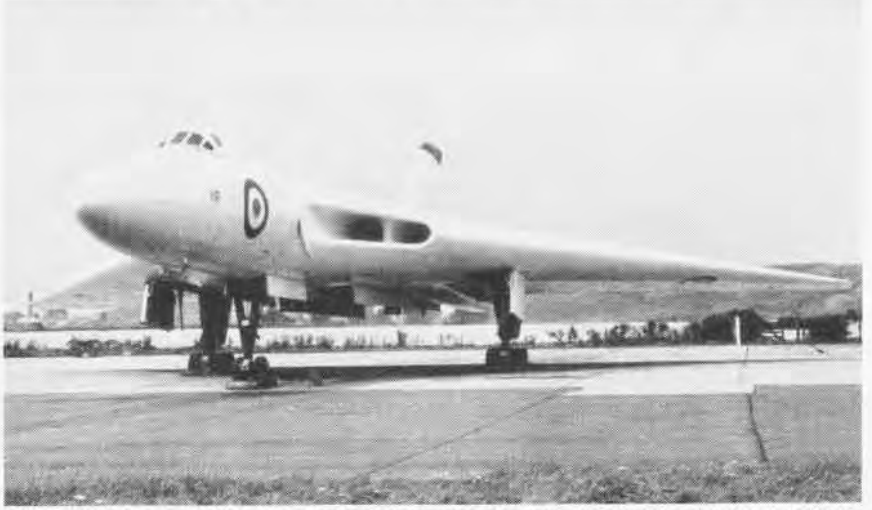
ARNBOROUGH WAS THE FAIREY F.D.2 WHICH HOLDS THE WORLD ABSOLUTE SPEED RECORD OF 1132 MPH ESTABLISHED ON 10 MARCH 1956

OUGH 1957

by the Society of British Aircraft
orough, England, September 2-8.
more than last year, participated.
nearby runway in the morning and
flight in the afternoon. The show
oduction of Royal Navy and RAF
n landing of five red Fleet Air Arm
he RAF's formation of five Hunters
batics. Despite ban on supersonic
s near it as pilots could arrange.

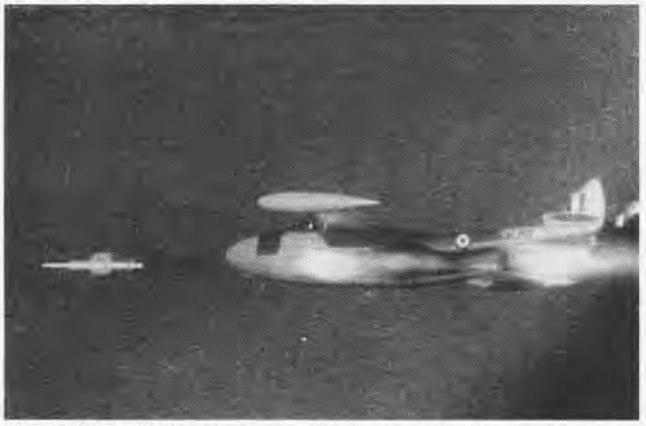
SEA VENOM MK. 22 IS LATEST VERSION OF THE ROYAL NAVY'S ALL WEATHER FIGHTER

SEARCH AIRCRAFT HAS OUT-OF-THIS-WORLD LOOK



AVRO VULCAN IS BEING USED BY ROLLS-ROYCE TO TEST CONWAY BY-PASS TURBOJETS

MISSILES STAR AT FARNBOROUGH



THIS PHOTOGRAPH, *taken immediately after the pilot of the parent Venom had fired, shows Firestreak accelerating rapidly toward target.*

THE DE HAVILLAND *Firestreak, shown fitted to the de Havilland Sea Vixen, has an infra-red homing system of great range and sensitivity.*

GUIDED MISSILES with their noses pointed skyward were dramatically located just outside the entrance at the SBAC show at Farnborough, which indicates their importance.

Vickers-Armstrong's *Red Dean* was displayed and described as an advanced missile intended for all-weather interceptor. Aerodynamically it resembles the smaller *Firestreak*.

Designed to engage and destroy modern, high-speed bomber aircraft at all altitudes, the *Firestreak* is a compact, light weight weapon which has been chosen and ordered as standard equipment for the RAF and the Royal Navy. It is scheduled to be carried by the English *Electric P.1*, the Gloster *Javelin* and the de Havilland *Sea Vixen*.

The accuracy of the *Firestreak* was established during trials in both England and Australia. This accuracy, united with the lethal qualities of the warhead and the fusing system, insures a high probability of target hits.

The *Firestreak* has six main sections: guidance, control and fusing systems, the power supply, the propulsion motor and the warhead. These sections are housed within an aerodynamic body tube, 10 feet, 6 inches in length, which is fitted with four small wings and four control fins.

The infra-red guidance system possesses great range and sensitivity, and is immune from the jamming which can deflect conventional radar weapons. The use of this type of homing system, which requires no control by the pilot of the parent aircraft after the weapon has been launched, enables the fighter to break off the attack immediately *Firestreak* is fired. The fighter can thus remain well beyond the range of defensive fire from the target.

The parent fighter carries *Firestreaks* on launching shoes attached to the wings of the aircraft. Weapons may be fired singly or in pairs, from fighters travelling at subsonic or supersonic speeds, and provision is made for jettisoning in event of an emergency.

Special equipment required in the parent aircraft has been designed and developed also by de Havilland Propellers Limited in parallel with the main *Firestreak* project.

Also in the Farnborough exhibit, there were a number of Fairey *Fireflash* missiles. This missile consists of an explosive portion, a warhead, fuse, and boost motors, and a section of guidance gear, wings, controls.

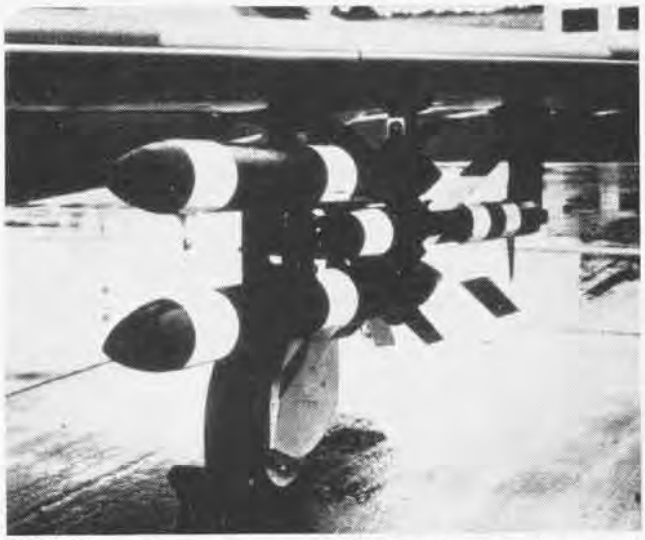
Bristol's *Bloodhound* and the Royal Navy's *Sea Slug* missiles were seen together and were similar in appearance. The *Bloodhound* was stated to be in production for the RAF; it is a defense type missile of the surface-to-air type. *Sea Slug* is intended for shipboard use.

Thunderbird, another surface-to-air missile, is made by English Electric for antiaircraft defense. Unlike *Bloodhound*, *Thunderbird* is propelled by a rocket motor. It resembles *Bloodhound* and *Sea Slug;* its four wrapped-around boost rockets fall clear after use.

FIRESTREAK HAS *been fired from a number of different types of aircraft and has proved well suited to both small interceptors and to larger all-weather fighters. Above, Firestreak is shown just after being fired from a Canberra during high altitude trials in South Wales.*

SPECIAL EQUIPMENT *designed for ground transfer was shown at Farnborough. Bloodhound ground-to-air guided missile is shown on trailer.*

THE BRISTOL/FERRANTI *Bloodhound missile is shown on its launcher ready for firing. It is now being produced in quantity for the RAF.*



FIREFLASH *guided missiles were displayed at Farnborough mounted on a Hawker Hunter F.4. Fly tests had been made in North Wales.*

THE BLOODHOUND *made its first appearance at Farnborough this year. This guided missile is powered by two Bristol Thor ramjet engines.*

SEA SLUG, *a naval AA weapon designed by Armstrong Whitworth, has four clusters of triple boosts which fall clear after burning out.*

FIRST PILOT *to arrive at MCAS Cherry Point for Operation Vigor was Maj. S. P. Erickson, here stepping down from his F9F-6 Cougar.*

NEW ORLEANS *MAReserve contingent loads practice bombs under wing of an AD Skyraider for use on close air support training mission.*

MARINES STAGE OPERATION VIGOR

by Lt. Col. Reuben M. Monson

MARINE Air Reserve maneuvers which annually attract dozens of news personalities and VIP's to view reserve operations at a Marine Corps Air Station, this year drew two VIP's of a "very important" variety.

