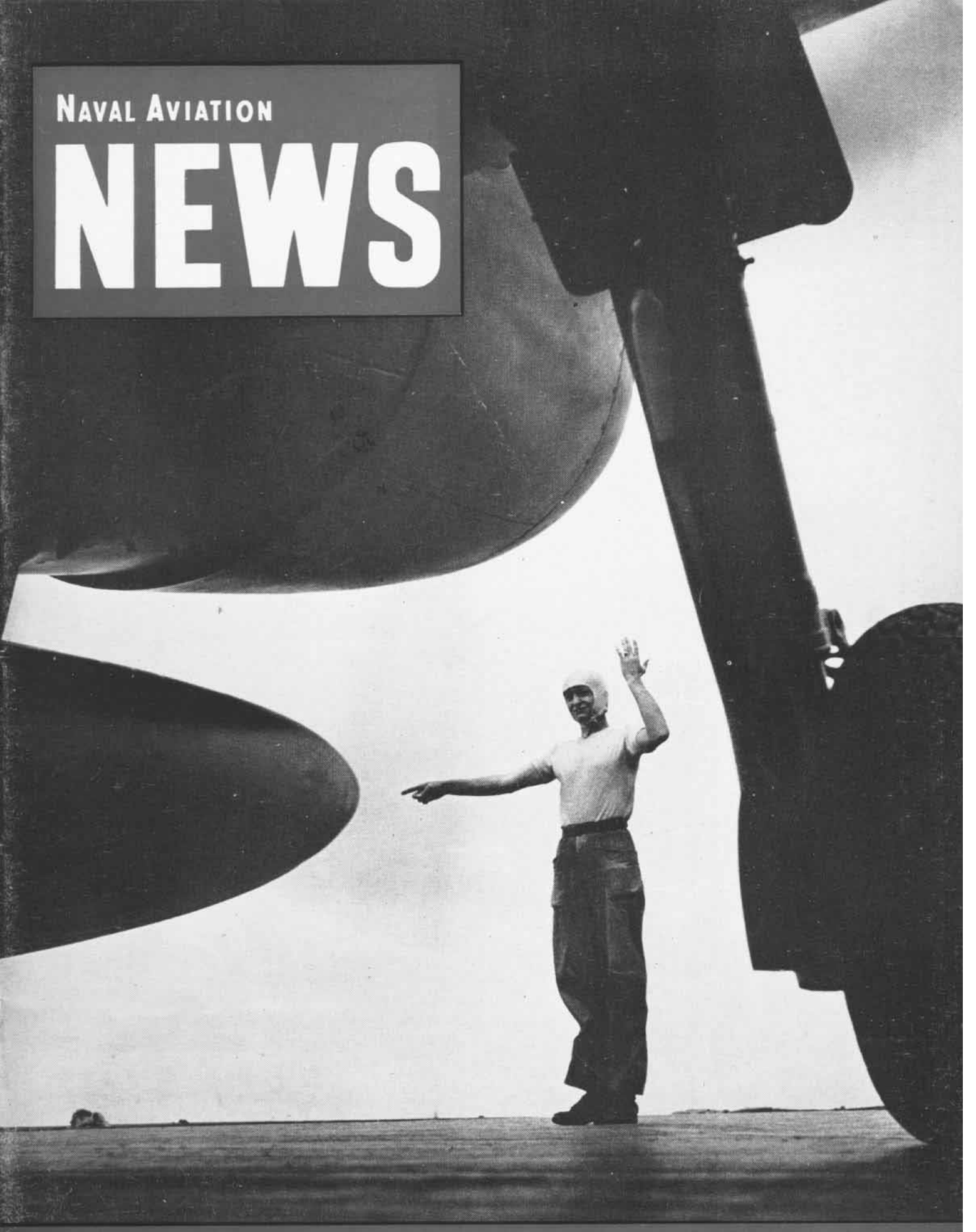
NAVAL AVIATION NEWS



Technical Training
Schools for Aviators
Aircraft Searchlights

August 1947

RESTRICTED

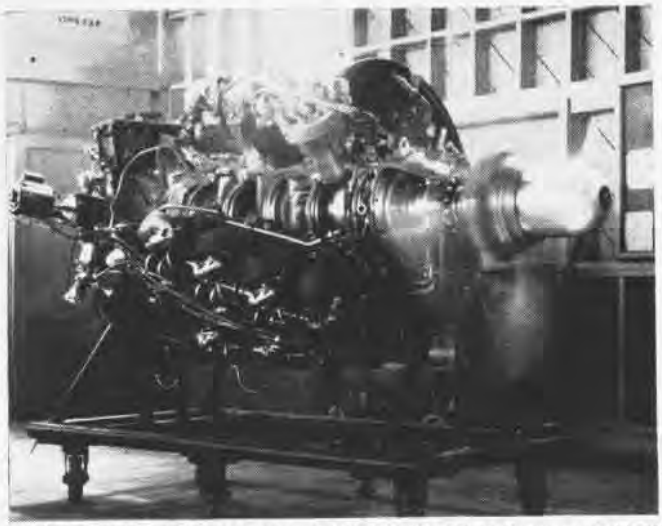
PRIMARY OR ADVANCED? Whether you were a student in primary or operational training, you should recognize these stations at opposite ends of the U. S. Where are they? *Answer Page 40.*

NAVAL AIR TECHNICAL TRAINING

NOTICE the hands in the photograph above. Freckled, hairy, trained—these hands are assembling a naval aircraft engine. From a pile of apparently incongruous metal, they are creating the powerful engine that drives the F2G *Corsair* through the air at over 400 mph. These hands belong to naval air technicians.

Naval Aviation is an exacting profession. And each aviation rating must be a specialist in his own field. The job of teaching the aviation specialist his trade belongs to the Naval Air Technical Training Command. The naval air technician must be taught the skills of a "doctor" whose preventive medicine consists of routine maintenance and periodic checks. He must become an expert "diagnostician" capable of detecting the ills of ailing equipment by the sound of an engine; by the position of an instrument needle; by the odor of a burning condenser. The aviation technician must acquire the sensitive touch of a "surgeon," ready at a moment's notice to operate on his mechanical patient; to repair or to replace worn-out parts. He must be familiar with the restoratives of his particular profession; instead of sulpha and penicillin, he may prescribe and apply lubricants; in place of the surgeon's conventional scalpel, he will use a welding flame or a socket wrench.

The MD maintains the health of the individual; the aviation rating maintains the health of his equipment. And while the striking MD attends Johns Hopkins, or another school of medicine, the aviation rating attends the Academy of the Navy's enlisted man, the many schools of the Naval Air Technical Training Command.



CUTAWAY PRATT WHITNEY 4360 DEMONSTRATES AN ENGINE IN ACTION

IN 1942, the Aeronautical branch of the Navy was critically short of trained technical personnel. Aviation technicians were needed to operate, maintain and repair the flood of new and modern equipment released by the war. To meet this demand, the Navy consolidated all aviation schools under a single head, and the Naval Air Technical Training Command was born.

REAR ADM. FELIX B. STUMP

Old training methods had been outmoded and made obsolete by the overwhelming wartime expansion. The country's best qualified civilian educators were drawn into the program at the top, and a continuous, intensive, specialized system of training was inaugurated.

This system of training kept pace with wartime needs and is still an integral part of naval aviation. For though the mechanized volume has been reduced to peacetime proportions, post-war advances in technology are still of the highest order. As peace has cut numbers of personnel, NATTC has reorganized, consolidated and cut down in quantity—but NATTC has not let down in quality.

During the crucial war years, 60 NATTC schools turned out over 360,000 trained technicians for the Navy's air arm. At the present time, NATTC schools are turning out students at the rate of 17,500 per year. This figure represents approximately 36 percent of all aviation personnel on board, and clearly illustrates the importance placed on proper training by the Navy. Every man in the Navy is always eligible for another school!

Rear Admiral Felix B. Stump is Chief of Naval Air Technical Training and has his headquarters at NATT CENTER MEMPHIS. From there, the closely integrated structure of aviation technical training spreads over 9 separate naval establishments, reaching from the East to the West coast. A total of 31 schools are now under the Command, conducting 5 levels of training—class P, A, B, C and officers' schools.

There is only one class P school at present, located at NATTCENTER JACKSONVILLE. Labeled Aviation Fundamentals, the class P school is the preliminary or preparatory school for all future aviation technician rates.

