

NAVAL AVIATION

NEWS



8

41st Year of Publication

SEPTEMBER 1960

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BIRDSEYE VIEW OF BUSY BERTH

It takes 4000 men about three and one-half years to create a carrier the size of USS Constellation (CVA-64) shown being built at the New York Naval Shipyard. When this picture was taken some 46,000 tons of steel, 175,000 gallons of paint and almost 3 million feet of electrical cable had been used in her partial construction. One of the first U.S. carriers to feature all-missile defensive armament, the Constellation will displace 75,000 tons when completed.



NAVAL AVIATION NEWS

FORTY-FIRST YEAR OF PUBLICATION, SEPTEMBER 1960

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■ COVERS

A clear flight deck ahead for this F4D and an unnamed photog captures a classic view of the start of a carrier approach while an "angel" hovers to starboard of the USS Essex. Back cover was contributed by Iwakuni.

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NAVAL AVIATION NEWS

Blood Flows From Hancock Half of Crew Gives to Foundation

In a farewell gesture before departing the Bay Area for a tour with the Seventh Fleet, half of USS *Hancock's* crewmen volunteered en masse to donate blood to the National Hemophilia Foundation.

It was the second time in two years that *Hancock's* crewmen responded to the foundation's appeal for blood.

For Thomas Turpin, HMC, the donation marked a milestone. The pint he gave raised his total to 70 pints, given during the past twenty years.



NAVY BLUE ANGELS stage demonstration for 600 NROTC Midshipmen from 25 colleges and universities at NAS Corpus Christi. The Angels used a "V" rather than their usual Diamond formation during demonstration.

Navy G-Suit Saves Woman Pilot's Gear Adapted for Sickroom

Two Miramar sailors rigged a pilot's G-suit with an oxygen regulator to save a woman's life after childbirth.

Officials at Mercy Hospital in San Diego called Capt. N.A. Campbell at the air station, requesting the G-suit. Jerry W. Knudson, HM3, and Jack L. Adkins, PR1, rigged the suit and adapted aircraft fittings for use at the woman's bedside.

"It appears the G-suit may have been the difference between the pa-

tient's life and death," her doctor said. She wore the suit six hours.

The woman had lapsed into severe shock from loss of blood. Earlier efforts to save her had included giving her 18 pints of blood, fluid, and drugs. The G-suit was a last resort.

The G-suit was put on the woman, and oxygen was released inside the suit to build up pressure in three pressure bladders—one at the waist, another at the thighs, and a third at the legs. The pressure brought the patient out of shock by preventing the pooling of blood in her lower extremities.

Skyhawk Contract Given Improved A4D Increases Range

A contract to build an improved version of the Navy's A4D *Skyhawk* has been awarded the Douglas Aircraft Company's El Segundo Division.

Designated the A4D-5, the improved *Skyhawk* will have increased payload and range capabilities over the A4D-2N version now operational with the fleet.

Powered by the lighter and more

powerful P&W J-52 jet engine, the A4D-5 is designed to deliver the same payload as the earlier configuration with a 27% increase in range.

The A4D contains the rocket-catalyzed ejection seat recently approved by the Navy for the *Skyhawks* and replacement of older seats in planes already delivered to units in the fleet.

Named 'Best' for 3rd Time Ltjg. Wendelen Sets VT-3 Record

Ltjg. Hilding Wendelen has been selected Instructor of the Month in VT-3 for the third time this year. He teaches formation tactics.

The award is based on a point system with points given for syllabus hops flown during the month, number of flight lectures given, standardization grades given by a check instructor, and for each time the instructor is mentioned on student critique sheets.

Ltjg. Wendelen enlisted in 1956, was accepted into the flight program after boots at Bainbridge, and was designated a Naval Aviator in 1959.



THE OLDEST CARRIER on active duty did it! The aircraft carrier, USS *Essex*, set a new combat carrier record of 98,550 arrested landings as the ship's commanding officer (left) landed an S2F *Tracker* on the *Essex* flight deck. Capt. Richard L. Fowler USN, made the flight which surpassed by one the World War II aircraft carrier *Saratoga's* record, set 14 years ago before the old *Saratoga* was sunk by the United States in atomic bomb tests off Bikini Atoll.





WHEN THE USS HANCOCK arrived in the Far East for its latest duty with the U. S. Seventh Fleet, it carried 70 tons of clothing, food and medical supplies to be given to Hong Kong's destitute escapees from Red China. Part of Operation Handclasp, the major portion of the cargo came from Chinese Americans of San Francisco's China-



town. Since 1948, Navy ships have carried over a million tons of goods—250,000 tons thus far in 1960—to Hong Kong for distribution by Catholic and Protestant missionaries. Above, left, Capt. Fred Bakutis, Hancock skipper, accepts donation during kick-off of drive 12 May. Right, crewmen finish final loading of Handclasp cargo.

U.S.-Canada Train in ASW Kearsarge, Bennington Main Ships

United States First Fleet units joined Royal Canadian forces for an anti-submarine warfare exercise off the west coast of the U.S. and Canada in July and August.

VAdm. Charles L. Melson, Commander First Fleet, was in command. Two ASW groups headed by the carriers *Kearsarge* and *Bennington* joined six RCN destroyer escorts and a supporting logistics force to provide the surface participation in the exercise.

Patrol and ASW air squadrons located at Whidbey Islands, Alameda, and North Islands, and a Canadian anti-submarine unit bolstered the air arm.

Word Passed on Purple K New Chemical Reaches Stations

Complete instructions on the use of Purple K fire fighting powder have been published in BUWEPS Instruction 11320.2.

Purple K is the new non-toxic dry chemical which is twice as efficient as the older sodium-based dry chemical powders. It can be used interchangeably with C-D-C dry powder from identical extinguishers.

The new chemical, discovered last year, does not destroy protective foam used on aircraft fires.

It does not cause the "orange-ball-flare" usually associated with older dry extinguishers. A cool, light-purple

flame is developed when Purple K reaches the fire; and flame extinction is immediate. The fuel surface resists re-flash longer and men can advance toward the fire with a greater degree of safety than formerly.

Purple K can be used for slender "finger fires" in or around a foam cover applied by the MB series aircraft fire fighting and rescue trucks and it has been highly recommended for delivery to areas of fires by helicopters.

Re-enlists Above Fujiyama Takes Oath at Better than 40,000

A new record, of sorts, was claimed by VAH-4 when Jess Heaton, AQ1,

a heavy attack crewman, was re-enlisted in the Navy while flying at more than 40,000 feet above Mount Fuji, Japan, in an A3D *Skywarrior*.

Heaton, a Gunner Navigator, is on deployment with VAH-4's Detachment November aboard *USS Ticonderoga* in the Seventh Fleet.

LCdr. M. W. "Red" Rumble, pilot of the aircraft, handled the shipping over ceremony, with Ltjg. Bob Hager, Bombardier/Navigator, acting as official witness for the event.

The Rumble-Hager-Heaton crew has been in the news before. The trio finished as the #1 heavy bomber crew in the 1959 Naval Air Weapons Meet.



EXPERIMENTAL Multiple Bomb Rack, which has been evaluated at NATC Patuxent River, is displayed on an A4D of VMA-225 at Cherry Point. Three multiple racks may be suspended from A4D type aircraft. Each rack can carry six 500-lb. bombs or 12 250-lb. bombs.



GRAMPAW PETTIBONE

FOLLOW ME MEN

A flight of two HRS-3 helos departed its home field on a scheduled flight to the island of Kauai, a total of 115 miles distant and 82 miles overwater from the island of Oahu.

All emergency equipment carried in the helos for the overwater hop had been checked and emergency procedures reviewed prior to departure.

They departed Kaena Point at about 0810 (no one kept a log and estimates varied) and headed out to sea on a heading of 300° , cruising at 1500 feet. The weather was good, with excellent visibility and scattered clouds. As they progressed, the forecasted scattered rain showers appeared and increased in number. Visibility dropped to one to three miles. A strong crosswind from the right gave the two aircraft an estimated 10° left drift and heading was corrected to compensate for it. The LF/MDF was turned on and an attempt made to pick up an aural null on the Port Allen homer. There was too much static, although it came in loud and clear on the antenna position. The ARA-25 UHF/ADF was tuned to the LIHUE Omni station frequency but they were obviously out of range and so continued on course.

At about 0930 the flight leader decided they were south of Kauai Island and turned to a heading of 030° . The other HRS blindly followed. They were now well past a reasonable ETA.

Unsuccessful attempts were made to call LIHUE Omni on button 16 UHF. This was marked on the frequency card as 257.8, civil control towers. Lihue does not guard this channel. None of the four pilots checked the RADFACS for the proper frequency.

Finally the flight leader switched to UHF Guard channel and broadcast a request for a "radio check" with any aircraft in hearing range. A Coast Guard RSD, airborne over Oahu, heard their call, ascertained their trouble,



alerted the SAR units and, taking UHF/DF bearings on the helo transmissions, proceeded in their direction. Within a few minutes the Coast Guard aircraft determined their position to be north or east of Kauai and directed the helos to take up a course of 250° magnetic. By 1015 it was determined that they were 70 miles due north of Kauai and they were directed to take a course of 180° magnetic. Visual contact was established

in a short time and a total of five SAR aircraft were soon circling overhead. Help was requested too late however, for the two HRS-3s were forced by imminent fuel exhaustion to ditch just 20 miles north of the Kauai coast in 1900 fathoms of water. Rafts and equipment were dropped by the SAR aircraft and within an hour rescue helicopters arrived to pick up all hands.

Investigation after the accident revealed: There was absolutely no pre-flight planning by any of the four pilots involved.

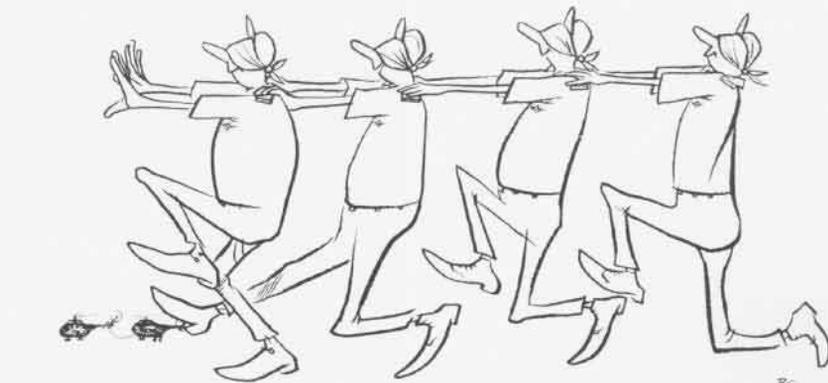
The only navigation publication utilized was the Radio Facility Chart.

No WAC, strip, or other type charts were used, and none of the pilots had a navigation computer.

There was no DR plot or inflight log maintained at any time.

The DD175 was not signed by the flight leader and only one pilot attended the weather briefing. This was not the flight leader.

The DD175 stated the helos had 4 plus 30 fuel aboard. One ditched after 3 plus 23 hrs and the other after



The Blind leading the Blind!

3 plus 56. At no time did any of the pilots actually measure the distance from coast to coast, and no base course, drift correction, or ETA of landfall was computed. Not one of the pilots could offer a definite time that they expected to reach land. Their intentions and instructions were simply to "follow the leader."



Grampaw Pettibone says:

Jumpin' Jupiter! These guys must of had their brains purged out! Kinda reminds me of the pilot who preferred the oil company road maps. There's enough instructions published by CNO and all the Fleet commands on the duties of a flight leader and each pilot's individual responsibilities for flight planning and navigation to darn near pave the route these dodos attempted to travel.

They had PLENTY of radio navigation equipment aboard the HRS-3s. Course its just CARGO if you don't use it!

Their life insurance companies have a bunch of bad risks on their hands.

*Good men are hard to find.
When leaving the chocks,
don't shot peen your line man!*

Pistol Packin' Pilot

Soon after a night catapult launch and just under a 2000-foot broken cloud layer, an A4D pilot was forced to eject when his aircraft went into what appeared to be uncontrollable left rolls. Because of the low altitude there had been little time to try much in the way of recovery measures and no "Mayday" call had been made.

The seat and 'chute worked perfectly but as he swung in the harness while descending he began to worry about no one knowing of his ejection. Deciding to signal before the ships went by, he pulled his unloaded .38 cal. pistol from his shoulder holster, removed his gloves and put them in his G-suit pocket. He was attempting to load the pistol in the darkness when he suddenly realized the water was getting pretty close. Shoving the pistol back in the holster, he stuck the cartridge in his mouth, grabbed the rocket jet fasteners on each parachute riser and hit the water almost immediately.

He was able to release the right fastener, but not the left, and since there was a 30-knot wind, he found himself being dragged through seven-foot

waves on his back. He swallowed some salt water and was beginning to panic when he finally got the left riser fastener to release. After taking a few quick gulps of air and inflating his MK3C life vest, he followed his life raft lanyard down to the inflation bottle. There was no toggle on the bottle, so he

the pilot loaded the remaining empty chamber and fired his pistol once again. Alert look-outs on the destroyer spotted the tracer. As the ship heeled over in a fast turn, the now weary pilot decided not to take any more chances, put away his pistol and fired a flare from his life vest. The destroyer came



raised the aluminum lever, and the raft, to his immense relief, started to inflate. Although it only partially inflated, he decided to climb in anyway.

Something was wrapped around his legs, and he was forced to cut himself free with his survival knife. He then climbed into the raft and inflated it with the oral inflation tube!

Still working hard at survival, he loaded five rounds in his pistol and fired them off at about two minute intervals.

Seeing a destroyer heading his way, he started to reload, but was unable to eject the expended cartridges from the cylinder. Looking up, he noted that the rescue vessel was closing at a startlingly high rate of speed. Fortunately, he put the pistol back in the holster and decided to await a more opportune time to reload, for the destroyed went roaring by at about two feet and flipped pilot, raft, and all, end over end!

After struggling back into the raft,

alongside, one of the ship's officers dove into the heavy seas with a line and he was helped aboard, safe at last.



Grampaw Pettibone says:

Sufferin' catfish! This feller really had a pistol fixation, but it DID save his bacon! Dozens of people saw the tracers, but he was firing them at such an angle no one really pinpointed him.

The survival equipment officer in this squadron better get with it! The .38 cartridges were corroded, hence wouldn't eject, the raft had no toggle, and the pilot obviously hadn't had enough "dry runs" on use of his survival gear. There are some procedures you MUST follow prior to water entry if you're gonna have a chance at survival. You've got to KNOW your survival gear to use it properly!

Ever try blowing up a life raft by the oral inflation tube while you're sitting in it? It's a killer, believe me!



HUGHES XHS-1 Hydrostreak skims over water on cushion of air. Two skegs, one on either side of hull, and a waterwall at each Fan in center forces air into a chamber underneath the craft. end trap air to form the cushion. The propeller increases speed.

REPORT ON GROUND EFFECT MACHINES

SO MUCH emphasis has been placed on missilery and space vehicles in recent years that a revolutionary new concept in weapons, transportation and logistics has almost escaped public attention. The concept is Ground Effect Machines or GEMs.

GEMs fly but they are not airplanes; they float but are not ships; they travel overland but are not trucks. Yet they combine some of the better properties of all three.

Still in the "dream" stage, GEMs seem likely in the reasonable future to replace conventional aircraft, surface craft and land vehicles in several significant functions. They are not touted as "cure-all" machines which will make aircraft, surface ships and land vehicles obsolete, but the best informed Navy sources feel confident that they will satisfy vital needs in fringe areas.