They were the fathers of two young Marines who flew in for a firsthand look at their sons' roles in Phase I of "Operation Vigor" being staged at Cherry Point, N. C.

One a Minneapolis milkman, the other a rural Minnesota county road-grader, they were proudly introduced by Col. Arthur H. Adams, commanding officer of the MAR Training Detachment at NAS MINNEAPOLIS, with these words: "These fathers are our VIP's. On behalf of the many parents of reserves, they are here to see what Marine training is like."

For the better part of a week the fathers elbowed in with their sons. Richard L. Anderson, the milkman, looked over the shoulder of his son, Pfc. Richard T., as he performed routine aircraft maintenance on the flight line. Edward Pavlish saw a squadron function from the vantage point of his son, Pfc. Alfred Pavlish, an operations clerk in charge of dispatching planes on the maneuver.

Many others dropped in for a view first at Cherry Point and later between 17-31 August during Phase II of "Operation Vigor" at El Toro.

Here's a rundown on some of the things they saw and a few random comments made by Pavlish and Anderson:

"We should keep our young men fit and ready in case of any emergency and not have to go at it green, as we did in World War II, against men trained since childhood in the course of war," said Anderson, who had been a serviceman himself many years ago.

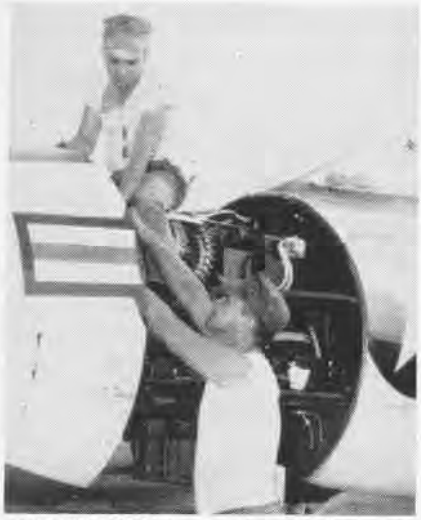
VIP ANDERSON *locates son Richard at work on flight line, servicing a plane for flight.*

Massed along the Cherry Point flight line were rows of fighter and attack planes wearing the home letters of Marine squadrons from GLENVIEW, DENVER, LINCOLN, OLATHE, NEW ORLEANS, SPOKANE and MINNEAPOLIS. Electronically following the reserve air traffic were Marine Air Control Squadrons from DENVER and DALLAS.

Along with other units training at home stations and the other half of the Marine Air Reserve Training Command (based in the eastern U. S.) that went into action in Phase II, this mixture of veterans and partially-trained men were polishing a degree of readiness that distinguished Marine reserves during the quick call-up early in the days of the Korean War.

Training at home stations during the operation's Phase I were fighter squadrons from DALLAS, OAKLAND, ST. LOUIS, MEMPHIS and SEATTLE. Two MACS units, MINNEAPOLIS and GLENVIEW, also worked out at home. Two fighter squadrons, group headquarters and a MACS unit from Los ALAMITOS, maneuvered at the Mojave, Calif., Marine Corps Air Station.

Across the country, Phase II brought these fighter squadrons to EL TORO: BIRMINGHAM, ANACOSTIA, ATLANTA, GROSSE ILE, AKRON, NIAGARA FALLS, NORFOLK and WILLOW GROVE. MACS units from ANACOSTIA, AT-



PFC. D. V. FLYNN *(top) and Sgt. D. K. Dazelin load ordnance aboard an F9F-6 jet fighter.*

LANTA, WILLOW GROVE and GROSSE ILE provided air control. Training at home were fighter units from COLUMBUS, MIAMI and SOUTH WEYMOUTH, along with MACS units from BROOKLYN, COLUMBUS and SOUTH WEYMOUTH. Other BROOKLYN squadrons trained at CHERRY POINT; the Jacksonville fighter unit at MAYPORT.

Pavlish said he wanted to let all parents know that *"their sons are not wasting their time, but are being trained in many difficult fields. At the same time, they are learning to follow and obey orders as they are given."*

From dawn to dusk—weather permitting — pilots and crewmen were given a workout in the warm North Carolina sun as they pushed the total flight hours up to 4,683.4 (average per pilot—32.75) for the two weeks. Lumping the hours logged at home stations, the total jumped to 10,977.4 during Phase I of Operation Vigor.

From the arrival of Maj. S. P. Erickson of Olathe (first pilot to land for the maneuver), until the units—including business men, professors, farmers, mechanics, engineers and students—packed up to return to the civilian side of their Marine reserve lives, the pilots blasted the targets with 45,000 pounds of 20-mm ammunition, 500 miniature bombs, 100 water and sand-filled bombs, 150 100-pound bombs and 508 rockets.

"The fine work the young men in the service today are doing to keep our country prepared in the event of any emergency and getting the training in some skill or trade is an inspiring thing to be able to see," Anderson said as he looked at the war games.

The other father commented, *"It seems like one big family all working together to make the Marine Corps one of the finest units in the world."*

Pavlish didn't hear the commander of the Marine Air Reserves, BGen. Frank C. Croft, talk to the reserves, but the Marine father echoed the general's sentiments. Many in the audience were reservists who served in two wars. Gen. Croft said he was proud to head a command that a few years ago had made such a contribution in the Korean War. At one time, over 54 percent of all Marine pilots—and not far from that percentage of ground crews—were Marine Air Reservists. One out of every three missions flown by all Americans in Korea were flown by activated Navy or Marine Air Reservists.

PFC. SHENROCK, *VMF-113, belts practice ammunition for use in aerial gunnery training.*

Following the two Marine fathers and interested in their reactions was Kenneth Butler, national president of the Flying Farmers of America. He wanted to learn more about opportunities for rural youth in Marine Aviation and to bring back answers to questions raised by farm boys regarding military obligations.

Anderson, talking with Butler about military service, said: *"My son has about a year and a half to serve in the reserves and the way he talks now is thinking of enlisting in the regular Marines. I'm hoping he does."*

LCOL. MORRISON *is briefed by VMF-216 duty officer before taking off on training hop.*

OLATHE *reservists help Miss June Pickney, "Miss Marine Air Reserve," into parachute.*

FLYING FARMERS *president Kenneth Butler and Capt. V. Horvle pose on wing of Marine jet.*

FLASHLIGHT, NEW USSR FIGHTER

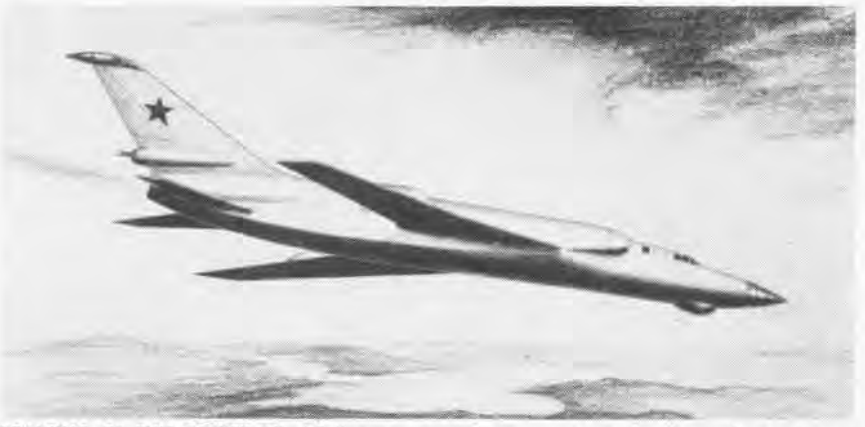
FLASHLIGHT 'B'

FLASHLIGHT 'C'

Flashlight 'C' was first observed by Gen. Twining and his party in Moscow on 24 June 1956. This all-weather interceptor is a dual-placed, twin-jet, sweptwing, sharp-nose development of the blunt-nosed Flashlight 'A.' Changes include the probable addition of afterburners to give Mach 1 performance.

Flashlight 'B' has similar performance, and is a single-placed attack, reconnaissance bomber development of the earlier Flashlight 'A.'

IN FOREIGN SKIES



DRAWING OF THIS SOVIET *"Backfin" twin jet, medium, supersonic bomber indicates it may have been designed as opposite number of USAF's B-58 Hustler. Its extremely powerful engines are mounted high and taper into the fuselage to share the single outlet located in the tail.*

Britain Enters USAF Meet

Britain's long-range, fourjet bombers, nuclear weapon carrying Vickers *Valiant* and Avro *Vulcan*, are competing against USAF airplanes of Strategic Bombing Command in this year's bombing contest at Pinecastle AF Base, Florida, early this month.