In many ways, Aviation Fundamentals is the most important of the training schools. At this school, all recruits slated for aviation duty undergo the primary training that is the foundation for their entire future career in the Navy. In the 14 weeks of "AvFund," prospective aviation personnel are given an elementary insight into the organization of naval aviation; they receive the rudiments of aviation seamanship and are given their first taste of an old Navy standby—blinker and semaphore. AvFund teaches the neophyte "airedale" the basic skills of various aviation rates and gives him information appropriate to prepare for A school training. P school students also receive the "once over lightly" of survival equipment, pass specified swimming tests, and are given a series of screening and rate selection examinations. In addition, those students who will become combat aircrewmen receive initial gunnery training in P school.

THE P school is not just a vague introduction to tomorrow's labors. It is a concentrated short course of instruction on practically every phase of aviation duty. It might be compared to the first two semesters of college work. The 560 hours of instruction received, approximates the number of hours the average college teaches its students in the first two terms.

Screening for future ratings is by preference, ability and general qualifications. When the new recruit arrives in AvFund school, one of the first things he does is put down his rate preference. This choice before training is usually based on preconceived desires and ill-informed notions of the duties of the rate chosen. But it does give the instructors an idea of what each student is shooting for. After the student has been somewhat indoctrinated into naval aviation, and has received general information on various rates, he is once more given an opportunity to name his rate preference. After this choice has been made, the student is subjected to three hours of fundamental instruction in each of the 13 aviation ratings—duties of the rate, skills required, etc. Then, near the end of the 14 week training period, the student is given his third and final rate choice. At this point, the choice is based on concrete knowledge of what each rate implies, and is usually the man's permanent choice.

Aviation Fundamentals school points with pride to its record of placing over 70% of all P school graduates in the A school of their choice. Less than 5% of the men fail to receive one of their first three choices. Of course, there are cases of students insisting upon a rate for which

THIS IS NOT ENGINE OVERHAUL BUT IS A PART OF THE MECH SCHOOL

they cannot qualify. It is impossible to make an actuary out of the student who can't add two plus two—but he might make an excellent violinist. If a man cannot stand high altitudes, or oxygen, or is deficient mentally or physically in some phase that is essential to the rate of his choice, he will have to be given a job for which he is fitted. Channeling the man into the rate he is qualified for is up to the school's instructors and interviewers.

FOLLOWING AvFund school, the non-rated man is sent to one of the 13 class A schools. In an A school, he receives all the requirements necessary to make him eligible for the first petty officer rating, as established by BUPERS manual. In addition, the student receives from 14 to 44 weeks of intensive training in the specialty of his choice. Here, he receives his initiation into the manifold and complex duties of his rating to be. Fundamentally, class A, B and C schools utilize common principles of instruction. They are the best vocational schools in the U. S. today. Planned and created by people with many years of experience in each line of study, they embody the latest training methods in existence. Practical work is emphasized. Experience is the best teacher—learn by doing.

Metalsmiths are taught their art with welding torches in hand. Parachute riggers learn by sewing, making, packing chutes. Mechs learn trouble-shooting on the line with actual planes and real troubles.

After leaving A school, the graduate joins the fleet. Then, after he has advanced to petty officer second class, he is ready for a B school course. To attend B school, the man must have had at least 18 months sea duty and have obligated service remaining of 18 months.

THE CURRICULA for all class B schools contain all the requirements for promotion to the next higher grade as stipulated by BUPERS manual.

B schools are a continuation of A school training, in that the instruction is more advanced, includes more theory and covers the ground more thoroughly. Personnel attending have a background of practical experience and are capable of absorbing more advanced material than the man with no field experience. Latest developments are included in the B school syllabus. A and B schools are constantly changing to incorporate the results of day-to-day progress in research and development.

The material for the returning B student is new, or is required to refresh his memory. And always it goes farther into the individual problems.

Class C schools fill two functions. They provide training in specialized equipment which would not necessarily fit in any particular rate. For example, a C school is conducted to train Ground Controlled Approach personnel. The life of a school of this type is indefinite. GCA training cannot easily fit into any general rating.

Another type of class C school is established on a much more temporary basis. This school conducts specialized training in specific equipment recently developed, that does fit into a definite rating structure. This training will be incorporated into the A and B school of the particular rate, and the C school serves only to meet the immediate demands of the fleet for personnel trained in the new phase. As soon as the course has been included in the A and B syllabus and sufficient numbers of trained personnel are graduating to fill fleet requirements, the C school is disestablished.

CUTAWAY MODEL OF THE I-16 JET ENGINE IS STUDIED IN CLASSROOM

PROPER JET STARTING TECHNIQUE BEING TAUGHT BY ACTUAL STARTING ▲

ORDNANCE MEN GET THE STRAIGHT DOPE ON AIRCRAFT PACKAGE GUNS ▼

LEARN BY DOING—LOADING A TORPEDO INTO THE BOMB BAY OF A TBM

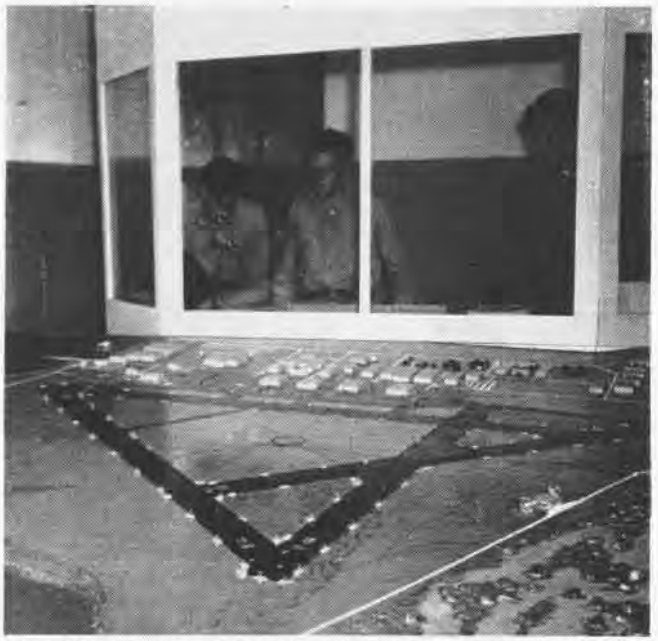
THE CLASS C Jet Engine school at Memphis, recently disestablished was one of this variety. Jet engines are now included in A and B Mech school and enough personnel have been trained in the C school to meet immediate needs.

C schools do not meet the requirements for an advance in rating. They are intended only to train men to fill a gap along the endless chain of progress in naval aviation. At the present time there are 10 class C schools operating; they teach such specialized subjects as R5D line maintenance, atomic hydrogen and heliarc welding, etc. This number may change rapidly from time to time, inasmuch as C schools are wholly dependent upon the needs of the service at any one time. Specialized training is conducted throughout the NATTCOMMAND, or is located at convenient civilian sources, i.e., factories, plants, etc.

OFFICERS' schools are specialized courses for officer personnel. They qualify officers for control and supervisory positions as engineering maintenance officers, electronics officers and what have you. Officers' courses are taught along the same lines as the A, B and C schools, the officer students attending many classes alongside non-rated and rated personnel. However, the officers' school courses are more comprehensive, overlap into several A, B and C schools and go much deeper into theory, and less into practical work . . . supervisory rather than actual application.

METALSMITHS LEARN THEIR SPECIALTY WITH WELDING TORCH IN HAND

Where do the students come from that attend the various schools? All Aviation Fundamentals students are new recruits. The present policy marks 30% of all naval recruits for aviation duty, all of this 30% attend the P school. Class A schools are about 60% filled by P school graduates; 40% by fleet personnel who have not attended the P school. (Although all aviation personnel attend P school at present, the school has only been established for something over two years.) Quotas are set by BUPERS and are requested from all commands throughout the Navy. Students to attend B schools are drawn from the fleet by mandatory BUPERS quotas. The majority of C school students come from the fleet, but in some cases go from A and B school direct to C



THE CONTROL TOWER OPERATOR'S SCHOOL USES A REPLICA OF NAS JAX

school, to pick up a special subject that has not yet been incorporated into the A and B syllabus. Quotas are furnished by BUPERS directive to all commands. Schools for officers are composed of commissioned personnel who have requested technical training, or who are ordered to a school by BUPERS. All fleet personnel who have not had previous training in a school may request A, B or C schools through their commanding officers, if eligible.