To bring you this report on GEMs, Naval Aviation News interviewed peo-

ple closest to the subject in the Bureau of Naval Weapons, the Bureau of Ships and the Office of Naval Research.

What are GEMs?

A Ground Effect Machine is basically a surface vehicle which operates very close to the earth's surface, either land or water. It rides on a cushion or bubble of air and never touches the surface except when it is at rest (exceptions will be described). Since the GEM's ground friction is considerably less than that of conventional surface vehicles, the GEM must depend on aerodynamic forces for propulsion and control (again with exceptions).

GEMs follow several basic design principles and each principle has enough variations to account for the great variety of vehicle shapes now being studied.

The *Levafad* is merely a flat disc with a hole in the middle. Air is taken in and pumped down through

the hole to the base plate where it leaks out continually around the edges. Once separated from the ground, the vehicle floats on the cushion of escaping air. This system can be made practical only for extremely small heights above a surface and with relatively high air supply pressures.

The *Plenum Chamber* is nothing more than a powered upside-down bath tub. Air is taken in and ejected downward by a fan into a plenum (bell shape with small top and flared out bottom) and exhausted out the bottom. A pressure bubble is created, and the continued flow of air maintains the bubble.

The *Annular Jet* is essentially a Plenum Chamber with a base plate and guide vane. Air or water is taken in, and by use of a relatively low pressure ratio, it is pumped downward and discharged from an annular jet at various angles and with various jet thick-

nesses. The David Taylor Model Basin's Aerodynamics Laboratory has been most active in this field and has performed many of the significant theoretical and experimental studies.

While the annular jet principle would permit a GEM to "fly" above land or water, one version has been modified to form a hydroskimmer with runners or skegs which never leave the water. Such a configuration was demonstrated by Hughes in Washington this summer for the Bureau of Ships. The skegs or runners provide greater stability and economy, but they increase friction and tend to limit the vehicle's ultimate speed. Further water contact was made by a water propeller used to increase the vehicle's speed.

The *Ram Wing* principle is one of

more economically than a conventional ship or helicopter, and with a much less highly trained operator. Ultimately an ASW GEM might even be remotely operated. In another ASW theory, the GEM would have an area of search responsibility. It would hover or land in one area, then take off and change stations until the area is completely searched.

For assault operations, perfected GEMs could deliver troops and combat equipment either to conventional ships or large GEM-type ships at the port of embarkation, then be loaded themselves aboard the larger ships for transport to the area of operations. With the assault task force some 50 to 100 miles from the land objective, GEMs could race in at much greater speeds

in direct proportion to their size or area.

Some far-sighted scientists are blessed with such imagination that they foresee GEMs being used as huge aircraft carriers and even as missile launchers in the future.

What is the state of the art?

One authority said: "We are in the same stage of development with GEMs today as we were with the airplane in 1909. The choice of configurations is still to be determined."

Another said: "What we need right now is another year of *arithmetic* to prove and disprove some theories, rather than a lot of hardware to test." He said there would be a need for prototype models, of course, to correlate with theory studies, but he re-



GYRODYNE MODEL 55 GEM, authorized in 1959, employs annular jet principle. A one-man vehicle, it uses a Porsche engine.



ADM. ARLEIGH BURKE, CNO, operates a GEM at David Taylor Model Basin's Aerodynamics Laboratory during a visit to the lab.

the oldest in theory. Designed in the thirties by Finnish engineer T. J. Kaario as a way to reduce the frictional resistance of motor-driven sleighs on skis, it is literally a wing which flies very close to the ground. An air cushion, rather than downward motion of the air stream, provides its lift.

What are the most likely military applications of GEMs?

The GEM's brightest future lies in fringe areas where conventional machines have obvious limitations.

In ASW, a perfected GEM or a fleet of GEMs might lie in waiting on the surface with detection equipment working. On contact with a submarine, the GEM would lift off, catch the sub, launch its destructive weapons, then land on the water to continue its search. In theory it could operate

than conventional landing craft and at much greater economy than helicopters to land troops. Their main asset, of course, would be in flying troops at high speed from the mother ship to the tree line, rather than stop at the edge of the surf and require troops to walk ashore. With the beachhead established, they could carry cargo from the beach to advance echelons inland. Meanwhile, other types of GEMs could be making reconnaissance flights or, if armed, flying interdiction missions.

In a logistics role, large GEMs could serve varying ship roles, ranging in size from river barges to large ocean-going cargo carriers. While the very idea of GEMs is in its infancy, enough research has been completed to indicate that the efficiency of GEMs *increases*

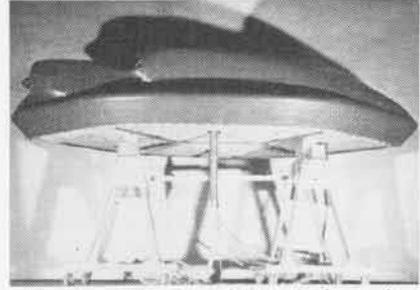
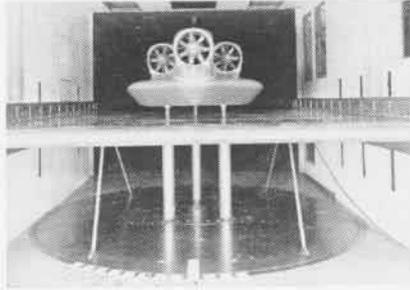
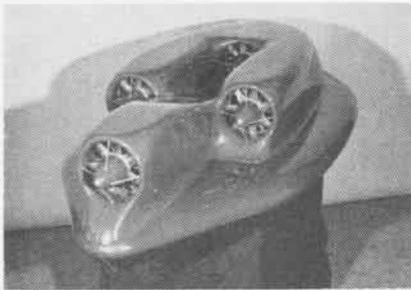
emphasized the need for more knowledge and less production hardware at this point.

The Aerodynamics Laboratory of David Taylor Model Basin in Washington has been testing theories and shapes of GEMs for the past two years and has run various shapes through wind tunnel tests. The Hydrodynamics Laboratory has made parallel studies of prototype vehicles on a water environment.

Results of these studies are made available to other government agencies in exchange for knowledge those agencies have acquired on GEMs. A Marine and an Army officer work full-time in the Office of Naval Research in this exchange of information.

What problems are yet unsolved?

The GEM has three main shortcom-



GEM CRUISE configuration of David Taylor Model Basin's Model Aerodynamics lab to determine its pitch, lift and drag characteristics at various engine revolutions and angles of attack. 48 ground effect machine goes through wind tunnel tests in

ings: at this stage of development it creates spray at low speeds, it has control problems at low speeds and during hovering, and control problems in high speed turns. Some feel that as GEMs grow larger, their problems will become relatively smaller, even if they are not solved completely.

Specific shapes of GEMs have problems peculiar to their shapes. Take a GEM designed for assault use as an example. If such a vehicle is to be used in the future to take men and equipment to a larger ship, ride that ship to the theater of operations, then be used to take troops and equipment ashore, the GEM itself must be so shaped that it will occupy a minimum of cargo space in transit.

Ideally, it should be flat on top and bottom, even practically square or rectangular, so as to permit stacking in tiers. But if the GEM is to be flat for stacking, what about its cockpit for operator visibility, or power plant, or exterior controls, that should pro-

trude from the top or sides. Must these items be retractable for shipment, thus complicating the GEM's construction? One firm has suggested an inflatable GEM.

Other problems will arise when GEMs reach the stage of development where engineers begin to think of refinements and sophistication. One of the early GEM's assets appears to be its simplicity of operation which permits control by an average operator with minimum training. (One version has been operated by a five-year-old child.) As the basic machine is refined, the training level of its operator must be improved.

When and if the very large ocean-going GEM is designed, it is quite likely that it will be powered by a nuclear plant. Such a ship would require all the shielding, radiation controls, and skilled engineers that one would imagine.

Another problem, said one research engineer, is to overcome the tempta-

tion to build an all-purpose GEM. From lessons the Navy has learned in aircraft and ships, and the Army has learned in land vehicles, we should design specific GEMs for specific missions, he said.

What timetable is the Navy following in its GEM program?

According to the Chief of the Bureau of Ships, "We should be able by 1963 to answer the question of whether a 2000-ton seagoing hydroskimmer vehicle is practicable."

(GEMs have been called by a variety of names. At one point the Army referred to them as Ground Effect Vehicles. Many persons call them Skimmers. While Ground Effect Machines or GEMs seems to be the most commonly accepted name, a BuShips spokesman said, "We prefer hydroskimmer as a name for our vehicles because it gives them sea-service identity.")

To meet this goal, BUShIPS intends to obtain data from four different test vehicles being built this year. The first of these was delivered by Hughes Tool Company in May. This craft, called XHS-1 *Hydrostreak*, operates on a modified waterwall principle. It has two skegs, one on either side of the hull, and a waterwall at each end to trap the cushion of air formed by a fan in the center. The craft is 21 feet long, 11 feet wide, and will cruise at 25 knots.

A second test craft to be delivered soon by Hughes Tool Company will consist of a complete waterwall with "no feet in the water" with the exception of scoops and a propeller. Both this craft and the XHS-1 will be limited to a water environment by their design characteristics.

A third vehicle is under construction by Bell Aircraft Company. This will be a sidewall vehicle with airwalls



CURTISS-WRIGHT air car has land and water capability. It made 55 mph in this test at Daytona. The Army bought two of these annular jet GEMs for its testing program.

fore and aft. This craft is scheduled for delivery this month. To round out the group of four vehicles, information on a completely peripheral jet craft will be obtained from one now being built for the Marine Corps by National Research Associates. This craft will be capable of operation over land or water when it is completed.

trols, transmissions and powerplants.

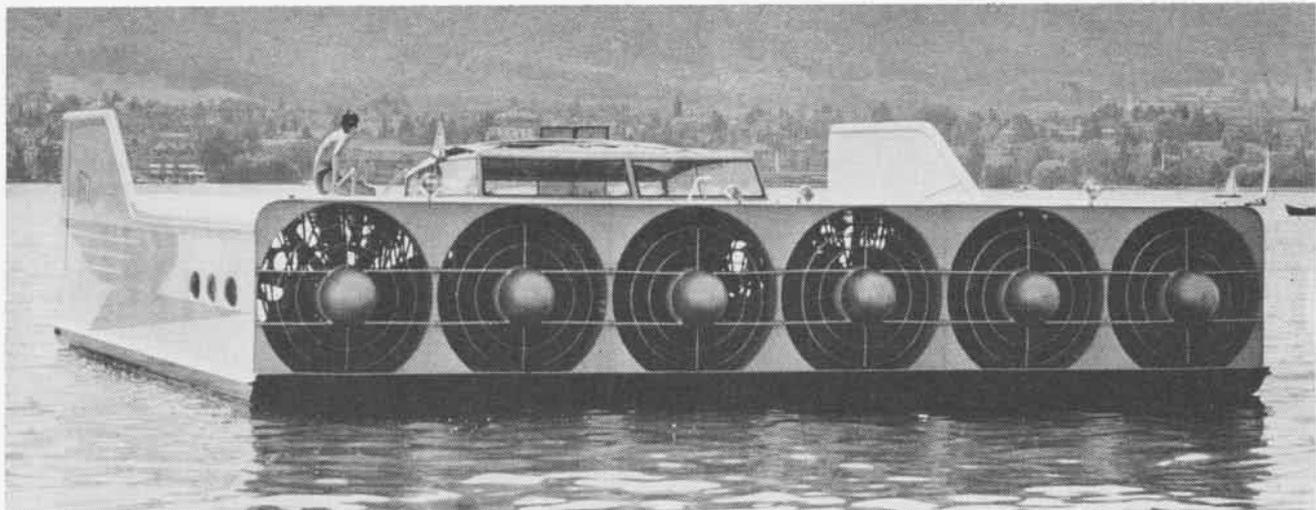
What lies is the future for GEMs?

For the most part, Navy spokesmen confine their remarks to immediate needs and the reasonable future when they discuss GEMs. But designers in industry are bold enough to extend their sights even further.

They see massive ferryboats as well

speeds and altitudes just as aircraft.

But the Navy spokesmen we interviewed, when we attempted to draw them out on this subject parried with: "What you're talking about is no longer a GEM," they said. "You could call it VTOL or STOL, but you'd be wrong. That type of vehicle would be a GETOL; not vertical or short



15,000-LB. WEILAND GEM-2 was made in Switzerland and has been tested at Quantico. Six fans are powered by two Ford engines rated at 240 hp each. It lifts 8-10-12 inches off water, has land capability, carries two crewmen and research instruments.



NATIONAL RESEARCH Associates' Pegasus I has been tested by Marines at Quantico. Supporting air cushion is generated by four low pressure fans, two at each end. Can lift gross weight of 1100 pounds to height of 15 inches and can make up to 60 mph.

The Bureau of Ships hopes to gain knowledge from these vehicles, and from additional research, to build a 50-foot test craft next year and a 150-foot ocean going craft for experiments and evaluation in ASW and amphibious work in 1963.

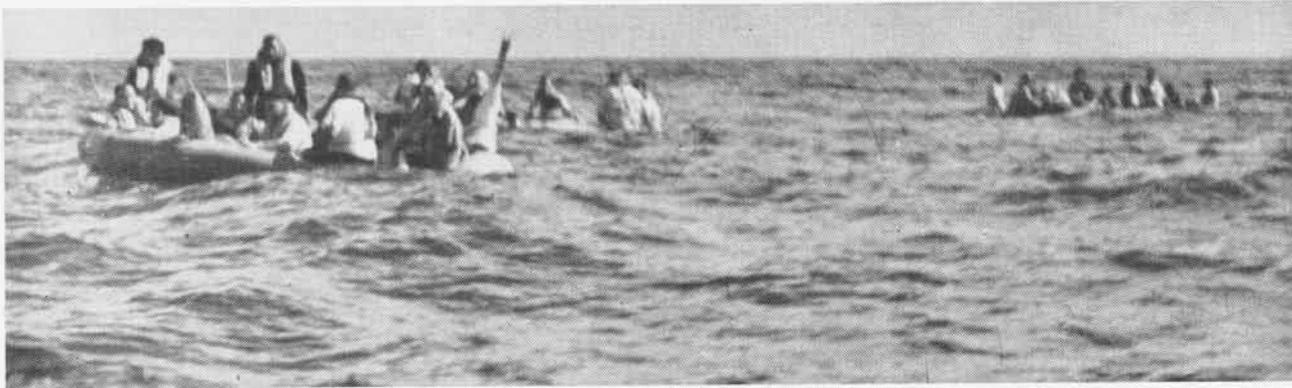
In the research program, greatest attention is being given structures, con-

as huge GEM aircraft carriers and missile launchers (mentioned earlier). Some even see GEMs that extend deep into the domain now traveled by aircraft. They would, in the future, build GEMs that are limited to ground effect only for takeoffs and landings. After takeoff, the machine would assume free flight at extremely high

takeoff and landing, but a ground effect takeoff and landing craft."

Nor would our interview sources express an opinion as to when the large ocean-going type of GEMs would come to fruition. They explained that there is simply too much more study and evaluation involved at this state of the art to even hazard such a speculation.

56 OF 58 SAVED AFTER AIRLINE CRASH



MEN AND AIRCRAFT of Patrol Squadron 40 joined Coast Guard units in rescuing 56 of 58 persons who were on board a commercial DC-7 airliner which ditched into

the sea 85 miles northeast of Manila. A Coast Guard UF-1 Albatross from Sangley Point was first to reach the survivors, who had boarded rafts. The UF-1 and P5M Marlins of VP-

40 then shuttled the survivors to Sangley Point for medical attention. These photographs of the rescue were made by Paul A. Gilly, PH3, and Richard M. Moore, Coast Guard AD3.