Two *Vulcans* and two *Valiants* will compete, and there will be one of each held in reserve.

Air Chief Marshall Sir Harry Broadhurst, Air Office Commander in Chief of the RAF Bomber Command, will accompany the teams to this country. The RAF crews who will fly the bombers were selected from the winners of a rigorous contest in Britain.

Months of preparation for the contest have been spent by the Bomber Command, and there has been close liaison with the USAF especially in working out the technical details.

Britain's Turbine Helicopter

Before a group of visitors at Yeovil, Somerset, Great Britain's first turbine-powered helicopter, the Westland *Wessex*, was put through its paces. The visitors had been told that the aircraft would be airborne 60 seconds after the pilot pressed the starter.

After 45 seconds, the rotors were still motionless, yet 12 seconds later the *Wessex* was airborne. This is an advantage of turbine power; piston-engined helicopters take ten minutes to warm up. On its first flight, the *Wessex* remained aloft 65 minutes.

The reduction in noise level not only means a more comfortable ride for the passengers, but less wear and tear on the transmission, rotor head and gear box. This provides a longer overhaul life and reduced operating costs, while compactness and light weight permit an increased payload.

Designed primarily for antisubmarine operations, the Naval version of the *Wessex* can also be used for search and rescue, communications and supply, casualty evacuation, etc.

In addition to a crew of two, 12 passengers and baggage or eight stretcher cases can be efficiently carried.

Safety System Scheduled for Test

A new technique that removes the hazard of fuel fires in civil and military aircraft, from take-off to touchdown, is shortly to be flight-tested in a specially-modified *Canberra* jet-bomber.

The system works on the principle that if there is a sufficient proportion of nitrogen gas in the air space inside a fuel tank, it will prevent the oxygen in the air from supporting combustion. The new technique offers complete protection from fuel tank explosions caused by lightning striking the aircraft in flight, or from enemy action in combat.

There is no high weight penalty for this protection. Fuel tanks have to be pressurized with air tapped from the aircraft's engines, and the nitrogen is simply injected into this air in the correct proportion to produce an inert gas inside the tank.

The nitrogen is carried in liquid form in a high-vacuum insulated container. This is claimed to be the lightest and simplest explosion suppression system yet devised. It weighs 15 lbs. per 1000 (Imp.) gallons of fuel carried. It takes up so little space that the liquid nitrogen container can even be housed inside the fuel tank, displacing less than one quarter of one per cent of the total fuel volume.

Liquid nitrogen is fed from the container to a swirl atomizer built into the pressurizing air supply line from the engine to the fuel tank. The heat of the air causes the nitrogen to vaporise and form a nitrogen/oxygen mixture, the correct proportions of the gases being maintained by a duct-stat control which adjusts the oxygen content according to the temperature of the air entering the tank.

NAVY, MARINE AND AIR FORCE *team up at NAF China Lake to demonstrate weapon delivery for NATO observers. A4D aviators are project pilots in VX-5; skipper is Capt. F. B. Gilkeson, USN. They are Lt. E. R. Christie, USN, Maj. E. D. Wegley, USMC, Capt. S. S. Clark, USAF.*

New Bomb Hoist Developed

Rig Termed Easy, Fast, Accurate

A 47-pound portable electric bomb hoist, now being evaluated for possible fleet-wide use, has been developed for the Navy by Douglas Aircraft. Weighing considerably less than manual hoisting gear now in service, each Aero 17A lifts up to 2500 pounds at the rate of 15 feet per minute.

Operator fatigue is reduced by the lightweight device which permits faster and safer store hoisting with accurate loading up to 13 feet within 1/32 of an inch.

The new unit, four of which have been delivered to the Navy for testing, requires a single electrical cable connected to either a deck-edge receptacle or a portable power unit. When power is not available, a hand crank, stowed atop the cable drum, will raise or lower a 2500 pound load with a force of 20 pounds on the crank. The hoists are used in pairs for bombs or stores up to five thousand pounds.

BOMB IS RAISED BY NEW AERO 17A HOIST

Each hoist has a geared cable drum driven by a miniature motor, and a telescoping extension tube with cable pulley and an electrical connector.

VW-15 Logs Records

Makes WV-2 Flight Time Marks

While Airborne Early Warning Squadron 15 was deployed to Argentia, it established several WV-2 *Super Connie* flight time marks.

During one month, the squadron's aircraft flew 1785 hours while maintaining the "Barrier Atlantic." A total of 6826 flight hours were logged on the barrier planes over the four-month deployment in Newfoundland.

VW-15's aircraft availability was 68.1 percent. One of its planes was in the air for 229.2 hours.

Capt. C. J. Eastman, VW-15 CO, praised highly maintenance personnel.

P.1 Exceeds Speed Record

Security Shrouds the Exact Figure

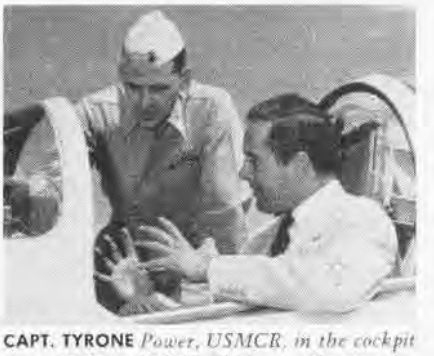
English Electric has announced that a prototype of its P.1 supersonic interceptor has flown at speeds in excess of the existing world speed records. For security reasons, the company did not state the precise speed reached.

The world speed record now stands at 1132 mph, the equivalent of Mach 1.73 at altitude and is held by a British aircraft, the Fairey F.D.2.

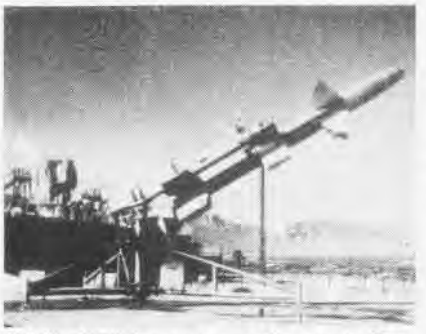
The P.1 is a single seat, day and night all-weather fighter, which has been ordered by the Royal Air Force.

CDR. J. L. BUTTS, *OinC ATU-206, presents Cougar model to Father J. C. Condit for Our Lady of Loretto Chapel, Pensacola. The chapel, dedicated to naval aviators, was suggested by famous Franklin chaplain, T. J. O'Callahan.*

JOTARO YOSHIZUMI *of Sasebo gives scroll of appreciation and vase to Louis Voynovich, Lexington, HN, for saving his son from drowning by applying hours of artificial respiration. Executive Officer and interpreter look on.*



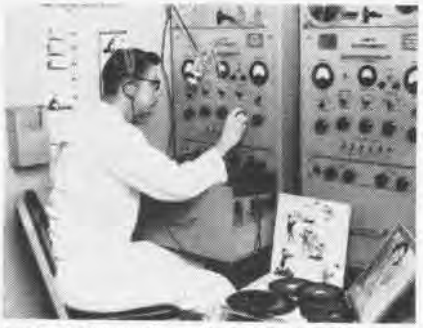
CAPT. TYRONE *Power, USMCR, in the cockpit of an FJ4B at MCAS El Toro, talks over his R5C pilot days with Maj. D. L. May of VMA-223. The actor successfully passed his promotional flight physical exams for Major.*



TALOS, NEW *long-range, surface-to-air Navy missile, will be guided to its target by super radars which use antennas that resemble gigantic searchlights. It was developed for military services by Sperry Gyroscope.*

GLASSED! *Images of news media and military representatives are reflected in Naval Air's new mirror-landing system following first public demonstration of device at Patuxent. Curvature shows photog taking this shot.*

FIRST *FJ-4B Furies to be delivered to NAS Alameda were accepted by the Black Knights of VA-151. Cdr. David Crockett, Air Task Group One, and Cdr. B. Sevilla, VA-151 CO, shown with company reps, flew them first.*

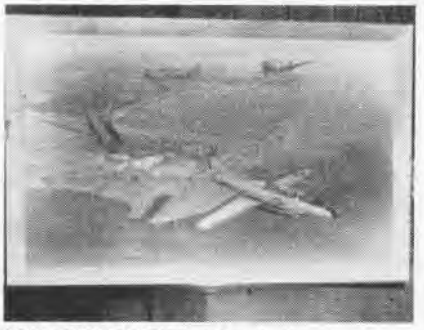


DISC JOCKEY *Kenneth T. Roth, SN, pipes daily music concert to 3500 crewmen of USS Saratoga. Selections run from Beethoven to Bop. Crew praises quality of Hi-Fi broadcasts.*

SEATED IN *cockpit of his F4D Skyray after recording the 71,000th arrested landing on the FDR is LCdr. George L. Tarleton, XO of VF-74. Landing was made enroute to the Med.*

'WHAT'S THIS?' *The universal curiosity of children ran rampant on the bridge of the USS Bon Homme Richard as 85 youngsters of Yokosuka Toshima Family Assn. toured ship.*

AN F8U-1 *Crusader was flown to NAS Corpus Christi to acquaint student pilots, instructors, station pilots and other interested persons with many features of this new Navy airplane.*



FOUR GENERATIONS *of North American training aircraft over Pensacola, Florida, are depicted in this painting presented by NAA to the United States Navy Pre-Flight School.*

T-34 MENTOR *is used at MCAS Quantico for indoctrination to see if officer candidates have physical ability and acumen to become aviators. Pensacola uses it for beginners.*

Inflight Fueling First

VF-32 Qualifies Using the F8U-1

VF-32 at NAS CECIL FIELD, the Navy's supersonic interceptor squadron, has added another first to its log by becoming the first squadron to qualify in inflight refueling with the *Crusader*.