IN SOME cases commands have mistakenly felt that mandatory BUPERS quotas work an undue hardship by draining off top personnel to attend school. Therefore, a policy of returning all fleet personnel to the unit from which they come has been established.

NATTCENTER MEMPHIS, headquarters for the Chief of NATT, is also one of the largest NATTC's in the organization. At the present time, 8 schools are conducted at Memphis, including two class A, two class B, three C and one officers' school.

The A and B schools teach basic and advanced AMM

and AM ratings. The class C schools at the moment are printing, atomic hydrogen and heliarc welding and R5D line maintenance. The officers' school is the Aircraft Maintenance Officers' School.

In addition to these schools, NATTCENTER MEMPHIS is the home of the Naval Air Mobile Training Detachment. NAMTD is precisely what the name implies, a mobile unit that can be sent anywhere in the U. S. to conduct special training for as long as required. In case some shore-based command is to get a new type airplane, or a new piece of equipment, NAMTD can move a unit intact to that establishment and teach a complete training course in the field. The units are large trailer-truck affairs, equipped with instructors, training aids, mock-ups, cut-aways, film etc.—everything required for a short training course.

NATTCENTER WARD ISLAND, Corpus Christi (NANEWS, JUNE 1946) is the Alpha and Omega of future electronics technicians. Two class A schools are conducted here in Aviation Electronics Maintenance and Aviation Electronics Basic Maintenance. The former course is primarily an operators' school of 28 weeks duration, the latter a more complete maintenance school lasting 44 weeks. An officers' school is also located here for future aviation electronics officers.

NATTCENTER JACKSONVILLE, one of the major centers, has a total of 11 technical schools, plus the AvFund school and naval air gunnery training. Five class A schools are located at Jax, including schools for aviation electricians, ordnancemen, storekeepers, control tower operators and special artificer devices. All are well known rates with the possible exception of special artificer devices—SAD. This school is devoted to training personnel to operate, maintain and repair all the special training devices found in naval aviation, such as GunAir trainers, bombing trainers, free gunnery trainers, etc.

Three class B schools at Jax give advanced instruction to electricians, ordnancemen and aircraft instrument specialists. Two class C schools are now convened in Jax, one for storekeepers, and one for 1-CA-1 Link trainer maintenance—operation personnel.

NATTCENTER PENSACOLA has one class A school in photography and two class C schools operating, one in camera repair, the other a study of the motion picture camera.

The last war proved the value of photography of all kinds. Photographic intelligence is an exact science (NANEWS MAY, 1947) and is one of the most important factors of any offensive war. If it's photography and if it's aviation, the man is trained in Pensacola.

NATTCENTER OLATHE has a class C and an officers' school in Ground Controlled Approach. All the officers and men who operate and maintain the delicate equipment that goes to make up the Navy instrument letdown system are taught in this school.

One of the soundest themes stressed in technical training throughout the courses, is that, "Upon your actions may depend the life of many shipmates." It is especially true of GCA personnel. Every time their gear is used to bring a plane in on instruments, a plane and crew are placed at the mercy of a handful of trained men. The same applies to a degree to any technician in the Navy. A parachute rigger tests a parachute packed and prepared by himself in a live jump, mechs fly in planes they maintain, ordnancemen drop bombs and man machine guns; safety is a very real thing to men in technical training—safety makes a job well done.

REPAIRING A DAMAGED COWLING IS ALL IN THE DAY'S WORK TO THE AM

NATTCENTER Glenview has an officers' school for instruction of CIC watch officers. Here, pilots are taught the cardinal rules of air intercept and control. (NANEWS, JUNE 1946.)

At NAS LAKEHURST, aerographer's mates receive the word from the ground up in the A, B or C aerographers' school located there. In addition, this is the home of the embryo parachute rigger. Here the PR learns the secrets of naval aviation's number one piece of survival equipment. A flyboy doesn't go up without a parachute. Aviation medicine is potent stuff, one drop will kill you—unless it is eased down by a parachute rigger's handiwork.

Aviation boatswain's mates receive their initial training in the class A school at NAMC PHILADELPHIA. (NANEWS, NOVEMBER 1946.) They learn how to beach seaplanes, how to make buoys on one pass and the care with which a plane has to be handled on the water. Later on in the course they take a short "cruise" aboard the good ship USS *Block Island* at Annapolis, Maryland. Though the *Block Island* doesn't get around much anymore, the ABM's that train on her decks do. Operations aboard simulate actual operations in the fleet. Catapults are fired, plane-handling is conducted, the men are taught all the intricacies of carrier ABM duty.

Class C courses for boatswains are also conducted at NAMC PHILADELPHIA and aboard the *Block Island*. Here the latest in catapults and arrestation gear is taught.

At NAS SANTA ANA, the mysteries of target aircraft are taught in a class C school. The control of guided target aircraft is a fairly new phase of naval aviation, and leads into the field of guided missiles and pilotless aircraft.

Technicians are the blood, the muscles, and the heart of naval aviation. The Naval Air Technical Training Command is the head that coordinates and instructs these vital components into action. Naval aviation is staying prepared.

GRAMPAW PETTIBONE

Seven Lucky Marines

Not long ago a JRB taxied into the parking area at Floyd Bennett Field after a three-hour flight from MCAS CHERRY POINT. The crew of three and the four passengers seemed particularly glad to be on the ground.

A few minutes earlier the plane had radioed for emergency assistance due to a strong odor of raw gasoline in the cockpit, a rapidly dwindling gasoline supply and increasingly bad weather as they approached the New York area. New York radio had instructed the pilot to take up a heading of 090 degrees and hold until contacted by GCA. He had been on this heading for 10 minutes when he spotted water below a break in the overcast.

Since he had only a few minutes of fuel remaining, he elected to dive through the hole. He pushed over at 4800 feet and broke out below the overcast at approximately 1300 feet. The pilot states that his indicated airspeed did not exceed 230 miles per hour in the dive.

Examination of the plane after the landing at Floyd Bennett revealed that three gas tanks were dry and the fourth contained only two gallons. The plane's fuselage was buckled; rivets were popped; and the right wing center section inner bulkhead assembly was broken, while the same support on the left side was buckled. The center section spar assembly was bowed down in the center, apparently due to a wing load beyond the elastic limit of the truss. This JRB will never be flown again.

Grampaw Pettibone Says:

Here are a few other facts on this accident which could very easily have resulted in seven fatalities. This flight was cleared CFR, although the weather map at the time of takeoff gave strong indications that instrument weather would probably be encountered in the New York area. The pilot possessed no valid instrument rating, and had less than one hour's instrument practice in the preceding three months, yet he filed his clearance as having "Standard" instrument qualifications.

When the odor of raw gasoline was first noted in the cabin and the pilot discovered that his fuel was dangerously low, he was in an area where contact conditions prevailed. Within a very few miles there were several large airports at which he could have made an immediate emergency landing. Instead he elected to continue into instrument weather, in an effort to get to his original destination.

This is an example of the *worst sort of judgment.* It indicates that the pilot had a complete disregard for the safety of himself, his passengers, and his aircraft. As a result of this accident, the pilot has been suspended from flying pending reclassification.

Careless — $25,000 Worth!

An F8F pilot returned to the carrier after a tactics flight and found that he was unable to extend the tail hook. After trying every known procedure without success, he was finally ordered to come aboard. The ship was turned into the wind and a wind velocity of 41 knots was built up across the flight deck.

The pilot was attempting to land as slowly as possible and began to settle slightly at the ramp. He answered a come-on from the L.S.O. and was "cut" in a normal position. The plane landed slightly wheels first near the number three wire, bounced, and floated slowly up the deck. It stalled out, left wing first, and crashed into the barriers. The pilot was uninjured, but the plane requires a major overhaul.

Subsequent investigation revealed that this plane had been damaged the previous day when the plane handlers were spotting it on the deck. It had been pushed into a tractor with damage to the tail cone fairing, and the tail-hook rollers had been dislodged from the track. Maintenance personnel repaired the damage to the tail cone fairing and checked to see that the hook was not binding. They did not check the hook for extension nor discover that the tail-hook rollers were off the track.

