

NAVAL AVIATION

NEWS



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N-E-W-S-

North, East, West and South, these planes are flown by the men of the Naval Air Reserve. More aircraft appear on the inside back cover. Here some of them are shown: a Banshee, Niagara Falls; Cougars, New York and Los Alamitos; TV-2, Dallas.



A BETTER WAY TO DO IT

NEW TOOLS AND DEVICES HAVE IMPROVED AVIATION TRAINING BY MAKING IT FASTER, CHEAPER, INTERESTING AND EFFECTIVE

NEW DIMENSIONS in training today are the inevitable result of the increasing complexity of man's inventions. This is particularly true in the field of aeronautics where speed multiplies hazards and, under certain critical circumstances, eliminates a second chance.

In August one great center for research and development of training equipment celebrates its tenth anniversary as an independent facility of the Navy and its 15th year of growth. It is the United States Naval Training Device Center located at Port Washington, New York. Its home since 1946 has been the former Daniel Guggenheim estate on Long Island where training devices take the place of horses in

the great stables of the old days, and scholars and scientists find their sanctuary in what was once the setting for luxurious living.

Only recently the name of the Center was changed officially from "Special Devices Center" to "U. S. Naval Training Device Center." The change signifies the growing acceptance of training

devices by the operating forces as well as the shore establishments. The new name accurately portrays the Center's reason for existence. Training is its business, one at which its highly trained personnel are adept. The Center points the way toward greater accomplishments in training people for life in the brave new world that technology has built.



ADM. DE FLOREZ AND CAPT. MURPHY CONFER



HELICOPTER FLIGHT SIMULATOR MAKES PRACTICE TRAINING REAL

THE ACCOMPLISHMENTS of the Training Device Center have been so often trumpeted by enthusiastic journalists and laymen, who have occasionally described the Center as "gadget heaven" or "Rube Goldberg's delight," that the extremely practical nature of its mission has been obscured. The serious, dedicated men and women at the Center work energetically and continuously for the single purpose of improving the effectiveness of training through the use of training aids and devices. What was once the special province of aeronautics has now been enlarged to include training devices for Naval surface and sub-surface forces, as well as for the Army and the Air Force.

Had the nature of these devices been as closely allied to fantasy as occasional critics in the early 1940's presumed, the Center would probably not be in existence today. Its steady contribution to the science of teaching technical and highly complex operations thoroughly, economically

and soundly makes it one of the outstanding research facilities of the National Defense Establishment.

In the spring of 1941, as the United States inaugurated the "arsenal of Democracy," the country faced the problem of training millions of men for multiple tasks in aviation. The scope of the task called for new techniques. If aviation training was to be accomplished in time, on time, all the time, something new must be added.

One of the answers—and it turned out to be an important and effective one—was the establishment of some kind of organization within the Bureau of Aeronautics for the purpose of developing special training aids. In a memorandum dated 30 April 1941, RAdm. John H. Towers, Chief of BUAE, announced the creation of the Special Devices Desk and appointed Cdr. Luis de Florez, USNR, to sit at it.

Upon this gifted engineer and inventor originally rested the responsibility for supervising experiments and developing special training devices for primary flight training, navigation and gunnery training. A little over two years later, the Desk became a Division and established its base of operations in the District of Columbia at 610 H Street Northeast. There it transformed an automobile display room and garage into a laboratory for the development of training devices.

In WW II, Special Devices Division developed some 500 training devices. Experts worked on this principle: "The Navy will use any device to make serious training easier, more graphic, more fun, quicker, and to save lives, time and dollars that would be expended in regular training."

What was designed at 610 H Street became the basis for production models which were used throughout the world. At schools and bases in the United States, at advanced bases and aboard ships, the training program headed by officers and men trained in Special Devices, carried on the unending task of training men in new skills and refreshing and improving them on those they already possessed.

In May 1945, the Special Devices Division became a part of the Office of Research and Inventions. In August 1946, it reached its present status as the Special Devices Center of the Office of Naval Research and moved to Long Island. As indicated before, it is now called the U.S. Naval Training Device Center. In the process of growth, the program was constantly enlarged, for if anything had become clear, it was the importance of training devices.

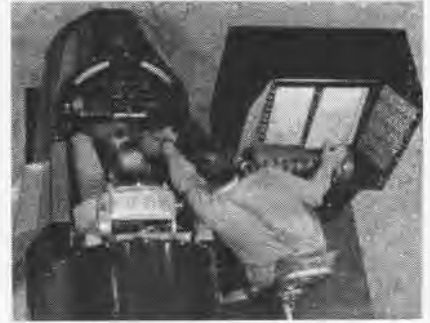
With no precedent to guide it in a completely new field, the Training Device Center has, since 1941, designed and produced (under contracts with industrial firms and uni-



PILOT IN TRAILERIZED F2H-2 SIMULATOR



FLIGHT PRACTICED IN JET LINK TRAINER



NEW PROCEDURES TRAINER FOR FITF TIGER

versities) thousands of different types of training equipment. It has distributed these to the Navy, Army, Air Force, Marine Corps and allied military organizations. Synthetic trainers ranging from pocket searchlight blinker trainers to aircraft, ship and submarine simulators, made possible the saving of millions of dollars worth of equipment, incalculable man hours and countless lives.

No one appreciates more clearly than Capt. C. H. S. Murphy, commanding officer and director of NTDC, the complexity of the problems of training. "Many times those in the business of training aids are falsely accused of selling their product as a cure-all," Capt. Murphy says. "In fact, no one appreciates better than they that training devices are no magic panacea to end all problems.

"The proponents of training devices do know that properly defined, properly made and properly used, training aids can contribute to a major extent in some training situations, to some extent in most training situations, and not at all in a few training situations."

ONE OF THE great advantages of a device is that it can be used as needed. For example, the Operational Flight Trainer (OFT) can be used when aircraft are grounded by weather or are otherwise unavailable. It can be used at any time and need not necessarily be at an airfield. But one of its great virtues is that it can be used to train pilots or crewmen in flight emergencies that would be far too dangerous to practice in the air.

Here are a few examples of the kind of savings that can be realized through efficient use of training aids:

The teaching of radar intercepts and the development of the pilot's intercept proficiency in nightfighters can be accomplished more effectively in an Operational Flight and Tactics Trainer in conjunction with an operational aircraft, in half the time required with the aircraft alone. This is done at a cost of \$66.00 per hour for the OFT as against \$560.00 per hour for the aircraft.

A West Coast P2V squadron found its ground loran trainer sufficiently effective to cancel its requirements for an actual aircraft for loran training.

A commander using the P5-M ASW tactical trainer has stated that "one day in the trainer is worth ten at sea."

It costs \$600 an hour to train the nine-man crew of a patrol bomber when an actual aircraft is used. Devices bring the cost down to approximately \$64 an hour.

During WW II, NTDC produced some bombing trainers for the AAF. The price tag was \$2,500,000. The Air Force later reported that in just one year, the trainers had saved



CELESTIAL IDENTIFICATION DEMONSTRATOR PROJECTS STARS

an estimated 119 lives—lives that would have been lost in routine flight training accidents, not to mention the \$28,850,000 saved in equipment costs.

The years of experience have established new trends. Trainers were originally moved from place to place as required. This made maintenance difficult, so the OFT in a trailer was evolved. No longer is it necessary to disassemble and pack the trainer; it simply moves in its trailer to the next training station.

The Operational Flight Trainer is a far more complicated device than the first flight simulators. For aircraft other than day fighters, a Weapons System Trainer is being built. This is really a flight simulator and a tactical simulator combined.

Weapons System Trainers currently in use by the Fleet are the P2V, P5M, and ZSG-4 ASW Trainers; the F3D-2T2, and the F2H-3 *Banshee* All-Weather Interceptor Trainer.



PILOT COCKPIT IN TWIN ENGINE OFT



INTERPHONE TRAINER FOR COMMUNICATIONS



SEXTANT USE REQUIRED IN NAVIGATION



USE OF OXYGEN MASK IS TAUGHT IN LOW PRESSURE CHAMBER

OPERATIONAL Flight Trainers take time to build. For example, the P6M prototype Weapons Systems Trainer required from 150,000 to 175,000 man-hours to engineer and 75,000 more to manufacture. The cost of such a project was approximately \$1,600,000, including all supporting items—maintenance and utilization manuals and maintenance factory training.

Scheduled for delivery in 1956 and early 1957 are: F3H-2N All-Weather Interceptor Trainers; the F4D All-Weather Interceptor Trainer; the FJ-4, A1D, F11F, and F8U Flight Simulators. Under development are the F3D, P6M and F4H Weapons System Trainers.

In addition to the Weapons Systems Trainers, a new type of device is proving efficient and economical. The Pilot Procedure Trainer meets the requirement for more trainers at less cost for transition training. This trainer is a cockpit mock-up with certain instruments activated.

The instructor introduces typical cues for an emergency, and the pilot demonstrates what he would do. Signal lights on the instructor's board show his proficiency.

The F11F Procedures Trainer is a good example of a type of device that is practical and economical. This kind of trainer costs about \$50,000 instead of 20 times that amount for a flight simulator. In going about the business of building such a trainer, NTDC specialists decided that what they needed to do was to highlight the differences between this fighter and the jets the pilots were already flying.

They realized that it must often be a seasoned pilot who conducted the transition training, rather than trained personnel using a formal syllabus. They therefore furnished the pilot an F11F-1 cockpit, duplicating the controls, instruments, and accessory equipment he would be using in the actual aircraft.

The instructor's station is placed next to the pilot's cockpit in such a way as to give the instructor an "over the shoulder" relationship. Signal lights and charts of correct operation enable the instructor to monitor the pilot's action efficiently and accurately. Because the design and plan were carefully figured down to the last detail with every attention given to human engineering values, the device should prove to be one of the most effective pilot transition

trainers ever developed by the Training Device Center.

Procedure trainers are used for transition and familiarization training in the T-28, T-34 and WV-2. Still others are under procurement for the T2V, FJ-3 and F9F-8T.

Another device is the Aircraft Systems Animated Panel Trainers. Such panels show by graphic means, the operation of a system. Panel trainers are currently in use for S2F, R6D, R7V, T-28, AD, TV, P2V, HRS, F9F, etc.

The Training Device Center does not itself initiate the work it does for the Navy and other services. It does work strictly on order. That is, NTDC does not say "There's a new aircraft (or equipment) coming up and we'll start working on a trainer that will show the pilot and crewmen how to do their job." The responsibility of initiating the development of a training device rests upon one of the five training agencies: DCNO (Operations), DCNO (Air), BUPERS, BUMED, and the United States Marine Corps.



PRACTICE IN DILBERT DUNKER TEACHES SURVIVAL TECHNIQUES

Once a requirement is expressed by one of these agencies, NTDC is requested to analyze the training problem and initiate appropriate device development. If the development is successful, funds for procurement are budgeted by the material bureau which has cognizance of the operational equipment, by some other agency or by the sponsoring training agency. These aids may then be procured by the developing bureau, another bureau or NTDC.

The Center is equipped to tackle unusual problems in instruction. Men and women, gifted as educators, engineers, psychologists, scientists, artists and specialists, are available to work out the special developments required to improve training. The Center offers a battery of talent to attack a training problem. It has performed on-site surveys of training programs in various commands. The resulting recommendations have been implemented with marked success.

Working at NTDC are more than 600 employees, mainly civilians. Only about 40 represent the Services—Navy, Army and Air Force. An Air Force liaison officer monitors the program so that special research work is not duplicated by the Air Force.

If a training device is to be worth the investment of time

and money to develop and produce it, it must be planned in advance of the time it will be needed. For example, Operational Flight Trainers or Weapons Systems Trainers require three years planning, development and fabrication; a procedures trainer takes approximately ten months lead time, and an animated panel trainer requires 15 months.

It was a Fleet requirement that initiated the development of the Celestial Navigation Trainers. Approximately 95 of these CNT's were installed at training stations during WW II. Later when a request was made for a Polar Navigation Trainer, the economy-minded Center figured a way to use the old CNT's by modification. The latest Polar Celestial Navigational trainer is now installed at Norfolk. Flight Safety devices, such as the Dilbert Dunkers, Bailout Trainers, Ejection Seat Trainers, and Oxygen Demonstration Panels, exist as a result of fleet and shore station requirements. Each trainer has proved itself in action.



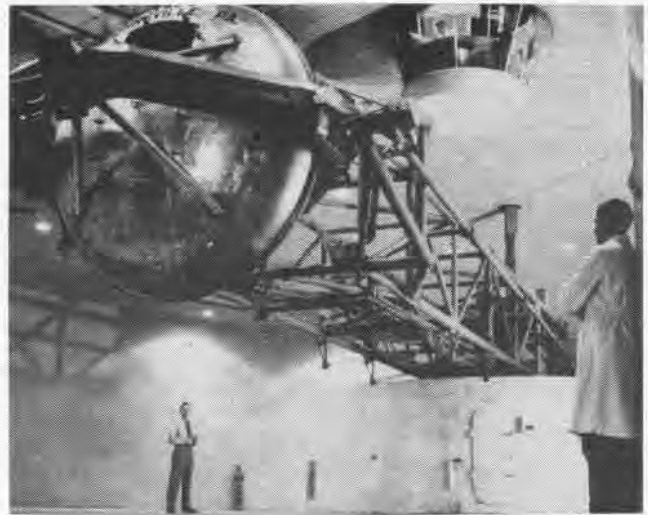
SKILL IN PROPER BAIL-OUT JUMPS IS TAUGHT AT CORRY FIELD

Several Gunnery Trainers have been developed for free gunnery as well as fixed gunnery. An air-to-air gunnery trainer is being developed that is to be combined with an OFT. This will give flight simulator pilots realistic air-to-air gunnery training.

A similar device has been developed for the AEW program: a trailer containing target generating devices that, when tied to a wv aircraft, will provide synthetic targets on the radar scopes of CIC compartments and provide training to the airborne CIC crews in the actual aircraft. It has also designed a mock-up of the CIC compartment of the wv aircraft for use with actual operating radars. Trailized versions are now being procured.

Probably no future development in the field of training aids is more challenging than that of guided and ballistic missiles. The very cost of these new weapons means that training costs would be prohibitive if practice had to be restricted to actual experience in firing missiles. The Army is using training devices in its *Nike* system and finds them not only valuable in training, but also a means of keeping up morale at distant *Nike* locations.

Scientists at the Center are quick to point out that in launching of missiles, the missileer must be right the first



TRAINING DEVICE CENTER PLANNED AND ENGINEERED CENTRIFUGE

time. In studying the reliability of missiles, it has been determined that there are 10 governing factors. Four of these are *human* factors. The effectiveness of the weapons depends on the skill of men trained to use them.

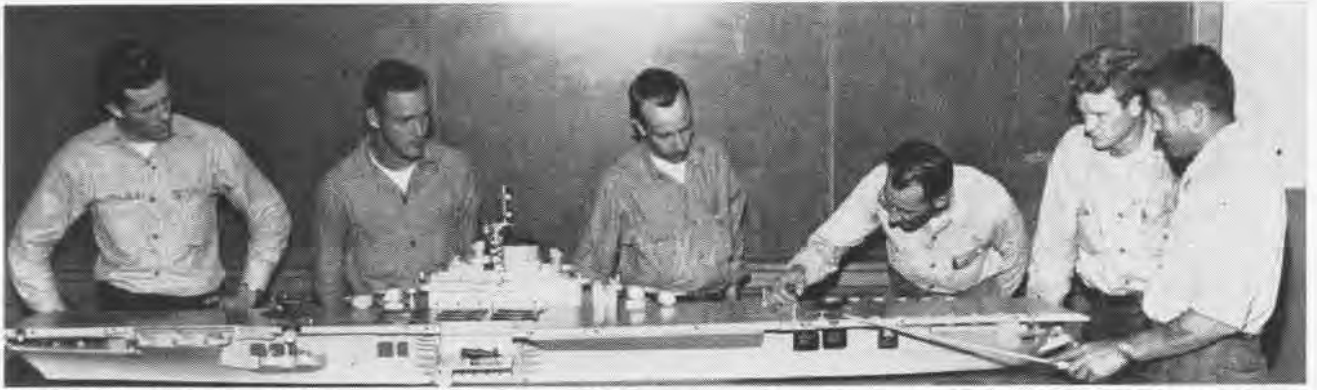
OPNAV Instruction 1500.8A looks toward the careful development of new weapons. It stresses the importance of an orderly synchronization of training and weapon development, pointing out that "the development of the necessary material must go hand in hand with the development of the hardware."

The Center has carried out research for the purpose of reducing training time. One of its early contributions was its flight safety cockpit program described in a manual entitled "Standard Navy Fighter Cockpit Arrangement." Similar manuals were developed for dive bombers, attack aircraft, and patrol aircraft. In this program, the shortcomings of the instrumentation and controls were brought to light. This was supplemented by other studies, such as the basic research involved in analyzing information required for instrument flights.

A few of the most important new instrument concepts fostered at NTDC and currently being exploited by the Services are combined altitude and directional information, engine-in-line data, integral instrument lighting, fuel duration, automatic approach and landing system, etc. Another innovation initiated in 1949 at NTDC was the use of OFT's as research tools for simulation and evaluation of new instrument concepts and operating procedures through simulation of equipment systems.

As far back as 1945, Adm. de Florez initiated a project to study, develop and evaluate ejection seats for high speed aircraft escape. This was done in cooperation with BUMED.

Other escape and survival projects were begun at that time. The first step was the procurement of an ejection seat tower which was installed at NAES PHILADELPHIA. This tower provided the Center with both engineering and physiological data for its Ejection Seat Trainer. All the work that has since been done in the development of Navy operation ejection seats has been carefully coordinated. The long range value of such research is now being realized in the Jettisonable Cockpit which is an ONR project.



RESERVISTS AT NORFOLK, VIRGINIA, STUDY CAREFULLY A LARGE MODEL OF AN AIRCRAFT CARRIER WITH THE MODERN ANGLED DECK

HUNDREDS of Navy and Air Force pilots—Navy supplied ejection seat trainers to the Air Force—have survived because they were trained in the use of escape equipment. The ejection trainer gives the pilot practice that he may one day critically need. In a real emergency, he must be letter perfect. There is no second chance.