The operation was conducted with an AJ *Savage* propellor-driven tanker piloted by Lt. M. L. Lillebee from Heavy Attack Squadron Seven at NAS SANFORD, Fla. Sixteen VF-32 pilots qualified in 22 hours.

With the capability of refueling in flight, the F8U-1 *Crusader* now has added striking power which enables it to prowl beyond the normal jet range in search of enemy aircraft.

Jax Gives Gala Greeting

Wagon with Fringe on Top Added

Pilots and passengers deplaning at NAS JACKSONVILLE are apt to experience a case of "spots before the eyes" —of the very pleasantest variety. The new "Welcome Wagon" that rolls out to meet them at the airstrip is a masterpiece of technicolor splendor.

The tractor and trolley, both painted blush pink, are generously spattered with small, medium and large polka dots of red, green, blue and white. There are turquoise blue foam rubber cushions, black floormats and even eight-inch fringe on the top.

LCdr. Oscar Willingham, Aircraft Maintenance Officer in the Operations Department, conceived the idea when it was decided to dispense with the enclosed truck previously used. His trolley car design allows for almost 360 degree vision, a distinct advantage. Cost of the project was kept extremely low by the use of salvage materials and volunteers.

The festive wagon provides a 24-hour shuttle service for both the incoming and outgoing personnel.

TIRED PILOTS ENJOY COLORFUL WAGON RUN

Decommissioning of VW-13

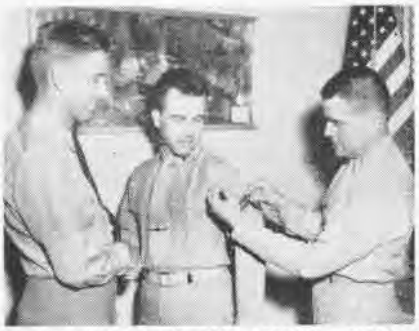
Atlantic Barrier Units Reduced

Airborne Early Warning Squadron 13 was decommissioned at Patuxent River. This reduces the number of squadrons in the Atlantic Airborne Early Warning Wing to two, VW-11 and VW-15.

Reason for the change was that in flying Barrier Patrols, the Navy has determined that it can carry out its mission with less aircraft.

Another reason was the limitation in operating funds which required a reduction in the number of aircraft and the number of personnel.

VW-13 won a Naval Aviation Safety Award for 1957. It was then under the command of Commander Otto Finley.



LT. KELAHER SEWS, CDR. REDING PRAISES

Stripe for School Star

All-Time Academic Record Broken

A spot promotion to the rank of Corporal was William E. Miller's reward for meritorious work while attending Aerographer's Mate Class A School at NAS LAKEHURST. The Marine achieved a cumulative academic average of 95%, the highest in the school's history.

The course consisted of such subjects as weather plotting, analysis and forecasting, as well as the study of wind direction and upper air readings.

Cpl. Miller, as top man in his class, was granted choice of his next duty station. He selected the Marine Corps Air Station El Toro.

SeaStar Antenna Modified

Four Units Are Pooled under Nose

Lockheed engineers have combined radio antenna, arresting gear, airspeed indicator and the antenna for the tactical air navigation unit into one package on the new T2V-1 *SeaStar* jet trainer.

Resembling a king-sized fishhook, the four-in-one innovation serves as an aerial speedometer, an emergency brake and a two-purpose antenna.

When employed as an emergency barrier hook for carrier landings of the T2V-1, the antenna will withstand a jerk-to-a-stop pull of 15,000 pounds.

The *SeaStar* is a 600 mph trainer which provides new safety features, precision controllability and training devices.

In developing the new antenna, Lockheed research engineers were puzzled as to how to place four separate equipment items in the same location underneath the plane's nose section.

Design studies showed a single spot as the best area for installation of the emergency barrier arresting hook, the pitot tube airspeed indicator, the pilot's command radio antenna and the antenna for the Tacan unit.

Tests proved that locating the UHF command radio antenna underneath the nose assured reliable communication from all angles without interference from other antenna or electrical equipment. The pitot tube and the emergency barrier arresting hook also performed best in approximately the same under-nose position. But each would interfere with the others if installed separately.

The answer was to combine all three in a single unit but this had never been done before. Then, during preliminary work on the 3-in-1 design it was discovered that the best available place for the Tacan antenna was also beneath the nose.

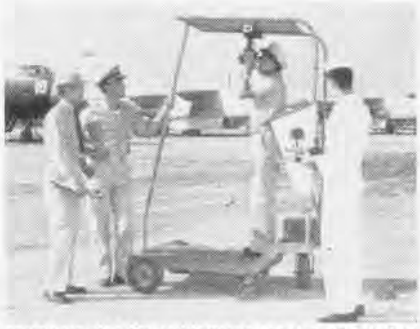
A revised design, combining all four items into one unit, has been approved as a standard production feature of this new carrier-based trainer.

HU-2 Is 'Good Neighbor'

Brazilian VIP's Ride Whirlybird

Helicopter Squadron Two had the honor of carrying the President of Brazil and his top military dignitaries on an official inspection tour of the Brazilian island, Fernando de Naronha. Detachment 75 of HU-2, NAS LAKEHURST, was working on the island while attached to the USS *Maury* (AGS-16).

President Juscelino Kubitschek and his party were piloted by Ltjg. R. W. Mueller and Ltjg. A. J. Libby.



SEXTANT STAND IMPROVES VAH-5 TRAINING

VAH-5's New Training Aid

Used for Celestial Navigation

To help teach celestial navigation to bombardiers and third crewmen, Ens. Ed Williams, navigation officer of VAH-5, and Ens. John Bailey, maintenance department, have constructed a mobile sextant stand.

The stand has produced excellent results. It has the advantage over the old fixed type sextant stand in that it is easily moved to any location by one man.

The sextant can be rotated through 360 degrees and is lighted for night star shots by a self-contained battery. A work shelf is provided for figuring and plotting lines of position, so that the navigator no longer has to return to the navigation office to complete his computations. He is also able to determine quickly the cause of any errors.

Shown in the picture above from left to right are Ens. Williams, Ens. Bailey, George, ALC, and Zak, AQ1.

LINED UP *on the flight deck of the big attack carrier, USS Antietam, these two T2V-1 SeaStar jet trainers shared topside billing during carrier suitability tests conducted recently off the Atlantic coast. The trainer underwent extensive fleet catapult takeoffs and arrested landing tests.*

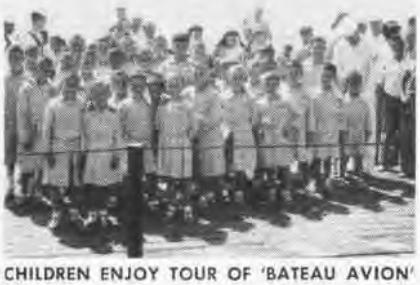
THE BIG ATTACK AIRCRAFT CARRIER, FRANKLIN D. ROOSEVELT, ATTRACTS CROWDS

CVA-42 SPREADS GOOD WILL

MUCH HAS been written about Vice Admiral C. R. "Cat" Brown's U. S. Sixth Fleet describing its fighting potential and its role as a deterrent to aggression in the Middle East and Mediterranean. Less has been said of the Fleet's relations with the citizens of the countries it visits.

Every ship is an ambassador of good will for the United States. Every man is a representative of the United States. What these folks see of the ships and men determines, in great measure, what foreign nations think of the U. S., as to her purpose for sending a fleet as big and as powerful as the U. S. Sixth Fleet to the Mediterranean, and what sort of people live in and come from the U. S.

The aircraft carrier, USS *Franklin D. Roosevelt*, is one of these ambassadors with a crew of more than 3700 junior ambassadors doing its part to maintain friendly relations between America and the free world's people.