Grampaw Pettibone Says:

This $90,000 aircraft is not quite ready for the scrap heap, but it will have to go through a major overhaul, which with the replacement parts required will cost upwards of $25,000—all because of plain, ordinary carelessness. The carelessness started with the plane handlers who caused the initial damage and continued right down the line through the maintenance personnel who made the incomplete repairs to the plane captain who did not give the plane an adequate pre-flight check. In addition the damage in the collision with the tractor *was not reported* to the proper maintenance authorities.

THIS SORT OF NEGLIGENCE MIGHT VERY EASILY HAVE RESULTED IN A FATAL ACCIDENT.

If you damage an aircraft in any way—on the ground, in the air, on a hard landing, or while pushing it around—report the damage at once. If you fail to do this, you may find yourself spending a lot of sleepless nights wondering if YOU were responsible for the plane that didn't come back.

"Dear Grampaw Pettibone:

"I thought you might be interested in the following story of an embarrassing and expensive accident that didn't quite happen.

"One morning I took off from Quonset Point, R. I., in a JM-1, bound for Atlantic City. My co-pilot had about 150 hours as such in the plane, and had ridden with me previously on several occasions. A short distance down the runway there was a slight rise and fall in the runway where another runway intersected with ours, almost at right angles. We started our take-off run, and as was my usual custom on this runway, I pulled the nosewheel

off the ground a little more than usual to prevent it from digging into this rise, with the intention of lowering the nose after we crossed and continuing the take-off normally. We crossed over the little hill and started down the other side; some sixth sense suddenly indicated that the plane was lower than it should have been. I took a fast glance out of the corner of my eye and discovered the landing-gear handle in the UP position! I sweated blood for a few seconds while nursing the plane along into the air, unable to put the nose down an inch for fear of hitting the runway, and unable to pull it up for fear of stalling out. After a few seconds which seemed like a thousand years, the plane took hold and became solidly airborne. The co-pilot sat there looking pretty sheepish for the rest of the trip to Atlantic City, and admitted he couldn't think of a single reason for having pulled the gear handle up without any signal from the pilot. So we dropped the subject and completed our trip without further incident.

"We landed in Atlantic City and climbed out of the plane and stood around for a few minutes chewing the fat. Suddenly one of our mechs let out an exclamation and called me over to take a look. Every blade on the starboard propeller was flattened off about a quarter of an inch!

"I still have nightmares about it!

"Yours very truly,

LT. COMDR., U.S.N."

Grampaw Pettibone says:

Many thanks for this interesting contribution which certainly brings home again the necessity for proper indoctrination of all crew members. My files contain a great many similar cases where propellers were damaged because the wheels were raised too soon, but off-hand your case is the only one I can remember where the aircraft was able to continue flight.

Positive hand signals are the answer to eliminating accidents of this nature.

Attention F4U Pilots

Two recent wheels-up landings in F4U's were attributed to faulty functioning of the CO2 emergency system. In one instance a subsequent investigation disclosed that the pressure in the CO2 bottle was so low that it failed to actuate the emergency by-pass valve. As a result of this discovery all aircraft in this particular squadron were grounded until the CO2 bottles could be weighed.

It was found that on four planes the CO2 bottles had lost more than 50% of their contents. Since all the bottles had been checked for correct weight two weeks earlier, the defective bottles were placed under water to determine the presence of slow leaks. Small leaks were found to be occurring around the safety disk and around the cutter disk at the rate of one bubble every five to eight seconds.

Grampaw Pettibone Says:

This looks like a mighty good opportunity to save needless damage to Navy planes. An investigation is underway as a result of the RUDM submitted on these defective CO_2 bottles. In the meantime smart maintenance personnel will weigh the CO_2 bottles in each F4U and test any that are low for the presence of small leaks.

Shoulder Harness Saved Day!

The picture above shows all that was left of an FR-1 after a spin accident during Field Carrier Landing Practice. The plane struck the ground in a steep left bank and cartwheeled on its nose. After shedding the tail section, aft jet engine, and forward engine, the cockpit section came to rest upright and facing 180 degrees from the original heading. The pilot was uninjured, because he had his shoulder harness and safety belt *tight* and *locked*.

"Dear Grampaw Pettibone:

"Here's one for you when you feel the urge for a dissertation on Lady Luck.

"It was one of those CAVU days at Kodiak, Alaska. During such weather there is no place in the world where you can see farther, or see more. A Lt(jg) in my command was flying a local hop in a *Privateer*, brushing up on the finer points of instrument flying in preparation for his Patrol Plane Commander Check on the following morning.

"Reaction in emergencies is a normal part of a Patrol Plane Commander Check, but this pilot couldn't anticipate the emergency arising when the life raft came out of its cradle in the fuselage of the plane and carried away half of his elevator controls. He was too busy getting the instrument flying hood down, and trying to maintain control of his aircraft. Descending from 7000 to 3000 feet, out of control, the pilot and co-pilot were able, by using full 'up' tab, full power, and almost the full back pressure that both of them could exert on the yoke, to continue flight.

"After experimentation, it was found that with approximately half flap, the plane responded to controls at speeds in excess of 160 kts. In that condition the plane was landed. The fact that the brakes were burned out in stopping was expected; and everyone was slightly surprised that the pilot was able to hold the plane on the runway.

"Reaction in emergencies . . . EXCELLENT!"

SQUADRON COMMANDER"

Grampaw Pettibone says:

I wish a long-standing policy could be altered to let me give this pilot's name, but I'm sure that at least his squadron mates will recognize the incident, and join me in saying "Nice going." That was certainly a heads up job of flying.

Lock the Canopy Open

A recent forced landing accident illustrates the importance of locking the canopy in the open position before take-off or landing. In this case the pilot gave his engine a thorough ground check and noticed no indication of malfunctioning during the run up.

However, when he reached an altitude of about 50 feet, and was near the upwind end of the runway, the engine suddenly failed. Observing that he would not be able to get back down on the runway, the pilot retracted his wheels, extended his flaps, and landed straight ahead even though the terrain out there looked pretty rugged.

The plane struck several small trees, skidded about 150 feet in the rough terrain, and came to a stop in the upright position. The cockpit canopy had not been locked open prior to take-off and it slammed shut on impact, inflicting slight head injuries to the pilot.

Grampaw Pettibone Says:

You handled this emergency like a veteran, son, and I am mighty pleased at the excellent judgment you showed in getting your wheels up, flaps down, and landing straight ahead. That's the correct procedure if you want to walk away from a low altitude emergency landing. However, if you had just remembered to lock the canopy open before take-off, you would have saved yourself some painful cuts.

In a similar take-off accident last month a pilot was *decapitated* when the cockpit canopy tore off on impact with the runway.

DID YOU KNOW?

Naval Aviation Aids Science

Plays Role in Arctic and Bikini Projects

In the air and under the sea naval aviation is contributing to two scientific projects being undertaken by the Navy this summer.

The *Edisto*, which is now cruising in the Canadian Arctic in conjunction with Weather Bureau projects in that area, is carrying a helicopter for ice reconnaissance. The helicopter will will be used to determine the most favorable course through the ice masses. When longer flights are necessary and open water is available a J2F will be used for reconnaissance. The *Edisto*, an ice breaker, will touch at Thule, Greenland, and at Winter Harbor, Melville Island.

The practicability of using helicopters for reconnaissance when a ship is surrounded by ice and seaplanes cannot be launched was well illustrated last year during the *Nanook* Arctic operation and during *Operation High Jump* to the Antarctic, when helicopters were used to chart the course for the ice breakers.

A more unusual role in the interest of science is being played this summer by an aircraft carrier. This carrier is the famed *Saratoga* which was sunk last year during *Operation Crossroads*.

The *Saratoga* is one of the sunken vessels which will be examined by deep sea divers so the Navy may supplement information obtained after last year's atomic bomb tests, when radioactivity

SARATOGA IN HAPPIER DAYS ON WAY TO BATTLE

prevented complete examinations.

The diving operation is only one phase of the scientific resurvey of Bikini Atoll which the Navy with the cooperation of the War Department is making to determine the long-range effects of the atomic bomb tests.

A group of forty-odd scientists and technicians, representing the Atomic Energy Commission, the United States Geological Survey, Fish and Wild Life Service of the Department of the Interior, the Smithsonian Institution, the Army, the Navy, and other scientific and educational institutions throughout the country are participating in the survey. They will bring back extensive collections of biological and geological specimens, employ a hard-rock crew to drill for cores on the atoll and make radiological studies of the water.