ONE OF FOUR RAFTS of survivors waits to be rescued by Navy and CG planes dispatched from the U.S. Naval Station at Sangley Point.



STILL SHOWING SHOCK from the impact of the ditching, this plane load of survivors heads for rest and medical attention at Sangley.



TIRE D AND WATER-SOAKED survivors are helped from P5M Marlin by medical personnel and chaplain after their landing at Navy base.



HELPING HAND is extended by Capt. Joseph D. McAllister, station CO. Sailor in foreground is hosing water onto the hot pavement.

Flying for NROTC Middies More NROTC Grads to Aviation Aim

A free private flying course is to be offered to junior and senior NROTC (Regular) students as soon as funds are available. Initially the course will be provided at the 34 schools where similar programs exist. Later it is to be expanded to all 53 NROTC colleges and universities.

The program, which has been dubbed the FIP (Flight Indoctrination Program), is being offered as a means of motivating NROTC students for aviation. Planners hope ultimately to increase the number of NROTC graduates going into flight training from an average of 330 to 880 per year.

With the aid of the FIP, it is expected that the already low flight training attrition of the NROTC graduates will be even further reduced. Air Force and Army FIP graduates have suffered less than 50% the attrition of non-FIP graduates.

The reduction in the numbers failing to complete the flight training course is not credited to any flying skills acquired in the civilian course, but rather to a screening out of those who find they do not like flying or that they do not have much talent for it.

The flight course, which will be in addition to the student's regular college program, will be the standard FAA private pilot's course of 35 hours flight and 35 hours ground school training. The training will be done on contract by FAA approved civilian flight schools at a cost to the government of about \$500 per student.

Receives Legion of Merit Sets a New Precedent for Marines

MSgt. Charles T. Perkins became the first enlisted Marine ever to earn the Legion of Merit for peacetime service. He received the award from Secretary of the Navy William B. Franke at the Marine Barracks, Washington.

MSgt. Perkins earned the medal for his work in developing an "aircraft directives configuration list system" which has been adopted on a Navy-wide basis.

The new system uses electronic data processing techniques to record and correlate technical information on which to base modifications to aircraft used by the Navy and Marine Corps.



CDR. CHARLES O. Donnaud III, C.O. of VAH-11, congratulates LCdr. B. B. Brown (L) for becoming the first pilot to make 200 A3D landings aboard the same carrier. Record was achieved from deck of USS F. D. Roosevelt.



LT. JOHN T. CARROLL, left, Navy pilot on exchange duty with the Air Force, is congratulated by LCol. Frederick D. Ellis, commander of the 498th Fighter Interceptor Squadron, on his first solo flight in F-106 fighter.



TRADITIONAL BATON which signifies holder is Commander Task Force 77 in Pacific Fleet is passed from RAdm. Francis D. Foley, (rt.) ComCarDiv 1, to RAdm. Joseph C. Clifton, ComCarDiv 7 as Oriskany relieved Ranger.

P3V-1 Still on Schedule To Benefit from Electra Lessons

The widely publicized difficulties with the commercial version of the Lockheed *Electra* will not slow Navy deliveries of its blood brother, the P3V-1. Final assembly of the P3V-1 did not start until June. Therefore it has been possible to incorporate the *Electra* "fix" in the P3V-1 during its initial construction. The changes have required the scrapping of only a minimum of previously fabricated tools and assemblies.

Even though the structure and engines of the *Electra* and the P3V-1 are not identical, they are sufficiently related that the lessons learned in commercial *Electra* operation can save the Navy the trouble of learning everything about the plane by its own experience and trouble. The changes to the wings and engine mounts which grew out of the *Electra* crash investigation were but one example of the P3V-1 benefiting from *Electra* lessons.

As a result of all this vicarious experience, BUWEPs experts are confident the P3V-1 will be more bug-free than most new types upon Fleet delivery.

A-Blast Noises Simulated NOL Scientist Designs Blast Cone

Physicists at the Naval Ordnance Laboratory have developed conical shock tubes which can be used to simulate high explosive blasts as powerful as those generated by the Hiroshima A-bomb, by using small charges.

The cone test method for explosives was developed by William S. Filler as part of basic research in blast wave phenomena by the air-ground division of NOL's research department.

When a small charge is fired in the apex of a cone, its blast wave represents a sector of a spherical shock wave generated by a much larger charge fired in the open. In effect, the small charge shock wave expands within the confines of the cone in the same manner as it would if it were part of the full sphere.

To determine the size of the charge required to simulate an open air blast, an "amplification factor" is used. This factor is the ratio of the solid angle of a sphere to that of the solid angle of the cone. Theoretically it can be increased to a 160,000-to-1 ratio by using a cone measuring a half degree.

THIRTY-THREE years have passed since Charles A. Lindbergh taxied down the dirt runway of North Island, San Diego, Calif., on the first leg of his flight to fame. Today Donald A. Hall, the engineer who designed the "Spirit of St. Louis," does his work almost in sight of the spot from which the historic flight to Paris began.

He is head of the Helicopter Branch, Aeronautical Engineering, O&R, NAS SAN DIEGO. For the past 11 years, the noted design engineer has turned his talents to the development of the one of the youngest members of the aircraft family, rotary wing aircraft.

The world knows Don Hall primarily for his contribution to the creation of the "Spirit of St. Louis." That period of his life reads like a legend—a legend in which two young men waved a magic wand and caused a silver monoplane to materialize. The magic wand was intellect, enthusiasm and imagination. The young men were Hall and Lindbergh.

A man of great modesty, Hall says that he just had a job to do and did it. Today, a slender, silver-haired man with piercing blue eyes, he radiates integrity.

Hall had worked as Chief Engineer for Ryan Airline in San Diego only a few days when a memorable telegram from Lindbergh's backers was received. Signed by the Robertson Aircraft Company of St. Louis, the telegram read, "CAN YOU CONSTRUCT WHIRLWIND ENGINE PLANE CAPABLE FLYING NONSTOP BETWEEN NEW YORK AND PARIS STOP IF SO PLEASE STATE COST AND DELIVERY DATE." The Ryan Company replied: "CAN BUILD PLANE SIMILAR M ONE BUT LARGER WINGS CAPABLE OF MAKING FLIGHT COST ABOUT SIX THOUSAND WITHOUT MOTOR AND INSTRUMENTS DELIVERY DATE ABOUT THREE MONTHS." Thus began the great adventure that gave the world a new hero and pushed aviation forward in one tremendous surge.

In Hall's memory the picture is vivid of the day Lindbergh walked through the door of the dusty, paper-cluttered office at Ryan. He had come to San Diego to make arrangements for constructing the plane needed for the transoceanic flight and planned to stand by to help push the project.

Hall remembers clearly his first en-



DON HALL

THE DON HALL STORY

By *Elretta Sudsbury*



LINDBERGH

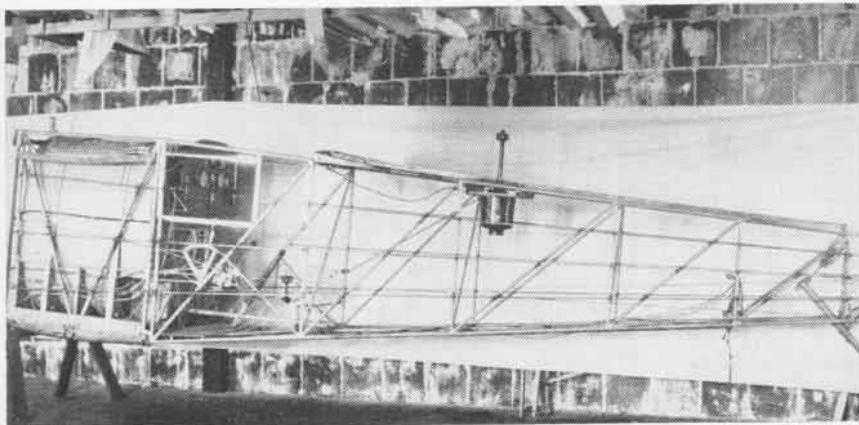
counter with the tall ex-mail pilot with the deep cleft chin and the serious blue eyes. Lindbergh, 25, and Hall, 28, measured each other and liked what they saw. Thus began the association that was to continue day and night for 76 days and result in a lifelong friendship. From 23 February until 10 May, they worked together to create the "Spirit of St. Louis," pooling their knowledge to make a champion.

In 1927, the roaring twenties were at their height—the last big spree before the crash. WW I had taught the nation that airplanes were important. All over the country, new aircraft were being designed and built. Records were set almost every day. The year 1927 saw the beginning of controls on flying. The Aviation Branch of the Department of Commerce, a forerunner of the Federal Aviation Agency, ruled that all planes built after 1 July 1927, must have a "Type Certificate" to fly interstate. That year the Navy began to implement the Morrow Board recommendations and inaugurated a five-year construction program to provide the Navy with 1000 operating aircraft.

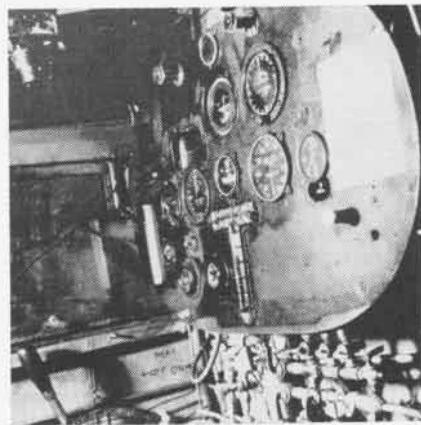
In all the sound and fury of the late twenties, the big race was for the sky. Hall and Lindbergh, products of that era, set to work. The basis for the "Spirit of St. Louis" was the Ryan M-2 monoplane. Hall redesigned it to fit the specific needs of the trans-Atlantic flight. When he was through, little of the M-2 design was left except the



W. H. BOWLUS AND B. F. MAHONEY, RYAN LEADERS, LINDBERGH, HALL AND 'SPIRIT'



HALL'S PICTURE OF THE 'SPIRIT OF ST. LOUIS' FUSELAGE BEFORE IT WAS COVERED



INSTRUMENT PANEL AND FUEL PLUMBING

wing ribs and tail surfaces. The major engineering problem facing Hall was to design a plane that could take off with enough fuel to carry it 3600 miles from New York to Paris with a safe reserve for unpredictables.

Hall's office was a bare drafting room next to the wing loft of the Ryan airlines. To give Lindbergh a work area from which to oversee the airplane construction, a plywood table and a wooden box, topped with an airplane seat, were provided in Hall's small office. Hall devised a knocking system, so that he and Lindbergh could lock the door and be safe from interruptions.

Lindbergh's enthusiasm for and implicit faith in his undertaking inspired the Ryan workers to put forth almost superhuman effort to complete the plane on time. Lindbergh is quoted as saying in a telephone conversation at this time, "Each of them [Ryan workers] is striving to do a quicker and better job on the 'Spirit of St. Louis' than he's ever done before. No pains

are too great, and no hours are too long. Lights sometimes burned in the factory all through the night. Donald Hall worked for one stretch of 36 hours without sleep."

Since the Ryan Company had no inspectors, Hall checked the completed parts against the engineering drawings. He made these inspections two or three hours before the factory opened, so that production was not interrupted.

There was no time to lose. The Orteig Prize, offered in 1919 to the first person to make the transoceanic flight, was still unclaimed. But Lindbergh knew he had to work fast, for many other pilots were getting ready at the same time.

Early experience gained by Hall was utilized during the 'Sprit of St. Louis' assignment. While employed in 1925 by Douglas Aircraft, he prepared a design analysis of a proposed Army Air Corps non-stop flight from San Francisco to Honolulu to be made in a Douglas c-1. This background knowledge was vital to his work on the Lind-

bergh aircraft. Early in 1926 Hall left to "try his wings" as a cadet in the Army Air Corps.

Had Don Hall followed his original plan for a career, he would have missed designing the "Spirit of St. Louis." He had intended to go into automotive design when he was graduated in 1919 from Pratt Institute, School of Engineering, in Brooklyn, N.Y. Instead, he took a job with the Curtis Aeroplane and Motor Company. This beginning in aeronautical engineering led eventually to the Ryan Airlines and the Lindbergh assignment. Early association with such men as Curtis and Douglas inspired Hall to the same fiery zeal characteristic of other great pioneers in aviation.

This inspiration and his unquestioning faith in the future of aviation drove Hall during the 76 days he worked with Lindbergh. Round the clock in the cramped drafting room at Ryan, this two-man team was laying a solid, practical foundation for a successful venture. While the engineer



LINDBERGH LOOKS BACK TO SEE 'SPIRIT OF ST. LOUIS' IS SAFE FOR TRIP TO DUTCH FLATS WHERE FLIGHT TEST WAS MADE

worked against time, Lindbergh spent hours studying navigation and plotting his course on the Great Circle route from New York to Paris.

Cost was a vital factor in the Lindbergh undertaking. His backers willing to gamble on the Orteig prize, had raised \$10,000. But the actual cost of the airplane totaled \$12,580, although all possible corners were cut. This price included the basic aircraft, a 220-hp. Wright *Whirlwind* air-cooled radial engine, and an earth-inductor compass built specifically for Lindbergh by the Pioneer Navigating Instruments Co.

The fabric-covered silver monoplane had a wing span of 46 feet and an over-all length of 27 feet 8 inches.

ready to embark upon the first part of its epoch-making journey.

Rockwell Field, the Army section of North Island, was the point of departure. At 3:55 on 9 May 1927, Lindbergh with a confident smile climbed into his plane and headed east. Two Army observation planes and one Ryan monoplane escorted him as he circled North Island, the Ryan factory, the city, and then left ocean and bay behind. Hall was in the Ryan plane that escorted Lindbergh to the mountains. With him were W.H. Bowlus, factory manager, H. J. Harrigan, Ryan test pilot, and J. A. Edwards, a Ryan salesman. They returned to San Diego to wait with the rest of the world.

years of aeronautical research and the assembling together of all that was practical and best in American aviation. It represented American Aviation."

Later, on 16 June 1927, at a banquet in New York City, Hall sat near Lindbergh and shyly took his bow when Lindbergh introduced him: "There is one person to whom great credit belongs. He is Donald Hall, I am going to ask him to rise, so that you may see another one of the partnerships of 'We.'")

Thus one dramatic episode in Don Hall's career drew to an end—but not entirely. Hall helped Lindbergh in the preparation of his book, *The Spirit of*



'SPIRIT'S' FLIGHT IS SMOOTH OVER CORONADO SILVER STRAND



HALL IN FRONT COCKPIT OF X-1; TEST PILOT HARRIGAN, REAR

The enclosed cockpit, which was behind the main fuel tank, had no direct forward vision. Weight was reduced in every way in order to carry the maximum in fuel. At the beginning of the flight, the plane was loaded with 450 gallons of gasoline—enough to take it an extra 1000 miles if necessary.

Less than three weeks from the start of the project, the skeleton of the fuselage and wing took form. Sixty days after the order was placed for the "Spirit of St. Louis," Lindbergh took her up on the initial flight test from the Ryan Airfield. He taxied across Dutch Flats and was off the ground in $6\frac{1}{8}$ seconds or 165 feet. He drove the plane upward with a rush, flew around a few minutes, turned a couple of flips and came down grinning. Hall watched with critical eyes as the plane made her first flight.