Another example of a trainer that is credited with saving lives is the Dilbert Dunker. MCAS CHERRY POINT commented late in 1952 on the special value of this trainer: "This type of instruction serves not only to keep the men in shape, but in many cases has meant the difference between going down with the plane or surviving to fly again. The evidence of this fact is the case of Capt. Robert M. 'Pappy' Spence, a *Corsair* pilot with VMF-211.

"Capt. Spence was forced to ditch his plane in the Caribbean last month while participating in LantFlex-52 maneuvers. He jumped clear of his plane and, with the use of his Mae West and a one-man life raft, was able to keep afloat until he was picked up by a rescue helicopter."

As psychology is the basic science underlying the art of education, the Human Engineering Department seeks to solve training problems by combining psychology, education and engineering. Any phase of learning, old or new, which may pay off in ultimate saving of lives, time and money, is investigated.

Human engineers seek new ways for men to learn things they have never had to learn before. How can a pilot be taught to land a fast plane on a pitching carrier at sea? Realistic simulation of this problem might prove exorbitantly expensive. However, psychological simulation of the problem has proved feasible. In this instance, the im-

portant cues of the problem are isolated and the pilot is taught to concentrate on these, ignoring the disturbing factors in his environment. (A reduction of 75% in air time was achieved in one training experiment.)

How much information can be poured through the senses of the normal human being? Can senses other than sight and sound be utilized? When does overloading of the senses occur? How can information be organized so that transmission is reliable and response fast and accurate? Can a complicated procedure be simplified for ease in learning?

And beyond the individual's adjustment to the complex cosmos of war, how does a system of men and machines learn to function without a flaw? Even the location of training difficulties in today's vast systems of air, ground and underwater operations becomes a major job of research analysis. It is the spotting of these "weak links" by systems analysis, that constitutes the major spadework of research preliminary to building training devices today. For CIC equipment in wv-2 aircraft, the Human Engineering Department has made major contributions both to the design of the gear and to the training of men.

Improving displays in trainers, or the organization of visual material, has been a major occupation. Effort has gone into the organizing of existing visual information and developing new. This effort is concerned with such things as legibility, dial design, patterns of instruments, tables and graphs, grids and range rings, visual principles, etc. The human eye and its psycho-physical limitations are still one of the most important problems in training by devices.

Human engineers are concerned with measuring the effectiveness of devices. What are the often intangible factors



ANIMATED TRAINING PANEL IS EFFECTIVE



INSTRUCTOR USES OVERHEAD PROJECTOR



TRAINER DEVELOPMENT IS COORDINATED

that make for acceptance or rejection of training devices? What is the effective medium for a specific training? For example, comparisons in identical training have been made with such media as mock-ups, cutaways and charts. These comparisons permit substantial savings when they indicate effective training by a cheaper method.

In the field of research tools for flight safety, the Center has made a valuable contribution in the form of an omnirecording accelerometer for crash injury research. This device has been installed in Naval aircraft to record G's and duration in all three axes of forces experienced by the pilot should his aircraft be involved in an accident. Knowledge of these forces, as well as their duration, is invaluable to aircraft equipment designers. They are making every effort to decrease personnel injury in crashes and to design equipment to withstand forces. NTDC accelerometers have been made available to the AF, NACA, and civilian organizations for research.

Research tools to study conditions and phenomena affecting pilot performance have also contributed a major part of the Center's contribution to the Navy's basic research program. The world's largest human centrifuge was developed by the Center and installed at the Naval Air Development Center, Johnsville, for research on acceleration and deceleration effects encountered in flight.

A third important aviation research project for the U.S. Naval School of Aviation Medicine now in the latter stages of construction is the Human Disorientation Device. It is a well-known fact among flight surgeons that a significant number of experienced pilots have experienced "vertigo." Disorientation as a result of vertigo has accounted for many an aviation accident. Research in this field of sensory responses to angular acceleration has been practically impossible because of the lack of a controllable mechanism. The Human Disorientation Device meets the need for an instrument to explore this problem.

PROBABLY the best customer for training devices and teaching aids in number and variety, if not dollars, is the Naval Air Reserve Training Command. This Command comprises more than 400 squadrons of nine different missions. It operates over 1400 aircraft of nearly 20 different types, and has special training problems at 21 Naval Air Stations and six Naval Air Reserve Training Units. For one thing, training must be compressed into only 12 weekends and a two-week period of active duty. Only expert instruction makes it possible to complete the varied air and ground training syllabi in this limited time.

Three hundred devices, some of them especially developed for the Naval Reserve, are now being used by the Reserve. At the present time, the Naval Air Reserve Liaison Officer at NTDC is monitoring more than 25 additional projects for devices and aids which the Naval Air Reserve needs. Among these are a C-11-B jet instrument trainer, cockpit procedures trainers, additional S2F-1 animated panel trainers, an ASW submarine target, electronic circuit demonstration units, and transparencies on various subjects.

When aircraft are transferred from the Fleet to the Naval Air Reserve Training Command, training devices and aids are reassigned from the Fleet to the Reserve.

To support the training device program, the Center relies on its five regional offices at Norfolk, Pensacola, Great

Lakes, San Diego, and San Francisco, to maintain close liaison with training activities. They assist the Center in carrying out its responsibilities for providing services to such activities. Additionally, there are three area representative offices located at Naval Air Stations Seattle, Corpus Christi, and Jacksonville.

In many ways each of these offices is a miniature Training Device Center. Each is staffed by highly competent civilian training specialists, engineers, and equipment specialists. Not only are these offices the "eyes and ears" of the Center, they are also equipped to handle repair and modification of small devices.

The services of each office are available upon request to assist in any problems of installation, maintenance, or utilization. Funds are also made available to develop and fabricate small devices and aids which are needed locally.



PHOTOGRAPHIC PROCESS MOUNTS MODELS AGAINST CLOUD SHOTS

Another important department of NTDC is the Device Maintenance and Utilization Department. This department is concerned with making sure that activities get optimum performance and maximum utilization of the trainers.

There are now 31,000 devices in use, ranging in value from \$100 to \$1,000,000. The total value of devices now in the field is \$138,000,000. In order that these may be maintained, there is constant training of special devices men. There are 1940 TD's in the Navy: 170 Chiefs, 304 first class, 373 second class, 593 third class and 500 TDAN's. Officers' Training courses are conducted regularly for field personnel.

There are many ways in which the Department makes sure that the devices will not be lost by failure of maintenance. Specialists, under contract, service installations wherever they may be, and where modifications are needed to keep the trainer up to date, these are carried out.

In the complicated science that warfare has become, there is greater and greater need of precision. Training devices have proved their worth and they may prove eventually a decisive factor. Recently the Director of NTDC pointed out that he had never seen any reference to the use, by a possible enemy, of training aids as we know them. "It could be," he said, "that this is the one field in which we have retained significant superiority. Properly exploited, training aids could well be our real secret weapon."



GRAMPAW PETTIBONE

Dear Gramp:

Here is one for you to ponder on—**LIFE VEST TURNS DEATH VEST.** It's one of the things you read about but never think could happen to you. This is just the way it happened.

While testing a *Banshee* at 35,000 feet, I noticed that my life vest toggles had inadvertently been pulled just enough to gradually inflate the vest. My first thought was one of disgust because I had checked the vest prior to flight and noted that both toggles were safetied. As I had my parachute harness snug (as it should be) together with shoulder harness and oxygen mask, I could not look down to do anything, because the gradually inflating vest was shoving my head back and pressing under my chin.

I finally managed to loosen the quick-fit buckles on the parachute harness to relieve the pressure on my chest, but this released the vest and it shot up under my throat with a terrific pressure and choked off what little air I could get. I grabbed for my throat with both hands and held the vest away to get some breath and thought the situation out—no knife to puncture the thing and I could not look down to see the oral inflation tube because the mask was impeding this action.

The next thing that I could think of was to get down to a safe cabin altitude, so I could take my mask off and look down to see what I was doing, but every time I took my hands off to fly the aircraft, I started to choke. I pulled both engines back to idle and opened the dive brakes and forgot about the aircraft and concentrated on keeping alive until I could do something about the situation.

I finally got down to 15,000 feet on the cockpit and managed to get the mask off. By this time I was alternating between greying out from suffocation and breathing like a steam engine while I held the vest away from my throat to get some air. The vest



was now fully inflated and, even by holding the vest out, I could get only short, quick breaths because of the terrific pressure on my chest.

About this time I saw my mechanical pencil on my knee board and, by taking a large breath of pure oxygen and holding it, I got hold of the pencil and stabbed it through the sides of the vest. I spent the next five minutes fighting hypoxia and sheer exhaustion. I was breathing hard from the exertion, and the altitude on the cockpit still was too high to get enough oxygen, so I took a few gulps of 100% oxygen and forced myself to breathe slowly



until things settled down and my eyes came back into focus.

The reason for this story is obvious, and I can only recommend what has been recommended hundreds of times before: All pilots should carry some sort of knife just for such incidents as this. Most airmen are complacent about wearing one, but from now on I'll have one with *me* within reach. I seriously doubt whether I would ever have been able to get to a knife fastened to my vest, as I just couldn't move or see enough. I believe a knife on my leg is about the best bet. Maybe someone can come up with a better location, but this is certainly one situation that requires some prior preparation and thought.

ALC/AP, USN



Grampaw Pettibone Says:

Glad to have you *back* aboard, Chief. Your answer to the problem is a good one as long as the knife is securely fastened in an accessible position where danger to the pilot is minimized. Furthermore, the knife could be mighty useful in the event of a forced landing or bailout in a sparsely settled area.

You're far from the first to have this happen, but as far as I know you hold the altitude record for inadvertent inflation.

Look Out!

The pilot of a large passenger-carrying Navy aircraft recently reported five near collisions with other aircraft while on a routine daylight transcontinental flight. Two of the incidents would have been disastrous had the plane commander not taken split-second evasive action. These near collisions occurred in *the clear on airways on an IFR flight plan.*



Grampaw Pettibone Says:

It scares ME! Everyone's talking about the scarcity of air space these days, but I wonder if these pilots weren't relying too much on their altitude assignment. An IFR flight plan is good protection from other IFR traffic, but on a clear day—look out! Pilots have to be aware

donned their life vests before swimming ashore.



Grambow Pettibone Says:

My initial reaction of "Was this trip necessary?" was based primarily on the fact that the helicopter received substantial damage when dunked. While some other method of freeing the fish may have been possible, this was probably the quickest and easiest means. After all, the heli-



E. (over)

copter is a mighty versatile vehicle, and there are few aircraft flights from which nothing can be gained in the way of training and experience. However, the pilots were all wet in not requiring that the passengers wear their life vests. Paragraph 39a of OpNav Instruction 3710.7 applies.

It was stated in the AAR that the cause of the engine malfunction was not positively known, but it was suspected that water was sucked into the carburetor air ducts while the fish were being poured into the lake.

Just For Fun

Over the field immediately after take-off, an AD-2 pilot and his wingman on local VFR clearance for simulated instruments spotted a buddy and joined up on him. The carefree trio decided it would be fun to climb into the soup and fly over to a bombing range.

In a tight triangle and climbing through 8000 feet on instruments, the pilot leading the flight decided maybe their idea wasn't such a hot one, and he began a gentle port turn back toward the field. In the words of one of the other pilots:

"When we started to turn we were still climbing, but I soon noticed that our angle of bank was increasing, and we were beginning to lose altitude rapidly. All of a sudden the lead plane turned sharply into me. To keep from



colliding with him, I turned sharply away. I then lost contact with the flight and went on the gauges. The altimeter was unwinding at a terrific rate and I couldn't read my gyro horizon.

"After many frantic attempts to recover I decided to bail out. I opened the canopy, unbuckled my safety belt and tried to stand up. I was unable to effect a bail-out, so I sat back down and closed the canopy. Man, was I shook! I decided that I had 'had the course,' so I just started to horse back on the stick.

"I recovered from my split-S at an altitude of 800 feet—about 1000 feet below the overcast. I pulled about 8½ G's, greatly overstressing the aircraft. I found myself in a valley, with mountains on both sides ranging from 4000-5000 feet. Recognizing where I was, I proceeded back to the base and made a normal landing. Believe me, this is the last time I go IFR without proper clearance."



Grambow Pettibone Says:

Egads, lads, somebody could've got hurt! Presumably the other two pilots made non-aerobatic let-downs with less adrenalin expenditure. Even though the flight leader had a change of heart in the middle of the evolution and decided to call the whole thing off, what worries me is why these pilots executed an unauthorized join-up and endangered themselves and others by going on actual instruments on a local VFR clearance when they knew better. If they hadn't gotten a good scare out of it, I'm afraid they'd do it again. There's a mighty big difference between being sorry you did wrong and being sorry you got caught.

Any other pilot tempted to go IFR on a VFR clearance should remind himself that under circumstances such as these IFR really means "I'm Flying Recklessly."



of what's going on in the airplane, but they'd darned well better know what's happening outside too. Join the swivel-neckers! A well creased neck is better than none at all.

MEMO FROM GRAMP:

If you are looking for trouble, just glance over your shoulder. It's probably right on your back.

Understatement of the Year:

Assuming that I was clear of the plane, I pulled the ripcord two or three times and I seemed to slow down just before I hit the ground. The chute had obviously opened.

Pour Fish

Pilot, co-pilot, two passengers, and a goodly number of trout fingerlings in six 10-gallon cans took off from Kodiak in an HO4S. Mission: plant the fish in a nearby lake. The pilot circled the lake a couple of times, checking the wind (seven to ten knots), and came to a hover four to six feet above the water and a short distance from the lake bank.

Shortly after the passengers started dumping the fish, a sudden loss of power occurred and the wheels of the helicopter touched the water. By the time the fingerling freers had poured out the third container of fish, the can almost floated out the door. After a momentary rise the RPM again fell off and the helicopter dropped back into the lake.

The pilots extricated themselves from their sunken vehicle, then set out to rescue the passengers who were still in the cabin. Life jackets in hand, the passengers surfaced and, hanging onto the tail of the helicopter which protruded above the surface like a miniature leaning tower of Pisa, belatedly

SENSE FOR WEEKEND WARRIORS

"WHEN THE chips are down, everybody has to help." That neat little statement appears in the latest Sense Pamphlet issued by Aviation Training Division of CNO, *Weekend Warrior Sense*.

Every Naval aviator and air crewman should take a look at this publication. It really does make sense. Written in the usual light, readable style, and aptly and amusingly illustrated by Robert Osborn, the pamphlet pulls no punches. Addressed directly to Reservists, it offers both pro and con arguments for affiliation with, and non-participation in, the Naval Air Reserve.

The writer puts his finger on a very important fact: "You chose to be a pilot. For maybe four years you and your friends have been flying around in airplanes. There never was a time when it was not possible for you to quit. Any time you said the word, you could have turned in your wings and grounded yourself. You did not say the word."

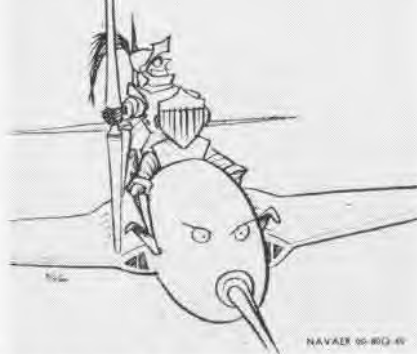
He points out that: "You've still got the wings. You are a trained and skillful pilot. More important than the knowledge and skill is the assurance that you *can* do it. You've been through the mill. You have flown whatever aircraft have come along and you've done all right.

"What's more, as a seasoned pilot, you have the feeling you would like to keep on with it. Why not? After all, flying is a technique you've spent a long time acquiring. There's no sense throwing it away just because you are about to go back to civilian life. You enjoy flying."

Weekend Warrior Sense compares the admitted hazards of flying with the everyday accidents which fill newspapers. It mentions such hazards as falling off ladders, dropping TV antennas on power lines, and blowing up the old homestead by pouring gasoline around a hot water heater.

Added income for the Weekend Warrior is touched upon. "In terms of money, the deal is not bad at all. Organized Reserve pilots can figure on taking in enough to keep up payments on a reasonable sort of house, to help finance an addition to the family, or

WEEKEND WARRIOR SENSE



FRONT COVER of *Weekend Warrior Sense*, shown above, depicts knight astride plane.

load up the kitchen with gadgets.

"Let's face it. A fellow going back to civilian life from Navy flying almost always takes a cut in income unless he is extremely lucky or well connected. Your Reserve pay can help bridge the gap."

And then the retirement benefit is mentioned. After you put in 20 years Reserve time, including the time already served, an assured retirement is yours at age sixty.

"Certainly the money helps. But it is by no means the most important reason Reserve pilots sacrifice a certain amount of time and pleasure with the family to be on hand. These are flying men who see the Reserve as a wonderful opportunity to keep up with the skill they respect.

"In short, they are people like yourself. Not the least attractive feature of joining a Reserve unit is the association with sound and reasonable fellows who have the same interests you do. It's a pleasure to be around them."

The problem of reluctance on the part of some employers to release Reservists for two-weeks of annual training duty is brought into the booklet. The Navy has done some excellent work in combatting this, and has achieved substantial success. "Thanks to the very special effort the Navy has made in the last few years, you will not run into many employers nowa-

days with that attitude. Working through the Navy League, chambers of commerce, Rotary, and Kiwanis, the Navy has brought about a big change. Shortsighted businessmen were convinced that after all, it's their country, too."

Weekend Warrior Sense winds up with another, and most important consideration. The little woman has to be on the team. This facet is handled thus: "However much you want to continue flying as a Weekend Warrior, be prepared to meet certain objections. The chief ones will come from your wife and family. These people, who love you very much, may feel that you've had enough of airplanes and are likely to be around a whole lot longer if you are safely and permanently grounded.

"Your wife may figure it's high time for the family to settle down and carve a niche in the community.