CHILDREN ENJOY TOUR OF 'BATEAU AVION'

Since joining the Sixth Fleet in July, the *FDR* has been the object of many curious eyes. It's the fourth largest warship in the world, second only to the *Forrestal* class carrier.

In the two ports visited by the *Roosevelt* since she has been in the Med, her tenth trip to this part of the world, folks have come aboard by the thousands in Cannes, France and Barcelona, Spain.

The school children are the ones most impressed by the big "Bateau Avion," in France or "Porta Avions," in Spain. After the kids have seen the ship, they're taken below to the mess deck where they're served ice cream and cookies, a rare delicacy for most of them.

In Cannes, approximately 2,000 came aboard. In Barcelona, there were 4,000 more.

They were admitted by special invitation from the crew and by cards printed by the ship and issued by the U. S. Consulates in each port. Seven hundred and fifty cards were passed out each day by the U. S. Consulate. Curious sightseers took full advantage of the offer.

Each morning was set aside for organized visits of local schools and orphanages, and in the afternoons, the ships utility and personnel boats were kept busy shuttling general visitors from the fleet landing to the ship.

There were days when the water was rough enough for the liberty parties to wear life jackets on the boats, but this didn't stop one Spanish or French visitor from climbing aboard for a bucking, bounding trip to the ship.

They'll keep coming to see the *Roosevelt* and all the ships of the U. S. Navy that enter their harbors. And the ships will continue their vital role as ambassadors of good will.

Jeep is Lifted by Copter

Special Sling Affords Protection

A sling developed by Marine 2nd Lt. Barker P. Germagian for use in helicopter-lifting of a jeep has been tested satisfactorily at New River.

The lieutenant used a half-inch steel wire to fashion a cargo sling. After several tests to insure proper balance in the sling and chafing protection for the jeep, the lift was made successfully by Maj. W. J. Tebow of HMR(L)-261 in a HUS-1 copter.

Army Gets Cessna YH-41

Evaluation Tests are Scheduled

Cessna Aircraft Company has delivered the first unit of an evaluation quantity of YH-41 helicopters for the U. S. Army. The first YH-41 is scheduled to go to Edwards AF Base in Muroc, Calif., where the Air Force will conduct an engineering evaluation of the machine for the Army.

The helicopter has a maximum gross weight of 3000 pounds and a useful load of 950 pounds. Powered by a 270 hp Continental FSO 526A engine, it has a maximum speed of 124 mph at 8000 feet.

With a cruising speed of 100 to 124 mph, the helicopter has a sea level rate of climb of 1350 feet per minute and a hovering ceiling in ground effect standard conditions of 14,500 feet at 2600 lbs. gross weight.

The Cessna YH-41 has a range of 290 miles and an endurance of 3.8 hours.

LT. A. E. LUSH, USAF, PILOTS COPTER

BLUE ANGELS IN NIAGARA SHOW

NAS NIAGARA *drill team performs precision drill routine prior to start of five-hour air show which thrilled more than 250,000 fans.*

RIBBON CUTTING *dedicates Niagara hangar. Capt. C. H. Amme, RAdm. H. H. Caldwell, VAdm. W. V. Davis, Jr. assist "Miss Navy Wings."*

NAS Niagara Falls, which is located on less than 20 acres of prime flying land and classifies itself as the smallest of the Naval Air Reserve's 27 stations, played host recently to what NAS officials believe was "one of the largest assemblages ever to attend a military air show."

The program, commemorating the 50th anniversary of military aviation and setting the stage for the dedication of Niagara's new Denver-type hangar, attracted more than 250,000 spectators, who witnessed a five-hour air show featuring the *Blue Angels*, and demonstrations by Navy and Air Force combat aircraft.

Pre-show preparations included publication of a 40-page air show program which included articles and photos depicting the latest in the "New Air Navy." Parking arrangements were made with surrounding farm owners to permit the handling of more than 50,000 vehicles. A crash publicity program netted 27 news features, 30 TV and radio spots, 41 live show appearances and was carried to the county fair circuit in order to gain full exploitation of the forthcoming air show.

A bit of tongue-in-cheek advertising was gained through means of a long range weather forecast. Subject of the forecast news release was a station aerographer who predicted three weeks in advance the weather for the big day. The Navy weatherman story, billed as "Al Kotlarz's Fearless Forecast," predicted (successfully) "fair and warm" with the aid of past records and some deft crystal-balling.

Lending official Navy Department prestige to the event were VAdm. William V. Davis, Jr., DCNO(Air); RAdm. Henry H. Caldwell, CNARESTRA; and RAdm. M. E. Miles, Commandant Third Naval District.

In the spectacular statistics department, one of Niagara's acute actuaries disclosed that the huge audience, in addition to drinking in a considerable amount of fabulous flying also consumed two tons of hamburger, four tons of hot dogs, 1500 cases of soft drinks and 6000 ice cream bars.

What really pleased NAS officials however, aside from the tremendous turn-out, was the happy fact that not a single mishap—in the skies or on the highways — marred the observance.

GEORGIA FLAG, *official greetings are delivered to VA-673 CO for California "invasion."*

Confederate 'Wing' Deploys

NAS Atlanta's Attack Squadron 673, otherwise known as the "First Naval Wing of the Confederate Expeditionary Force" (suh!), made its ATD deployment westward more than a routine affair as two-week cruises go.

With a destination of Alameda, California, the squadron's official mission was two weeks of intensive training to further improve its combat readiness as a unit of the Naval Air Reserve.

Unofficially, however, the squadron, skippered by Cdr. Charles C. Gibson of Sandy Springs, was embarked on an "invasion" of the State of California. In keeping with this unofficial concept, the unusual "Wing" designation was handed down by Georgia governor, The Honorable Marvin Griffin, in an official proclamation.

Ammunition for the invasion included an official letter of greetings from Governor Griffin to Governor Knight of California and letter from Mayor W. B. Hartsfield of Atlanta to the Mayors of the three Bay cities, San Francisco, Oakland, and Alameda.

WILLIAM SENSABAUGH, *SD3, rescued Mrs. H. Owensby, children, Otis, Sylvia from dam.*

The invasion force consisted of 16 AD-4NA *Skyraiders* and two R5D's which airlifted 75 enlisted personnel, most of whom are from Atlanta.

Columbus SD3 Saves Three

Two hysterical children in a submerged automobile and a floundering mother interrupted a Columbus TAR's fishing trip; but his heroic rescue of the trio has won for him a recommendation for the Silver Life Saving Medal.

While fishing near Columbus' O'Shaughnessy Dam, William Sensabaugh, SD3, attached to NAS COLUMBUS, observed a car containing two youngsters roll down a nearby bank and sink out of sight. The mother of the children, who had been fishing in the immediate vicinity, jumped into the water and attempted to save the trapped youngsters, but was unable to open the car door and get them out.

Sensabaugh succeeded in rescuing the two children and as he reached high ground the car slipped over a ledge into deeper water, its suction pulling the exhausted mother with it.

Sensabaugh went back into the water and pulled the mother to shore.

For his dramatic rescue, Sensabaugh, whose Naval service dates back to 1943, has been recommended for the Life Saving Medal by Captain Fred Borries, Jr., Commanding Officer of NAS COLUMBUS.

Air Defense Billets

Four Oakland Air Wing Staff 87 officers were indoctrinated recently during a two-week annual training duty period in the responsibilities of the newly-created Air Defense Liaison billets.

The four officers, Commanders S. C. Jackson, D. L. Watts, H. F. Weidman and E. M. Wilson, Jr., commenced their intensive checkout session under the supervision of Cdr. R. H. Thelan, Naval Deputy, 28th Continental Air Defense Division at Hamilton Air Force Base, San Rafael, California. Following detailed briefings on CONAD procedures, the group visited various installations on the west coast to observe operations of air defense machinery.

Implementation of the new billet structure at Oakland is expected to make the organic jet squadrons a potent factor in the Bay Area defense setup.

Dallas Delivers

When members of VR-702 of NAS DALLAS landed at Port Lyautey to begin their annual training duty with VR-24, little did they realize that their personal contacts would range from kings to paupers.

Led by Capt. W. L. Richards, Dallas CO, VR-702 representatives journeyed to Rabat for an audience with King Mohammed V. They presented the king with a Texas hat, a gift from Governor Daniel of the Lone Star state.

While in Rabat, squadron personnel launched "Operation Bluejean" during which they distributed 200 pairs of Texas bluejeans, cowboy boots, undergarments and soda pop to the needy children of the Moroccan city.

In 11 logistical support trips serving the Sixth Fleet, the squadron airlifted 485 passengers a total of 1,061,044 miles; 23 tons of cargo 25,541 ton miles and delivered three tons of mail to Med fleet post offices.