Three cameras *on the ground and atop the plane fuselage record the flight of a 5" spin stabilized aircraft rocket as it leaves one of the twin launchers in the nose of this* B-25 *on the ground at NOTS Inyokern, Cal. Rate of fire is* 300 *a minute, with the fiery blast from the rockets being diverted by a tube downward out of the fuselage. Studies are also being made for shooting such rockets from rapid-fire installations in the plane wings.*

Photo Contest To Be Held

All Navy Photographers May Compete

A letter from the Chief of BuAer has gone out to all ships and stations announcing the semi-annual Navy Photographic Competition. All photographer's mates and photo strikers of the Navy and Naval Reserve may compete.

Rules of the Competition are as follows:

Pictures submitted shall be black and white, prepared on 8" by 10" single weight glossy paper, mounted on mounting board not larger in size than 11" by 14".

Entries shall be stamped, numbered and captioned in conformance with the standard Naval procedure on the reverse of the mounting board and in addition shall bear the full name, rate and service number of the entrant, together with a statement concerning the class in which the picture is to be entered. Further, the following information in the order indicated should be included: (1) Camera used, (2) film used (type and Weston rating), (3) exposure and filter, if any, and (4) development.

Entries shall be forwarded with the original negatives through regular channels to the Chief of BuAer, clearly marked "For Semi-Annual Photographic Competition."

Classes of photographs are: (A) Human interest of Naval subjects, (B) Action photographs, (C) Pictorial aerial photographs, (D) Military aerial photographs, (E) Technical photographs, and (F) Humor.

Points of judging will be based on photographic quality, eye appeal, story telling, composition and technical value. Individuals may submit only one entry in each class.

Closing date for entries will be 30 June and 31 December. Entries received after the above dates will be held for judging in the following contest. All entries submitted must have been taken during the six months preceding the closing date of the competition.

Results of the contest will be reported in official publications. Individuals submitting entries are enjoined to refrain from entering into correspondence regarding entries. In all cases the decision of the judges will be considered final. Entries will not be returned.

Suitable certificates of merit will be awarded the winner in each subject group and appropriate entries made in service records to show the award.

Air Reserve Birthday

THE NAVAL Air Reserve celebrated its first birthday on 29 June when all reserve commands carried out *Operation Anniversary*. With parades, air shows and extensive publicity, the Air Reservists ushered in the beginning of their second year of activity.

NAS NEW YORK flew an aerial parade over the entire Manhattan area on 29 June and followed the next day with a gigantic air show. The *Phantom, Truculent Turtle* and several other of the Navy's newest planes were on exhibit. The *Blue Angels*, Navy's flight exhibition team kept a crowd of 15,000 spellbound as they went through their precision maneuvers. Reserve air groups made coordinated mock attacks on the field to add the realism of war.

The entire program was received enthusiastically and radio, newspaper and television publicity gave full news coverage.

At other stations throughout the country programs of similar nature were arranged. Various stations pooled their resources for aerial parades made up of hundreds of planes throughout the entire areas of the participating units. Parades were, in most cases, followed by flight demonstrations.

It is still too early to report the activities of all Air Reserve stations, but it is certain that *Operation Anniversary* was a success in all respects. Next month's NANEWS will contain more detailed descriptions of the observance at various Naval Air Reserve Training Units.

Navy Reducing Air Stations

Banana River, Ottumwa Close Down

The diminishing number of naval air stations was cut still further with the closing down of Banana River and Ottumwa this month as an economy move.

Banana River, sometimes known as "mosquito heaven" during certain months of the year, had been the PBM training base, plus a few students in torpedo bombers and fighters. Those activities are being moved to Jacksonville. Pre-flight training, for several years the big activity at Ottumwa is being sent to Pensacola.

With the start of the new fiscal year 1 July, the pilot training program is still in a state of flux. Although rumors have been that Corpus Christi would be closed and basic training centered at Pensacola, no definite word had been received up to press time.

The air station at Houma, Louisiana, is scheduled to be inactivated on 15 October and the air facility at Hitchcock, Texas, on 15 September. According to present plans the LTA base at Santa Ana, Cal., will be declared surplus on 1 January 1948. The air station at Terminal Island, Cal., was put on caretaker status last May. Rodd field, a subsidiary auxiliary air station of Corpus, was inactivated 1 August.

NAS St. Simon was declared surplus on 1 July and the Marine Corps auxiliary air station at Oak Grove inactivated on 15 June, leaving the Marines only three stations in the country—Cherry Point, Quantico and El Toro, Calif.

Now Hear This!

Ever since the war was over, *Naval Aviation News* has been receiving letters from pilots and other aviation personnel wanting to subscribe to the magazine so they could keep in touch with the Navy's aerial progress.

We always had to reject their requests because the magazines were classified "*Restricted*" and could not be sold. Now, NANEWS is publishing an unrestricted version containing practically everything that is in its regular edition.

This "*Naval Air Reserve Edition*" can be purchased by any person by sending $2 for a year's subscription to the Superintendent of Documents, Government Printing Office, Washington, D. C.

NATS Men Save 15 Planes

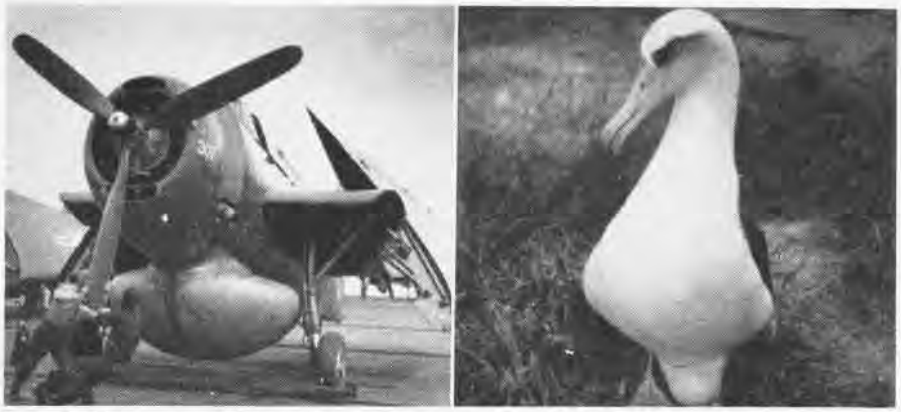
Bravery at Honolulu Wins VR-8 Praise

COMNATS, PAC—Letters of commendation and meritorious mast were awarded members of VR-8 and other units who helped quench a hangar fire at NAF HONOLULU which did $2,000,000 damage and threatened 15 NATS transports.

The fire was in the original NATS hangar at John Rodgers field, now used by three large commercial operations, Pan Am, United and Pacific Overseas, plus several smaller organizations. NATS being housed in an adjoining hangar was endangered by the flames, which did burn a few ailerons and elevators on Navy planes.

An R5D was on the wash rack between the two hangars, with 2,100 gallons of gas aboard and winds sweeping the flames toward it. Sheer manpower finally pushed it out of danger, probably saving considerably greater damage had it exploded. Two R5D's and an R4D downwind from the burning hangar were taxied away by the VR-8 operations duty officer and several other pilots with complete disregard to their own safety in a shower of flaming embers. Marines moved oil drums and other inflammable gear from between the hangars. Only three small commercial planes, plus the hangar, were destroyed.

NAS JACKSONVILLE—Fifty cadets from the Danish training ship *Danmark* were given a quick look at naval aviation while visiting the station recently. Despite language difficulties, they got the main idea when shown such things as Link trainers, gunairstructors, operations tower and the A&R shop. They watched an R5D land and were thrilled to be introduced to four survivors of a PBM crash in the Antarctic, who had returned in the transport.



Somebody *once said "Nature reproduces everything." When NANews ran a picture of the TBM-3W "Guppy" with a radome on its fuselage, little did it think some child of nature would try to imitate it. Then NAS Midway sent in a picture of a Gooney bird, that conical, dopey denizen of that sand-swept island, which apparently saw NANews' picture; decided that probably was the latest style and grew a radome (egg) of its own.*

TRI-CYCLED RYAN IS SUCCESS ABOARD CARRIER

Fireball Outfit Keeps Busy

Completes Scheduled Fleet Operation

VF-1E, San Diego—This *Fireball* squadron has just finished a busy quarter. On 26 April the outfit embarked on the USS *Badoeng Strait*, and for the first time since the commissioning of the squadron, the *Fireballs* were used in scheduled fleet and Air Group operations. The operations involved "hunter-killer" exercises similar to those prescribed in USF-54 for anti-submarine warfare. On 2 May, the squadron returned to San Diego, embarking again on 16 May and returning on 23 May.