"Why not talk it over realistically? After all, as you know, the organized reserve program is no harebrained operation. The emphasis on safety is constant and vigilant. That's why the record has been so good. If by some chance you should be banged up, the family is extremely well protected by a host of benefits. Go over the situation: it's no more ghoulish than having a talk about the family insurance policies. You can convince the family that they are not being left out on a limb just because you want to fly. It's easy enough to demonstrate that you're safer, percentage-wise, than working around the house."

The booklet points out numerous other advantages of the organized reserve program which are available to the family. Station facilities such as swimming pool privileges, and hen parties at the Officers' Club are some mentioned. It suggests that the potential Weekend Warrior show the booklet to his wife.

"Your own attitude toward what you are doing in the Weekend Warriors will be better if the wife and family are solidly behind you. Once they know the facts, there's no reason why they shouldn't be."

"You want to fly. The Navy wants you to fly. You'll get a good deal."



MODERNISTIC TOUCH OF NEW PAINT SCHEME FOR SQUADRON JETS IS SHOWN HERE BY CREWS FROM NAS SPOKANE FIGHTER OUTFIT

TEN CANDLES FOR NAVAL AIR RESERVE

A DECADE of accomplishment has been chalked up by the Naval Air Reserve Training Command as it celebrates its tenth anniversary this month. The Command can point with pride to the development of a sound, thorough training program which keeps in readiness thousands of pilots and crewmen at Naval Air Stations all over the country.

No less an authority than Adm. Arthur W. Radford, now head of the Joint Chiefs of Staff, commended the Reserve in 1952. "The Naval Air Reserve has established a remarkable record of achievement during the Korean conflict. Their performance has emphasized the fact that the Naval Air Reserve is one of the Navy's greatest assets."

Korea was a dramatic demonstration of the worth of this asset as the Naval Air Reserve rapidly mobilized trained officers and men. This demonstrated capacity proved the validity of the Navy's organization: a hard core of regular Navy men backed up and supported by a trained reserve that is ready when called. How and why this capacity was developed is a long story told briefly here.

While it is true that the Naval Air Reserve Training Command was first organized in July 1946, the reason for its existence goes back to the Navy's

experience between WW I and WW II.

Of course, there had been a Naval Air Reserve in that era, but it hadn't been effective. The years of 1934 through 1938 saw a steady decline in Reserve strength. Drastic cuts in appropriation, the increasing age of veteran pilots and a lack of incoming younger pilots took their toll. As a result, the mobilization potential at the opening of WW II was far below requirements. When the time came to stand up and be counted, of the 37,000 men trained in aviation during and after WW I, only a handful—700 officers and 600 men—could be mustered to bolster our forces in the crisis.

The Navy resolved that this must not, should not be repeated. While plans were being made in the Navy Department to mothball ships of the Fleet, thinking was directed to preserving another commodity of war, the expensively taught and complicated know-how of the most important part of the fleet—her officers and men. This is the story of the Weekend Warriors.

When the first Chief of Naval Air Reserve Training, RAdm. E. C. Ewen, officially raised his flag at NAS GLENVIEW, on 1 July 1946, he began a difficult, but highly rewarding job. From thousands of seasoned veterans of WW II, scattered all over the nation, he set about to mold a force of ready Reservists capable of manning the carriers of the mothball fleet.

First, Naval Air Stations and Naval Air Reserve Training Units were established in areas of concentrated population. Supporting personnel of these activities are mainly active duty reservists in the TAR program (Training and Administration of Reserves). An Air Wing Staff and a number of squadrons comprised of ready Reservists are located at each. In addition, there are Auxiliary Air Units (AAU's), Aviation Ground Units (AGU's), and Bureau of Aeronautics Training Units (BARTU's) supported



A BRONC 'PURSUES' A DALLAS COUGAR



STOCK PLAGUED THE STRIP AT NAS DENVER



THESE WERE EARLY TIMES FOR RESERVISTS



NAS AKRON AIRMEN CRUISE ABOARD CARRIER



THE 'DENVER HANGAR' IS NOW A BYWORD



FIRST PLANE IS SPOTTED AT NAS LINCOLN



DALLAS MADE FIRST POST WW II CV CRUISE

by the parent station. Today, more than 36,000 Reservists take part.

The lessons learned in the Reserve program between WW I and WW II were not forgotten. The planners of the Naval Air Reserve Training Command devoted time and attention to making sure that the Reservists remained ready. They inaugurated an active reaffiliation-recruiting program, and this, combined with recent Reserve legislation, has reduced the dangers of a recurrence of the slump in the thirties. The realistic handling of the problem by our legislators, evidenced by the new over-all look in Reserve programs, gives assurance that any decimation of the Naval Air Reserve probably will not be caused by appropriation cuts.

Weekend training and two-week training cruises, during which a planned syllabus is followed, keeps the veterans on their toes. Younger men, new to the Navy and Naval Aviation, are able to take advantage of the veterans' know-how. But a new concept, now in the trial stages, will make the Naval Air Reserve even more valuable. It increases the opportunity for crew training through overseas deployment.

The first request for the overseas deployment of Naval Air Reserve squadrons was proposed by the Commanding Officer, NARTU, JACKSONVILLE, in 1953. Capt. J. L. Counihan had recently returned from duty in Eu-

rope as a representative of the Navy Department in the guided missile and aviation ordnance fields. He was concerned by the great cynicism of the Europeans about the readiness and ability of the U.S. Reserve forces to be deployed in that possible theater of operations in time to be effective in the early stages of a conflict.

Upon reporting to NARTU, JACKSONVILLE, Capt. Counihan discovered that a trained nucleus, recently released from active duty, existed in one of his Reserve squadrons, VP-741. The squadron CO, Cdr. Charles Rogers, was confident that, given 200 aircraft and a chance to do something on their annual training duty other than normal syllabus flying, he could recapture some of his former flight crews and mechanics. Many of them had been dispersed through squadrons in the command.

In the light of these facts, an over-water cruise seemed logical, a challenge far more interesting than straight syllabus flying. A request for CNO approval was formally made.

It was determined that VP-741 had attained satisfactory proficiency in patrol plane operations. The squadron had a hard core of veterans of recent fleet experience. Certain elements of NARTU JACKSONVILLE and Wing Staff 74 were to be added to the squadron for the period.

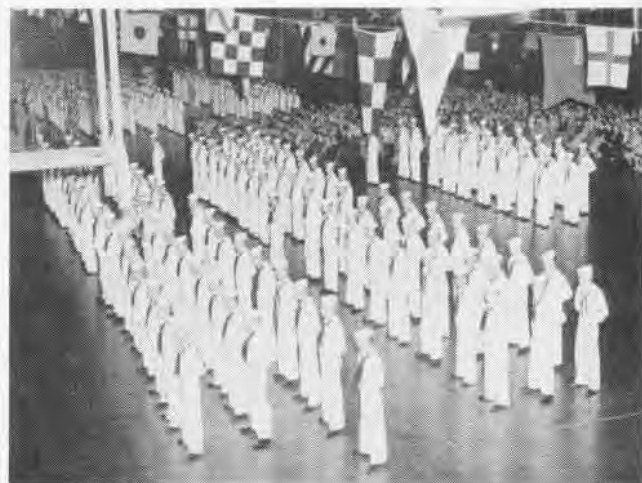
The operations plans started out

with the rapid and safe movement of the squadron to Port Lyautey via the Azores. Exercises were to be conducted with the Sixth Fleet and other units in the western Mediterranean, including mining exercises in the Aegean Sea under simulated war conditions. Every opportunity was to be utilized to improve friendly relations with foreign nationals and show the capability of rapidly deploying trained Reservists to augment friendly forces.

Permission for the proposed deployment was given by CNO. And VP-741 did it, on time and on schedule. But it did far more. It was not enough to just carry out the operation; it had to be recorded so that Reservists in this country and the general public could point with pride to the ready Reserve. The effect of this cruise is now history. Everywhere the squadron went, it moved as a self-contained task force, complete with spares, special staff personnel, and technicians.

This first mobilization training exercise of the Naval Air Reserve was an unqualified success. It resulted in greatly advancing the prestige and reputation of the Naval Air Reserve. A documentary film, made during the cruise and entitled "Malta Revisited," is being used to publicize the demonstrated capability.

The following year, 1955, VP-801 and VR-801 from NARTU MIAMI operated from Port Lyautey, and VP-



NAS GROSSE ILE RECRUITS ON PARADE AFTER 90 DAY SCHOOL

NAS MINNEAPOLIS HELD ITS INSPECTION IN ITS BIG HANGAR

881 from Olathe and VR-811 from Minneapolis operated from Barber's Point. These were equally successful cruises and served to prove the soundness of the "global aspect" in the training of Naval Air Reservists. This summer, 12 selected VP and VR squadrons will perform active duty overseas.

It has been proposed that the Reservists, who are qualified by background and experience to perform this type of operation, should be inventoried and designated "Qualified Reservists." Also, it has been suggested that their training periods should include more operations with the fleet to maintain this ability for rapid deployment. "Qualified Reservists" should be known to the Type Commanders in Fleets in order to facilitate maximum integration during their annual, two-weeks active duty training periods.

It is understood that liaison with the Type Commanders is being established to bring a greater awareness of the Naval Air Reserve and its requirements. A "Qualified Reservist" could be defined as one who has had recent fleet experience, qualified in type for instrument and night operations, and is qualified in primary weapons.

The operations of VP-741 has had its side effects on the surface Reserve. The cruise attracted the attention of Under SecNav Thomas Gates, who expressed the wish that similar operations for qualified surface Reserves should be programmed. As a result, last year a number of selected Reserve officers and men were deployed by air to the Sixth Fleet for their training duty. This year, a similar deployment of se-

lected Reservists will be made to both the Sixth and Seventh Fleets.

The importance of ready, qualified Reserves has never been greater for the security of this country. It is hoped that such men will be recognized and utilized to improve the confidence and morale of Allied and friendly forces both at home and abroad.

The present CNAResTra, RAdm. D. V. Gallery, and his Marine counterpart, BGen. A. F. Binney, COMART, direct Naval and Marine Air Reserve activities at 21 Reserve Air Stations, and six NARTU's. The 24th installation to be commissioned, NAS AKRON, was placed in a sprawling factory building near the municipal airport. Today, it supports approximately 350 officers and 1,100 men. One of the Reservists at NARTU ANACOSTIA,

Cdr. W. C. Clay, commutes 1600 miles round trip from Daytona Beach, Fla., to drill with his squadron, FASRON-661. Fifteen hundred Naval and Marine Air Reservists take over NAS ATLANTA on weekends.

Reservists attached to NAS BIRMINGHAM won the hearts of residents of that city when, in 1950, they contributed 40 pints of blood to a little girl suffering from a blood disease. Propeller-driven planes at NAS COLUMBUS gave way to F4E-6 Cougar jets in April, 1955. The "Texas Minutemen" of NAS DALLAS reported to the Commander, Pacific Fleet, ready for action, just eight days after their 1950 recall.

Reservists flock to NAS DENVER from the largest area in the NARTC, 405,320 square miles. NAS GLENVIEW has a full complement of Reserves, but also supports the Headquarters and staffs of CNAResTra and MARTCom. NAS GROSSE ILE is just 22 miles from Detroit, and was a Reserve activity in 1925. The precedent-setting deployment of Jacksonville's VP-741 was described earlier. Center of lighter-than-air training for Reservists is at NARTU LAKEHURST.

Many stories could be told about the Naval and Marine Air Reservists, should space permit, but for information on training locations, the rest of them are listed alphabetically. Stations are Lincoln, Los Alamitos, Minneapolis, New Orleans, New York, Niagara Falls, Oakland, Olathe, Seattle, Spokane, South Weymouth, St. Louis and Willow Grove. NARTU's are Memphis, Miami, and Norfolk, Va.



AIRCRAFT THAT SYMBOLIZE USNR READINESS

1929

GRUMMAN

1956

Who makes Navy planes? This is the second of a series of special articles about the aircraft companies that have built and are building our planes.

THANK GOD for Grumman!" These words of an admiral watching *Hellcats* pound the Japanese in the Pacific expressed the thought of many an American fighting man in the critical days of World War II.

Founded just two months after the stock market crash in 1929, the Grumman Aircraft Corporation weathered the depression to become one of the great producers of Naval aircraft. It was founded by Leroy R. Grumman, Leon A. (Jake) Swirbul and William T. Schwendler. They had gained much of their engineering experience working for the Loening Aeronautical Engineering Corporation.

Grumman has a record of continuity of management. All three founders are still with the firm: Grumman as chairman of the board, Swirbul as corporation president, and Schwendler as vice-president. Three other officers have been with the company from the beginning: E. Clinton Towl, financial vice-president, Edmund W. Poor, treasurer, and Joseph A. Stamm, secretary.

In early January of 1930, the company opened its doors in a makeshift garage in Baldwin, Long Island. There it began to repair and build replacement parts for Loening amphibians. The first real break was a contract from the Navy to design a pontoon with retractable landing gear. This successful design, which converted Navy catapulted scout planes to amphibians, resulted in Grumman's first Navy order, and its initial contract for an experimental fighter aircraft.

The FF-1 reached final development in 1933, the first of many famous fighters designed for the Navy by Grumman. This two-seat plane, a successful entrant in the aviation world, was equipped with retractable landing gear and was faster than any other Navy fighter of its day. Its

stubby body set the pattern for all the single-engine fighters Grumman made until the F6F series.

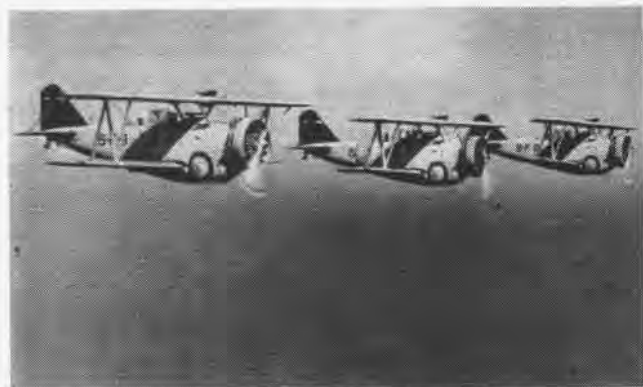
One of the chief sources of the Navy's carrier-based planes, Grumman has always maintained an interest in amphibians. Seed for the amphibious aircraft branch was the all-metal JF-1. It took to the air in 1933, and from that day on, the big "Ugly Duck" became a fixture at Naval Air Stations. Its successor, the J2F, used for photographic work, target towing, scouting, and rescue, continued in production until 1946.

In 1935, the F2F-1 was unveiled. The tiny single-seat biplane was one of the first to use the double-row radial engine in the military. The Pratt-Whitney engine gave the Grumman plane a top speed of 230 mph at 7,500 feet, thus putting this carrier-based plane among the top fighters of its day in speed and performance.

Two years later, the F3F was delivered to the Navy. This model was a further development of the F2F, with an increase of span, length and load-carrying ability.

In the late thirties, Grumman came out with the F4F *Wildcat* series. At this time, many experts claimed that the fighter plane had been made obsolete by the speed of bombers, and the development of anti-aircraft guns. This maneuverable, stubby fighter, a single-seat monoplane equipped with a Pratt & Whitney Twin-Wasp engine, was in a few years to prove the soundness of the concept that fighters are an integral part of the fleet.

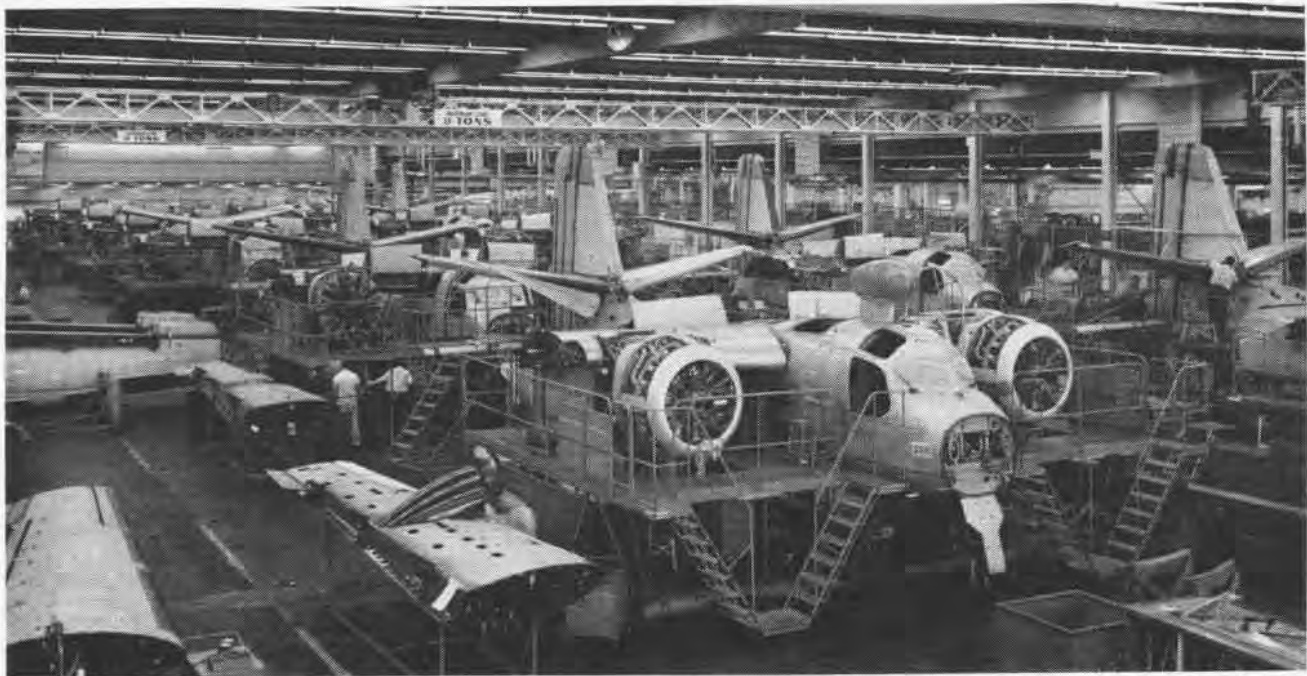
By 1937, Grumman had its own \$360,000 plant at Bethpage, N. Y. One year later, the company's first twin-engine amphibian, the JRF *Gray Goose*, was produced. By the end of World War II, more than 300 of this versatile utility aircraft had been manufactured by the Grumman Company.