Other tests followed. With each flight the fuel load was increased 50 gallons until the plane was carrying 300 gallons. With final adjustments made, the "Spirit of St. Louis" was

The rest is history. The "Lone Eagle" left Roosevelt Field, Long Island, at 7:52 on 20 May and traveled 3600 miles over strange land and trackless seas. He reached Paris 33 hours, 30 minutes later, circled the Eiffel Tower and landed at Le Bourget airport, and became a worldwide symbol of the best of young America. The saga of Lindbergh's lonely hours in the sky captured the world's imagination.

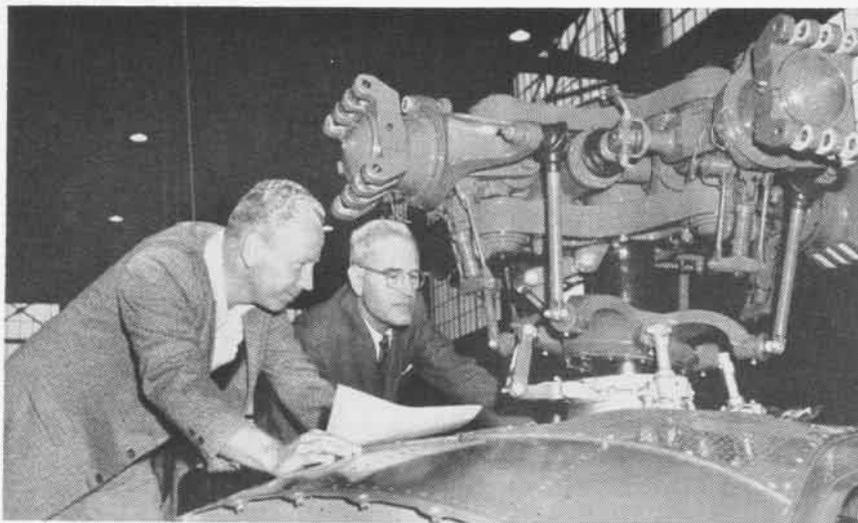
In San Diego, the men of Ryan Airlines—B. F. Mahoney, the owner, Fred Rohr, the metalsmith, Douglas (Wrong Way) Corrigan, the field mechanic, Hall and all the others—went wild with joy when news of the safe arrival of the "Spirit of St. Louis" was flashed over the radio. Hall remembers how they piled into cars and toured San Diego, shouting and honking their horns. The whole town would know *their* plane had reached its destination.

In one speech Lindbergh tried to explain the successful flight in these words: "It was not the act of a single pilot. It was the culmination of 20

St. Louis, published in 1953. Four years later, in 1957, he served as technical advisor to Warner Brothers during the filming of the Lindbergh story. Much has been written concerning Hall's vital contribution to the Lindbergh's trans-oceanic flight. The consensus is that no other person except Lindbergh himself did so much to make the flight to Paris a success.

Hall remained with Ryan Airlines a little over a year after the completion of the Lindbergh plane. Much of that time he worked on the design of the X-1, an experimental semi-tandem-winged aircraft. He believes that his design of the highly maneuverable plane, which was advanced for its day, was far more significant than the "Spirit."

At the time Hall was working on the X-1, Lindbergh purchased another plane from Ryan, a "Spirit of St. Louis" type, but built to carry four passengers. Hall did not design the plane, but he made the test flight with Lindbergh. Hall describes an incident



H. L. MARSHALL (LEFT) AND HALL STUDY A PROBLEM IN ASSEMBLY OF HELICOPTER

that illustrates Lindbergh's cold nerve in an era when all pilots were heroes.

Hall was sitting in one of the middle seats when Lindbergh decided to test the stability of the airplane. He climbed out of the pilot's seat and sat down next to Hall. Since there were no automatic pilots in those days, the plane was strictly on its own. As it began to veer slightly to one side, Lindbergh opened the door slightly so that it served as a drag rudder and pulled the plane back on course. Then Hall got into the act and opened the door on his side. Together they flew the plane for some time, using the doors for rudders.

Late in 1928, Hall left the Ryan Company which was nearing the end of its years of business in San Diego. He struck out on his own, planning to complete the development of the X-1 on which he held the patent rights. But aircraft research and development required money, and Hall had little. For about two years, he worked and lived at the YMCA, then found he lacked funds to maintain even that level of existence.

With his small reserve of cash depleted and no backer of consequence to underwrite his project, Hall arranged to live and work in his old Ryan Airlines office. He placed a cot and hot plate on one side of the drafting room. He really roughed it in the deserted building. He washed his clothes in a bucket and hung them in the wing loft to dry. He cooked his meager meals on as little as 10 cents a day by buying only the cheapest foods,

Hall's fame that followed the successful flight of the "Spirit of St Louis" was almost forgotten during the early thirties. The city of San Diego took over the Ryan building, but allowed Hall to remain in his old drafting room until Solar Aircraft moved in in 1933. Most of the time he lived there rent free. His only possession of any value, a 1928 Chrysler roadster, he couldn't sell because it was collateral for an unpaid loan. Occasionally the young engineer would splurge and buy one gallon of gasoline to take his girl for a ride, but usually he walked or rode a streetcar.

A partner was found in 1933. The partnership gave him some measure of security, so he married the San Diego girl, Elizabeth Walker, who had waited for him since 1930. But reverses plagued the business partnership, and early in 1936, it was dissolved and he was once more without work.

The year 1936 found Hall living in a small furnished house and wondering what the future held for him, Elizabeth, and their one-year-old son, Donald, Jr. Looking back upon the meager years, Hall resolved to put his dream away and go to work for an established company.

He started out in 1937 with Consolidated Aircraft Corporation, serving first in his profession as an engineer, then in a new specialization, patent analysis. He was the first Patent Director for Convair.

When a slump hit the aircraft industry in 1949, Hall took a leave of absence and worked a short time for

a Los Angeles firm. Then in December 1949, he was hired as an aeronautical engineer at NAS NORTH ISLAND. When the Helicopter Branch for O&R was established in June 1952, he was selected to head the unit.

Helicopters were becoming an important work program for the O&R department, so an experienced engineer was needed to solve the many problems.

Helicopters aroused Hall's pioneering instinct; he feels they are about 25 years behind conventional aircraft. Such problems as metal fatigue, stress failure and others generate a requirement for Disassembly Inspection Reports. Hall and his subordinates investigate the causes of failure, recom-



JAMES STEWART, FILM 'LINDY', AND HALL

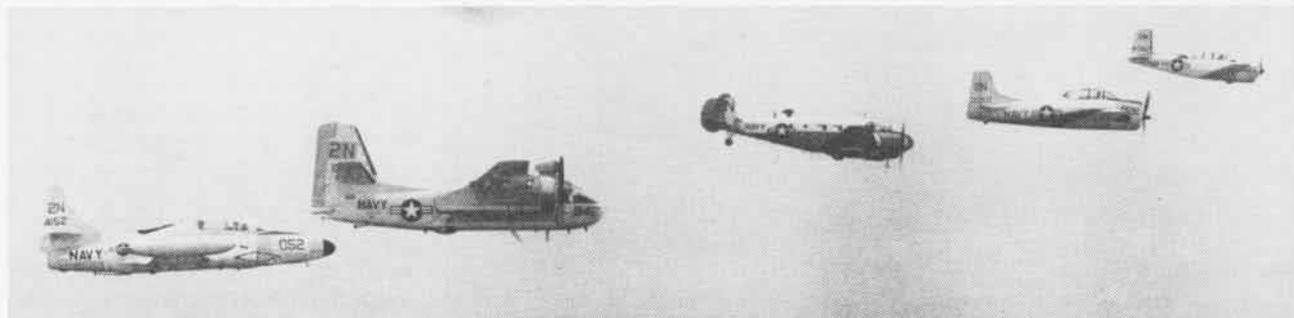
mend corrective or preventive action, and write the report.

Hall also writes local engineering specifications to outline the action which should be taken to prevent certain types of discrepancies in helicopters. One recent assignment entailed the investigation of a helicopter that developed ground resonance while preparing for take-offs. The plane partially disintegrated, then turned over. Hall and his subordinates were assigned to find the cause and write the DIR.

Hall's health has forced him to reduce his physical activity. Swimming, a favorite sport of earlier years, he can seldom enjoy now.

Donald A. Hall was young when aviation was young. He matured with the industry. The complexity of modern naval weapons systems is a challenge to Hall. He is still making vital contributions to aviation. The Navy at North Island is proud of Hall and esteems him as one of the foremost aeronautical engineers of our time.

TRAINING THE NAO'S



NAO STUDENTS FLY during their eight weeks of basic training. The above planes, T2V, S2F, SNB, T-28, and T-34, are assigned to the school. Air crew trainees fly 20 hours. Maintenance, intelligence, and other aviation ground officers get 6½ hours.

OVER 22,000 officer billets require officers with aviation training and experience. Traditionally most of these billets have been filled by pilots. In 1959 these 22,000 billets were screened with a view to reducing pilot requirements to the minimum. It was found that non-pilot officers with an aviation background could fill over 4000 of these billets. Almost half involve flying as crew members in ASW, AEW, VA and VF aircraft while maintenance, electronics, and intelligence account for many of the ground jobs. The Naval Aviation Officer (NAO) Program is designed to recruit, train, and rotate officers for these billets.

Of the 4000 plus billets, it was determined that 1000 should be filled by regular Navy unrestricted line officers (Code 1350), 1250 by LDOs, and the rest by Reserves.

In order to attract career officers into the program, it was necessary to provide a career pattern for NAOs. It provides for sea/shore rotation; ship, squadron, and staff duty; and

opportunities for postgraduate training, command, and flag rank.

A tremendous training effort will be required to fill the need for all categories of aviation officers. At present the Navy aeronautical organization has less than 15% of required numbers of regular Navy unrestricted line officers, (code 1350) and only about 70% of requirements for LDOs.

Training for students entering the NAO program is given in three phases: Pre-flight, Basic, and specialization schools.

Pre-flight is the same for NAOs as for prospective pilots. Fleet officers, Naval Academy, and NROTC graduates have 10 weeks of pre-flight while direct procurement college graduates are given 16 weeks.

Basic NAO School is at Forrest Sherman Field. There the students are given general indoctrination and introduced to the various fields open to Basic NAO graduates. Subjects covered include jet engines, aviation electronics, air intelligence, communications, special weapons, navigation,

CIC, and naval leadership. The first class entered Basic on 1 July, 1960.

Flight familiarization in the T-34, T-28, SNB, S2F, and T2V rounds out the program. Air crew trainees fly 20 hours and ground officers 6½.

Since the first NAO class will not reach the final phase of training until September, pictures on this page are of current Basic NAO training.

After Basic, the NAO's will attend various specialty schools within the Air Training Command. Navigators will go to Corpus Christi for 16 weeks; Radar Intercept Operators, AEW/ECM Evaluators, and ASW Evaluators go to Glynco for 17 weeks. Maintenance/Electronic Officers course is 25 weeks at Memphis, while Ordnance Officers go to Jax for 20 weeks.

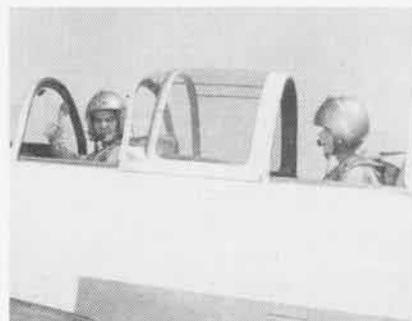
The NAO program gives young officers a chance to fly and build careers in aviation, even if they are not able to meet pilot physical requirements. It also provides careers for the highly qualified maintenance managers required to keep complex modern weapons systems in mission ready condition.



GENERAL INTRODUCTION to all fields of specialization open to Basic grads is given.



FLIGHT CREW TRAINEES are briefed by pilot Lt. S.C. Wood for cross-country S2F flight.



NAO STUDENT Ens. Stephen J. Crosby and pilot Lt. T. K. Anaston ready for T-34 flight.



COMMANDER R. C. Ries (L), skipper of VT-3 at Whiting Field, receives VT-3's accident-free hours champion aviation award and congratulations from RAdm. C. H. Duerfeldt, Chief, Naval Air Basic Training

Oceana Wins Safety Award Accident Reduction Outstanding

The Secretary of the Navy Award for Achievement in Safety for 1959 has been presented to NAS OCEANA.

Presentation of the award was made to Capt. G. R. Luker, commanding officer, by Capt. R. W. Cooper, Commander Naval Air Bases, Fourth and Fifth Naval District.

This award is one of 162 such presentations to Naval Shore Activities throughout the world for achievement in all aspects of safety (excluding flight safety.)

Reduction in frequency, severity, and motor vehicle rates, along with the appraisal of the safety program established for the base, contributed toward the honor of receiving this award.

Factors which contributed to Oceana's receiving the award were: frequency of accidents, .83%; severity of accidents, .33%; and motor vehicle accidents figured on miles per accident, one accident for every 54,680 miles.

Frequency rates for 1959 as compared to 1958 were cut in half, owing to the alertness and safe driving of military and civilian personnel. This is the third time Oceana has won the award, the other two times being for the fiscal years of 1953 and 1954.

VF-101 Tests New Mark Visually Augmented Target Tried

The newest target to make its mark in the sky over NAS KEY WEST, Fla., is the visually augmented Aero-42 flare target (Del Mar DF-4MFC). It was introduced during training exercises to VF-101 flying F4Ds and RCAF Fighter Squadron 870 flying F2H-3s.

Designed for training of fighter

pilots flying aircraft not equipped with long range fire control radars, this target leaves a "day-glo" orange trail in the sky which clearly distinguishes the target from the tow plane. The visual augmentation device enables a pilot to visually pick up the target and angle his attack properly before firing a *Sidewinder* missile toward it.

Navy Pilot Saved from Sea USMC, AF, CG, Sampan Get in Act

Marine Helicoptermen of HMR-161 rescued the pilot of a Navy jet fighter which crashed off Maui, Hawaii.

Cdr. Edward C. McGowan of Barber's Point parachuted from his FJ-3 *Fury* when it developed trouble. Maui tower spotted the pilot parachuting from the jet.

Within four minutes, an Air Force transport plane was on the scene and dropped a life raft to the pilot.

A coast Guard cutter, Air Force and Coast Guard rescue planes, and two helicopters from HMR-161 were dispatched to the scene.

First to arrive, however, was a small fishing sampan. The pilot was taken aboard the boat and later was picked up from the boat by a helicopter piloted by LtCol. A. W. McCully.



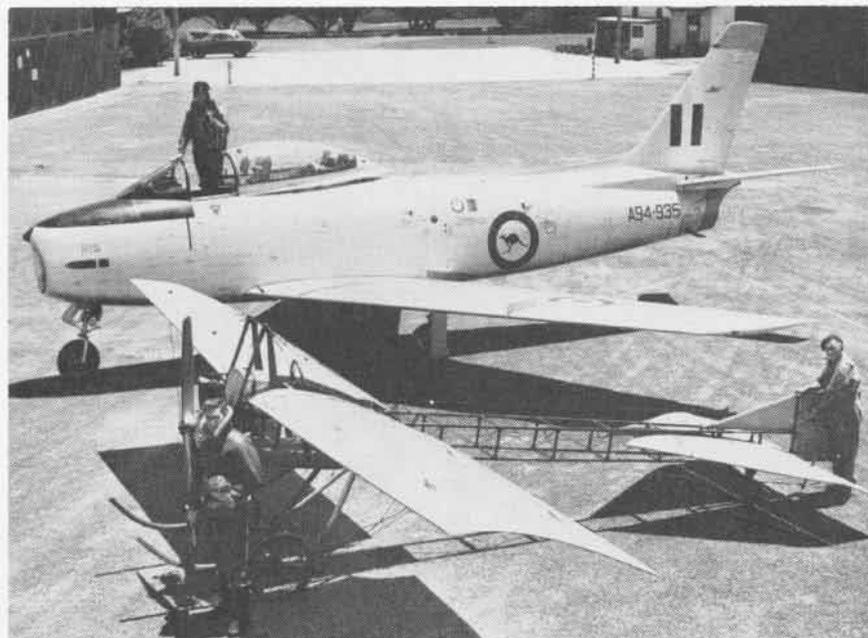
PAYMASTERS NEMESIS, Ens. Louis F. Perrinello wears and holds four hats he wore in span of 17-month tour with VU-1 at Barber's Point. He accepts salute from 'sideboys' with hats of PO1, CPO, WO1, and Ensign.