AT WILLOW GROVE, *V. P. Colaluca, TDC, and fiancee, Betty Jane McCoy, TD1, are a team.*

DALLAS WEEKEND *Warriors standby to assist Moroccan youngsters during Operation "Bluejean." Texans distributed boots, clothes, pop.*

CDRS. THELAN, *Watts, Wilson, Weidman listen in as BrigGen. C. B. Low, CO, 28th CONAD Division, briefs Cdr. Jackson on air defense regs.*

LET'S LOOK AT THE RECORD

VF-143 has 78.3% Average

Furies Active on WestPac Cruise

VF-143's FJ-3 *Fury* maintenance crew wrapped up its Western Pacific cruise with an overall maintenance average of 78.3 percent while deployed aboard USS *Hancock*.

The *King Pins* of VF-143 (cover pilots of the month) qualified aboard the *Hancock* in January before deploying to WestPac in April for five and a half months. During the cruise, the squadron's maintenance crews enabled *Fury* pilots to accumulate 1919 flight hours and 1156 arrested landings. Only 17 sorties were cancelled owing to maintenance difficulties.

Under T. L. Settle, ADC, the maintenance crews checked planes thoroughly and regularly.

Squadron officers expressed their appreciation for the high maintenance by presenting each maintenance crewman with a *King Pin* key chain.

It Wasn't EEEEEEEEEEEasy

Philippine Sea Receives 12 Awards

The *Philippine Sea's* block lettering experts have applied the finishing touches to the twelve bright new "E's" now adorning her. Seven months of operation in Hawaii and the Far East culminated in the presentation of the Navy awards for battle and engineering efficiency—the first "E's" the CVS-47 has won.

PROUD CO ACCEPTS 'E' FROM RADM. AHROON

Upon the ship's return to Long Beach from Yokosuka, Japan, RAdm. Thomas A. Ahroon, ComCarDiv 17, presented the bronze plaque for battle efficiency in the fleet support carrier class to Capt. George S. James, Jr., the Commanding Officer, and to his crew. Two days later the red engineering "E" was awarded.

The white "E" appears on the carrier bridge bulwarks; the red "E" adorns the stack. The ten other "E's" decorate the ship's gun mounts and directors, bearing witness to the crack performance of her gunnery teams.

VA-214 Carquals on Hornet

Bravo Fury Landings Total 292

Squadron qualification landings in the Navy's new FJ-4B *Fury* jet fighter bomber have been completed on the USS *Hornet* by VA-214, now returned to NAS MOFFETT FIELD.

VA-214 was the first squadron on the West Coast to be assigned the versatile and speedy, carrrier-based *Bravo Fury*. It was fleet tested at Moffett during early summer.

Pilots of VA-214 accumulated a total of 292 landings aboard the *Hornet* in three and a half days of accident-free operations. Cdr. R. L. Johns, Commander Air Task Group Four was first to make a landing.

NAMTC Pilot Commended

Wrote Text Material in Free Time

Project pilot Lt. W. J. Hickman of the Naval Air Missile Test Center, Point Mugu, has been commended by the Chief of the Bureau of Aeronautics for his contribution to the pilot's handbook on a particular armament control system used at NAMTC and throughout the Navy in connection with *Sparrow* missile firing.

Working with the armament control system, Lt. Hickman found that the pilot's handbook contained little or no information on the subject. He prepared material in his free time and forwarded it to BUAER.

BUAER officials were pleased with the write-up and included it in the next printing of the pilot's handbook.

FIRST "FIRST" *may be a legitimate claim of Lt. Dick Powers, Naval Air Development Unit, NAS South Weymouth after logging unusual ration of day's flight time recently. On left, LCdr. D. R. Richardson, ADC H. F. England assist Powers (center) prior to a.m. balloon ascension to 1800 feet, top speed of 6 knots. Right, after returning unscathed, intrepid airman abandoned balloon basket, donned "G" suit and took F4D on p.m. flight to 40,000 feet, speed Mach 1 plus.*

RADM. R. F. HICKEY, *ComFAirAlameda, accepts William Marshall Herman Trophy won by Ltjg. W. B. Rennie of VA-26 at Naval Air Weapons Meet this year. Trophy will be turned over to VADM. A. M. Pride, ComNavAirPac.*

LCDR. CLOSE AND CHIEF SHEWMAKER INSPECT SUIT STOWAGE

MARINE MAJ. A. McCALEB OF VX-3, FLIES A TRAINER MISSION

LEARNING TO WEAR 'SPACE GEAR'

MAN'S BODY is accustomed to the environment close to sea level where there is an abundance of oxygen and adequate pressure. In the newest naval aircraft, flights are made into the fringe of space where the atmosphere is too thin to sustain the human organism. Pressure suits are issued to pilots to provide protection against death from exposure, decompression and hypoxia which might result from loss of cabin pressure.

It is not enough that suits be manufactured and supplied to aviators. It is essential that the men whose lives depend upon the gear be thoroughly indoctrinated in its correct usage.

The Full Pressure Suit Training Unit of the Medical Department at NAS NORFOLK serves as the important link between maker and user. It tests and issues the latest pressure suits and trains pilots in their use. The unit offers a three-day course of instruction to prospective wearers of the "space gear," under the supervision of LCdr. Perry Close, MSC, and Glen Shewmaker, HMC. Pilots are taught the rigging of the suits and the operation of the oxygen pressurization and ventilation apparatus. They are given physiology lectures. Finally, the aviators test the outfits in the ejection seat, in the Link trainer and in the low pressure chamber at 40,000 feet.

The current omni-environmental full pressure suit is more comfortable and mobile than earlier models. The suit takes over automatically if cabin pressure is lost. It is equipped to offer relief from temperature extremes, and has its own supply of oxygen for breathing and suit pressure in case of bail-out. While this is the latest word it is by no means the last. As aviation progresses, scientists, medical men and engineers will continue to improve and perfect pressure suits.

CDR. PAUL MILLER, VX-3, 'MAKES THE FACE CURTAIN REACH' PRIOR TO EJECTION

AT END OF TEST MILLER SAID, 'I'M SOLD'

Memento at End of Course

The Last AD Class Has Been Held

The custom for classes graduating from the Fleet Air Gunnery Unit (Pacific) Course has been for each to leave some symbol of the class in the ready room.

Class 5-57, which completed the course August 1, upheld the tradition. Since this class was the last one which would study a syllabus for the AD aircraft, they presented FAGU with a plaque which showed the tail of an AD as it disappeared into a lightning streaked bullseye, the FAGU emblem. The inscription read: "Class 5-57, Tail End of the AD's." On either side of the AD are models of the F9F-8 and FJ-3 fighters.

Cdr. Ross A. Knight, skipper of FAGU, accepted the "trophy" from Maj. George C. Henshaw, USMC, senior member of the last AD class.

HENSHAW PRESENTS SYMBOL TO KNIGHT

Primary mission of FAGU is to conduct air-to-air and air-to-ground gunnery training in fleet type aircraft and armament control systems. The AD portion of the air-to-ground course is being replaced by one for the FJ-4B aircraft in Class 6-57.

BuAer Gives Research Sum

High Temperature Material Studied

The Bureau of Aeronautics has awarded a research and development contract of over $21,000 to Rensselaer Polytechnic Institute, Troy, New York. Investigation of niobium base materials for possible applications in gas turbines and jet engines will be conducted under Dr. F. V. Lenel, Department of Metallurgical Engineering.

Niobium, also known as columbium, has long been considered a high temperature metal. Study of the element was restricted by the limited supply from the main source in Africa. The recent discovery of sizable deposits on the North American continent now permits extensive experimentation.

Tender Visits Nha Trang

Pine Island Crew Treats Orphans

USS *Pine Island* (AV-12) recently became the first Navy ship to make a goodwill visit to Nha Trang, Vietnam, in more than three years.

The 14,000-ton tender, commanded by Capt. William L. Dawson and flagship of RAdm. Paul D. Stroop, Commander Taiwan Patrol Force Pacific, was visited by 1000 Vietnamese during the three-day visit.

A party was held for 1000 children from two orphanages in Nha Trang.

ORPHANS GET MONEY FROM RADM. STROOP

After touring the ship, the children were shown animated cartoons, then treated to ice cream and cookies. Money donated by crewmen was presented to two Vietnamese orphanages.

Buddy Training Plan Used

Midway Sailors Drill on PhilSea

USS *Philippine Sea* steamed into San Diego in September to embark 559 members of USS *Midway's* pre-commissioning crew for an unusual training technique.

Each member of the *Midway* crew was assigned a department, division and a "buddy" from the *PhilSea.* Buddies were of comparable rate and duty assignment. Thus each *Midway* crewman learned what will be expected of him during all future drills and exercises.