RETRACTABLE LANDING GEAR WAS FEATURE OF THESE FF-1'S



THIS VETERAN WILDCAT BATTLED AT GUADALCANAL IN WW II



THE 52F HUNTER/KILLER, EQUIPPED WITH THE LATEST ELECTRONIC DETECTING GEAR, IS SHOWN ON BETHPAGE ASSEMBLY LINE

IN 1940, the first plant expansion program increased floor area by approximately 32,000 square feet. In 1941, the construction of a new plant was completed, costing \$3,300,000. Ironically, the new plant's opening festivities were celebrated the day the Japanese struck Pearl Harbor.

On December 7, 1941, Grumman stopped expanding. From then on it exploded. In three years the company's plant area went from 680,000 square feet to 2,680,000. Employment soared from 6,659 in January 1942 to 25,094 two years later.

In the all-out effort, Grumman workers, according to management claims, set world production records which still stand. The world record was set in 1944 when 6329 planes rolled out of the Bethpage plant. All told, Grumman chalked up 11 world production records, one for making 17,000 aircraft during the 45-month war.

For months after Pearl Harbor, Grumman's speedy production of *Wildcats* was a bright spot in the Navy's fighter war in the Pacific. The Japanese *Zeros* proved to be for-



TBF AVENGER OF WW II FAME WARMS UP FOR ATLANTIC ACTION



NIGHT FIGHTER GEAR INCREASED THE HELLCAT'S CAPABILITIES



U-1 ALBATROSS OPERATES FROM LAND, WATER, ICE OR SNOW



ONE OF A PAIR OF GUARDIANS DESIGNED FOR ANTISUB WARFARE



S2F CARRIES TORPEDOES, ROCKETS, MINES OR DEPTH CHARGES



THE NAVY'S FAST F9F-8P COUGAR IS NOW IN FLEET OPERATION



THIS PANTHER FLEW OVER 400 COMBAT MISSIONS IN KOREA

midable opponents, and the Navy counted on Grumman to produce an even better fighter. Grumman, Swirbul and Schwendler listened to the pilots who flew Navy fighters in the early months of the Pacific war. They prepared a new fighter incorporating this up-to-the-minute battle information to meet Navy specifications. By the end of 1942, the most famous of all Grumman war time fighters was being rushed into production. The F6F *Hellcat* was ready for action!

The *Hellcat* featured folding wings, first used by Grumman on the *Wildcat*, an important space-saving device in these carrier-based planes. The superb combat performance of this plane won it national acclaim as the Navy and Marine officials and pilots praised its exploits to the sky.

Grumman not only turned out 12,000 *Hellcats* during the war years, they also produced 2,500 TBF *Avenger* torpedo bombers. Many more were produced by General Motors, under the designation TBM. This rugged performer made its debut at the Battle of Midway. It played a major role in the war, operating effectively in both the Atlantic and Pacific theatres. The *Avenger* remained in active service with the Fleet until a few months ago.

Official Navy statistics show that of 9,249 Jap planes shot down by all types of Navy and Marine aircraft in WW II, Grumman-designed planes accounted for 6,548, or more than two out of every three. In a letter complimenting company personnel on their war production record, Secretary of the Navy James Forrestal said: "Grumman saved Guadalcanal."

Grumman was the first manufacturer of airframes in the country to be awarded the Navy "E". The firm received the first one in April 1942, and won the award consistently every six months thereafter during the war months. At the end of the war, Grumman and Swirbul were the first in the aircraft industry to be awarded the Presidential Medal for Merit . . . "for exceptionally meritorious conduct in the performance of outstanding service . . . in the design and production of several of the most efficient types of aircraft supplied the Navy."

During the latter stages of WW II, too late to see action, Grumman produced the F1F *Tiger* cat, a Marine day-night fighter, and the F8F *Bear* cat. The *Bear* cat, a direct descendant of the *Hellcat*, was considered by many Navy pilots as the ultimate in conventional propeller-driven fighters. It held the world's record for a climb to 10,000 feet from a standing start until early in 1955.

In response to a Navy request for another carrier-based fighter, in 1946, Grumman began work on what was to become renowned as the F9F-2 to -5 *Pan*ther. The small, powerful fighter was built around the Rolls Royce *Nene*. The English jet engine was produced in the United States by Pratt & Whitney.

When the Navy needed the *Pan*thers in Korea, Grumman had them ready in quantity. The F9F was the first jet in the history of American sea power to be flown into combat from an aircraft carrier. It was considered a fighter "work-horse" by Navy and Marine pilots.

During this same period, Grumman produced the UF *Albatross*. The "Ugly Duckling" claims a first in aviation history—it successfully operates from land, water, ice or snow.

The swept-wing F9F-6 *Cougar* jet, successor to the *Pan*-

ther, was on its way to Korea when the armistice was signed. Much faster than the *Panther*, the *Cougar* was the first swept-wing jet fighter in operational service with carrier squadrons. Maximum speed for the F9F-8, as announced in *Jane's All the World's Aircraft, 1955-56*, is 712 miles per hour.

The company's anti-submarine warfare aircraft started with the TBF *Avenger* of WW II fame. Later, it developed the *Guardian* hunter-killer team, the AF-2W hunter and the AF-2S killer. Grumman is now producing the twin-engine S2F. This hunter-killer, equipped with the most advanced electronic detection gear, and capable of carrying torpedoes, rockets, mines and depth charges, is able to perform the complete search-attack assignment. Latest navigational equipment allows it to perform in all types of weather.

Grumman's latest fighter, the F11F-1 *Tiger*, was designed to provide a substantial increase in performance while keeping the aircraft small and light. One of the most interesting features of design is the slight "coking" of the fuselage amidships in the region where the wing joins the fuselage. This is the application of the principle known as "area rule" and is used to insure minimum drag at high speeds. The F11F-1 is the first production airplane to have this principle of design incorporated at the very beginning of planning. This single-seater has wings with a 30° sweep-back. The wing tips are manually hinged for carrier stowage. The plane is equipped with one Wright J65-W-6 axial-flow turbojet engine with afterburner, pressurized cockpit in the nose, ejector seat, four 20mm cannons and provision for air-to-air and air-to-ground missiles.

Although not in production, Grumman is doing important research in the guided missile field. At present the work is restricted to preliminary study and design.

The employees of the Grumman Company are one of its greatest assets. Very rarely do personnel problems arise. When they do, the door to "Jake" Swirbul's office is always open. The fact that every man in the plant calls him "Jake" is testimony of the high regard his employees hold for him.

DURING WW II, there was a realistic understanding that absenteeism was often necessary. To take care of household emergencies and run errands that could keep people away from work, a fleet of trucks was put in operation. They repaired workers' cars, fixed flats, turned off a forgotten faucet at home, or got license plates, and annually ran some 17,000 errands. As a result, absenteeism was less than one percent.

Although primarily a producer of Navy planes, Grumman has built aircraft for the other services, and civilian plane-types as well. In 1941, Grumman introduced the twin-engine J4F *Widgeon*, a light and trim amphibian. Originally designed as a commercial transport, the five-place *Widgeon* found wide military use as a general utility plane for the military services during WW II.

At the end of WW II, the pre-war *Widgeon* was again produced, and the luxury twin-engine amphibian, the *Mallard*. However, as military contracts increased, the commercial aircraft program was discontinued.

Another postwar venture was aluminum canoes. In 1953, boat sales made it feasible to move boat construction

to its own plant in Marathon, New York. Building of aluminum truck bodies, discontinued in the late thirties, was revived after the war. In 1946, after much experimenting, production started on several types. A wholly-owned subsidiary, Aerobilt Bodies, Inc., was created and carries on this work at a small plant at Athens, New York.

With its Bethpage facilities becoming marginal for the safe operation of testing jet aircraft, Grumman moved final assembly and flight testing of jets to its new plant in the less-populated Peconic River area of eastern Long Island. Built by the Navy, this aircraft facility was constructed specifically for jet assembly and flight operations. Two runways, one stretching over 10,000 feet, and the other over 7000 feet, comprise more than three miles of landing strip. This new facility gives Grumman 611,000 square feet more of plant area than during the production peak of WW II.

The U. S. Navy has not known a day in the past twenty-three years when a Grumman fighter was not in active service. During these years, the company's main job has



COKE BOTTLE DESIGN WAS INCORPORATED IN THE F11F-1 TIGER

been designing and manufacturing planes for the Navy. The long, close relationship between the Navy and this aircraft corporation has been a long and fruitful one.

Although the Grumman management firmly believes in the worth of research, its theory is that planes on paper do not fly, nor do experimental aircraft make airpower. Because of nuclear weapons, we must fight with what we have if an enemy strikes, not with what is on the drawing boards. There must be weapons, and aircraft are only weapons when in the hands of operational squadrons. The ability to produce, in almost any quantity when necessary, has gained Grumman the reputation for having its latest aircraft ready when needed. True in the past, it also promises to be so in the future, for the Grumman Aircraft Corporation believes that no civilization progresses unchallenged. The key to defense in an age of nuclear weapons lies in the offensive capabilities of the defender. The slogan at Grumman Aircraft is: "Progress needs protection."

ACTIVE RESERVE STATUS DEFINED

RESERVE OFFICERS now on active duty either in obligated service, or on limited or indefinite extension have an excellent chance of remaining on the active rolls of the Navy for as long as they desire or until retirement. This was the gist of the message which the Chief of Naval Personnel included in letters which are presently being mailed to all reserve officers on active duty.

The Navy needs officers, and most particularly Naval Aviators, to remain on active duty, and is attempting to do everything possible to make career service as a Reservist most attractive.

The first of the two letters is addressed to officers serving obligated service. It states that "the outlook for Reserve Officers to continue on active duty is far more favorable than it has been for many years." The President has stated that as long as the Armed Forces remain at approximately their current strength, the division of officers between regulars and reserves should be about 50-50. Legislation has been initiated to make this division a matter of law, which would mean that there would be a requirement for about 30,000 Reserves on active duty for the foreseeable future.

The second letter is addressed to officers on extended active duty including TARs and says that the information contained in the letter to obligated service personnel also applies to them.

If an officer is now serving on voluntary extended duty beyond his original obligated service under the terms of an active Duty Agreement in accordance with BUPERS Instruction 1120.22A, he will be automatically extended, after the expiration of the Agreement, unless he specifically requests release from active duty. He may apply for a renewal of the Agreement; but whether or not he is tendered another contract will not affect his retention on active duty if he so desires.

Officers now serving on voluntary extension of active duty, (not a continuation of obligated service) in accordance with BUPERS Instruction 1926.1B, and having a termination date in their extension, will be released to inactive duty at the end of their extension unless they request to be re-

tained on an indefinite extension.

Those officers now serving on indefinite extensions will automatically be retained on active duty continuously in that status.

Younger officers on obligated service are particularly urged to apply for extended service beyond their present obligation. The letter from the Chief of BUPERS encloses the proper form in which this application should be made. Each officer will receive in return a Letter of Intent from BUPERS if his application is accepted.

This letter also outlines those contingencies which might require the release from active duty of any reserve officer on extended active duty. These reasons listed are: Voluntary request for release, twice failing selection, failure to meet standards of efficiency or conduct, forced reduction in Navy strength and qualification for retirement or overage in grade.

In his letters, the Chief of Naval Personnel take cognizance of the necessity of making the prospects for the future more attractive if significant numbers of officers are to be expected to take advantage of the opportunity of a career in the Naval Reserve. He, as well as the entire Navy Department, is giving full support to legislation scheduled for early consideration which will accomplish this. A bill passed by

the House of Representatives (HR 6725), presently in committee in the Senate, if enacted into law, will provide for a lump sum payment equal to 1/2 month's pay for each year of five or more years of active duty, to involuntarily released Reservists. BUPERS, with the approval of SECNAV, has forwarded to SECDEF a Reserve Officer Voluntary Service Pay Plan which parallels the existing law for Regular Navy Officers. It provides lump sum payments of two month's pay for each year of active duty up to a maximum of twenty-four months, if they are involuntarily released to inactive duty. This plan is presently under study for the feasibility of its application to the other services."

The position of the Naval Reservists on active duty, whose tenure in the past has been something less than definite, has improved immeasurably as a result of recent administrative decisions in the Navy. Reserves must be encouraged to remain on active duty if the ratio of half and half—regulars and reserves—is to be maintained.

● Clifford M. Covert, AD2, Operations Department, NAS Moffett Field, has been commended by his CO, Capt. Paul W. Watson. An HUP crew member, Covert was instrumental in the rescue of 12 civilians during the December floods in Marysville, Calif.

● VS-39 topped NAS Quonset Pt. units with 61% of personnel advanced in rate, 100% of yeoman, nine for nine, made their rate.

WANTED: SEAPLANE TEST PILOTS



A SEAPLANE test pilot at NATC Patuxent River uses two of the four 3,500 hp T-40-A-10 turboprop engines of the R3Y-1 during braching operations. Patrol plane pilots are urged to apply for test pilot training at the Center since a shortage of experienced seaplane test pilots is foreseen.



VF-13 OFFICERS, PICTURED ABOARD THE BENNINGTON, CHALKED UP IMPRESSIVE RECORDS DURING THE LAST EIGHTEEN MONTHS



VF-13 COUGAR PLANES FLY OVER JAPAN

VF 13

WHEN THE wheels of VF-13's *Cougars* touched the runway at NAS Cecil Field in April, it was a happy homecoming for the squadron. VF-13 has a great record.

In September 1954, while based at Cecil Field, VF-13 was the first Atlantic Fleet squadron to receive the F9F-8 supersonic jets. The new aircraft were painted blue and white, the squadron's colors. Since then, VF-13's blue-tailed *Cougars* have flown 10,000 hours from two carriers, and many far-distant airfields. The squadron established two new Atlantic Fleet gunnery records, made 2,124 carrier landings, and 35 members won "E" awards.

In January 1955, VF-13 began its training schedule with an air-to-air gunnery program at NAF Mayport. Lt. Roy McLain became the 1955 NANews "Dew Jug" winner by scoring 126 hits out of 150 rounds fired at 15,000 feet.

During March, the present skipper, Cdr. L. B. McCuddin and XO, LCdr. E. W. Scantlebury, reported for duty. Later that month, Cdr. McCuddin

won an "E" in the 15,000 feet gunnery competitive exercises.

After completing the FCLP training phase, the squadron was divided into two groups for carquals. One group, led by Cdr. McCuddin went aboard the *Intrepid* and demonstrated the capabilities of Naval aviation during the carrier's joint civilian orientation cruise. The other group, led by LCdr. Scantlebury successfully qualified aboard the *Bennington* with ATG-201. Capt. Russ Rogers, USAF, exchange pilot serving with VF-13, became the first AF pilot to qualify on an angled deck carrier.

After regrouping at Cecil Field in May, VF-13 departed for Guantanamo, and there successfully completed 66 assigned missions. Flying alternately from NAS Leeward and the USS *Bennington*, all pilots qualified for inflight refueling. New Air-Lant records for radar gunnery were established. The average was 39 hits per pilot at 15,000 feet and 35 hits at 25,000 feet and 15 more "E's!"

Back at Jacksonville in September



CDR. MCCUDDIN IS THE SQUADRON'S CO

for a refresher course, VF-13, became the first *Cougar* squadron to carqual using the mirror landing system. The squadron fired another complex at 25,000 feet operating from NAF Mayport, marking up five more "E's."

In October, VF-13 left Jacksonville with ATG-201 for San Diego where they rendezvoused with the *Bennington*. During the six-month WestPac cruise, the squadron logged 1120 carrier landings and 1950 hours. During breaks between Task Force 77 operations and ship exercises, the squadron visited Hawaii, Japan, Okinawa, the Philippines, and Hong Kong.

While at Subic Bay, VF-13 fired a strafing complex with the cooperation of AF personnel on Crow Valley Target. This resulted in three more "E's."

With Task Force 77 in March, the squadron participated in Naval airpower demonstrations for President Magsaysay of the Philippines.

After receiving a "Well Done" from RAdm. Fitzhugh Lee, ComFAirWestPac, the *Bennington* and ATG-201, together with VF-13, said "Sayonara."



VS-21 PILOTS FLY S2F IN FAR EAST

VS-21 BOASTS a very special "first." It was the first designated Air Anti-submarine Squadron in April 1950. It was formerly VC-21.

Only three months later, on the Fourth of July, there was another "first." On board the USS *Sicily*, VS-21 became the first carrier-based squadron to depart the United States after the outbreak of the Korean conflict.

Flying their TBM *Avengers*, VS-21 pilots assisted in the evacuation of the wounded from Katori airstrip near the Chosen reservoir. Later, they flew hunter/killer exercises from the USS *Bairoko*.

In February 1951, the squadron returned to North Island at San Diego to start a new training cycle. In 1952, her pilots began flying *Guardians*.

Two more cruises to the Western Pacific area were marked by many



CDR. A. H. WELLMAN, CO addresses VS-21 pilots and crewmen in ready room briefing.

long, lonely hours of patrol and black night launches when "pigeons come home to roost and ducks take shelter."

In 1954, the *Guardians* were replaced by the Navy's new antisubma-

rine aircraft, the powerful S2F. It combined the tactical capabilities of the two-plane AF teams into one "hunter/killer" package. At that time, the squadron's present skipper, Cdr. A. H. Wellman, assumed command.

During the past year, pilots have put in long hours of all-weather flight at NAAS BROWN FIELD and logged 20,000 hours during 1955.

During this same period, VS-21 racked up over 2400 accident-free carrier landings, and is the first S2F squadron to qualify all of its pilots for both day and night carrier operations.

The squadron's policy of having two fully qualified pilots in each crew is a departure from the "pilot/copilot pattern." The advantages of having both pilots qualified for either right or left seat positions have become very apparent in ASW warfare.



VS-21 PILOTS now fly S2F's. Pilots in the squadron in 1950 had flown various aircraft—Hellcats, Wildcats, Avengers, even Ryan Fireball.



THIS IS how S2F aircraft of VS-21 looked the morning after a night of continuous snow at Iwakuni. Princeton was on SEATO maneuvers.