Lands WF-2 the Hard Way One Engine Feathered on Arrival

LCdr. John Lavra of VAW-12 landed a WF-2 *Tracer* aboard USS *Independence* with one engine feathered.

At the time, the ship was being refueled from the oiler *Caloosabatchee*, and only two of four arresting wires were in operation.

LCdr. Lavra was flying an AEW patrol off the Atlantic coast with three crewmen when his starboard engine began losing oil pressure. He brought the aircraft in smoothly on the carrier's angled deck despite handicaps.



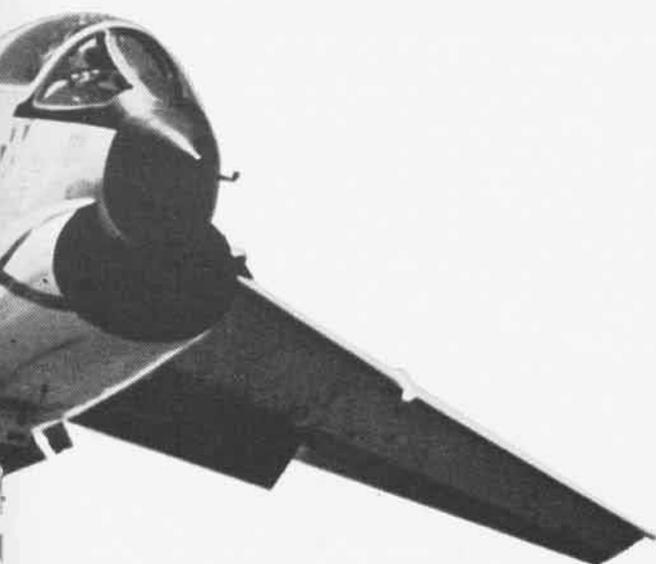
CANVAS-AND-WIRE Deperdussin aircraft shares deck space with Australian Avon-Sabre jet fighter in reminder of the changes which have occurred in Australian aviation over the past half century. Weighing only a few hundred pounds, the Deperdussin had three cylinders which sometimes could not prevent it being blown backwards. On date photo was made the craft had to be hand-held to prevent its becoming airborne.

CAMERA ON THE C



RUSADER

Now undergoing Navy Preliminary Evaluation and early BIS trials at NATC, the F8U-2N, when delivered to the Fleet in the near future, will offer a number of improvements to Navy Carrier pilots. Besides increased range and power, better radar and a push button autopilot have been incorporated in the near-Mach-2 fighter. These shots, showing F8U-2N carrying advanced Sidewinder-1C's, were made by Vought's Art Schoeni who cut his shutter-teeth as an NANews editor.



APPLIED PSYCHOLOGY OF SHARK WARFARE

PHOTOGRAPHS on these pages were made in the wake of a West Coast tragedy. A day earlier, 16-year-old Suzanna Theriot was attacked by a shark while swimming in the Monterey Bay area. One of her legs was so badly mangled it required amputation.

Hiller Aircraft Corporation sent test pilot Dick Peck, photographer "Wick" Wichers, and PR manager John Staubel to assist Santa Cruz sheriff Doug James in investigating the area.

On the first hop they spotted a 10-foot shark some 200 feet off the beach. Several swimmers were in the area. They warned the swimmers away and returned to the sheriff's office for rifles and spear guns.

They returned to find that the shark had barely moved from the spot. Shortly afterward they spotted another shark about a mile away from the first and also about 200 feet offshore.

Returning to the first shark they hovered over him within five feet of the water and studied his actions. He appeared oblivious to the helicopter's presence and he was not impressed when they fired at him with a rifle at point blank range.

The hunters rigged a spear with a harpoon and a 180-pound test line. They attached the end of the line to the copter and fired. The spear penetrated the shark's midsection. He thrashed wildly, headed first to his left, then toward the tail of the helicopter.

Suddenly the line became taut and the pilot felt a sharp downward pull on the helicopter. When he applied power to stay airborne, the line snapped. They moved about in a small circle to discover eight sharks varying from 8 to 10 feet in length.

THE NAVY has had a strong interest in sharks for many years, but it was near the end of WW II before the first shark repellent was made available for survival kits.

Some of the best shark knowledge has come to light in the past two or three years, however. The Biology branch of the Office of Naval Research, and the Bureau of Aeronautics

called a shark symposium in 1958.

In addition to ONR and BuAer experts in attendance, the symposium welcomed Dr. Perry Gilbert of Cornell University, Dr. Stewart Springer of the U.S. Fish and Wildlife Service, and Dr. Leonard Schultz of the Smithsonian Institution, all leading authorities in their fields.

Following standard scientific procedure, the symposium adopted a "what do we know?" approach before attempting to answer the question, "what do we do?" These facts came to light:

- Sharks have exceptionally large brain lobes which give them extremely sensitive smelling sense. They can be attracted to or turned away by an odor.

The odor of blood is believed most appealing to the shark, and the odor of a dead, decaying shark most offensive to several species. Navy standard shark repellent contains a copper acetate ingredient which simulates the odor of a rotting shark's carcass.

- Contrary to the once-common supposition that sharks are near-sighted, they have an almost unbelievable capability to discern objects in the water; even in very dark, deep water. They cannot discern detail in objects as other fish or animals can, but they have no trouble spotting the object itself. The pupils of a shark's eyes are coated with a tapetum or reflective film which allows them to turn their vision up or down.

Whether the shark is drawn to a swimmer by sight, or smells the swimmer or senses him by noise is yet to be determined. At any rate, sharks can detect a swimmer from some distance. Their decision to attack it or avoid it depends on the type of shark and the circumstances.

Thus another basic ingredient of Navy standard shark repellent is a black dye which appears to be a very effective component. The dye might obscure the swimmer, or it might offend the shark's eyes or nostrils.

- Different species of sharks have marked differences in anatomy, reproductive habits, and "personality." What might be the rule among one species does not necessarily apply to another species. As individuals, sharks



HELICOPTER-BORNE harpoonist prepares equipment for assault against 10-foot shark.

can be classed as far-ranging, free-booting scavengers, and usually they can be found in tropical and subtropical water from 45 degrees north latitude to 45 south.

- Sharks appear more sensitive to unrhythmic, thrashing noises than to rhythmic noises in the water. Psychologists have known for some time that when a person or animal is frightened to the point of panic he gives off *Schreckstoff* (fear substance). They believe that sharks, like dogs, can detect this substance. When they do, scientists speculate that the shark's bully nature is provoked, his lust to kill is aroused, and he rushes in for the kill.

- Scientists are quite certain that human waste attracts sharks. They recommend that if a swimmer has a possible chance to get into a life raft or onto the beach within a reasonable time, he should wait.

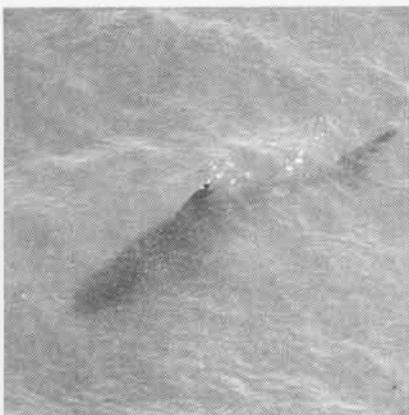
- Some repellents and would-be repellents have been as bad as they have been good. Among the chemical repellents, Navy standard has been effective. Others have actually lured sharks as effectively as perfume ads claim their product will lure men. Shock and noise type repellents

have not drawn serious Navy attention for two reasons; the electrical types might shock the swimmer, and both types are too bulky to fit into compact survival kits.

With these factors discussed, the scientists decided it was still not time to start thinking of anti-shark "hardware." They decided to continue their quest for knowledge.

ONR planned and sponsored the formation of a Shark Research Panel, comprised of Doctors Gilbert, Springer and Schultz, who have obtained cooperation from Dr. Albert Tester, and several other science consultants.

The Panel designed a questionnaire and sent copies to the International Game Fish Association, commercial and sports fishermen, physicians, the working press, and law enforcement agencies where attacks might occur.



SHARK SIGHTED! *Ferocious predator lies in wait near surface, his fin breaking water.*

The questionnaire asks the sender to give the victim's name, age, sex, date of attack, depth of attack, time of day, temperature of the water and air, whether the day was bright or cloudy, how the victim was dressed, the color of clothing he or she wore, the color of exposed skin, occupation of the victim, locality of the attack, the kind of shark, the number of sharks involved, and names and addresses of all witnesses.

Reports have been returned from both U.S. coasts, the Hawaiian Islands, Australia and South Africa. They have helped the Panel to establish important patterns of shark behavior.

One of the most interesting, though not necessarily important, pieces of information to come from the reports to date is that of humans

attacked the ration has been 12 miles to every female. The scientists do not speculate as to whether humans have sex appeal to sharks. They shrug off the implication by saying there are probably 12 times as many men present in shark infested waters.

Until the studies are complete and the ultimate shark repellent is at hand, here are some sound rules of conduct which might save your life in the event of a sea tragedy. These thoughts have been forwarded to the Office of Naval Research by Dr. Gilbert and the panel:

1. Do not abandon your clothing when entering the water. Clothing is your only protection against the rough skin of a shark.

2. Place wounded in a life raft. If there is room in the raft, all survivors should get in it as quickly as possible.

3. Remain quiet. Conserve your energy.

4. If you must swim, use regular strokes, either strong or lazy, but keep them rhythmic.

5. Don't trail arms or legs over the side of a raft.

6. Don't jettison blood or garbage.

7. Do not fish from life raft when sharks are present. Abandon a hooked fish if a shark approaches.

8. When a shark is at close range, use Navy shark repellent. The noxious odor plus the black dye will repel many species of sharks.

9. If you are threatened by a shark while in the water, form a tight circle and face outward. If approached, hit the shark on the snout with any instrument at hand, preferably a heavy one. Hit a shark with your

fist only as a last resort, experts say.

Not listed in the nine cardinal rules but nevertheless worth mentioning is the hazard that might be encountered by use of a survival knife against a shark. You might slay the first challenger in true Tarzan style by slitting his gullet or by rupturing his soft undersides, but the blood you let might just likely serve as invitation to a large school of sharks.

Other Do's and Dont's the author prescribes for swimmers, skin-divers and Scuba divers might come in handy if you take your liberty underwater.

1. Swim with a companion.

2. If sharks are in the water, stay out unless it is necessary.

3. Since blood attracts sharks, do not enter the water with an open wound. Also when you have speared a fish, put him in the boat or on



HARPOONED! *But not for long. Speared shark thrashed madly about, darted to his left, then toward tail of helicopter. Its strength was so great that 180-pound-test line was snapped.*

the beach immediately so that his blood will not spread in the water.

4. Don't keep speared fish on a line cinched to your waist. It is tantamount to waving a red flag in a bull's face.

5. Avoid swimming in turbid or dirty water when visibility is poor. You cannot see the shark, but he can see you.

6. Do not spear, ride on, or hang onto the tail of a shark, even a very small one.

7. As a rule, a shark will circle its victim several times before attacking. Get into the boat at first sight of a shark. Use rhythmic strokes in swimming to the boat or shore.

8. If a shark moves in on you before you can get out of the water, hit him on the snout with a club.



RED BIRD HOVERS BEFORE MAKING LANDING

Arguello Gets Helicopter Will Give Missile Launch Warning

The first helicopter to be permanently assigned to the Naval Missile Facility at Point Arguello was flown in by LCdr. William Leary, Jr.

Painted a bright sonic red, the Sikorsky HRS-3 is equipped with the latest in radio and public address systems. It will be used as a range clearance craft for missile firings at Pt. Arguello and Vandenberg AFB.

Before missile firings, the helicopter will patrol the off-shore danger zone and warn small craft to stand clear of the area.

Other anticipated uses are base photographic flights, cargo hops, ferry assignments and general utility.

Detachment Alfa is Ready VP-30 Unit to Train Marlin Crews

Detachment Alfa of newly-established Patrol Squadron 30 has begun training operations at NAS NORFOLK.

The detachment will fly P5M *Marlins* in training pilots, aircrewmen and maintenance personnel for Atlantic Fleet seaplane squadrons. Four P5Ms will be used.

The idea of training patrol aviation personnel before they report to an operating activity is relatively new. Before now, each unit was required to train its own personnel while meeting operational schedules.

VP-30 will supply men who have completed a standard training program which will enable fleet activities to concentrate on ASW missions.

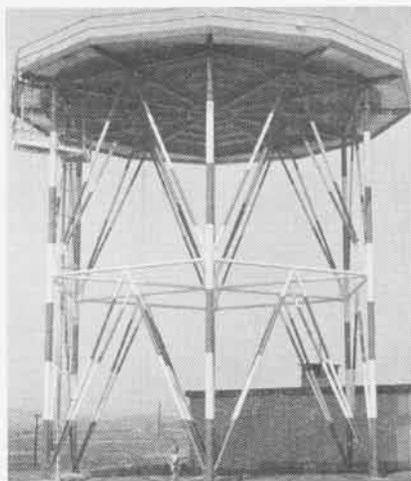
Norfolk was selected as the site for Detachment Alfa because of its seadrome facilities and its proximity to other area seaplane training facilities.

'Danger — Stacked Deck' New Flight Deck Safety Film Out

"Danger—Stacked Deck," (FN-8909) a new training film, was released 8 August. This 13 minute color cartoon drives home six rules for flight deck safety:

- Wear Protective Clothing.
- Watch your Step.
- Beware of Aircraft.
- Don't be a Spectator.
- Obey Fuel and Arming Rules.
- Operate Vehicles Carefully.

Even though the film accomplishes a serious purpose, it is presented in an interesting and humorous vein.



NEW RADAR antenna at NAS Miramar nears completion. To enter service next year, it will increase station's radar capability by 50 percent. FAA operated, it will give sharper image, won't pick up building reflections.



ARMY HU-1A Iroquois helicopter demonstrates ability to let loose a lethal barrage of six SS-11 guided wire missiles during trials. Now in service with field units, HU-1A handles suppressive fire missions without sacrificing speed or maneuverability.

Better Generators Bought They Burn Fast, Leave No Deposit

Navy contracts totaling \$1,330,000 have been awarded to Rocketdyne for production of solid propellant gas generators for research and development for advanced technology in solid propulsion.

The generators will be used in future *Tartar* and *Terrier* missiles.

Twin gas generators, similar except for slight variations in size and performance, are paired up to power the auxiliary systems in these surface-to-air missiles.

The generators employ a clean burning solid propellant that leaves no detrimental deposit on component parts of the gas generator system. They can be stored for long periods of time without special care.

A unique feature of these generator units is a boost phase of fast burning propellant which provides the instantaneous burst of power needed to start the hydraulic and electrical system turbines in the two missiles.

Scores 25,000 on Ranger Same AD Pilot Recorded 21,000th

Ltjg. John F. Gardner of VA-95 made the 25,000th arrested landing aboard the 80,000-ton USS *Ranger* in an AD *Skyraider*. Some months earlier he had made the ship's 21,000th landing.