VP-5 Honored in Iceland

Returns to Jax After Deployment

Patrol Squadron Five has returned to NAS JACKSONVILLE, its home port, after completing a successful deployment in Iceland. On its departure from Keflavik the squadron was accorded the distinction of being honored by a military review of NATO Army, Navy and Air Force units at Keflavik's International Airport.

All three components of the Iceland Defense Force were inspected by BGen. H. G. Thorne, Jr., USAF, Commander Iceland Defense Forces, and Cdr. E. E. Coonrod, CO of VP-5.

In a review following the inspection, U. S. Army, Navy and Air Force personnel marched to music provided by the Air Force band. Army tanks, field artillery pieces and other mobile units participated and the review ended with a low-level formation flyover by *Neptunes* of VP-5 and F-89D *Scorpion* jet fighters of the Air Force.

Marlin Landing at AF Site

Crew Safe after Harrowing Hop

A Martin *Marlin* of VP-50 made an emergency landing at an U. S. Air Force radar site south of Kyushu when one of the engines failed and weather did not permit return to Iwakuni.

The *Marlin*, piloted by Ltjg. J. R. Peckham and Ltjg. D. R. Sandlian, lost the starboard engine while on a routine patrol mission. After the proper emergency procedures were executed and flying times estimated, the crew settled down to ditching stations while the aircraft flew at 500 feet through rain clouds.

The navigators, Ltjgs. R. T. Carr and C. R. Pope, with the help of radar operators R. T. Davis, AT3, and L. C. Lambie, AM1, steered the aircraft around mountains nearly 6000 feet high in some places. Two hours of playing a deadly game of dodge elapsed before they contacted the radar site.

They landed at the site because the weather was reasonably clear there. The crew was welcomed by the Air Force while relief and repair crew with parts were sent from Iwakuni.

Personnel at the AF radar site cooperated to turn a possible disaster into a well handled emergency.

PILOT MAKES 'NO-HANDS' LANDING

SKYNIGHT NEARS CARRIER, ACLS LOCKS IN FOR THE APPROACH

CAPT. THORN, BELL PREXY FANEUF, ON BRIDGE OF ANTIETAM

OBSERVERS ABOARD USS *Antietam* in August saw the first "no hands" carrier landing in history when Cdr. Don Walker of the Naval Air Test Center landed a Douglas F3D *Skynight* fighter with his hands off the controls. The landing was made by a system combining radio and radar.

Built by Bell Aircraft under a BUSHIPS contract, the Automatic Carrier Landing System (ACLS) takes over from the pilot while the airplane is still some distance from touchdown on an airport runway or carrier deck and brings the plane in for a safe landing. It was developed for use when normal flight operations are suspended because of dense fog or other unfavorable weather conditions.

Radar locates the airplane and determines its altitude and location in relation to the carrier's deck. Then an electronic computer sends necessary course corrections to an automatic pilot which directs the airplane into the desired flight path. When the system "locks on," the pilot relinquishes control and rides into touchdown as an idle passenger.

PILOT IDLE, F3D NEARS FLIGHT DECK IN PERFECT APPROACH

PILOT'S HANDS ARE STILL FREE OF CONTROLS ON TOUCHDOWN

PILOT TAXIES PAST GUIDANCE AND CONTROL UNITS AT RIGHT

NEW RADOME UNDERGOES TEST

A RADAR INSTALLATION that resembles a rubber ball within a rubber ball, and stands 70 feet wide and 65 feet above the ground, is being tested and evaluated by Marine Air Control Squadron Six at MCAS CHERRY POINT for the Marine Corps Equipment Board, Quantico.

Called "Radome," the installation is constructed of neoprene-coated nylon and can be divided into 12 sections for rapid delivery by aircraft. The spherical structure is anchored directly to the ground.

Compressed air supplied by two blowers inside the sphere is the only means of support for the installation. It maintains a pressure of 4.5 inches above atmospheric pressure.

If the sphere is punctured under combat conditions, it can be repaired easily by placing patch material over the exposed area. Interior pressure holds the patch material securely in place.

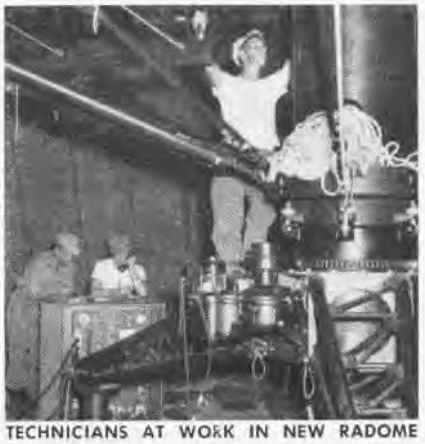
The Radome houses a special "paraballoon antenna" developed and built by Westinghouse. The antenna is made of vinyl coated fiberglass. The outer rim of the special antenna is constructed like that of an automobile inner tube and is inflated to maintain its hemispherical shape. It rotates within the Radome, clearing the sides and top of the outer shell by approximately two feet.

In tests, the Radome withstood small arms fire up to and including 4.5 inch rockets. It retained its shape under these blasts.

The Radome antenna was designed with a view to obtaining an antenna with greater range and protection from the elements. Owing to its greater size, this antenna realizes a longer range than conventional antennas now in use. A conventional antenna of this size would be ineffective when exposed to the elements, but the new type antenna is completely encased within the Radome and is protected from all elements. It can withstand winds up to 90 knots.

The 70-foot-wide, 65-foot-high unit can be deflated for transport by air. Its 12 component parts can be carried easily by the crew.

Key personnel involved in the testing and maintenance of the project are Capt. H. R. Davis and Technical Sgt. J. W. White from the Equipment Board; Capt. C. D. Holcroft and Staff Sgt. R. E. Wisham of MCAS-6, and Westinghouse Corporation engineers.



TECHNICIANS AT WORK IN NEW RADOME

Firebee Sets New Record

Pilotless Drone Flies 35 Minutes

A production model Ryan KDA *Firebee* drone has set a new endurance record, flying a full pilotless 35 minutes at NAS CHINCOTEAGUE. It was the first *Firebee* flight to be launched on the East Coast. The previous record was 21 minutes, set on the West Coast.

Firebee was introduced to the Atlantic Fleet by Utility Squadron Four.

A JD-1D target tow plane, modified to carry the *Firebee*, took off with the drone nestled under its wing. When the JD reached launch altitude, three Grumman F9F-6 *Cougars* took off to rendezvous with it.

The *Firebee's* 1000-pound-thrust Fairchild J-44 engine was started, and moments later, the drone was dropped from the mother plane to be controlled by the *Cougars* in its flight.

As the drone neared the water its parachute opened, and the *Firebee* dropped lightly into the sea where it was picked up by a waiting ship and returned to VU-4's maintenance crew.

RYAN DEVELOPED TARGET FOR TRAINING

AF Uses New Radar Beacon

Refueler is Pinpointed in Flight

A high powered radar beacon, now being produced in volume for the Strategic Air Command by the Sperry Gyroscope Company, makes it possible for airplanes to rendezvous with flying tankers day or night in any kind of weather. The system's long range enables squadrons of planes to pinpoint the exact location of scheduled tanker planes from hundreds of miles away.

In air-to-air operations the beacon is installed in a designated rendezvous aircraft. Other aircraft wishing to "home" on the beacon use interrogating radar to send out pulses of a specific type to trigger the beacon. In response to the proper interrogation signal, the beacon transmits a coded reply. The operator of the interrogating radar is thereby able to identify the beacon-equipped aircraft, as well as to determine its exact range and bearing.

Beacon designation is AN/APN-69.

Electron Tube Developed

Improved Radar Defense Expected

Development of a new electron tube designed to increase the power in the nation's vital radar defense networks has been announced. The new tube, called the "amplitron," combines the best features of existing radar boosters and also doubles their efficiency.

The tube makes possible lighter, more compact and versatile radar sets. It was developed by the Army Signal Engineering Laboratories at Fort Monmouth and the Raytheon Maufacturing Company.

The 10-pound amplitron works on the same principles as an ordinary TV and radio tube, but it has a different appearance. Encased in a disc-shaped metal case, it has power connections projecting from its edges.

Sailor Saved By 'Copter

Lifted From Shark-infested Water

A young sailor's helicopter rescue from shark-infested waters highlighted a recent midshipman training cruise in the South Atlantic.

William T. Young, fire control technician third class aboard the Destroyer *Damato*, was yanked into the sea off South America when his foot became snared in a replenishing net as he helped unload supplies.

Young, wearing a life jacket, bobbed on the water's surface in the swirling wakes of the *Damato*, the nearby tactical command craft USS *Northampton* and the store ship USS *Hyades*.