ONE OF THE MOST exciting photographs of the Grumman S2F was taken during exercises from the USS Princeton in the Far East. All six

rockets can be seen, two toward the bottom of the picture, two which have just been launched and two still in position under the S2F's wing.



TWO S2F's in formation fly over Hiroshima. The atomic bomb Peace Memorial appears just to the right of the nose of the top aircraft.



THE HOME away from home for pilots of VS-21 is on board the USS Princeton. Here two of the aircraft orbit over the attack carrier.



AFTER THE 'I DO,' A BIG FAT BONUS

VA-115 Chief Reenlists CPO on Second Tour with Squadron

An old hand has returned to VA-115 and re-enlisted for another six years service. He's Paul W. Henchey, AEC, who was sworn into the Navy for this latest enlistment by his squadron CO, Cdr. C. W. "Moose" Smith.

Henchey, a veteran of 12 years service, first reported to duty with VA-115 in 1949. He re-enlisted while aboard in 1951 and served with the squadron until 1952.

After a tour of shore duty, Chief Henchey returned to his old squadron in June 1954. His latest six-year enlistment will put him "over the hump" for retirement with 20 years.

New BuPers Announcement Covers Material in 14 Instructions

A BuPers Instruction 1300.3B, dated 9 April 1956, of particular interest to present or prospective members of the Organized Reserve, supersedes 14 other instructions. It brings under one cover all data related to its subject and title, "Assignment and Termination Policies and Procedures for Pay Units of the Naval Reserve."

The instruction is designed to cover both officers and enlisted personnel.

Air Reserve Celebration Times Square Name is Changed

There have been some changes in New York's Times Square. The Square was officially re-titled "Naval Air Reserve Square" for the week beginning May 2. Humorist Will Rogers, Jr., Adm. Luis deFlorez and Vincent O'Connor, New York's Commissioner

of Marine and Aviation, participated in the occasion as Capt. W. M. Ryon, CO, NAS FLOYD BENNETT FIELD, hung up the new sign.

The occasion marked the first in a series of events commemorating Naval Air Reserve Week.

Shortly after the sign-hanging ceremony, a Navy F9F-7 *Cougar* was wheeled into place on the Square and opened for public inspection. Directly behind the *Cougar*, the Reservists had set up a recruiting booth and distributed pamphlets and information on the Naval Air Reserve Training Program.

On May 4, Hulan E. Jack, president of the Borough of Manhattan, pre-



NAVY PERSONNEL WATCH CHANGE OF NAME

sented a plaque to Capt. Ryon paying tribute to the tenth anniversary of the reactivation of the Naval Air Reserve Program and the 25th anniversary of Floyd Bennett Field. Jack praised the activity of the field and the importance of the Naval Air Reserve in the defense of our country.

The week's activities ended with a movie presentation of "Oklahoma" at the Rivoli Theater. Some 1500 Reservists turned out to see the musical.

NAS Hosts 'Flying Parsons' Grosse Isle Site for CAP Confab

The 1956 Regional Chaplains' Conference of the Civil Air Patrol was hosted at NAS GROSSE ILE during its two day confab. Capt. M. T. Martin, Grosse Ile's CO, welcomed over 100 "flying parsons," representing 12 states, to the air station in April.

The Reverend A. W. Van Eck of Wayandotte, Mich., was in charge of

arrangements for the conference. At present, he is a lieutenant colonel with CAP but served as a Naval Aviator during WW II, flying as a Marine.

The conference ended with a banquet. Col. Lloyd Arnold, of the 10th Air Force, made the principal address.

AC2's Make Grade at 4.0 Quiz Kids on Duty at Birmingham

When an enlisted man scores 4.0, it's news. When two men do it as they did at NAS BIRMINGHAM, it's big news.

After the results of the Navy-wide February exams were posted, T. E. Capps and D. E. Cobb, both AC2's in the Operations Department found they had hit the bullseye.

Capps added another feather to his cap recently when he came out honor man of the AG(B) School at Olathe.

Tours, Movies and Lunch First Annual Open-House at NADC

The Naval Air Development Center, Johnsville, Pa., held its first annual Family Day as more than 1000 visitors were guided through shops, offices and hangars.

Besides seeing a movie about NADC's mission and operation, military personnel and employees' families inspected airplanes, and met other em-



C. QUIRING SHOWS FAMILY GYRO MOCK-UP

ployees and their families. Various electronic devices and methods were on display so that the wife and kiddies could see the kind of work the family breadwinner is accomplishing.

After lunch at the cafeteria, the sightseers returned home with a fuller understanding of NADC work.

SPOTLIGHT ON NAAS SAUFLEY FIELD



SAUFLEY INSTRUCTOR EXPLAINS POINTS OF FORMATION FLYING T28 AND SNJ TEXAN TRAINERS ON THE SAUFLEY FLIGHT LINE

A TIGHT four-plane formation streaks through the late afternoon sky. Chances are that the tiny yellow dots against the blue background pass almost unnoticed by the people below, because this is Pensacola, the Navy's basic training center for aviators. Here thousands of pilots learn the rudiments of aviation. Learning by doing, they pepper the sky with their aircraft during most of the daylight hours.

Located ten miles northwest of downtown Pensacola, NAAS SAUFLEY FIELD is the basic tactical and combat flying base of the Naval Air Basic Training Command. Here 3000 future Naval aviators a year are taught high speed coordination and aerial teamwork. They prepare for the day when they will depend on each other's skill in specialized fleet combat teams.

Saufley Field first opened for flight purposes in 1940, and has been in use ever since. The field was named after Lt. Richard C. Saufley, an early Naval aviator. At Pensacola, in 1916, Lt. Saufley set an altitude record of 16,072 feet in a Curtiss pusher-type seaplane. Later that year he set an endurance record for continuous flight of eight hours, 43 minutes. He broke that record on 9 June 1916, over Santa Rosa, but this flight ended tragically in a fatal crash.

The station resembles a good-sized community. Visitors are impressed with its well-kept lawns and shaded streets. It has its own dispensary, open 24 hours a day, and an air-conditioned gym, which is turned into a movie

by Ltjg. H. Adler

theatre at night. Besides living quarters and chow halls for the personnel, Saufley has a library and hobby shop.

The Ground School is an integral part of the air station's activities. Here instructors teach students civil air regulations, navigation, communications, and engineering.

Basic Training Unit Two is the real reason why the station exists. This is where the tyro pilots are taught the meat of their instructional course at Saufley: formation flying in two and four plane formations, night flying, and cross-country flying.

On an average good flying day, you'll find BTU-2's hangars buzzing with activity from dawn until midnight. More than 500 student aviators and almost 200 instructors spend something like 55 hours flying together, plus countless hours on the ground in briefing and instructional periods. Students spend approximately six weeks at Saufley.

At present, the station has two training programs going. One involves the SNJ *Texan* trainer students and the other, the new T-28 trainer students. The *Texan* has been the basic trainer throughout the Naval Air Basic Training Command for some years. It is gradually being replaced by the high performance T-28, which is faster and more comparable to fleet type aircraft. Saufley trains students who have soloed in the SNJ at Whiting Field and who continue to go through the Saufley program in "J's". The other group

of students come from Corry Field. They have soloed in the T-28 and now continue their training in T-28's at Saufley Field.

BTU-2's organization is molded on the standard fleet squadron. It has an officer-in-charge, and under him are two Commander Air Groups. Each CAG has a number of VFT's (Heavier-than-Air-Formation Training Squadrons) and they in turn, have a Commanding Officer, Executive Officer, Operations Officer, and the other officers found in a fleet squadron.

As squadron members, the students start their training together. At first they learn how to fly in two-plane formation, and later the four-plane formation. Slowly their instructors perfect their every maneuver, training them to fly together without mishap at over 150 mph, with only a few feet separating one plane from another. They learn to fly their maneuvers as closely, and as precisely as a chorus line.

Formation flying is only one part of their exacting schedule of instruction. As pilots, they must know how to fly at night and how to take off for an intended landing point, fly over unfamiliar terrain, and hit their elected field. To accomplish this, they train in night solo flying and cross-country navigation in formation flights.

The fledgling pilots at Saufley find that life in BTU-2 is rigorous. Training both on the ground and in the air is intensive. When the men leave Saufley Field, they will be ready for advanced training at Corpus Christi.



SHE 'BURNS' PHOTO UNDER AN ENLARGER



DONNELLY IS A SWITCHBOARD SUPERVISOR

THE LADY IS ALSO A WAVE

ON THE 27th of July, hundreds of WAVES are making good the slogan, "Meet Me in St. Louis," as they gather from all over the country to celebrate their anniversary. When WAVES became part of the Naval Establishment 14 years ago this month, few dreamed they would become an integral part of the service.

Thousands of them served during World War II and then returned to civilian occupations. Some of them accepted Regular commissions. Still others enlisted in the years that followed WW II and during the Korean conflict. After their active service some of them continued in the Reserve and became Weekend Warriors. Still others have never been on extended active duty.

In all there are some 6000 WAVES in the Naval Reserve Program, officers and enlisted, and of these, approximately 700 are on active duty at various activities throughout the Navy.



JACKIE SNAPS PHOTO AS A JET IS READIED

A typical Wave Reservist is Jacqueline Donnelly, a New York telephone switchboard supervisor in Brooklyn. She is a veteran of three years duty with the Naval Air Reserve Program. Currently assigned as airman at NAS FLOYD BENNETT FIELD, she is striking for a photographer's rating.

When her husband, an ordnanceman with a patrol bomber squadron at the station and a veteran of WW II and Korea, became a Weekend Warrior, Jacqueline decided she would too.

The husband and wife team, aside from their annual training duty, maintain their proficiency on regularly scheduled weekends.

"I have always enjoyed flying and being near planes," explains Jackie, "and now I can do both. I've been on many assignments taking photographs, and the training is exciting. I'll sign up again the instant my four-year enlistment ends. I like being a WAVE."



ORDNANCEMAN'S WIFE IS A WAVE AIRMAN

Navy Ambassador in Malta Airman in Maltese Soccer League

A VP-24 airman, L. J. Scheeren, has won the admiration of the Maltese people for his outstanding skill as the first American ever to play soccer in the Maltese Soccer League.

Maltese soccer is described as being a "wide open game consisting of hard and rapid play, long passes, rough blocking and full pressed, offensive effort." Although teams consist of 11 men, with no substitutes allowed, many teams finish games with only nine men.

The VP-24 airman scored the tying goal in the closing seconds of a hard fought game against the heavily favored opposing team. Fans leaped over the fence and, despite the efforts of mounted police, carried Scheeren off the field on their shoulders amid the hail of cheers by his team's followers.

As a tribute to their new champion, the Maltese fans treated him to spaghetti and other delectable Maltese dishes for hours after the game.

VP-10 in Mercy Mission Young Navy Dependent in Hospital

A three-year-old boy is on the way to recovery after having been flown to the Chelsea Naval Hospital from the Naval Station at Argentina by a crew from VP-10.

The youngster, Jacob L. Adecock, son of EN1 and Mrs. John B. Adecock, was in desperate need of special medical care, which the Naval Station could not furnish. The station's senior medical officer requested the flight from VP-10, which is temporarily based at Argentina.

An emergency oxygen tent was rigged in the after station of one of the squadron's P-3V's. Early in the afternoon, Ltjg. F. C. Weidman and his crew took off.

No position reports were made due to the danger of sparks from the radio transmitter possibly exploding the oxygen from the emergency tent.

After a long period of anxious waiting, word finally came through that the plane had arrived at Logan Airport in Boston and the boy was on his way to the hospital. Ten days later, the parents were informed that Jacob was out of danger and on his way to recovery. VP-10 is commanded by Cdr. W. C. Scarborough.

Skywarrior in ComAirPac VAdm. Pride Accepts First Plane

The *ABD Skywarrior* has joined the Pacific Fleet. The delivery of AirPac's first twin engine jet bomber was accepted by VAdm. A. M. Pride, ComAirPac, at his San Diego headquarters.

After christening ceremonies were over, Adm. Pride turned the new plane over to VAH-2, commanded by Cdr. Arthur S. Irish. VAH-2 is the first such squadron to be commissioned on the West Coast. This new high altitude jet is capable of atomic delivery and can take-off from one carrier in one ocean and, after a flight across country, land on another carrier in another ocean.

Crews for the new planes have been undergoing training at NAS OLAHE, NATC PATUXENT RIVER and at Naval air stations and factories across the country since January.

Fire Fighters' Conference NAS Corpus Christi Hosts 150 Men

One hundred fifty of the Navy's top fire-fighters converged on NAS CORPUS CHRISTI in May for instruction in standardizing aircraft crash fire-fighting training programs. The fire chiefs represented Naval air establishments from all over the world.

Conducted under the auspices of BUAE, the conference is designed to introduce new equipment and improved methods for greater protection. Over 20 manufacturers of fire-fighting equipment sent representatives, as well as new equipment to be demonstrated.

NAS CORPUS CHRISTI's fire chief, J. M. Britton, coordinated local participation in the conference and made arrangements for the demonstrations.



VADM. T. S. COMBS, DCNO(Air), presents Mr. C. N. Smith, an education specialist (NA News May, pg. 35), a special letter of commendation awarded by Adm. Burke, CNO.



MCMAHON, SOOY, TEETER DISCUSS MEET

Model Meet at NAS Dallas '56 Championships Held this Month

NAS DALLAS is to be the scene of the 1956 National Model Airplane Championships. The week-long competition will be staged at the station July 23-29. Capt. David A. Sooy, CO, has received the official certification for the meet.

Mr. Maurice Teeter of Dallas is to be the Contest Manager for the event, sponsored by the Academy of Model Aeronautics. Cdr. J. L. McMahon, Jr., will be the Navy's representative.

Forrestal Re-enlistments April 'Re-ups' Raise Percentage

The percentage of re-enlistments aboard the Navy's super-carrier USS *Forrestal* has raised that ship's total to 91% during the month of April. It was during this time that six men re-enlisted for a total of 36 years.

Since the ship was commissioned last October, 80 men have been discharged. Seventy-three elected to re-enlist.

Capt. R. L. Johnson, *Forrestal* CO, read the men's shipping articles and swore them into the Navy for another hitch. He praised their decision, pointing out the continuing need for experienced petty officers in the fleet.



FIVE HARDY members of VE-401's Grim Reapers pause after spending eight days and nights in swampy terrain of North Carolina. Operation taught ways to evade an enemy.

VP-29 Back From WestPac Now is Heavy Attack Squadron

VP-29 has returned from WestPac and is redesignated VAH-2. Moved from NAS WHIDBEY ISLAND, VAH-2 is now based at NAS NORTH ISLAND, with almost a complete turnover of personnel.

Now a part of the long range carrier-borne striking force, VAH-2 is scheduled to receive the new twin-jet AAD, the first squadron under ComAirPac to receive the aircraft.

VAH-2 is now being trained intensively for its new assignment.

AD2 Presented Navy Cross Gooding Lauded for Korea Heroism

A Point Mugu sailor has been awarded the Navy Cross for heroism in Korea. The sailor, Callis C. Gooding, AD2, was presented the award by Capt. D. G. Donaho, ComNAMTC, at a station military inspection in April.

Gooding was honored for his voluntary action in assisting in the rescue of two downed UN airmen deep in enemy territory during the Korean War. Despite the hazards of night helicopter flying, possible capture and death, he and the pilot, A. K. Babbitt, ADC(AP), approached their objective in the face of intense hostile anti-aircraft and small arms fire to pick up the two men. Babbitt, then assigned to HU-1, Unit 14, was subsequently awarded the Navy Cross and a British award—the D.S.M.

Last fall, in Washington, a grateful British Empire presented Gooding with the Distinguished Service Medal—for the same action.

The citation for the Navy Cross was signed by the Honorable C. S. Thomas, SecNav, for the President.



OLD AND NEW Navy seaplanes are compared by VADM. A. K. Doyle, Chief of Naval Air Training at Pensacola, and A. J. Lowrey, who signed up to become Naval aviator #282 in 1918.

'COPTER ON A COLD SUB DECK

AN HSS-1 HELICOPTER from VX-1 was saved in April by a queer quirk of fate. The incident occurred while the helicopter and a Key West based submarine, the USS *Corporal*, were conducting exercises about 30 miles at sea. The helicopter effected an emergency landing on the after deck of the sub.

The tricky landing clearly demonstrated the skill and airmanship of the Navy pilots involved.

Cdr. W. F. Culley and Lt. J. K. Johnson were working with the submarine on a simulated ASW problem when the helicopter developed mechanical trouble. The situation was complicated enough since they were 30 miles from land, but what added complications to the already tight situation was the fact that the nearest vessel, the *Corporal*, was submerged.

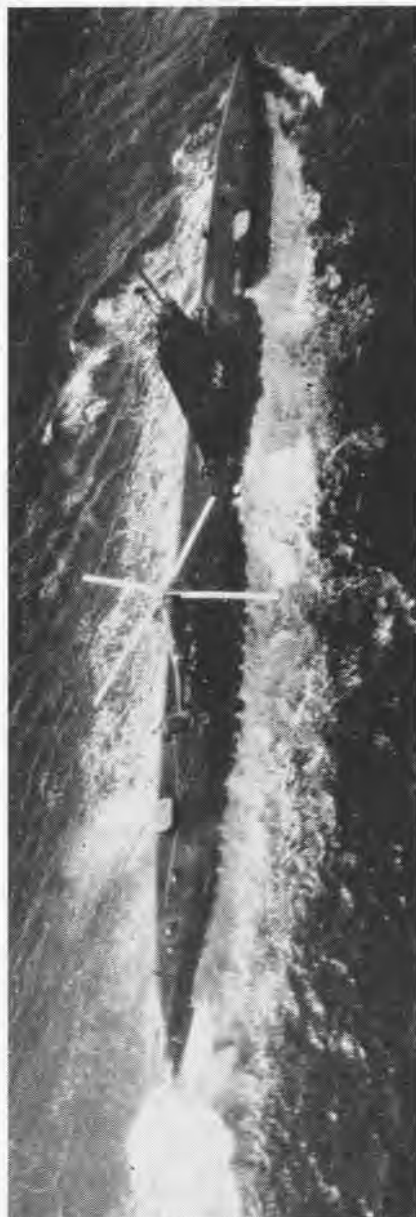
When Culley transmitted an emergency call, other aircraft in the area relayed the information of the impending water landing to the Navy's Air Sea Rescue Service at NAS KEY WEST. All available rescue craft were dispatched to the scene.