VA-95 is the only prop squadron on the *Ranger*. There are three jet fighter and attack squadrons and one jet heavy attack squadron now embarked.

'EVER BEEN LOST? TRY NSLA!'



THE PILOT may plot his course on specially manufactured tracing paper or else he may indicate his route on a regular aeronautical chart.



USING A "Rube Goldberg" device, Ltjg. Walt Wattenburger punches holes along the strip chart edges to match the pegs on the roller.

PILOTS OF LIGHT attack airplanes will be glad to know that the days of folding and adjusting large navigation charts in a small cockpit are drawing to a close. There is now a better way to track your geographical position.

Designated as *Navigation Set, Low Altitude, A/A 37G-2*, or *NSLA*, produced by the Naval Avionics Facility, Indianapolis, the device is slightly larger than a pilot's kneeboard. It automatically advances a strip chart under a plexiglass window at a controlled rate commensurate with the ground speed of the airplane. Compared to sophisticated equipment now in use or being developed, NSLA is a simple device.

A small electric motor powers the roller; gears and an adjustable integrator wheel drive provide a range of driving speeds corresponding to 250 knots to 700 knots ground speed. The five-inch-wide strip chart can have a scale of either 1:1,000,000 or 1:500,000. With a scale of 1:1,000,000, a strip chart long enough to portray 1100 miles can be displayed by NSLA.

A pilot may trace his route on the vellum paper or cut a strip chart. For ease of observation, each course line should be under the middle of the plexiglass viewing window. When a course change is due, the pilot makes a notation on the strip chart to "turn to ___° mag. heading." With an NSLA rolling a strip chart at a rate corre-

By LCdr. R. R. King, Jr., VA-144
sponding to his ground speed, a pilot has to work to get lost, as long as the ground or some other suitable check point is visible occasionally.

NSLA is an improved version of Low Altitude Navigation Equipment (LANE), an experimental device developed by the Naval Air Development Center (NADC) and tested by VX-5. Certain design modifications were suggested, and from LANE and these modifications, NSLA evolved. Production of NSLA units commenced, and in January 1960, CNO assigned a project to determine the suitability of NSLA "for low altitude, high speed navigation under fleet operating conditions in all possible operating areas."

VA-144, flying FJ-4B airplanes and deployed aboard USS *Oriskany* (CVA-34) was one of the squadrons parti-

cipating in the evaluation. To facilitate evaluation, VA-144 numbered each unit, fabricated canvas carrying bags, and assigned the units to individual pilots. When a pilot was assigned a flight where NSLA was to be used, he prepared a strip chart, loaded the NSLA in the ready room and took it to the airplane where it was installed in a matter of seconds.

VA-144 used NSLA during a weapons training exercise and strike exercise. Since much of the navigation was over water, the original presentation under the plexiglass window was landfall. With a map scale of 1:1,000,000, the landfall width portrayed was about 60 miles, which was adequate to allow for primary and alternate coastal entry points.

As reported by VX-5, the value of NSLA is not limited to navigation matters alone. The moving chart is ideal for notations of cruise control data and armament check lists, since information can be noted at positions in correct chronological and geographical sequence. The plexiglass window is hinged to allow reconnaissance information to be noted when and where it is observed.

VA-144 and units evaluating NSLA soon will report on its reliability.

If NSLA lives up to early reports, pilots of light attack airplanes can look forward to carrying something other than a stack of aeronautical charts in flight suit pockets during operations.



NAVIGATION SET, low altitude, is shown installed in the cockpit of FJ-4B Fury.



DILBERT DUNKER carries pilot to bottom of North Island pool in cockpit escape practice.



OVER THE SIDE for helicopter rescue practice. Student will ignite flare to guide "angel."



HELO HOISTS survival student while others await turn for practice with rescue sling.

COURSE THEY 'SURVIVE'



INSTRUCTOR, using display, shows how to tell edible from harmful species of sea life.

FÆTUPAC's Survival School is a course that no student ever forgets. It prepares flight crews to survive if they have to abandon their aircraft over water or land.

After a hearty breakfast, the students start the course at 0700 Monday, knowing they won't have another "civilized" meal during the entire five and one half day program. After a morning of lectures, the students are taken to a swimming pool, sans lunch, and taught procedures for abandoning ship, escaping from crashed aircraft, and getting free of a parachute while being dragged through the water. They also practice helicopter pick-up.

The first night they spend on the NAS NORTH ISLAND beach. They must improvise their shelter and forage sea-life for food. Except for seven ounces of survival rations, the only food during the course is what the student can get "off the land."

In the mountain phase, the students learn to identify edible plants and animals, build traps and overcome resistance to unusual foods.

A hike through barely passable country climaxes the course. With only a canteen of water, a compass, and a map the students must navigate to a spot five to seven miles away.

Through the course fliers learn they can miss a few meals and live, they can subsist on a diet of plants, shellfish, insects, and small animals; in short even in very tough circumstances, they can survive.



CLIFF HANGING crewman learns how to go safely down face of a fifty foot precipice.



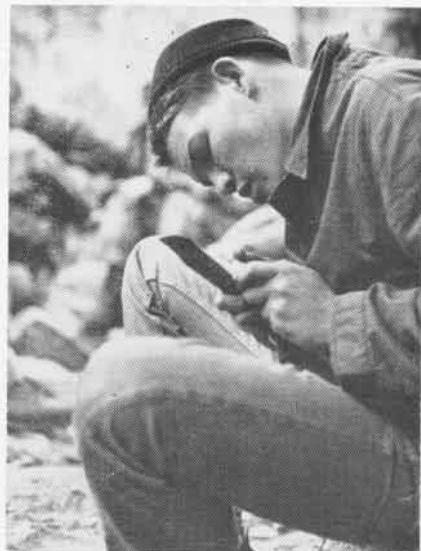
ROUGH COUNTRY hike gives students practice in land navigation, mountain survival.



PARACHUTE, the most useful item of survival gear, can meet shelter and other needs.



CACTUS PROVIDES survival food. The heart of the yucca, another cactus, not only is good to eat, but may also be used to trap ants. Course graduates claim ants have nut-like flavor.



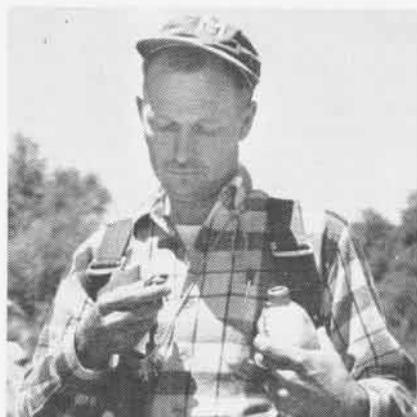
SURVIVOR WHITTLES peg for small animal trap. Slow work solves boredom problem.



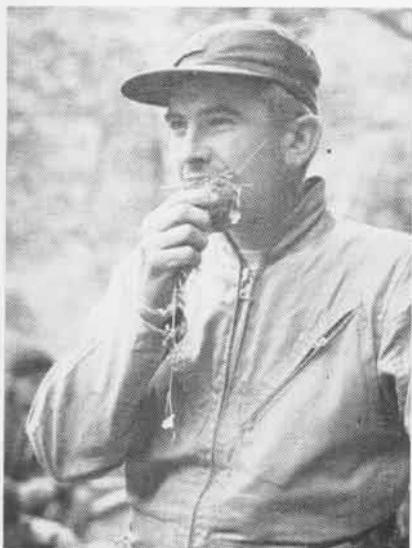
DANGLING SPECIMEN demonstrates that trap made of sticks and parachute shrouds works.



SNAKE STEAK is a survival delicacy. King snake, above, is almost as tasty as rattler.



SURVIVAL STUDENT contemplates best way to eat small horned rod caught on fifth day.



SURVIVAL DIET isn't all meat. Student munches leafy plant which tastes like lettuce.



NEAR THE END of the five and one half day course these students soak their feet in a cool mountain spring after a hot, eight hour hike through rough, mountain country.

UNDERGRADUATES AT MONTEREY



PICTURESQUE MONTEREY, CALIFORNIA, IS SITE OF GENERAL LINE AND NAVAL SCIENCE SCHOOL. AERIAL VIEW SHOWS EXTENSIVE CAMPUS

FOR MANY career aviators, their first advanced naval school will be one located on the beautiful campus at Monterey, California. The General Line and Naval Science School, as its name indicates, has two programs both designed to "raise the educational level, broaden the mental outlook, and increase the professional and scientific knowledge of line officers in order that they may better perform the duties and meet the responsibilities of higher grades."

The General Line Program is not new. It goes back over 30 years to 1927 when the General Line School was established as a component of the Naval Postgraduate School, then located at Annapolis. Its mission, however has remained the same: to acquaint junior line officers returning from sea duty with modern developments. During WW II the school was suspended.

After WW II the General Line School was re-established at Newport, Rhode Island, across Naragansett Bay from NAS QUONSET POINT. Its real job then was to provide "equalization" training for the large numbers of ex-reserve and temporary officers who had

been integrated into the Regular Navy.

When the Korean conflict began, the Newport School was closed. This did not mean that the program was abandoned, for the General Line School at Monterey was a going concern, having been established in 1948. In 1958 its title was changed to "General Line and Naval Science School."

As a result of the immediate post-war function, the General Line Program has come to mean "equalization" training in the minds of many officers. However, as the WW II groups have completed their training, the function has evolved to instruction at a higher and broader level than mere "equalization" characteristic of the earlier years.



EACH STUDENT RECEIVES SPECIAL COUNSEL

Flexible programming now permits each student, with the aid of faculty advisors, to select the courses which best meet his individual background and ambitions. The school now offers relatively sophisticated courses in such subjects as Naval Intelligence, International Law, International Relations, Restricted Weapons, Guided Missiles and Outer Space Operations. These and other such high level courses are of value to any naval officer at this point in his career regardless of background.

The General Line Program is comprehensive, thorough, and current. In each major field, students are first brought up to date, then introduced to advanced studies. Thus they are prepared for the new things and ideas they will encounter upon rejoining the Fleet.

Not all the courses are devoted to traditional military arts and to hardware. In order to equip the officers to meet ever increasing demands for leadership and management, courses are offered in Leadership and Administration, Personnel Management, Logistics, and Personal Affairs. The department of Humanities provides course

in Group Procedures and the Art of Presentation, Speech, International Law, International Relations, and National Security.

All Regular Navy line officers are considered for assignment to the General Line Program after completion of a tour of sea duty. However, priority is given to those officers who have not had the benefit of midshipman training. Ideally officers will be assigned after five to seven years of commissioned service. Since all officers are automatically considered, specific applications are not required.

The Bachelor of Science program is a result of the union of the New Five Term Program with the General Line School Program. This program includes the naval professional courses of the General Line Program plus



BASIC AND APPLIED SCIENCES STRESSED

sufficient coverage in the Social-Humanistic and Scientific-Engineering areas to support adequately a B.S.

To be eligible for assignment to the Naval Science Program, officers must have obtained 45 semester-hours

of college credit on their own. Some credit may be granted for in-service training. Eligible officers desiring the course are to submit requests to Chief of Naval Personnel in accordance with BUPERS Instruction 1520.48B.

Classes for both the nine-and-a-half month General Line Program and the one to two-and-a-half year Naval Science Program convene twice yearly in March and August. Details of both these programs can be found in Catalog of U.S. Naval Training Activities and Courses, NAVPERS 91769-D.

Naval aviators are eligible for both courses, and in fact, comprise the majority of the students. Of the approximately 350 students attending the General Line Program, 60% are 13XX, while of the 250 in the Naval Science Program, over 90% are flyers.



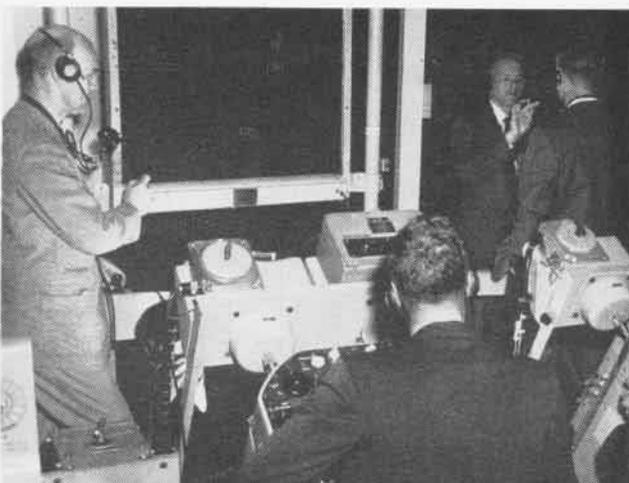
BASIC FLIGHT PRINCIPLES MUST BE HEEDED MORE THAN EVER



SEXTANT AND OIL PAN USED FOR DRY LAND PRACTICE SUN SIGHT



MODELS ARE USED TO DEMONSTRATE PROBLEMS OF AT-SEA FUELING



CIC MOCK-UP PROVIDES PRACTICAL AIR-CONTROL EXPERIENCE

Weekend Warrior NEWS



OAKLAND ASW SEMINAR, first in NAR, brings together Lcdr. K. Smith, Lt. R. Faines, Lcdr. K.M. Brown, Capt. H. P. Bennett.



SWINGING WARRIORS of NARTU Anacostia, also known as "Dukes of Dixieland," hold ramp session under S2F1 wing at home base.

Seattle 'Tigers' Return

The "Restless Tigers of the Pacific," ex-Seattle Naval Air Reserve Squadron VC-892, returned home during the 1960 Seafair for a short visit. Now designated Air Anti-Submarine Squadron 38, the unit was on board USS *Bennington* when that ship led the 1960 Seafair fleet into Elliott Bay.

From its beginning at Seattle 10 years ago, VS-38 has become an integral part of the Navy's first team in the Pacific. Since the first West-Pac cruise in 1951, on the old "jeep" carrier USS *Bataan*, the squadron has ranged

the length and breadth of the Pacific participating in many "firsts" and establishing many records that still stand.

Among the records is a period of deployment during which 137 days out of 216 were spent at sea, thus earning the officers and men their title, "Restless Tigers of the Pacific."

Oakland ASW Seminar

Twenty-three officers from NAS OAKLAND, NAS LOS ALAMITOS, NAS MINNEAPOLIS, NAS GLENVIEW, NAS SEATTLE and NAS SOUTH WEYMOUTH attended the first ASW Seminar for

Reserve Officers on the West Coast at Oakland.

Presentations covered weapons, tactics and capabilities of both ASW aircraft and surface units as well as submarines. One highlight of the seminar was a field trip to Mare Island Naval Shipyard where the group visited the *Polaris* sub USS *Theodore Roosevelt*.

Another highlight was the presentation, "Guided Missile Defense Concepts," by a team from the Naval Missile Center at Point Mugu.

The basic ASW schedule was enriched by talks on other subjects of



DEDICATED DALLAS DRIVE for Reserve recruits was highknighted by Lcdr. John Ledford, NAS R&I Officer. At left, Capt. R. M. Harper,



Dallas C.O., bids him speedy joust whilst at right, Knight of Olde beloes it, spear in hand, seeking out Spacemen Bolde.

interest to air intelligence officers. Among these were: "Residence in Leningrad," by Dr. Hugh Donnelly, a reserve Commander from the University of California, "Naval Intelligence," by Cdr. Hardenburg, (RIPO 12ND), and "Current and Prospective Developments in Photo Interpretation," by Dr. Robert Colwell, a reserve Commander from the University of California.