On 4 March, Lt. Comdr. Fernandez crashed into the sea during carrier landing practice after taking a partial cut and wave-off, but escaped without injury. On 25 March an accident resulted in minor damage to one plane when the left main gear folded on landing. The accident was the result of the failure of a main shock strut axle bolt—no injuries. On 28 April, an unmanned F8F-1 ran away and collided with an FR-1 resulting in survey damage to both planes—no personnel injuries. On 18 May, a landing accident aboard the *USS Badoeng Strait* resulted in major damage to one FR-1 airplane.

There were no personnel losses during the quarter except administrative ones. On 23 April the squadron suffered a 50% reduction in number of aircraft assigned and transferred nine FR-1 planes to NAS SAN DIEGO.

Ensign Crashes, Then Weds

Bruised Pilot Takes Vow in Sick Bay

NAS QUONSET—When Ensign Stephen J. Vose decides to do something, he goes through with it. Especially when it comes to getting married.

Although a Wednesday afternoon accident in an F8F confined him to a hospital bed with a severe eye injury and numerous cuts and bruises, he managed to take the vows on the following Sunday. And that took some doing.

Finding that his bride-to-be refused to put off the ceremony, he made arrangements with Judge Casey of Wickford District Court to waive the five-day waiting period. He also arranged for blood tests and got the marriage license on Sunday morning.

A large wedding cake, originally baked for over 200 guests, was shipped from Cambridge to Quonset. Patients in the hospital contributed flowers.

Navy nurses removed excess bandages from his face and a Gray Lady aide officiated at the piano. After Judge Casey performed the double ring ceremony, Ens. Vose returned to his bed to recover from his injuries. His bride returned to East Greenwich to await her husband's recovery.

Model Flies at High Speed

Navy Uses Replica in Drop Testing

Exact replicas of the F8F *Bearcat* are being used at the Naval Experiment Station, Philadelphia, to obtain information on aerodynamic characteristics of aircraft flying near sound speed.

The wooden models, four-tenths of

DRONE BEARCAT NESTLES UP TO FORT'S BELLY

full size, reach transonic speeds when dropped from the bomb rack of a PB-1W, Navy-owned B-17. The models have no propulsive units but 500 lbs. of lead in the nose of each plane allows it to obtain its speed in a free dive.

Automatic controls within the model pull it out of its dive at speeds in excess of 600 mph. and actuate a parachute for recovery and reuse. Located in the after portion of the model, the control equipment is preset for the type of flight desired. It consists primarily of gyroscopic mechanisms and electric servo-motors which actuate the controls.

Information on each flight is transmitted to ground receiving stations by radio telemetering equipment in the forward section. Radar tracking shows the trajectory and automatic radio-transmission permits evaluation of behavior in the air. The drop-testing technique allows testing at high speed without correction of data which is necessary in wind tunnel testing.

A method *of obtaining controlled, measureable wind speeds in the transonic speed zone is claimed by Lockheed Aircraft Corporation. Through the use of this wind tunnel "bump" invented by John H. Weaver (standing on installation) aeronautical engineer for Lockheed, a faster, curved flow of air is produced. Lockheed states that speeds up to 850 mph can be accurately recorded during speed tests.*

AD-1 Makes Carrier Landing

Passes Its First Tests on CVE Sicily

The Navy's new attack bomber, the AD-1 Douglas *Skyraider*, passed its first carrier qualification tests in good shape during June when pilots of the *Franklin D. Roosevelt's* air group took their tests aboard the CVE *Sicily* off Norfolk.

The squadrons were VA-3-B *and* VA-4-B, operating from the *Sicily* because

14 ROCKETS, INCLUDING 2 TIMS, ARM RAIDER

their own ship was undergoing repairs in drydock. The *Skyraiders* will replace the old wartime dive-bomber, SB2C, and the TBM/TBF torpedo bombers with the fleet. They will be available at first only to the fleet, although training commands will receive the AD-1 when production catches up with demand.

Versatility of the *Skyraider* as an attack plane can be seen in the accompanying photograph where it is carrying 12 HVAR 5" rockets and two 11.75" *Tiny Tims*. The plane also can carry a torpedo externally. Its speed is greatly in excess of the planes it replaces, sufficient so that at its best altitude it can give a fighter competition.

El Toro Trains VF Reserves

Fighter Squadrons Go on Active Duty

MCAS EL TORO—Twelve fighter squadrons of the Marine Corps Air Reserve will go on active duty at this station on 8 September for two weeks of operational duty. Total personnel involved is estimated at 2,250. A similar group will go to MCAS CHERRY POINT.

The Reserves will fly their own planes, approximately 124 FG-1D's, to El Toro from bases all over the nation. While here, the squadrons will engage in bombing, gunnery and rocket practice and pilots will receive some instrument training.

Oakland GCA Keeping Busy

Unit Guides Land, Seaplane Landings

NAS OAKLAND—GCA Unit No. 19, stationed on this base, reports what is something of a record for the month of May. Out of a total of 116 satisfactory approaches made, 60 of them were by NATS planes. Of this number, 36 were by R5D aircraft and 24 by JRM seaplanes.

So far as known, this is the only equipment of this kind used in connection with large seaplanes. This assistance of this unit in developing and carrying out the seaplane procedure has been a material aid in maintaining the regularity and safety of NATS.

COMBAT PILOTS SIZE UP BUDDIES

HOT PILOTS are not necessarily "successful" naval aviators. This is one of the conclusions reached by BUMED aviation psychologists who have evaluated the successful and unsuccessful combat pilots.

The man who looks out for his buddies is rated more highly than the man who considers himself a hot pilot, according to this report. Questionnaires used in this combat criterion program were filled in by combat pilots. They listed two men with whom they liked to fly and two with whom they did not want to fly.

By pinning the interrogated pilots to actual cases, the investigators obtained data on high and low groups of aviators. These they designated as successful and unsuccessful pilots.

Of prime importance were the qualities of leadership and team play. Evidently, the "wanted pilot" must not only be a good teamworker, but he must also feel responsible for the safety of those with him. He does not take foolish risks.

One of the most frequent criticisms of the unwanted pilots was that they are not real leaders. They do not have the respect and confidence of others.

How a pilot conducts himself in the wardroom or the readyroom comes under almost as much scrutiny as his behavior in the air. A successful aviator at least gets an upcheck for being a good mixer. Almost all the low pilots were rated poor in sociability.

Although pilots rate poor social behavior among least important drawbacks, one item drew much criticism—cockiness. Men who will not listen to advice and who think that their way is always right were prominent among the lower categories.

Successful pilots, according to this evaluation, are rated as neither temperamental nor nervous either on the ground or in the air. They are not likely to blow up when the going gets rough. Low nominees were most frequently erratic and undependable in the air and usually blew up in tight spots.

Many unwanted pilots were found to be rated as outstanding in ability to fly an airplane. This is a point in their favor but doesn't necessarily bring success. On the other hand, inability to fly an airplane well was one of the most frequent reasons for becoming an unsuccessful pilot.

SUCCESSFUL COMBAT PILOTS DO NOT SCARE THE LSO OR 'DOPE OFF' WHILE ON SQUADRON HOPS

Aviators expect their fellows to have adequate intelligence to keep from doping off and not getting the word. Those who make stupid blunders, who cannot think fast enough and who do not plan ahead were regarded with considerable misgiving.

Accessory skills in bombing, gunnery, instrument flying, aerology and navigation do not appear to be crucial items in combat success. However, pilots must meet minimum standards in these respects.

Avoiding combat missions was one trait which put pilots in the low group. Fortunately, this behavior did not appear very frequently. The ideal combat pilot was not overly aggressive but struck a proper balance between daring and caution.

The man who is too worried about his own safety drew special criticism. Combat pilots have to fight as part of a team rather than as an individual.

AIRCRAFT SEARCHLIGHTS WERE DEATH TO U-BOATS

A WARTIME COMBINATION WAS THE NAVY MARINER WITH AN L-11 SEARCHLIGHT INSTALLED

THE USE of giant aircraft searchlights during the war received little publicity. However, they did a big job. Primarily developed and used in conjunction with the anti-submarine campaign, aircraft searchlights were also used to some extent on other types of night attack.