Culley and Johnson made the necessary preparations to effect an emergency water landing, but decided to remain airborne until the last possible moment. They hoped that a surface vessel would arrive with sufficient deck area to permit a safe landing.

When things seemed darkest, the *Corporal* surfaced. Informed of the situation, the sub skipper had the after deck cleared of all movable obstructions in preparation for a landing attempt by the helicopter pilot.

Culley and LCdr. E. O. Proctor, CO of the sub, held a hurried conversation via radio. Proctor informed the helicopter pilot that the difference between the width of the submarine's deck and width of the helicopter's landing gear would be about two inches in the sub's favor.

Ltjg. G. D. Ellis, Jr., one of the *Corporal's* officers, coached Culley and Johnson to a successful landing after they had brought the 'copter into a hover above the submarine. A successful landing was made on the first try, splitting the two spare inches equally on each side of the landing



THE CORPORAL WAS 'JOHNNY ON THE SPOT'



HSS-1 HELICOPTER IS SAFE AFTER ORDEAL

gear of the troubled helicopter.

Two hours later, the *Corporal* steamed into Key West harbor with the helicopter still perched precariously on her after deck. A portable crane off-loaded the HSS-1.

Maintenance personnel who examined the helicopter were amazed that the 'copter had remained airborne for the period involved and applauded the skill that averted possible disaster.

VR-5 Pilot Averts Tragedy Line Burst Causes Near Accident

Navy training paid well in the case of LCdr. Robert M. Burnell. His R6D was approaching NAS BARBER'S POINT, T.H., with 63 passengers aboard when the hydraulic fluid line burst. The fluid which was lost is used to actuate mechanisms essential in landing operations. Burnell, of Mountain View, Calif., quickly executed procedures for an emergency landing.

The plane, enroute from Naval Base Kwajalein to Honolulu, was easily controlled to a smooth landing, and its engines immediately shut down to avert further possibility of fire from the fluid.

HSS-1 Effects a Sea Rescue When VC-4 Pilot Ditches Plane

The Navy's new HSS-1 Sikorsky helicopter has been credited with its first open sea rescue. The incident occurred during Operation *Springboard* near Guantanamo Bay, Cuba, when Ltjg. R. B. Bussell, a VC-4 Detachment 52 pilot, had to crash land his AD-5 *Skyraider* after the engine caught on fire.

The O-in-C of the VC-4 detachment, LCdr. F. J. O'Malley, circled the downed pilot and directed two HSS-1 helicopters to the scene from 20 miles away. The helicopters were airborne and on a practice ASW mission when the call for assistance was received.

With wind estimated at 25 knots and sea conditions described as being state 3, Lt. A. R. Windley, an HS-1 Detachment 52 pilot, maneuvered his eggbeater into position and picked up the uninjured pilot. Bussell was returned to the USS *Valley Forge*, from which the detachments were operating, 15 minutes after he hit the sea.

LCdr. H. M. A. Hayes, RN, was pilot of the second HSS-1. Lt. Jack Hamilton was Windley's co-pilot; crewmen were LaPointe and Nelson.



KAMAN'S HTK-1, RESCUE AND RECONNAISSANCE CRAFT, HAS FIRST TWIN GAS TURBINES AND FIRST TWIN INTERMESHING ROTORS.

NEW TRENDS IN 'COPTERS SEEN AT SHOW

ONCE AGAIN, an exhibition at NAS ANACOSTIA, both static and in action, demonstrating helicopter capabilities, brought to a close the annual convention of the National Helicopter Society at Washington, D. C.

Largest of the 'copters on exhibition was the HR2s, which carries a payload of 22½ tons, or 26 fully loaded combat

troops. Sharing interest was Hiller's HOE-1, 500-pound "mighty midget of the helicopter family." This craft which can lift more than its own weight, is the first CAA approved ramjet-fired helicopter. Also of interest was the HTK-1. Equipped with twin intermeshing rotors and twin gas turbines, it is under test by HMX-1 at MCAS QUANTICO.



SMALL 12-POUND RAMJET ENGINES DRIVE THE HILLER HORNET



POWERFUL TWIN-ENGINE HR2S HAS RETRACTABLE LANDING GEAR

NACA SETS CRASH FIRES ON PURPOSE

THESE IS an urgent SOS to the control tower! A fleet of ambulances and fire-fighting equipment rush to the edge of the runway. Impaired landing gear is forcing a pilot to crash land. Anxious faces watch the oncoming aircraft make its approach.

Many a pilot has landed his plane under these circumstances without serious injury only to find himself, seconds later, trapped behind an impenetrable wall of flames. Survivals from crash-landing types of accidents could be increased substantially if fire could be prevented.

Since 1949, scientists of the National Advisory Committee for Aeronautics have been obtaining precise answers to the fundamental "hows" and "whys" of crash fires. This work has been performed by personnel of the NACA's Lewis Flight Propulsion Laboratory, Cleveland, Ohio. Scores of obsolete military planes, provided by the armed services, have been crashed under controlled conditions to study how aircraft fires start and spread. Actual tests are carried out at the Ravenna, Ohio Arsenal.

Scientific measurements are made in order for experts to study the spread of combustible vapors, fire, fuel line failures, electrical short circuits, and airplane deceleration. The tests involve an airplane simulated landing or takeoff under full power. A slipper replacing the nose wheel guides the unoccupied plane along the 1700-foot guide rail to the crash barrier where the landing gear is torn loose as it strikes an abutment.

In one such test, slow-motion films show the airplane advancing towards the crash barrier at over 90 mph, carrying 1000 gallons of aviation fuel, and crashing into the abutment. A large cloud of fuel mist rapidly spreads sideways until it reaches the engine. A spectacular fire results.

Through crash studies such as this, scientists came to understand the various ways in which fires are started when oil, fuel, or hydraulic fluid, as liquid or spray, and as combustible vapors, are brought into contact with suitable ignition sources. Electrical sparks, hot exhaust pipes, other engine parts, exhaust or back-fire flames, and

friction sparks caused by the grinding of steel parts along concrete runways, were all found to be potent ignition sources under certain conditions.

Because it was felt these early fires

they decided to investigate methods of fitting such a system to airplanes in regular service.

Tests of the inerting system began with piston-engined aircraft and now



CRASH FIRE RESULTS IMMEDIATELY IN AN F-84 FIGHTER WITHOUT INERTING SYSTEM



IN CRASH OF SAME TYPE FIGHTER WITH THE INERTING SYSTEM, NO FIRE RESULTED

might mask other ways in which fire can occur, the known ignition sources were rendered harmless, or inerted, by experimental means. In repeated crashes, a plane equipped with the experimental inerting system, the same clouds of fuel mist were formed, but no new ignition sources appeared. Although NACA scientists evolved the fire inerting system merely for test purposes, it proved so successful that

cover turbojet engines. For both engine types, the system provides cooling as well as mechanisms to shut off the normal supply of fuel and electricity at the moment of crash.

The aircraft engine is the worst fire hazard in a crash since it operates at high temperatures and is located close to the plane's fuel tanks. In many accidents the tanks are burst or ripped open, spilling the contents

close to the hot engines. The jet engine, moreover, having no propeller to strike the earth and bring the engine to rest, will continue to draw large amounts of air through its heated interior.

Fire breaks out instantly when the flammable mixtures are sucked through the inlet, and burning of magnesium

ever, a critical period of several seconds after the crash, during which all the engine parts aft of the compressor remained hot enough to start a fire. The turbine wheel itself stayed hot enough to cause ignition for many minutes after the crash.

Because ignition occurred in the engine in only those relatively limited

the hot surface to promote cooling.

The inerting system, successfully used in full-scale crash-fire tests of turbojet-powered aircraft, uses water stored under pressure. Crash-sensitive switches release this water. In crashes of various kinds, the barriers were positioned to simulate various typical landing and take-off accidents and to cause different kinds of damage. For example, in one, the airplane ground-looped; in another, the engine was torn from the wing and tumbled through the cloud of fuel spray behind the airplane. Fire did not occur in any of the crashes in which the inerting system was used. A typical jet engine can be inerted fully with as little as nine gallons of water, a large piston engine with 3.5 gallons.

The Navy has no immediate plans for use of the NACA fire inerting system, pending further development, but is closely watching progress in this field. Like other additions to the airplane, the device could tend to reduce the useful payload.

Development is being advanced by a private firm under a USAF contract for both piston and jet engines inerting systems. Flight service tests for the former are due to begin this year. In addition, engine and airframe makers are investigating the NACA-evolved crash safety principles.

NAVY PLANES are equipped with in-flight fire safety gear. All Naval aircraft, with the exception of helicopters, have fire warning devices. Though fighters and attack planes are not equipped with in-flight fire-inerting systems, most multi-engine aircraft are provided with a means to fight fire while in flight. These semi-automatic systems, activated by the pilot, spray a chemical called bromotrifluoromethane into the danger area.

An explosion suppression device is used on the F7U-3M and -3P *Cutlass*. Pressure sensitive capsules are inserted in the wing cells and surrounding areas. The device is triggered to the rise of air pressure caused by a bullet or missile explosion. The explosion suppressor triggers a chemical mist that smothers fires or explosions before serious damage can occur.

Fire, the pilot's nightmare, is by no means a thing of the past. However, aeromedical research is fast winning the battle against this dread hazard.



A SERVICE-WEARY C-82, WITHOUT INERTING SYSTEM, FIRES AFTER CRASH LANDING



AFTER GROUND LOOP CRASH OF THIS C-82, INERTING SYSTEM STEMS FIRE OUTBREAK

parts adds to the conflagration. Some engine parts may remain hot enough to start fire many minutes after the combustor flame is extinguished. Full-scale crashes revealed that the gas turbine can feed upon spilled fuels and force large flames out of its inlet and tailpipe onto pools of combustibles.

It was found that parts were rapidly cooled by the continuing flow of air through the engine. There was, how-

ever, areas where the gas flowing through was moving at low velocity, it was feasible to provide cooling by direct application of water. The steam so generated protected against ignition by cutting out oxygen while the cooling was in progress. It was also determined that the outer surface of the tailpipe required cooling, and that a stainless steel screen wrapped around the tailpipe would keep water in contact with

HELICOPTERS ARE GIVEN ROCKET POWER

SOMETHING new has been added—rocket power for helicopters.

A Marine squadron has just completed tactical and evaluation tests of this new development mounted on Sikorsky HRS helicopters. According to HMX-1 pilots, rocket power for rotors is efficient and practical.

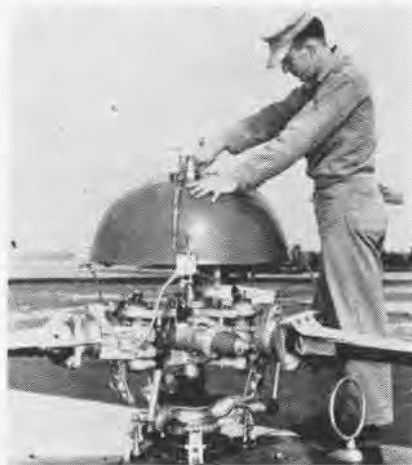
The great advantage of a rocket engine is that it can produce extremely high thrust independent of altitude.

The need for additional, quick power was made clear in the Korean War. Definite operational limitations of the helicopter showed up when there were adverse conditions of temperature and humidity, or where take-off and landing space made vertical flight a necessity.

Probably one of the most difficult operational limitations was that imposed by high altitude in the mountains. In mountainous territory, the gross weight had to be diminished to a point far below what the airframe could carry. This reduced the number of combat troops, litter patients and quantity of material which the helicopter could have accommodated.

A more powerful engine wasn't the answer. It might solve the sea level problem, but power output at altitude would still fall off proportionately. Even more important, critical power plant requirements exist only during hovering, take-off and landing, or at times when the forward velocity is very low. Thus, during the greater portion of flight, a larger power plant imposes a heavy weight penalty without a corresponding advantage.

What was needed, according to engineers in the Bureau of Aeronautics, and the Marine Corps, for improved operating capabilities at altitude was a



MARINE MECHANIC CHECKS ROR FUEL TANK

lightweight, efficient auxiliary power source that could be used when needed. This auxiliary power plant must be able to operate efficiently at altitude. This meant rocket power.

Involved in the development which makes use of rockets in helicopter design are the Bureau of Aeronautics, Reaction Motors Incorporated, and the Marine Corps. The helicopter used for development and test was the Sikorsky HRS. After running through a series of tests, the Marine Corps is ready to recommend wider use of ROR (Rocket on Rotor). This new auxiliary power is producing what they need: exceptional power for emergency use.

In order to test pilot adaptability, approximately 30 pilots were checked out in the system. One flight was adequate to check out a new pilot.

The ROR power plant is a variable thrust rocket system having a dry weight of approximately 75 pounds. The propellant tank is mounted over the rotor assembly. It can hold up to

290 pounds of fuel, enough for several minutes of operation. On and off control is provided for the pilot by a switch in the cockpit.

The propellant, 90% unstabilized hydrogen peroxide (monopropellant), is supplied to each engine by centrifugal pumping action brought about by rotation of the helicopter rotor. Thrust variation is attained by varying the propellant flow rate.

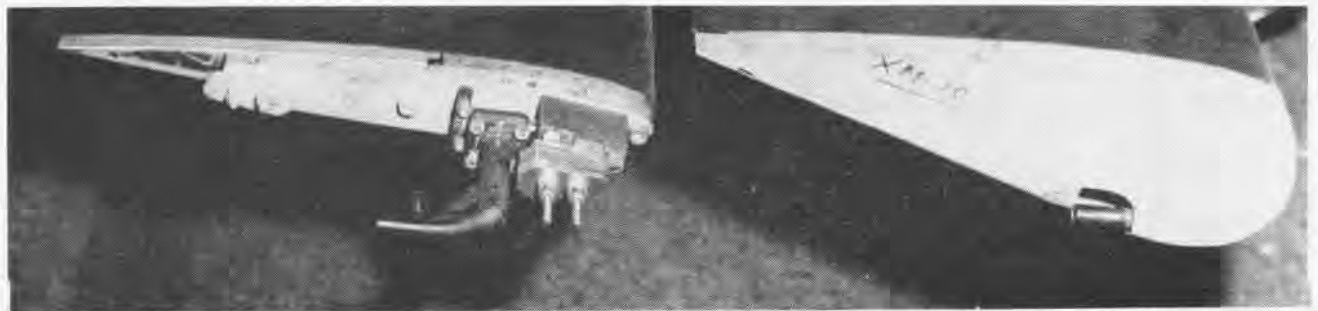
At the blade tips, the fuel enters the rocket engines, in each of which is a metal catalyst. Upon contact with the catalyst, the hydrogen peroxide immediately decomposes into oxygen and steam to produce thrust.

Tactical tests carried out by HMX-1 pilots indicate that operational efficiency and safety of helicopters are substantially increased. The ROR has proved to be an excellent auxiliary power system for HRS helicopters at all operating altitudes and under all weather conditions.

The additional power makes for greater safety by making it possible to decrease the rate of descent. Thus in times of emergency, it is still possible to make an unhurried landing and to have a wide choice of landing areas.

One of the great benefits of ROR is that its use permits a helicopter to fly with loads far in excess of the normal maximum gross weight. Still another is the advantage of efficient helicopter performance at altitude. Furthermore, a 'copter equipped with ROR can operate as well on a hot day as if the temperatures were moderate.

Installation of ROR on all HRS helicopters is being recommended by HMX-1 with a view of increasing the safety factor and operating capabilities of Marine Corps whirlybirds.



JET TIP OF ROR UNIT FOR HELICOPTER BLADE IS SHOWN AT LEFT WITHOUT FAIRING, AND AT RIGHT WITH FAIRING MOUNTED

IFR-IQ?

Is there a "Plan 62?"

Answer on Page 40

'Sara' Chief a Winner Shares 'Name that Tune' \$25,000

Chief Aerographer's Mate Henry A. (Red) Boucher was co-winner of \$25,000 on the fifth and final round of a Golden Medley Marathon on CBS television musical quiz, "Name That Tune." He was teamed with Mrs. Nan Langford, a student nurse from Oklahoma City.

Red's mother was a Navy chief when she was a yeomanette during WW I. He wears his mother's chief insignia on special occasions. Because of the death of his father, Red spent several years in St. Vincent's Home, Fall River, Mass., until his mother could have him and his younger brother with her. A good part of Red's prize goes to St. Vincent's toward the school building fund.

Chief Boucher and Mrs. Langford clinched the jackpot by identifying *Wearing of the Green*, *The Girl I Left Behind Me*, *Finlandia*, *Year of Jubilo*, and *A Mighty Fortress is Our God*. Capt. Robert Stroh, CO of the new *Saratoga*, to which Boucher is assigned as part of the aerology staff, participated in congratulating Boucher after the prize was won.

Boucher also has received letters of commendation from the Hon. C. S. Thomas, SecNav, and VAdm. J. L. Holloway, Jr., Chief of BUPERS.



BOUCHER AND HIS ST. VINCENT FRIENDS

SHADES OF THE FH-1 PHANTOM



FLIGHT TESTS ABOARD FDR PROVED THE PHANTOM CAPABLE OF CARRIER OPERATIONS

TEN YEARS ago this month, marked a milestone in Naval air power. The FH-1 Phantom demonstrated aboard the USS *Roosevelt* that an all-jet airplane could take off and land on a carrier deck. On July 21, 1946, the McDonnell-built fighter made its public debut, the first time an all-jet plane ever made a fly-off from a United States ship.

During the early part of WW II, BUAER started studies of jet propulsion in order to increase the speed of attack aircraft. After many months of designing and testing, McDonnell built the Phantom airframe around two Westinghouse axial-flow turbojet engines. Its tactical mission was that of a defensive air patrol airplane which could take off and land on a carrier deck, climb to altitude, patrol at about 15,000 feet and attack hostile aircraft when necessary.