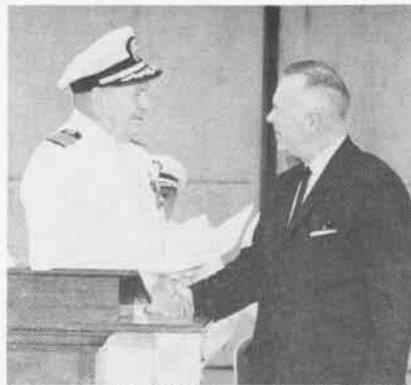
Anacostia Reserves Aid Pilot

LCdr. John V. Sullivan, plane commander of a P2V-5F *Neptune* bomber, was making practice landings at NAS Oceana, Va., in July during NRA VP-661's 14-day training cruise at NAS NORFOLK when he was directed to proceed and locate the downed pilot of an F11F *Tiger* jet from VF-33 off the *Intrepid*.

The P2V crew of modern minutemen from NARTU ANACOSTIA spotted the pilot's flare at night in an area 18 miles out into the Atlantic off the Virginia Capes. LCdr. Sullivan and his crew circled the area for 30 minutes and remained on the scene until a helicopter from NAS NORFOLK arrived to rescue the jet pilot, Lt. William Albertson, who was not injured.

Lakehurst WW Scores 98.8

Fred L. Dencklau, an Industrial Engineer for Mack Trucks Inc., and a Weekend Warrior with the Naval Air Reserve Training Unit at Lakehurst, has set a new high in scholastic aver-



CAPT. L.R. McABOY presents CNAResTra Certificate of Merit to Joseph McMabon.



B.R. ROBBINS gets Distinguished Public Service Award from RAdm. A.W. McKechnie.

ages at the NAR Electronic Training Unit, NAS WILLOW GROVE, with an average grade of 98.8 earned while he was studying the unit's two-week course in basic electricity.

On the final exam he had a perfect score for another first.

As a Weekend Warrior, Dencklau holds the rate of AT3 and performs training duty with HU-751 at Lakehurst.

Dencklau enlisted in the Navy in 1952 and took boot training at Bainbridge. He was last assigned to duty with Heavy Patrol Squadron 56 which operated out of NAS NORFOLK, Va.

'Astronot' in Alohaland

When the brand-new state of Hawaii was ceded to NAS LOS ALAMITOS (for NavCad and Aviation Officer Candidate recruiting purposes), LosAl "Navigator" teams were quick to take possession of the new procurement region.

Arrangements were made for an immediate visit to the campus of the University of Hawaii at Honolulu.

Among the tons of recruiting aids somehow crammed into their P2V was a mannequin named Irving, who was dressed in a \$5000 space suit. The full pressure rig recently had been declared obsolete by another service.

Procurement officers unanimously gave credit to their inanimate but attention-getting colleague from outer space. Much of the recruiting credit, they say, must go to Irving.

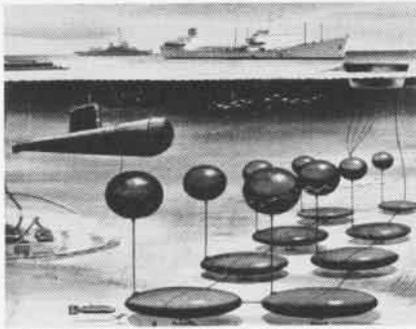


TIME: NOW; PLACE: HAWAII; MISSION: RECRUIT! (Yeab, work!) In the 50th State, LosAl's able team led by (and carrying) a mannequin dubbed 'Irving' spread the good word on Naval Aviation.



(L-R): Irving watching, LCdr. Bob Weyband scores first contact; Irving the Irresistible scores second and in last panel LosAl Space-man responds to Edgar Bergen on television beamed from Hawaii.





ARTIST'S CONCEPT OF UNDERSEA SYSTEM

Undersea Storage Studied Collapsible Rubber Tanks Tested

The Navy is testing an undersea liquid storage system in the Gulf of Mexico which, if feasible, could be used to provide ships, submarines and aircraft with gasoline, lube oil, crude oil, or possibly fresh water.

The article under test is a prototype 50,000-gallon rubber container.

While it is one of the largest ever fabricated, the prototype is regarded as only a segment of an undersea fuel system capable of serving as an emergency cache for fleet ships.

Full scale storage containers would be in the range of 25,000 barrels and several would be interconnected to a common header in actual use.

The tank being tested was developed by U. S. Rubber under ONR contract.

Ranger Donates to Needy Hong Kong Gets Five Tons of Gear

Officers and men of the carrier *Ranger* donated more than five tons of clothing and household goods to the needy people of Hong Kong.

The donation was made to the British Red Cross and Catholic Charities of Hong Kong, who will make further distribution.

Chaplain R. P. Heyl represented Capt. Donald Gay, Jr., Commanding



WEST MEETS EAST IN OPERATION HANDCLASP

Officer, at a ceremony held on Fenwick Pier in Hong Kong. Rev. P. J. Howatson and Miss A. Law accepted the donation.

The 272 boxes of clothing collected by *Ranger* crewmen, their families and friends, amounted to the largest donation made by a Seventh Fleet ship to Hong Kong's needy, according to the recipients. The clothing was collected during a week-long drive before the carrier left her home port in Alameda for the Far East.

En route to WestPac, a group of *Ranger's* master-at-arms force sorted the clothing. Articles not considered appropriate were discarded. The usable items were washed and ironed in the ship's laundry by volunteer help and then were boxed to make distribution easier.

Boxes were stenciled with Operation *Handclasp*, the American flag, and *Ranger's* name. *Handclasp* is part of the People to People Program.

AJ-1's Will Battle Fires Three Equipped with Water Bombs

Three AJ-1 *Savage* attack planes have been converted into water bombers for fighting forest fires. Each carries 2000 pounds of borate.

Conversion was done by Bellroy Air Tankers, Long Beach, Calif., whose spokesman said the *Savage* will handle twice the load at twice the speed of other aircraft used in this role.

WAVE Expert on Physiology Authority on High Altitude Flight

Without ever leaving the ground, LCdr. Mary F. Keener, the Navy's only woman aviation physiologist, teaches pilots and air crewmen of all services how to meet emergencies they may encounter miles above the earth.

Her classroom at NAS BARBER'S POINT is a low-pressure chamber which can simulate conditions at altitudes up to the stratosphere, the Navy's only such installation outside the mainland.

A recognized authority on the effects of high altitude flying on the human body, Miss Keener explains the cause, symptoms and cure for physiological reactions to the conditions of high altitude flight. She conducts classes for a weekly average of 50 to 100 pilots and crewmen of the Navy, Air Force, Army, Coast Guard and National Guard.

Miss Keener has supervised the establishment of two low pressure cham-



MISS KEENER ADJUSTS AN OXYGEN MASK

ber installations in the United States. These are located at NAS NORFOLK and NAS GROSSE ILE.

She was recently selected for advancement to the rank of Commander.

Scot Charms Yorktowners Recalls Past in Royal Navy, Army

The oldest and most popular man aboard the Pacific Fleet ASW carrier *Yorktown* is Thomas "Scotty" McMenemy, native Scotsman, veteran of the Battle of Jutland in a British Cruiser, a tour of army service with the British Lancaster regiment, and since 1943 (at age 43) a member of the United States Navy.

At 61, McMenemy is ready for a shooting war. Recently he told RAdm. Joseph D. Black, whose ComCarDiv 17 pennant flies in *Yorktown*, "I want to die in the Navy in one of two ways, either of old age or as a war casualty."

McMenemy was born August 31, 1899 when Queen Victoria was reigning monarch of the United Kingdom. He spent his boyhood in Paisley, Scotland. He joined the British Navy at age 15, stayed through the first world war, then changed to the Army at 19. His pay in the Royal Navy began at 12 cents per week. By the time he made seaman he was earning \$5. His Army stint completed, he returned to Scotland.

He has lived in America 37 years.



McMENEMY, RADM. BLACK ON YORKTOWN

Pensacola Progress Report

VT-3'S QUALITY CONTROL PROGRAM

QUALITY CONTROL is more than a watchword for Training Squadron Three at NAAS WHITING FIELD. It is something intensely practical and VT-3's all-Navy, all-time safety record for a training unit of 48,538 hours without a major accident means that what that squadron does in the way of maintenance has real authority.

There is no contention that VT-3 has the first successful quality control program; or that it is "the best in the Navy." But VT-3 does have a functioning quality control program, modeled after American industrial practice, which is accomplishing its purpose at an acceptable cost.

VT-3 did not "discover," "invent," or "develop" quality control. Its program springs directly from the directives of CNABATRA, CNATRA, and higher authority, particularly from BUAER Instruction 5440.2, the Organization and Procedures Manual for Aircraft Maintenance Activities, issued 23 September 1958. The squadron has developed some innovations in organization and procedure, but always within the intent of quality control directives.

Quality control helps to solve one of the chronic problems in military aviation: the loss of experienced mechanics and trouble-shooters through discharges and retirements in a time when aircraft systems are becoming more and more complicated. Quality maintenance thus must be stressed as never before.

At VT-3, the Quality Control Division has a small highly qualified staff of five first class petty officer master inspectors and a Quality Control officer. Inspectors personally pass on all major checks, component changes, acceptance and transfer checks, changes or work on the flight control system, and other work assigned by the Quality Control officer.

Even though the Quality Control Division people perform the important final inspections, the bulk of inspections required for quality work is performed by members of the regular working organization. These part time "systems inspectors" are designated by the maintenance officers and qualified



MASTER INSPECTORS not only make final inspections but also monitor work in progress.

by the Quality Control Division. Systems inspectors work under the supervision of their own division officers and petty officers, but under procedures approved by Quality Control. No systems inspector may approve his own work.

In addition to the final inspection of completed work, the master inspectors monitor work in progress to insure quality workmanship and compliance with technical instructions. This also enables them to spot trouble early enough to correct it with a minimum of expensive rework.

While they do not underrate the importance of inspections, VT-3's Quality Control Division regards inspec-



CO OF 'NAVY'S SAFEST,' Cdr. Robert Ries, Safety Officer Grouby, with CNO Safety flag.

tions as only incidental to their main function of helping to improve the maintenance "system." They know that quality can't be "inspected into" work, but must be built into it from beginning to end. Probably better than anyone else, the quality control people know that consistent high quality is the result of sound organization, good procedures, and above all, the "quality" attitude. As they see their function it is to spotlight areas where improved procedures or better training are required, so that the maintenance divisions may "turn to" on the problem areas. The Quality Control Division acts only as a "catalyst," a service to the men who do the actual maintenance.

Because spotting of trends and the analysis of system weaknesses require paper work, each shop keeps a log on each aircraft. An entry is made in the book for each work order performed on the plane which shows who did the work and who made the inspection. When a repeat squawk is received, the man who did the first repair is assigned to the same job with a different inspector. This procedure normally eliminates persistent complaints. However, if a third complaint is received, more extensive troubleshooting is performed.

All master inspection records are filed by check crew. Quality control people review these files to spot discrepancy trends of particular crews. Once a trend has been spotlighted, usually the only corrective action required is to bring the problem to the attention of the crew.

Even though the Quality Control Division performs only a small percentage of all the "inspections" required in quality maintenance, it does keep tight rein over the ultimate inspection, the test flight. In this area VT-3 has done the most to amplify the directives of higher authority.

Test flights follow each major (240 hours on the T-28) check, completion of acceptance and transfer inspection, change of engine or other major component, removal and reinstallation of flight surfaces, replacement of flight instruments, and various other major



TEST FLIGHT is key inspection in VT-3's quality control program. Here test pilot Walljasper checks the oil while his crewman Little gets fuel in a thorough pre-test flight inspection.

work. Test flights may also be ordered for special reasons by the Quality Control officer.

Before each test flight, a master inspector will conduct a thorough ground check of the maintenance work. Once all discrepancies detected by the master inspector have been worked off, the test flight will be flown.

Only a limited number of pilots fly test flights. Each is designated by the Commanding Officer in writing as a T-28 test pilot. The number of test pilots is restricted not for any lack of pilots possessing the basic qualifications, but as an aid to standardization. Maintenance Department officers personally fly as many of the test flights as possible. The Quality Control officer himself has flown up to 70 test flights in one month. Maintenance Department officers are scheduled for all test flights requiring in-flight diagnosis of elusive discrepancies.

Every test flight, regardless of the circumstances which required it, is a complete, standard test of the aircraft and all its systems. This not only insures that all components will be checked, but it also makes it easier to detect significant patterns.

Standardization of the test flight is achieved through careful indoctrination of test pilots and crewmen. CNABTra's "Flight Test Data Record (T-28)" provides the standardized framework for test flights. This form is printed on both sides of a 10½ by 8 inch sheet that, when folded, yields four knee-pad size pages. Three pages of the "Data Record" are devoted to

items which must be marked by the test pilot. Flight test remarks are on the fourth page. The test pilot also must enter all discrepancies on the yellow sheet.

The standard test flight requires more detailed observations than the pilot's annual physical examination. In addition to the 58 items which must be marked (✓) for satisfactory or (X) for unsat, 115 actual readings must be entered on the data record. Even more entries are required for test after an engine change. Actual readings for oil pressure and temperature, fuel pressure, and cylinder head temperature are recorded under six different conditions: before flight at 1200-1400 rpm, at takeoff power, at climb-power, at normal cruise in both low and high blower, and after flight at idle. Tab settings are recorded three times: clean at 100 knots, dirty at 100 knots, and clean at 170 knots.

Test pilots are indoctrinated in the use of the data record so that test requirements will be interpreted in the same manner. The Quality Control officer has prepared a comprehensive instruction on "Flight Test Data Record (T-28), how to fill out and when."

Crewmen are carried on all flights requiring a carbon monoxide test. Where specialized knowledge is desirable, test flights are made with a crewman. An AD is carried on all flights after engine changes, and an AM after structural work.

Repeat squawks provide the chief occasion for test flights "as directed by the Quality Control Officer." Where there is posed a frustrating recurring

problem which the maintenance crews can't find or correct on the ground, yet which keeps recurring in the air—usually with considerable conjecture concerning the ancestry of all concerned—a test flight may be ordered. "Ground checks OK" is not OK at VT-3. If the trouble can't be located after the second complaint, a test flight is scheduled with a crewman of the appropriate technical rating.

Long before a test flight is scheduled to run down an elusive problem, the



FOUR KNEE-PAD pages are filled with readings, "sat" or "unsat," and remarks for test flight.

squawks have been screened to eliminate those growing out of the inexperience of the student pilots. Before the student enters a discrepancy on a yellow sheet, he talks over the "symptoms" with an experienced technician who helps him diagnose the trouble and thus write up a discrepancy report which will lead the repair crew most directly to the trouble. Through this pre-screening, most of the "cockpit trouble" squawks are eliminated before they ever appear on yellow sheets.

After each test flight, the Quality Control officer reviews the Test Flight Data Record. He will frequently "down" a plane which the test pilot has left "up!" What he spots is a pattern of readings which indicate a deficiency, even though no single reading was outside the limits. VT-3 feels that such analysis would not be possible without the use of standardized test flight. Review of test flight records also helps the Quality Control officer to keep his finger on maintenance quality trends as time goes on.

It is now possible, after nine full months of operations, to evaluate the "quality control experiment" at VT-3. Quality control theory has been given a fair test in a military setting. What have been the results of the test?

Flight instructors and the officers and men of the Maintenance Department rate quality control a success. The instructors are impressed with the improved condition of the planes. Few flights are lost owing to aircraft discrepancies. The men of the Maintenance Department like the program, because they know it has helped them raise the quality of their work.