The battle against the German U-boat was a "touch and go" proposition back in 1942. Torpedoed merchant ships were spreading oil on every Atlantic coastline from Coney Island to Montevideo. German submarines presented the greatest single threat to the Allied cause. England's war potential was entirely dependent upon war materials received from America. To continue the fight, she had to receive an ever-increasing stream of supplies. Without these supplies, England's active participation in the war would soon end, and with U. S. ships unable to get through to Russia, that country's back would be against the wall.

America had to move every man, every weapon, across the Atlantic ocean; before a real offensive could be opened, the submarine threat had to be wiped out, or at least controlled. Literally, an all-out air attack was launched against Germany's U-boats. However, when allied daylight attacks began to take effect the subs merely went below during the day and then returned to the surface at night to carry out their raids in comparative safety. Even with radar locating U-boats at night, successful attacks could seldom be carried out. To sink subs, bombs must be dropped with pinpoint accuracy—that kind of accuracy cannot be obtained with radar bombing alone. Some sort of solution was demanded that would extend effective anti-submarine warfare to a 24-hour offensive before the menace could be halted. An answer was found in aircraft searchlights—powerful lights that could illuminate at close range, the submarine ferreted out by radar.

THE BRITISH first used searchlights. A squadron led by Wing Commander Leigh used a 90 million candlepower "Leigh light" in January, 1942. It proved so successful in the first three weeks of operation in the Bay of Biscay, that a complete report of the light was passed to the U. S. in February, 1942, with strong recommendations that it be installed on our anti-submarine planes.

British lights were not available, so the Radio and Electrical section of the Engineering branch of BUAER immediately began to investigate the possibility of American searchlights. As soon as acceptable lights were produced, installations were made.

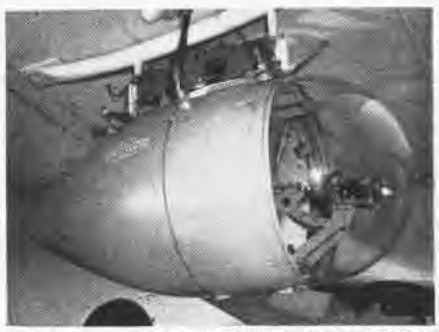
In a typical searchlight hunt, a patrol airplane uses radar to "sight" the submarine and track it down. As the plane nears the target, it is nosed down so that it will pass over the sub at approximately 100 feet. Then, as the radar indicates the plane is between ¾ to ½ mile from the target, the searchlight operator throws his switch "on" and a brilliant finger of light points out the U-boat ahead. The final run and bomb drop is made visually. Over the target with "bombs away" the light is turned off and the plane retires.

In addition to the light illuminating the target, it also acts to blind the submarine gunners during the final phase of the run while outlining the target for our own gunners. When the light is switched off over the target, the complete darkness throws off the enemy gunners during the retreat.

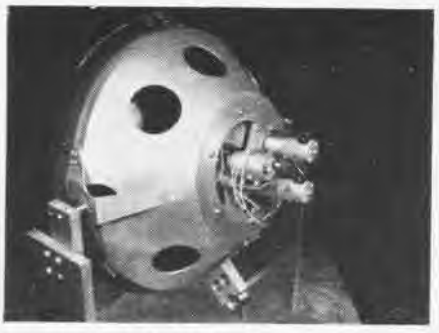
IN THEORY this all sounds "slick-slick, smooth-smooth". In reality, however, it isn't all honey and roses for the pilots. The sudden switch from instrument flying to contact with the light and then back to instruments presents some problems. On a multi-engine plane like the PBM or PB4Y, one pilot stays on instruments throughout the run. This pilot flies the plane until the light is turned on, then the other pilot takes over and flies the bombing run contact. Control is shifted back to the instrument pilot over the target.

This works well; however, the pilot flying contact has a tendency to fly down the searchlight beam into the water, and has to be closely checked by the man on instruments. With a single-engine plane like the TBM, the problem is in the hands of a single pilot. He must come in on instruments, switch to contact when the searchlight goes on and back to instruments when the light goes off. And he must be very careful not to get too low. It takes skill and constant checking of his radio-altimeter. To help re-orientate himself the pilot uses his cockpit lights turned high after the searchlight is turned off, during the critical retreat. At best, the single-engine pilot is a very busy boy, going from dark to light to dark again, in the space of one minute.

During the war, the aircraft searchlight underwent the normal experimental stage, while in actual use. Various methods of training the light and making the bomb drop were tried. The searchlight operator and bombardier were, at various times, the pilot, co-



CLOSEUP OF AN L-11 SHOWS COMPACT DESIGN



REAR VIEW SHOT OF NAVY'S L-22 REFLECTOR

pilot, radioman or bombardier, depending upon the type of plane used, squadron policy, etc. In the single-engine plane the bombardier utilized a periscope type sight to train the searchlight and drop the bombs. With multi-engine planes the bombardier operated the bombsight and the searchlight. Searchlight training was entirely manual and sometimes required some hunting to locate the target. This manual system continues to be used, with modification on some present anti-submarine planes.

In planes using this manual system, a MK 23 sight operated by the bombardier, is being employed to drop the bombs and direct the searchlight simultaneously. The pilot only controls the run by positively identifying the target and flying the run. If it is not a proper target, the pilot can flip a switch that shuts off the bombing system. If the target is identified by the pilot, he simply allows the completion of the run without interference.

A SEARCHLIGHT unit consists of an arc lamp, reflector, lamp supports, lamp housing, position control mechanism, and power supply. The arc lamp is employed to carry the high intensity carbons which provide the light beam. The reflector concentrates the light in a narrow beam. The lamp supports hold the arc lamp and attach it to the searchlight housing. The searchlight housing is a nacelle or blister, either hung under the plane's wing or faired into the leading edge of the wing and is designed to provide the least wind resistance and maximum aerodynamic stability while in flight. The carbons employed for the arc lamp are of the super-high intensity type and are the brightest source of light known to man. The position control mechanism of the searchlight is used to aim the beam in the proper direction and may be either electronic or hydraulic.

The older searchlight employed three 17 ampere-hour batteries, weighing approximately 15 lbs., for power supply. These batteries were carried in the searchlight housing and provided the power necessary to operate the light. In presently installed searchlights, and in future models, the power supply may be provided by one of two methods:

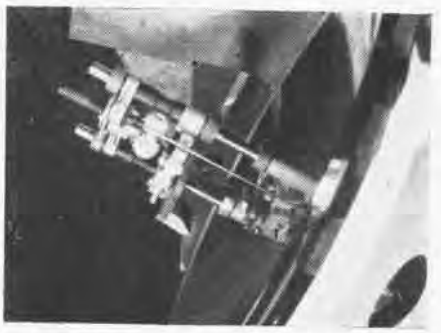
In aircraft with sufficient power capacity, a newly developed dynamotor is to be employed. This dynamotor, weighing approximately 20 lbs, will obviate the necessity for using batteries and will provide adequate power for operating the searchlight. The dynamotor converts the plane's 28-volt power supply to the 65 volts required for operation of the light.

In aircraft with insufficient power to supply the dynamotor, a scheme employing 2 batteries in series with the generator of the plane is employed. This eliminates one battery and consequently reduces the weight of installation.

Older types of searchlights employed electrical rate control for directing the light's beam. However, this was not entirely satisfactory and in presently installed and future models, position control mechanisms will be used. Position control mechanisms will be one of the following types:

In the case of searchlights which are already manufactured and which are to be installed on such planes as the TBM-3s, PBM-5s *and* PB4Y-2s, a hydraulic position control-system will be used. The hydraulic position control is directed by means of a MK23 visual bomb-sight employing either direct vision or a periscope as found necessary in the particular plane involved.

On future searchlight installations, an electronic position control directed by the APS-30 radar will be used. The APS-30 series radar directs the AN/APA-5A radar bomb-sight and this in turn feeds a signal into the searchlight through a servo system modified from the type AN/APA-43 searchlight control. The radar control position mechanism of the searchlight follows the radar, and thus, allows accurate location of the target. In addition, an override feature is to be incorporated in the searchlight control which will allow the searchlight to be directed either port or starboard approximately 5 degrees. This will allow the beam to be centered on the target for maximum visibility, since the radar picks up the brightest point on the target which may not be the center of the target.