The Phantom's first flight test demonstrated that the aircraft had a top speed of over 500 mph, yet it had stability and control characteristics at slow landing speeds comparable to conventional carrier-based planes. Its ceiling was over 35,000 feet and its range, over 1,000 miles.

The Phantom made its carrier debut about 35 miles off the Virginia Capes, aboard the FDR. On the flight deck, a select audience, including VAdm. A. W. Radford and VAdm. G. F. Bogan, watched as the Phantom lowered its wings and started its engines. Just two minutes later, after a 400-foot run, the FH-1 pulled up and away into a beautiful, climbing turn.

Then without retracting the wheels, LCDr. James Davidson, the pilot, banked her around for a landing ap-

proach, and came in for a perfect landing. Four more times that day the FH-1 took off and landed. These take-offs proved it could become airborne with a run of only 360 feet. It could take a wave-off right in stride and possessed excellent stability and control at low speed. Its performance exceeded expectations.

This new type of carrier-based aircraft posed a few new problems. Different methods of spotting planes and new techniques by flight deck personnel had to be developed for jet operations. The hot air blast from the two turbojet engines was dangerous, and the sharp-edge exhaust could cause a serious burn. Care had to be taken not to be sucked into the air intake in the leading edge of the wing.

When the faster, more powerful F2H Banshee replaced Phantoms in Navy operational units, the FH-1's were sent to the Navy Reserve.

Though the last of the Phantoms is no longer used, the FH-1 has secured for itself a place in the annals of American aviation. It was the pioneer which proved the feasibility of jet aircraft operation on carriers.



RADFORD AND BOGAN MEET PILOT DAVIDSON

LET'S LOOK AT THE RECORD

VC-33 Serves World Wide Detachment Service on 8 Carriers

The *Nitehawkers* of VC-33 have been dubbed "the Octopus Squadron of the Navy," and for good reason! The squadron has had detachments deployed aboard eight carriers all the way from Tokyo to the Med.

Normally, three or four detachments are deployed aboard as many carriers but during February and March, VC-33 AD-5N's flew from the decks of the USS *Bennington*, in the Far East; the USS *Forrestal*, USS *Coral Sea*, and the USS *Randolph* in the Gitmo area. While three teams were hitting the liberty ports in the Med and flying from the *Lake Champlain*, *Ticonderoga* and the *Intrepid*, another detachment was deployed aboard the USS *Antietam* for carquals. A total of 58 pilots, 275 enlisted personnel and 37 aircraft took part in this mass detachment deployment.

Cdr. Dale K. Peterson, CO of VC-33, has nothing but praise for his detachment O-in-C's: LCdrs. S. O. Bach, A. M. Barlow, E. D. Andrews, L. S. Kalousek, R. W. Hudeck, C. G. Tiedemann and Lt. H. F. Snyder. Units under their command compiled 2,300 hours, 910 day carrier landings and 318 night landings during February and March.

RAdm. Duerfeldt Sets Record As He Goes Aboard CVA-59 in TF-1

RAdm. C. H. Duerfeldt, ComNATC Patuxent River, set a record as the first admiral to pilot his own plane aboard the Navy's new operational carrier, the *Forrestal*.

The admiral and his co-pilot, Capt. Donald Gay, Jr., Director of Service Flight at NATC, flew a TF-1. On the first try, Adm. Duerfeldt brought his plane aboard in a landing that was described as "very smooth."

Capt. R. L. Johnson, *Forrestal* CO, greeted the admiral when he stepped down from his plane.

On the return flight to Guantanamo Bay, RAdm. A. G. Mumma, Chief BuSHIPS, and RAdm. W. A. Schoech, BUAFER, accompanied Adm. Duerfeldt,



COLEDA, PEASE, HELLAND WITH PLAQUE

VS-22 Record Impressive Logged 1687 Flight Hours in March

VS-22 chalked up impressive flying records during March at Key West, according to the skipper, Cdr. F. A. Pease. The squadron flew a total of 1687 hours with 14 aircraft. That was better than 115 hours per plane per month.

The same month three pilots went over the 100-hour mark: Cdr. Pease, 109.7 hours; Ltjg. G. H. Helland, 104.5 hours; and Ltjg. H. F. Colenda, 100.9 hours. In honor of the record, the skipper was given a pair of metal shorts with his record painted on them.

The Norfolk-based s2F squadron claims the winter flying record for VS squadrons with a total of 5443 aircraft hours logged during the period of November through March.

The March record was made without neglect of ground training. The squadron pilots logged 1900 hours of ground school training, fired 991 rockets and dropped 1487 bombs during the month.

VS-22's enthusiastic flying is matched by a high reenlistment rate of 47.8 percent for the November-May period. The Atlantic Fleet record for the same period was 25.2 percent.

VS-22 was decommissioned 1 June, and its crack pilots assigned to other squadrons. It had been progressively designated VA-2E, VC-22 and VS-22

since its commissioning on 19 July 1945. It had flown *Turkeys*, *Guardians* and recently the s2F.

VR-24 Sets a High Score Records 269,000 Miles in Month

Flying eight rad *Skymasters* that maintenance personnel kept at an 88% availability, VR-24 logged an impressive 269,000 flight miles during the month of March. The squadron believes they may have established a record for Navy air transports squadrons based upon number and type of planes utilized.

The squadron logged enough time to circle the globe ten times. Two of the squadron's planes averaged 7.5 and 7.9 hours a day for the entire month and flew a total of 95,000 air miles.

In reporting this figure, the terminal crews assisted by loading 400 tons of cargo for supply missions to the Sixth Fleet. In addition, several mercy missions were flown to Turkey and Lebanon after earthquakes had devastated those areas.

High flight time pilots and crewmen were Lt. R. C. Freested, 89 hours; Cdr. F. T. Ratchford, 87.2; AL1, H. Farrell, flight radioman, 100.4; W. V. Fazio, AN, flight orderly, 94.6, and F. Hatcher, flight mechanic, 56.1.

VS-21 Sets Landing Record Buckley Lands S2F-1 on Princeton

Ltjg. Eugene Buckley of VS-21 made the 61,000th arrested landing aboard the anti-submarine carrier USS *Princeton* in March. Ltjg. C. A. Phillips was co-pilot during the landing. Capt. W. E. Gallaher, CO, was present for the traditional cake cutting in the ship's wardroom.

During the past year, VS-21 s2F's have logged over 20,000 hours flight time, an average of 500 per pilot.

Pilots Log Meteor Time VP-24 Served at Malta with RNAF

Pilots of VP-24's missile carrying P2V-6M *Neptunes* put in time flying British jets and prop-driven aircraft from RNAS HALFAR, Malta, while the squadron was stationed there as part of NATO's fighting team.

Spare time between training and operational exercises found the men of the *Bat Girl* squadron soaring high over Malta in British *Meteors*, *Gannets* and *Sea Furies*. Cdr. J. A. Tvedt commands the *Neptune* squadron.

New Laboratory Dedicated For Convair's Seaplane Research

Convair's new 300-foot model seaplane towing tank, first unit of a proposed \$800,000 hydrodynamic laboratory, was dedicated in April at San Diego by RAdm. J. B. Pearson, BU-AER General Representative.

In addition to RAdm. Pearson, about 100 military officials and civic leaders joined Convair executives at the seaplane ramp on Harbor Drive. The ceremonies signaled the beginning of tests with the largest towing tank on the West Coast.

When complete, the facility will be 700 feet long with a 100-foot square turning basin in the center. A wind-proof structure will be erected to prevent gusts or inclement weather from interfering with tests.

The center turning basin will per-



RECORDING DEVICES TRAVEL WITH MODEL

mit studies of maneuvering problems, and can be adapted to study submarine as well as surface vessel designs. Special devices in the turning basin will produce artificial waves and mixed

sea conditions for rough water studies.

The towing tank will also permit underwater ballistics studies, and the investigation of supersonic aircraft shapes, using the high density of water as a test medium instead of air.

Old 'Navy Wings of Gold' Father Gives Son Wings He Earned

Ens. Edward C. Davis is carrying on a family tradition. When he grad-



A BIG EVENT REMINISCENT OF THE PAST

uated from advanced flight training at ATU-402 in April, his father, Dwight S. Davis, Sr., pinned a pair of "family" wings on him at ceremonies conducted at NAS CORPUS CHRISTI.

The wings were the same ones given to Mr. Davis 38 years ago by his father when he completed flight training in 1918 and received the designation of Aviator #1931. Mr. Davis resides in Woburn, Mass.

RAdm. R. S. Clarke, CNAAT, conducted the ceremonies when 72 graduates were designated Naval Aviators after the course with ATU-402.



ITS NOTABLE SERVICE IS COMING TO END

VP-50 Retires Old PBM's Last Squadron to Fly the Mariner

The "Ancient Mariners" of VP-50 have completed 15 years of notable service to Naval Aviation and are now being replaced with the newer PBM-2. As the last of the squadron's PBM-5S2's flew over Golden Gate Bridge, an era was ended, an era that began in 1941 when Martin Aircraft delivered the first of over 1000 of this type aircraft to the Navy.

It was during WW II that the plane first came into its own. The versatility of this seaplane made it an invaluable tool. Needing no airfields and operating from tenders and any makeshift facilities available, seaplanes "were practically moving up with the landing operations." PBM's became troop carriers, transports, bombers, rescue aircraft and, on occasion, even torpedo bombers.

Today VP-50's role is essentially the same. Operating from NAS IWA-KUNI, under the command of Cdr. C. J. Economou, the squadron is fulfilling its primary Far East mission.

Squadrons at North Island Receive Quarterly Safety Awards

Four squadrons assigned to Fleet Air Wing 14, at NAS NORTH ISLAND, have been awarded the Quarterly Flight Safety Award by ComAirPac. The award winning squadrons are: VP-40, VP-46, VP-48 and FASRon-110.

During the fourth quarter of calendar year 1955, the four squadrons flew a total of 4,513 accident-free hours. During the last two years, they have flown over 44,500 hours—the equivalent of five continuous years in the air.

To qualify for the award, Pacific Fleet squadrons must complete one quarter of a year without an accident charged against their safety record.



ONE HUNDRED FIVE members of Mine Force, Atlantic Fleet, line the forecastle of their ships to pose for a picture that represents the largest mass re-enlistment in the history of the Navy. After RAdm. N. K. Dietrich, ComMineLant, swore the men in, VAdm. Holloway, Chief, BuPers, delivered a speech which stressed the importance of every man's contribution to the U. S. Navy.

Far East 'Copter Couriers Service from Oppama to Atsugi

Helicopter flights have added to the convenience of travel in the Far East for authorized personnel. The flights, part of the service that MAG(HR)-16 performs out of NAF OPPAMA, Japan, originate at their home base and make stops at Yokosuka, Camp McGill and NAS ATSUGI. The one way trip



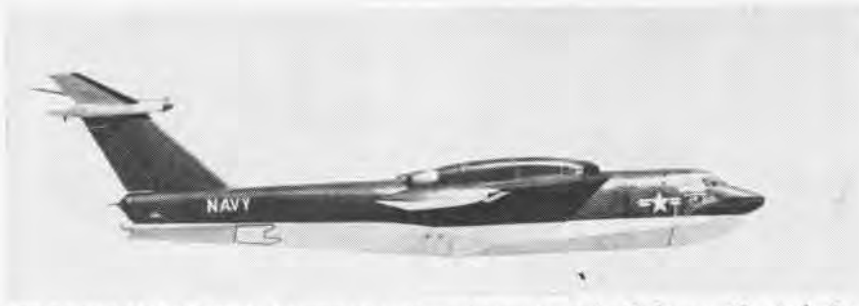
PASSENGERS ARE READIED FOR SHORT HOP

takes 35 minutes in a Marine HRS.

The helicopter service is important because it links Yokosuka, where the big carriers dock, with NAS ATSUGI, where the carriers receive much of their logistic support while in the Western Pacific.

The choppers cruise at about 65 knots over a low-altitude scenic route which provides views of picturesque Enoshima, Kamakura's Big Buddha and the white sandy beaches of the Miura Peninsula.

In addition, the choppers have performed air-sea rescue missions, rushed patients to hospitals and flown from the deck of the *Princeton* while ferrying combat troops for an exercise.



THE NAVY'S SECOND XP6M-1 Seamaster is shown during its maiden flight over Chesapeake Bay. The minelaying and photo-reconnaissance craft, powered by Allison J-71 turbojets which deliver 10,000 lbs. thrust each, was built by Martin Aircraft Co. Its speed is in the 600 mph range.

Lex Holds Family Cruise Wives Inspect Hubbies' 2nd Home

Nearly 1000 Navy wives took leave from their shore duties and boarded the *Lexington* for an eight-hour cruise off the southern coast of California.

Probably the largest cruise of this type ever held, wives and guests were given a taste of seafaring life with all the nautical trimmings. During the cruise, the families were given full run of the ship; crew members acted as guides for their own families. High points of the day were the flight and gunnery exercises.

Commanded by Capt. A. S. Hey-



GUESTS FIND FLIGHT DECK NOISY PLACE

ward, the *Lex* was undergoing training exercises off North Island. It is now deployed to the Western Pacific.

VF-91 Fliers Made Welcome Pilots at Clark AFB Give Glad Hand

Sixteen *Cougar* pilots of VF-91 from the *Kearsarge*, were treated to a "welcome aboard" party on the airstrip when they shut down their engines at Clark Air Force Base. Feting the Navy boys were the *Sabrejet* pilots of the 26th Fighter Interceptor Squadron.

During March, VF-91 made two productive shore based deployments with this AF squadron at Clark. In the three-week period, the carrier pi-

lots flew missions in air-to-air gunnery, air tactics, air defense intercept, joint Navy-Air Force parade formations, and strafing, for a total of 445 hours.

Eighteen of the 20 Navy pilots at Clark won "E's" in strafing under the regular AirPac competitive rules.

XO of FASRon-110 Retires Climbed from the Ranks to Captain

Cdr. William J. Barnard, Exec of FASRon-110, NAS NORTH ISLAND, who enlisted at the age of 17 as an apprentice seaman, is now retiring from active service with the rank of captain.

After ten years as an enlisted man, Barnard was commissioned an ensign in 1942 when he completed flight training. He served in the Atlantic theatre of operations during WW II.

During the retirement ceremony, CO Cdr. J. F. Litsey cited Cdr. Barnard for his outstanding devotion to duty. Barnard has served in every enlisted and officer pay grade from recruit to captain during his service.



RED CHECKER TAIL pilots of VF-211 pose before squadron aircraft, the North American FJ-3, at NAS Fallon. During gunnery exercises, Cdr. P. E. Pugh, the squadron CO, and his XO, LCDr. D. C. Davis, shot 64.1% and 72.5%. The squadron is part of newly commissioned CVG-21.

VS-25's 4th Safety Award

VAdm. Pride Makes Presentation

VS-25 has been awarded its fourth consecutive Quarterly Aviation Safety Award by ComAirPac. Flying the 52F, the squadron logged over 5600 accident-free hours during the last year. Of 1514 successful carrier landings, over 700 were made at night.

The award, which cited the squadron for its "sound maintenance practices, effective training procedures, and a high degree of air discipline," was presented to squadron CO, Cdr. R. H. Mathew, Jr., by VAdm. A. M. Pride, Commander Air Force Pacific.



CAPT. D. A. SOOY, CO of NAS Dallas, congratulates Cdr. R. D. Dilworth, at the commissioning of Air Auxiliary Unit-709 at NARF. Cdr. S. G. Parsons is the officer-in-charge of the Houston facility.

CVS-5 Reunion Scheduled

Former Crewmen Urged to Attend

The third annual reunion of former crewmembers of the USS *Enterprise* (CVS-5) is scheduled to be held at New York City on Labor Day weekend, Sept. 1-3. VAdm. M. B. Gardner, DCNO (Plans & Policy) and former CO of the ship from Nov. 7, 1943 to July 9, 1944, is honorary chairman. Mr. M. S. Cochran, Findley, Ohio, is chairman of the arrangements committee.

The veteran carrier is now berthed at Bayonne, N. J., with the Atlantic Reserve Fleet. At least one meeting will be held aboard the ship.

Former crewmembers who plan to attend should contact one of the following persons for pertinent information, E. J. Knapp, 59 E. 4th St., Corning, N. Y., Sergio Nesti, 1143 W. Oakdale, Chicago, D. C. Scarborough, 414 Ontario St., Shreveport, or George Matrange, 1240 Gastric Dr., Sacramento, Calif. Applications should be submitted by 10 August 1956.



THE USS CORAL SEA is the main point of interest for these New Yorkers. Over 20,000 lined the quay waiting for a chance to go aboard the big carrier. She departed in May for a tour of duty with the Sixth Fleet.



THESE MEN from VC-4 at NAS Atlantic City have all been advanced in rate as a result of the February Navy-wide exams. Their victory sign is their squadron designation.



WAVES FROM NAS Miramar enjoy first taste of sea life aboard *Lexington* during a guest cruise: (L to R) Lt. V. Thompson, Ltjg. M. Clark, Lt. G. Skowronski, Ltjg. R. Sarbaugh.

Safety Award Presented

For VMA-121's Outstanding Record

Pilots of VMA-121 accumulated 4,443 accident-free flying hours and have been awarded AirFMFPac's Flight Safety Award for the final quarter of fiscal 1955. In recognition of their achievement, a safety scroll was presented to squadron CO, LCol. W. H. Rankin by Col. J. R. Little, CO of MAG-12.

Congratulatory messages from MGen. C. C. Jerome, CG, AirFMFPac and MGen. S. S. Jack, CG, MAW-1, were received. The squadron is determined to maintain its fine record.



VISITING RAdm. F. L. Hetter, Aviation Supply Office CO, Philadelphia, receives bouquet from Miss Takasaki, daughter of Japan Aircraft Mfg. President at Atsugi. The company overhauls planes under Navy contract.