For the squadron, quality control has provided an entirely unexpected bonus in manpower utilization. It had been assumed that an inevitable part of the price of higher quality would be reduced maintenance output, since five of the most highly qualified technicians were transferred from active maintenance to "overhead" jobs. That assumption was found to be invalid.

With controlled quality, the total amount of maintenance work required declined. "Down gripes" between

quality control is reflected in his remark, "If we get down to where we have only one first class left in the squadron, I would be in favor of assigning him to quality control."

The real "proof" of quality control is the squadron safety record of 48,538 hours without a major accident. Why did quality control succeed? It can be argued that it succeeded because of the wholehearted support of everyone in the squadron. But it can just as well be argued that it has enjoyed support because it has been a success.

The answer to why it has worked and won support seems to lie in a soundly organized program staffed with the right number of qualified people. The squadron has managed to find the happy medium between the undesirable alternatives on the one hand, of staffing the division with collateral duty people, and on the other of overstaffing it so that it becomes a blood-sucking empire draining too many of the most highly qualified technicians from the producing divisions. VT-3 feels that if it is ever to "get off the ground," the quality control program must have a nucleus of highly qualified technical people.

Violation of the well known management principle that "no one individual should at the same time be required to be critic of, and subordinate to, another individual"—the effect of the collateral duty approach—inevitably reduces quality control to "just another program."

Arrangement of VT-3's five men in Quality Control permits them a mini-

mum of one AD and one AM on duty at all times for their "around the clock" maintenance effort. This small number would never be enough if quality control attempted an 100% inspection of all maintenance work accomplished, but it is adequate to perform the most vital inspections and to act as a trend spotter and catalyst.

Perhaps the key to the success of the VT-3 quality control effort is to be found in the men selected to man the Quality Control Division. The history of quality control at VT-3 dates from 10 October 1959, the date the Whiting South Field Maintenance officer let the Quality Control officer select from the entire Maintenance Department the five men he needed to staff the Quality Control Division. The men selected were highly respected both as petty officers and technicians. The respect these individuals enjoyed has carried over to the new Quality Control organization and ultimately, to the idea of quality control itself.

Another reason for the success of quality control at VT-3 is that it is soundly based on personal responsibility. The introduction of quality control has in no way relieved the maintenance people of any responsibility for quality work, but has rather sharpened that responsibility by adding accountability. Poor workmanship reflects on the man who turns it out. Good workmanship—more the rule now—also reflects on the man. From personal responsibility has come increased pride. The crew of VT-3 takes justifiable pride in their achievement.



QUALITY CONTROL officer flies many test hops himself and studies records of all others.

checks declined. The amount of work rejected after final inspection or the test flight declined. It was found that it requires less man/hours to do a job right once than to do it "quick and dirty" once and then do several jobs to correct deficiencies.

Even the saltiest veterans in the maintenance field have a good word for quality control. Lt. Bill Christi, the Shops Division officer of VT-3, is a mustang who has spent most of his 20 Navy years in aircraft maintenance. The importance he attaches to



CARBON MONOXIDE tests are made by crewman. Here Little, AD3, test kit in hand, watches Lt. Damon enter CO information on p. 4 of CNABATRA's "Test Flight Data Record (T-28)."



MOBILE CAGE IS POSITIONED AROUND TIRE

Blowout Hazard Lessened NAA Develops a Protective Cage

North American Aviation has designed a special protective metal cage to fit snugly around the wheels of the A3J *Vigilante* attack plane. The cage permits pilots and ground personnel to perform their duties safely as they secure the plane after a landing.

Contrary to automobile tires, the greatest danger of a blowout in jet airplane tires occurs some 20 minutes after landings. Tests on various high performance aircraft disclose that not until 20 to 30 minutes after a plane has stopped do the tires reach peak temperatures and pressures. Under certain emergency landing conditions or after excessive braking during taxiing, temperatures and pressures rise to more than five times that of normal.

Two special rectangularly shaped cages have been designed and produced

for the A3J flight line. More will be made. Each cage is 58 inches long, 23 inches wide, and 34 inches high.

The cages are built of angle-iron strips and 1/8-inch expanded metal. Expanded metal was used because it is strong and at the same time, holes in its surface permit freedom of air movement about the tires for natural cooling.

The cages rest on three small wheels and may be pulled by a T-shaped handle to the A3J and rolled into position around the landing gear. They form protective enclosures around the wheels and tires, so that crewmen may move freely around the aircraft.



ELECTRONIC-LADEN TRAILERS AT IWAKUNI

Accounting by Electronics Mobile Unit Opens Shop at Iwakuni

The First Marine Aircraft Wing has placed into operation a new concept in accounting and reporting.

The Fourth Data Processing Platoon (mobile), operating out of FMFPac headquarters, has arrived at

MCAF Iwakuni, Japan, and set up a four-fold mission as a reinforcing element of the Wing.

The 23-man platoon, activated at Camp Pendleton this spring, is equipped with eight electronic data processing machines mounted in two truck vans. The equipment includes an electronic accounting machine, a high speed interpreter, a high speed sorter, a reproducer, an electronic calculator, a collater, and two key punch machines.

Operations began in August when the first unit diaries were submitted by First Wing reporting units.

The unit will perform personnel accounting and reporting functions, mechanized supply support missions, and additional accounting functions.

Work on 5440.2 to Begin BuWeps Invites Ideas From Fleet

Work on the first major revision to BuAer Instruction 5440.2, "Organization and Procedures Manual for Aircraft Maintenance Activities," is scheduled to begin in the near future.

Maintenance people, officer and enlisted, have been invited to forward suggestions, comments, and ideas on improving aircraft maintenance organization procedures to BuWeps.

Send your ideas direct, urges BuWeps, and address them to:

Bureau of Naval Weapons
Maintenance Programs Officer
(FMPP-3)

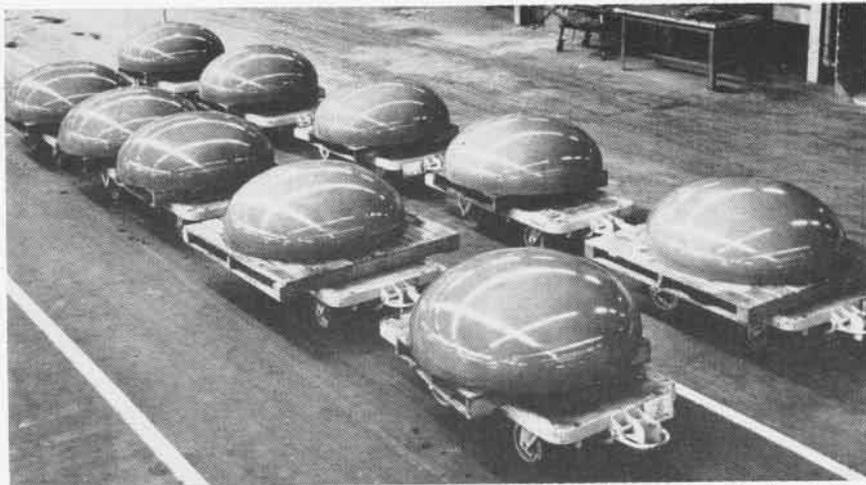
Attention Major R. A. Bauer
Navy Department
Washington 25, D. C.

ECM Recognition Program Helps Operators Learn Rare Signals

An Electronic Warfare Recognition Program has been established to train ECM operators to recognize intercepted electromagnetic radiations. The program will be similar to the Navy's visual lookout program.

The course uses slides and magnetic tapes coordinated through the use of a special slide projector/sound amplifier. Each lesson consists of three to five signals and lasts about 20 minutes. Signals from foreign, friendly-foreign, and U.S. sources are presented.

The initial quantity of the course (Training Device 5F3) and the sound slide projector (Training Device 11B-32A) will be distributed to commands named by CinCPacFlt, CinCLantFlt.



POLARIS rocket chamber end enclosures, explosively formed from flat blanks of high strength steel, stand ready for shipment at Aerojet-General's Ordnance Division, Chino Hills Laboratory. Uniformity of diameter, thickness is improved by process.

CUSTOMER SERVICE KEEPS PLANES FLYING



A WORK ORDER IS CHECKED BY C.W. DOUGHERTY AND J.J. HART



TARGET DRONE BEYOND SQUADRON REPAIR ARRIVES FOR SERVICE

A HURRICANE HUNTER aircraft from NAS JACKSONVILLE was forced to land at Norfolk because of a radio malfunction. The pilot made a quick call to Customer Service in the O&R Department. While the crew ate a meal, the repair was made.

An average of 193 repair and manufacture units, requiring approximately 700 man hours, are processed through the Customer Service division daily by a staff of six.

No job is so large or so small, no schedule is so tight, no distance is so great that it can't be bridged one way or another by the Customer Service group whose motto is "Service to the Fleet."

Customer Service was established in Norfolk in November 1955 when

O&R recognized the great demand for the limited amount of aeronautical material in its possession.

The new system expedited the repair of items that were causing AOCF and ANFE by making material available to aviation units in the area.

Basically, Customer Service was set up to assist fleet aviation units in their technical and material problems. But it has not been limited to those units alone. Service is extended to all aviation operation and maintenance units, the Naval Air Training, and the Naval Air Reserve Training Commands, as well as the Naval Air Stations. On several occasions, Customer Service has assisted NASA in the repair of aircraft items.

Service ranges from engineering and

consultation to the chemical, physical and metallurgical tests.

The most urgent items handled by Customer Service are the AOCF's. Over 500 of these jobs were completed July 1 through December 31, 1959.

On several occasions the O&R department has dispatched teams to Patuxent River and Argentia to replace defective nose sections on the engines of WV-2 barrier planes.

The firing mechanism for a personnel ejection catapult on a certain plane was modified recently. A pool was established and units were released to squadrons as quickly as they were processed through the ordnance shop. By working through the Christmas holiday period, the modification was completed and costly AOCF's avoided.



OIL CLEANER FROM NASA WAS PROCESSED ON A PRIORITY BASIS



VF-102 AT NAS OCEANA NEEDED BOOM FOR TOW TARGETS ON F4D

Sara Makes 10,000th CCA 1-1.5 Minute Intervals Averaged

USS Saratoga recorded its 10,000 Carrier Controlled Approach during Atlantic Fleet exercises in July.

Controlling the approach and recovery were LCdr. Martin Goode on approach control and David O. Lucas, AC1, on final control.

Cdr. Edward Dankworth, Commander of Air Group Three, piloted an F3H *Demon* of VF-31 for the landing.

Since May 1956, Saratoga's CCA crew and its embarked air groups have conducted approaches during IFR and night recoveries. Recovery intervals of one to 1.5 minutes per aircraft, including wave-offs and bolters, have been maintained. Recoveries of jet and reciprocating engine planes, combined, are not considered unusual.

Flying Parson at Corpus Accompanies USNR Middies on Tour

Lt. W. M. Bailey, sometimes called the Flying Parson, accompanied NROTC students on their indoctrination tour at Corpus Christi.

The Naval Reserve chaplain earned his wings at Corpus Christi in 1944. He joined Air Group 15 aboard USS *Essex* and returned home two years later with the Navy Cross, the Distinguished Flying Cross, Air Medal, and a Presidential Unit Citation.

After the war he returned to the ministry. He stayed close to the Navy by getting his designation changed from Line to Chaplain Corps.

The Reserve chaplain is minister of the Casa View Methodist Church in Dallas. Until this summer, he had not been aboard a carrier in 14 years.



CAPT. E. R. JOSHUA, and Capt. J. J. Davis, Jr., S.C., admire nation-wide, alltime low of 3.1% AOCP at ASO headquarters. Rate three years ago was 8.3%. Low rate means that there are 390 more aircraft now available.



CREW FIVE of VP-18, based at NAS Jacksonville, scored 100% in all phases of their Antisubmarine Warfare Mission in annual Competitive and Qualification Exercises. Plane commander, LCdr. Laurence L. Miller.

Glare-free Panel is Studied Would be Used in Future Aircraft

Chance Vought is attempting to develop a glare-free, luminous cockpit for aircraft of the future under a Navy contract. A new electroluminescent principle of lighting is being used.

The two-year project calls for production of console panels more evenly lighted and with greater reliability of operation than existing plastic panels. In addition to flight testing the panels in F8U fighters, CV will install and evaluate them in the integrated flight capsule it is designing for Navy planes of the 1963-65 era.

Numerous companies are developing commercial applications of electroluminescent lighting for products ranging from clock faces to automobile instrument panels. The Chance Vought study will seek to adapt this lighting principle to aircraft cockpits.

The principle uses a "sandwich" in which a phosphorescent material, placed between two electrical conductors, glows when an alternating current is applied. The technique produces a "cold light" which is glare free, requires less power, and results in a lighter installation.

One problem will be to develop a system which produces a white or red light. Red is preferred for preserving a pilot's night vision. Most light sources produce blue or green.

Ranger 'Brainwashes' USAF Carrier Briefing Very Successful

"I have confined all members of party to quarters pending completion of anti-brainwashing program," was part of a message received by RAdm. Francis D. Foley, ComCarDiv One.

It came from MGen. Thomas S. Moorman, Commander of the 13th Air Force, Clark Air Force Base, Philippines, who with four of his officers had visited the USS *Ranger*.

They remained aboard overnight and were taken on tours of the huge ship. Not only did they view landing and take-offs from every vantage point, but they were briefed on the carrier approach system, CIC, communications network, supply system, maintenance program and other aspects of carrier operations.

Gen. Moorman said he felt the visit "not only made us more aware of your capabilities but is the beginning of a close working relationship."

Gen. Moorman was flown to Clark from *Ranger* in a Navy A3D. Cdr. C. W. Meshier, VAH-6, was the pilot.

1st. MAW Topples Record Logs 2.19 Accident Rate for 1960

Fighter, attack, reconnaissance, transport and helicopter aircraft of the First Marine Aircraft Wing set an all-time low Wing record for aircraft accidents during fiscal year 1960 while logging approximately 86,000 flight hours.

Five of the Wing's squadrons were accident-free and many others closed the 12-month period with commendable records, according to Lt. Col. Clark E. Merchant, Wing Safety Officer.

The aircraft accident rate of 2.19 per 10,000 hours of flight was a 36 percent reduction over the Wing's rate for the preceeding year.

VMF-121 was the Wing's only fighter or attack squadron to achieve a perfect "zero" accident rate. VMR-253 boosted its total to 25 months.



VADM. GEORGE W. ANDERSON, Jr., ComSixthFlt, shares treat with crewmen of submarine USS *Torsk* which he visited in Med on 60th anniversary of submarine service. He flew to sub by copter; was aboard for 9000th dive.



VAH-9



SQUADRON INSIGNIA

The 'Hoot Owls' of Heavy Attack Squadron Nine, flying A3D 'Skywarriors' consider themselves 'the swordpoint of the Sixth Fleet.' The squadron won the Battle Efficiency Award for Excellence and the Heavy Attack Wing Commander's trophy last year. Cdr. Earl P. Yates, an A3D centurian aboard USS Saratoga (CVA-60), is C.O.





At its base in Japan, Marine Aircraft Repair Squadron 17 runs a night test on a J57-P4 engine used in one of the Marine's F8U-1 Crusaders. Time was when such testing was impractical in forward areas, when a malfunctioning engine had to be shipped back to the U.S. for test and repair. Today, at sea or on

NAVAL AVIATION
NEWS

IWAKUNI NOCTURNE

land, new equipments, specialized training and skilled maintenance personnel help give Naval Aviation the highest degrees of aircraft availability and flight safety in its history. If you want to fly, fly backed by the best. See your local Navy Recruiter, today, or write to: NAVIATOR, Glenview, Illinois.