A Navy utility Bell HUL-1 helicopter landed on the *Northampton's* deck about the time Young was pulled overboard.

Hearing the alarm, Helicopter Pilot Edward L. Ransdell, ADC, and Quentin L. Staton, AD2, took off in the HUL-1.

While the helicopter hovered over the floating sailor, Staton operated the power-driven hoist. A line was lowered to Young, and he was pulled swiftly into the helicopter cabin.

The helicopter returned to the *Northampton*, where examination showed Young free of injury. The entire rescue operation was over in a few minutes. After a rest and change into dry gear Young was returned to the *Damato*.

The rescue was the first by an HUL-1 since the Bell helicopter went into fleet service less than a year ago.

BuOrd Ballistics Research

New Speed of 12,000 MPH Reached

Missiles that travel 12,000 mph are being fired from a two-stage hypervelocity gun recently developed in the Ballistics Department of the U. S. Naval Ordnance Laboratory, Silver Spring, Md.

By using a special nylon sphere as the test projectile, scientists are calculating that the two-stage gun will propel its missile at a velocity in excess of 18,000 feet per second. The test gun being used is a scale model of a four-inch gun under construction.

It was first designed by Dr. Z. I. Slawsky and Dr. A. E. Seigel and then engineered by V. C. D. Dawson.

WATCHERS OF TORNADO ALLEY

EACH YEAR between the months of February and October, the Air Force weathermen assigned to the Severe Weather Warning Center in Kansas City, Missouri, have their eyes focused on the broad plains area between the Rockies and the Appalachians, aptly designated "Tornado Alley." Although tornadoes have been reported in every state in the union, the plains states are the country's most productive tornado factory.

SWWC is officially designated as Detachment 25 of the 6th Weather Squadron (Mobile). It is a specifically tailored warning system for the military. The center is co-located with the U. S. Weather Bureau's Severe Local Storms Unit which provides a similar service to the general public. The two organizations cooperate closely.

The job of SWWC is to fit together the pieces of the giant puzzle of the weather complex over the United States in a search for possible severe weather. Of particular concern is local weather associated with thunderstorms —high winds, hail storms and tornadoes. When the pieces of the puzzle, fitted together on the weather map, indicate such disturbances, an advisory forecast is sent out over the weather teletype to military installations.

These advisories include the type of weather predicted, maximum expected speed of wind gusts, the amount and height of turbulence, the size of hail, the geographic boundaries of the area expected to be effected and the inclusive times of the forecast. On the receiving end the information is interpreted in terms of local conditions. If a storm seems imminent, all possible actions are taken to protect property and the lives of personnel.

In the course of meteorological study, it has been noted that three factors are prominent prior to the formation of a tornado: warm, moist air from the Gulf of Mexico (near the earth's surface); a strong, drier westerly flow of air from the Rockies (above the moist layer); an additional band of strong winds also from a westerly direction (between 10,000 and 20,000 ft.). The combination of these three conditions might indicate tornadic weather. Detection of these elements requires the information received from upper-air soundings recorded at rawinsonde observation sites. Between February and May, severe weather is most likely to be found in the southern portion of "Tornado Alley," between Texas and Tennessee. As the season progresses it moves generally northward. The rawinsonde sites are also moved.

In order to increase the accuracy of prediction, personnel attached to the Severe Weather Warning Center continue to plot and study data from "Tornado Alley." Their aim is to learn more about the traits of destructive storms so that the storms may be pinpointed to relatively small geographical areas in time for adequate warning.

DELTA DART, *Air Force F-106A interceptor, flies over the Mojave Desert in California. The supersonic, delta-wing, all-weather plane has been undergoing flight tests at Edwards AF Base. First production models are being flown for use in further tests. The Delta Dart, which is equipped with advanced fire control system and armament, is capable of stratospheric altitudes.*

LETTERS

SIRS:

Your article entitled "39-Year Vet Ships for 6" on p. 29 of the September 1957 issue of NANEWS states that he had served on board the USS *Saratoga* which "was sunk off Guadalcanal."

As I served on board the USS *Enterprise*, CV-6, from September 1942 to December 1944 and was present during the battles, both surface and air, that took place around Guadalcanal, I do not believe the USS *Saratoga* was even present.

Further checking has determined that the *Saratoga* was used as one of the target ships during the atomic tests in the Pacific.

G. C. FISCHER, YN2

¶ Strictly a matter of opinion. The *Sara* was sunk quite a distance off Guadalcanal—1260 nautical miles to be exact—during the Bikini A-bomb tests. However, if you want to split hairs. . . .

SIRS:

The article, *Accent on Pilot Maintenance*, in the September 1957 issue says, "In a jet aircraft, a mere 2° nose-down altitude can result in a 1000-foot loss of altitude in two-tenths of a second."

A few calculations indicated that the above mentioned aircraft would have to have a true air speed of 84,700 knots to perform the above manuever.

LT. USNR

SIRS:

The forward velocity of the jet is approximately 85,000 knots. I am anxiously awaiting the delivery of these aircraft to the reserve squadrons.

LT. USNR

¶ It seemed obvious, at first, that the reason for the error in the article on pilot maintenance was that the doctor had figured the whole thing out using a sphygmomanometer and an ophthalmoscope instead of a slide rule and the sine tables. However, investigation revealed that he was the victim of bad dope or sheer misunderstanding in a conference with an aerodynamicist. Hats off to you sharpies!

HUS Lifts 'Grasshopper'

Plane is Undamaged After Flight

Two veteran aviators made what is believed to be the first helicopter pickup of a fully assembled aircraft by Marines at MCAF NEW RIVER, N. C. in August. By doing so, they proved the feasibility of heli-lifting such aircraft aboard a carrier when the carrier decks are too crowded with other planes to permit landings by tailhook-less "grasshoppers."

COPTER LIFTS MARINE OBSERVATION PLANE

Flying a Sikorsky HUS helicopter, they lifted a small Marine observation plane from the ground and flew it suspended below for approximately a mile before returning to the starting point.

In lifting the plane, Majors William J. Tebow and Samuel F. Martin attached their standard lifting device to a rig that was designed by two Marine Corps Air Facility officers.

The designers, Capt. Donald L. Ives of VMO-1, and 2nd Lt. B. P. Germagian of MAG-26, got their ideas from pictures of previous lifts of disabled aircraft by Army pilots.

The plane swayed slightly after the ropes were pulled free but straightened itself out when the helicopter gained forward momentum. No assistance was needed in setting the plane down; hook automatically disengaged.

Japan Air Power Has 989 Aircraft

Japan possesses a total of 989 aircraft according to figures of August 1 as announced by the Japanese Defense Agency, 16 more than there were the previous month.

The 989 aircraft are allocated as follows: to Air Self-Defense Force, 658; to Ground Self-Defense Force, 232; and to the Maritime Self Defense Force, a total of ninety-nine aircraft.

CONTENTS

● COVER

The North American "Furies" of VF-143's "Kingpins" strike a perfect tenpin formation while flying from the USS Hancock. Flight is being led by Cdr. V. F. Kelly.

● CREDITS

Bennett J. Mintz, JO3, wrote the article on the USS *Bon Homme Richard*, page 16; and Aaron G. Clark, JO3, the article on the USS *Franklin D. Roosevelt* on page 31.

● SUBSCRIPTIONS

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● THE STAFF

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

Cdr. George F. Rodgers
Editor

Izetta Winter Robb
Managing Editor

Lt. Barbara Sullivan
Joseph E. Oglesby, JOC
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Contributing Editors

James M. Springer
Art Director

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SQUADRON INSIGNIA

November's heraldry includes two Naval Air Reserve Activities, a utility and a helicopter ASW squadron. The name and training mission of NAS Columbus are symbolized by the Santa Maria in full sail and Navy wings of gold. A falcon carrying an aerial rocket against a gunsight and tow target represents the activities of VU-2. The dipping sonar is held by a winged hand on HS-8's insigne, and spikes on the sonar dome depict destruction capability. The simplicity of the Washington Monument represents NARTU Anacostia in Nation's Capital.

NAS COLUMBUS

VU-2

HS-8

NARTU ANACOSTIA

THIS MAN HAS A MAJOR MISSION

NAVAL AVIATION
NEWS

DEFENSE IS A MATTER OF DOING. Young men like Rollin A. Keck, who are members of the United States Naval Air Reserve, are committed to a program that safeguards their country. A telephone installer in civilian life, Keck is a member of the reserve unit at the Naval Air Station, Los Alamitos, Calif. He is a typical reservist, ready to serve in his daily work and ready to serve in a national emergency. This citizen-airman keeps in training throughout the year. If you, too, want to be a man with a mission, join your U. S. Naval Air Reserve today.