Teenagers Scan Navy Air

Adm. Gallery Launches Program

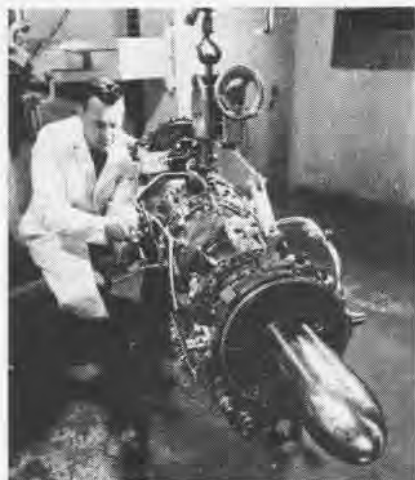
Voice of Youth, a patriotic organization in Colorado, is embarking on a thorough study of the Navy's flight training program. During a recent ceremony on the steps of the State Capitol building at Denver, RAdm. D. V. Gallery launched the project with praise for its purpose.

Governor Edwin C. Johnson proclaimed it Voice of Youth Day throughout the state. Another speaker was William R. Wright who, with a small group of teen-agers, organized Voice of Youth four years ago.

The purpose of the Voice of Youth is to prepare young Americans for patriotic leadership at home and abroad by having them engage in special study projects.

Later, Voice of Youth members and trustees were among some 1500 guests attending the inspection of over 1200 Weekend Warriors. The inspection marked the first public appearance of the crack NAS DENVER drill team.

TURBOSHAFT ENGINE INTRODUCED



G.E.'S T-58 PACKS MORE THAN 1000 HP

THE NEW turboshaft engine for helicopters, the T58, is headline news in the whirlybird world. It is the result of a joint effort in planning and development on the part of the Bureau of Aeronautics and the General Electric Company.

In terms of performance, the T58 is designed to give reliability and economy of operation. This turboshaft engine is counted upon to do better than reciprocating engines because of its greater horsepower-to-weight ratio. This should yield greater flight endurance, increased payloads and greater range for helicopters.

Lighter and smaller than equivalent piston or turbine engines, the T58 employs a free power turbine which gives it superior operating characteristics. While it is being designed initially to power helicopters, the engine may eventually provide the power for transports, missiles, drones, fighters and trainers.

In the T-58 turboshaft, air is taken through the compressor, mixed with fuel, ignited and burned in an annular combustion chamber. The resulting expanded gases are discharged through two turbines. The first is a two-stage turbine connected by a shaft to the compressor.

The second turbine is called a "free turbine," because it is not mechanically connected to the first but is spun by the gases that pass through the first two-stage turbine. As the "free tur-



SIKORSKY S-58 WILL SERVE AS A FLIGHT TEST VEHICLE FOR T-58 TURBOSHAFT ENGINE

bine" is spun, it turns a shaft which, through reduction gearing, causes the helicopter's rotors to turn.

In addition to superior performance, the T58 promises highly efficient operation. This results from the combination of a gas generator, free turbine, and a control which exploits the operating cycle of helicopters to improve torque characteristics. The T58 is designed to operate over a wide range of output power at constant output RPM. Its constant speed control requires the minimum of pilot attention. By replacing the manual speed control with an automatic one, the pilot no longer must trim power to set rotor speed. With only the relatively light inertia gas generator section to be accelerated to idle RPM, the free turbine design assures exceptional ease of starting.



A COMBUSTION CHAMBER LINER FOR T-58

Expected longer life of this type of engine is due to the gas turbine's ability to operate at a high take-off power rating for extended periods of time without adverse effects on engine life. Because many helicopter missions require operation at high power settings, the turboshaft engine can give satisfactory life on a given mission with a lower nominal power rating than an equivalent reciprocating engine. This is a great advantage.

Helicopters powered by the T58 should cost less to operate and create fewer logistics problems because of their ability to operate on a variety of lower costing aviation and gas turbine fuels. The inherent features of lower oil consumption and easier cooling are favorable to 'copter requirements.

Producing 1024 hp, the basic T58 engine is 54 inches long, 16 inches in diameter at its largest flange, and weighs 250 pounds, 325 pounds with reduction gear. This means it has the remarkable power-to-weight ratio of 3-to-1 in comparison with horsepower per pound of engine weight delivered by piston engines currently used to power helicopters.

The light weight and small size of the engine not only significantly improve helicopter power plant design, but they also substantially reduce maintenance time, since service is easily handled without the need for extensive ground handling equipment. Standard wrenches and a minimum

of special tools are needed to disassemble all major components. Unit package designs of the main reduction gear, the exhaust nozzle and the power turbine insure easy maintenance and quick replacement. The split outer housing of the compressor assembly makes it readily accessible for inspection and adjustment.

In the free turbine type engine, separate turbines are used to drive the compressor in the gas generator section, and for supplying the power output. This is a distinct advantage because power output can be supplied at a speed independent of the power level needed. This permits low rotor speeds for hovering, higher rotor speeds for forward flight, and still higher speeds for autorotation.

The free turbine also eliminates the need of a clutch for positive decoupling of engine from rotor, since the separation of the turbine units provides inherent clutch arrangement. Thus the gas generator portion can be started and brought up to speed with the rotor braked. Rotation is then obtained very simply by releasing the brake.

At present, development tests are being conducted at the G.E. Flight Test Centers in Schenectady, N. Y., on a test stand consisting of a complete helicopter rotor drive system. This simulates the helicopter tie-down



COMPRESSOR BLADES ARE JEWELRY-SIZED

test for the engine contractor and permits engineers to study the engine-rotor system problems of stability and response to transient power requirements. Following the first tie-down test, flight tests, with the Sikorsky HSS will be conducted.

NOT ONLY from an engineering standpoint, but in terms of new possibilities for extended operation, the helicopter is making progress. Cdr. Edward F. Hayes, head of the Rotary Wing Branch, Flight Test Division at NATC PATUXENT RIVER is sure that more and more missions are in the offing for the versatile whirlybird.

He points out that "the helicopter has complete mobility in all planes—longitudinal, lateral and vertical, a big advantage over fixed wing aircraft." Of course, in air-sea rescue work and medical evacuation, the helicopter is standard. It is increasingly being used in transporting supplies and equipment to troops in places where other means of transport are not mobile enough to reach.

A possibility that is now in the testing stage is the placing of helicopters aboard "Jeep" carriers. At least one carrier has already been designated for such a proposal. The big helicopters will then operate as assault troop transports.

Below, the Navy's new Bell helicopter, the HSL-1, puts on a show of strength as it tows a 300-ton yard salvage derrick through the water. Cdr. Hayes visualizes great possibilities in this kind of towing. He says, "I foresee the towing of big ships by helicopters when they are not able to proceed under their own power. This sounds unbelievable I know—that two helicopters CAN tow a battleship, carrier, or any big ship. Not at 30 knots, no, but they can *move* it, and that's the important thing."

It appears that the helicopter is making headway and is being used more and more to do a variety of tasks and missions. As its efficiency increases, its functions will also be extended.



HSL-1 SHOWS TOWING STRENGTH AS IT PULLS 300-TON DERRICK



CDR. HAYES READY TO GET IN HSL-1 DESIGNED FOR ASW WORK



DENNIS IS CONGRATULATED BY CO BOESE

Full Pressure Suit Tested PR2 Makes First Jump at El Centro

March 5th marked a red letter day for P. E. Dennis, PR2, of NPU EL CENTRO. Dennis demonstrated the Navy's new experimental full pressure suit in its first free-fall descent.

A group of Navy scientists and engineering personnel witnessed the demonstration.

This test, first of many scheduled to further determine the operational suitability of the new suit, was made from an AF C-119 *Flying Boxcar*. The plane was flying at 110 knots at an altitude of 5,000 feet.

Extensive laboratory and low-pressure chamber tests of this new suit had been completed prior to its use in actual flight and escape tests.

The suit was designed to provide protection during flight or ejection at extremely high altitudes when decreased atmospheric pressure approaches the near vacuum and where exposure would mean sure death.

Sailor Designs Timesaver New Machine Built from a Dream

Because C. L. Odom, AD2, had a dream several months ago, the Navy has a new machine that promises to save the aviation maintenance men many a man hour. Odom, attached to VR-8 at Hickam Field, built the gadget that enables a mechanic to test the internal lines of an engine for breaks, cracks or leaks without, in most cases, a costly teardown and rebuilding of the engine.

The device which Odom "dreamed

up" consists of a hand pump with which oil is pumped into an internal line. The condition of the line is then determined on the basis of the readings of a pressure gauge.

The machine, invented on Odom's own time, gives accurate readings on internal line failure frequently caused by friction and vibration of the engine.



DEVICE IS TESTED ON A J-34 JET ENGINE

CPO Designs Cleaning Tool Cleaning of J-34 Jets Made Easier

A new compressor blade cleaning and polishing tool for the J-34 jet engine has been designed by J. W. Petty, AMC, of FASRON-6. The tool has a minimum of moving parts which precludes wear, and not only costs less to maintain but less to repair.

Compressed air is used to turn an impeller which drives the sanding disk through a belt drive. It rotates at 5000 rpm.

Petty built all parts of the tool in the squadron's machine shop with the exception of the bearings and the air control valve. The whole unit weighs a very little over a pound.

Way to Reach High Places HMR-362 'Copter Solves a Problem

The problem of hoisting UHF equipment atop the blimp hangar at MCAA Santa Ana was solved a short time ago by a helicopter from HMR-362.

Capt. W. D. Garrett, MACS-9 electronics officer, was ordered to install an antenna, a receiver and a power supply unit for the equipment on top of the 210-foot high building. The interior ladders of the blimp hangar were inaccessible for the bulky gear and to raise it by crane would mean the installation of expensive hoisting equipment.

That's why Maj. C. H. Burgens and



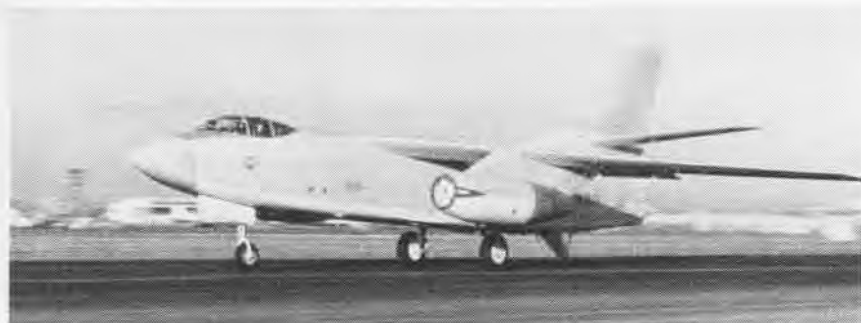
THE GEAR WAS DELIVERED IN FIVE TRIPS

1st Lt. Lou Levy arrived on the scene in their HRS, picked up the gear in a wicker basket and carried it to the top of the hangar.

The gear will be used to give pilots azimuth readings some 200 miles distant from the Marine air facility.



INTREPID'S Air Department and attached Air Group spell out "Happy Easter" in Greek letters on the carrier's flight deck. The display took place while the carrier was anchored off Salonika, Greece, during the Easter week-end. In Greece, Easter was celebrated on 6 May.



FIVE A3D SKYWARRIORS, similar to the one shown above, have been ferried to NAS Jacksonville. This twin jet, the largest and most powerful bomber ever built for carrier operations, carries a crew of three. The A3D is in the 600-700 mph class, capable of inter-ocean hops. Powered by Pratt and Whitney J-57 turbojets, the Skywarrior can operate above 40,000 feet.

Brass and Link Separator Sweeper Saves Time at El Centro

A magnetic sweeper, designed by Fleet Air Gunnery Training Unit, is used to run over the brass and link separating pit at NAS EL CENTRO.

The reinforced concrete pit is 48 feet in length, 30 inches wide and 5 1/2 inches in depth with a three-degree slope at one end for drainage. A 24-inch ramp on either side of the pit permits the magnetic sweeper to maintain an even track.

Separation of brass and links used by the M-3 20 mm cannon is accomplished by driving the magnetic sweeper over the pit. The sweeper removes the links and other ferrous metals leaving only the brass cases. The links are deposited for discard. Empty cases are then inspected and shoveled from the pit into ammunition containers for return to shipping activity.

The capacity of the pit is about 15,000 rounds and requires about two man/hours to separate a maximum load. This method of separating brass and links saves the Ordnance crew an average of 12 man/hours per week.



THIS IS an unusual photograph showing "sbock heads" in the exhaust trail of the Demon's J-71-A-2 turbojet engine. Common in rocket engines, it is a phenomenon in turbojets.

Ship Insignia Authorized OpNav Instruction Gives Details

The chief of Naval Operations has issued a new instruction governing the adoption and display of ship's insignia. It provides for a standardized display of appropriate insignia in recognition of war service performed by individual units.

The instruction, OpNav Instruction 5030.2B, is intended to raise personnel morale, and to promote a program of "unit integrity" and increase *esprit de corps* in all the units concerned.



THE NAVY'S new trainer, the T-28C, picks up a deck pendant during carrier qualifications aboard the USS Forrestal. Seconds later, as observers stood by, the T-28C's pilot added power, and the two-place trainer commenced a take-off from the big carrier's angled deck.

One of a Kind at Corpus O&R Employee Designs Contour Jig

L. F. Williams, an employee at O&R department, NAS CORPUS CHRISTI, has designed and built a remarkable machine which is the only one of its kind in the world. The hydraulically operated, electrically powered machine will perform the wrap and stretch operation necessary to manufacture certain aircraft parts which are formed to contour.

Built from scrap metal and some new raw metal, the most expensive part of the new jig is the 10-hp electric motor which supplies power. It can handle metal stock up to 24 inches wide and 144 inches long. It can bend metal to 360° and, with the aid of a booster unit, can exert pressure to a maximum of 126 tons.

Probably the most remarkable thing



WILLIAMS PUTS HIS IDEA THROUGH PACES

about the machine is that it bends stock and stainless steel to contour without loss of metal strength. Williams was given an outstanding accomplishment certificate and a reward of \$175, largest ever given to an NAS CORPUS CHRISTI employee.

Navy Accepts the XKDB-1 Target Drone Built by Beechcraft

Delivery of the first XKDB-1, an all-metal drone in the medium performance class, was accepted by the Navy from Beech Aircraft Corp., in June. Developed for BUAER under a competitive contract, the target vehicle is capable of out-of-sight remote control for armament systems training.

Flight evaluations of the new "bird" are being made at NAMTC Pt. Mugu.

Weighing less than 600 pounds, the drone flies at speed of more than 320 mph at altitudes of above 30,000 feet. Mission time at altitude is more than one hour. A V-tail configuration makes the drone distinctive.

LETTERS

SIRS:

The article on Soviet aviation in the May 1956 issue of *Naval Aviation News* was one of the most comprehensive writings on this subject that I have read in this country. NANews should be complimented for this excellent coverage, and I hope it will be possible for you to publish more such articles in future issues.

I am currently teaching a Civil Air Patrol class in aircraft identification and am hampered by the general unavailability of photos of Russian aircraft. . . . Congratulations on the article.

ROBERT F. DORE
1st Lieutenant, CAPC

Washington, D. C.

* Thanks for the kudos, and NANews, in turn, wishes again to express appreciation to the Controller of Her Britannic Majesty's Stationery Office for permission to re-print the majority of the material used in the article.

SIRS:

In your April 1956 issue of NANews you had a very interesting article (page 33) on the T2V-1. However, you mentioned the compressor bled air over the control surfaces at 1290 feet per minute. Could this possibly be in error?

RONALD G. PUCKETT, LCdr.

CO; VF-884

* You are right—we were wrong. It should read "approximately 1290 feet per second."

SIRS:

Naval Aviation News is consistently terrific, and the editors in the field can appreciate the tremendous effort that must go into it.

KEN CLEMENTS, PN1

NAS Los Alamitos



RADM. D. V. Gallery (L), Chief of Naval Air Reserve Training, on visit to Lockheed plant, checks out new T2V with LCdr. Ray Crandall of VF-771, NAS Los Alamitos, Cal.



CDR. L. R. McABOY, XO of NARTU Anacostia, presents two Navy combat art etchings to Dr. W. H. Elkins, (1), president of the University of Maryland. The etchings depicted the USS Columbia and USS Alabama.

AD1's Study Pays Off Works Way from 7th Grade to BA

Robert G. Estell, AD1, of VW-13, NAS PATUXENT RIVER, has worked his way from a seventh grade education to a Bachelor of Arts degree during his 15 years in the Navy.

Soon after entering the Navy in 1941, Estell completed the GED test which entitled him to a high school diploma. Since that time, he has piled up enough credits at George Washington University in Washington, D. C., and the university in Corpus Christi to qualify for a college degree.

Estell, now assigned to the Education Office of VW-13, intends to go on studying. His goal is a master's degree before completing his 20 years of active duty.

After retiring from the Navy, Estell plans to work in the field of education and occupational guidance.

IFR-IQ?

According to OpNav Air Traffic Control Procedures Section, the answer is No! The former "Plan 62" was superseded by the Military Flight Service Communication system. This system is a communications network by which Flight Service Centers provide the specialized operational services necessary for safe point-to-point military flights.

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● COVER

Lt. Thomas S. Overstreet illustrates his dual role as civilian and Naval Aviator at NAS Norfolk. W. A. Soux, PH1, took the picture which Lt. W. E. Outten, NARTU Command Liaison Officer, set up for the July issue of NANews.

● SUBSCRIPTIONS

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RESERVES ARE FLYING THESE PLANES

NAS Oakland shows the blimp, AF-2S, and climbing HUP-2; NAS Minneapolis has the hovering HUP-2 and dependable R5D; Cougars of NAS Columbus speed

over the Ohio countryside while those of NARTU Miami show precision to southern Florida; an AD-4N takes off at NAS Atlanta; NAS Lincoln's P2V flies.

THESE ARE RESERVISTS!



NAVAL AVIATION

NEWS

When they get together one weekend each month and for two weeks each year to keep sharp their military skills, they also have some time to swap sea stories, and enjoy the company of men with similar interests. They bolster our country's security, add to their personal incomes, and earn points for future retirement income. Get together with this gang. You'll enjoy it, and Naval Air Reserve will welcome you. It will be to your benefit and that of your country. Contact the nearest Naval Air Reserve activity and see for yourself the advantages that are available to you.