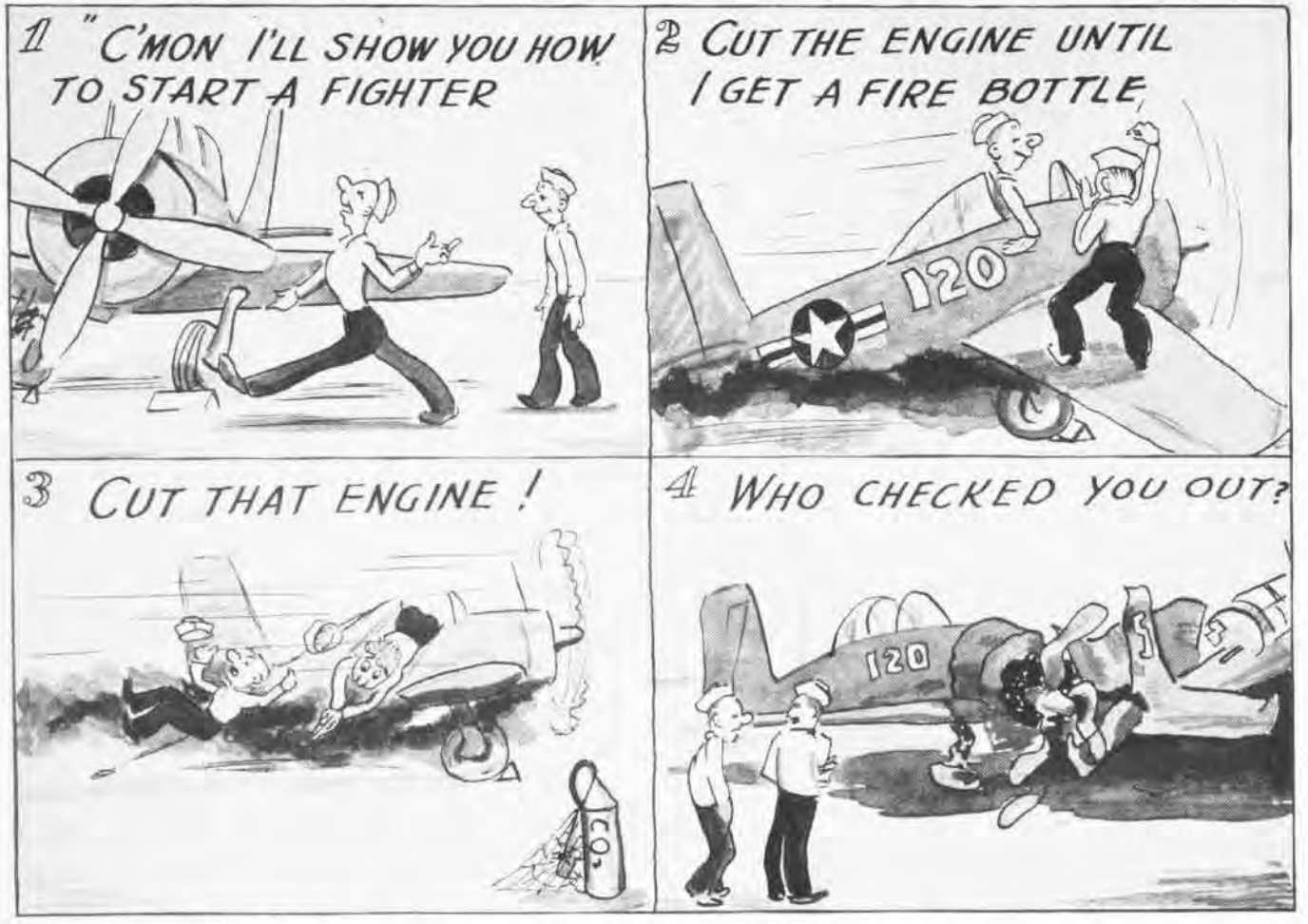


CARBONS OF THE L-22 LAST ONLY 15 MINUTES

The searchlight employing the hydraulic control is the type L-11. This particular searchlight was employed during the war for ASW service and incorporates the position control.

THE SEARCHLIGHT which will utilize the electronic position control and which will be fed from the APS-30 series radar is the L-22. This light is the latest development of the Navy and in addition to the new control, incorporates a considerable number of mechanical refinements in the arc lamp and structural mechanism of the light. The searchlight will develop a beam of approximately 90 million candlepower. It operates at 65-75 volts and, depending upon the type of carbons used, from 90-120 amps. The reflector employed has a diameter of 18 inches and is made of glass. The housing has a diameter of 24½ inches, is 6 ft. 1 inch long.

THIS L-7 SEARCHLIGHT INSTALLATION IS APPROXIMATELY THE SAME SIZE AS THE NEW L-22



S1c WILL SHOWYOU

Moral: Beware of Unsupervised Initiative

A STUDY of recent aircraft accident reports indicates that some aviation activities are not properly educating, qualifying, and supervising non-pilot personnel who are being employed in the starting, warming-up, and taxiing of aircraft. The Manual of Bureau of Aeronautics (Articles 6-108, 6-109, and 11-101) and Flight Safety Bulletin No. 22-45 stress the importance of having a *competent* person at the controls whenever an airplane is to be started, warmed-up, or taxied. Also in direct relation with the actual education, qualification, and supervision of non-pilot personnel, emphasis must be placed on the fact that unsupervised initiative in ground operations of aircraft can and usually does result in damage to material and/or injury to personnel.

CASE I A seaman first class, plane captain, took it upon himself to check out a seaman first class (just returned from a tour of mess cooking and assigned to the line detail) in the starting and warming up procedure in effect on the line. Following a short briefing by the plane captain, the "would-be" plane captain was seated in an F8F and engine started. Apparently due to over priming the engine began to torch. The plane captain told the "would-be" plane captain to cut the engine and jumped off the wing to get a fire bottle located at the right wing tip. The "would-be" plane captain professed to know nothing about stopping the engine and states that he tried as best he could to stop the engine but when the fire didn't go out and he could feel the heat on his left cheek, he jumped out on the starboard wing and tumbled to the ground. The plane had chocks under both wheels and the tail was secured to padeyes by means of two aircraft mooring reels. But with no one in the cockpit and the engine turning over at an estimated 2500 R.P.M., all attempts to reach the throttle or the throttle arm were of no avail. At this point in the predicament, the hooks on the mooring reels securing the tail straightened out and let the tail go free. The tail lifted and the aircraft began to move forward, shedding the chocks as it progressed. During its pilotless run it struck an FR and then angled into a TBM where it finally stopped. Net result—major damage to three aircraft and class "C" injury to the "would-be" plane captain.

CASE II The plane captain of an OY was instructed to get the plane ready for a hop. The plane was in need of fuel so the plane captain, on his own initiative and without authority, taxied the aircraft to the gasoline pump. There were some trucks parked in the vicinity of the pump. The plane captain taxied among them, but was not able to handle the plane properly due to the fact that he was not qualified to taxi the aircraft. The port wing brushed the box of a radio truck, resulting in the plane swerving to the left and causing the propeller to hit the truck's fender several times. Net result—one wing tip scraped and propeller damaged beyond repair. Beware of unsupervised initiative.

NAVAL ACADEMY POSTGRADUATE SCHOOL AT ANNAPOLIS, MARYLAND IS THE CENTER OF THE NAVY'S ADVANCED TRAINING SCHOOLS FOR OFFICERS

Postgraduate Courses Open To Naval Aviators Cover Many Specialized Branches Of Aviation

FOR ELIGIBLE Naval Aviators, there is a variety of naval postgraduate and special schools that give advanced military and specialized training.

Applications for these schools are requested by periodical ALNAVS, NAVACTS and BUPERS Bulletins, some six to nine months prior to date course convenes. After the applications have been received in BUPERS, a Board is formed to select candidates for each training course. Requirements vary with subject, and from year to year, but general prerequisites follow:

- All aviators applying for postgraduate training must have completed a normal tour in an aviation activity.
- The training in the engineering curricula (aerological, aeronautical, electronics and ordnance) is of a technical nature. Applicants should have had schooling in mathematics through differential and integral calculus equivalent to that required for a B.S. degree in mechanical, civil, electrical engineering, or in physics.
- The training in the applied communications and applied aerology curricula is in general of an operational nature but requires a sound educational background. Applicants should have successfully completed courses in mathematics through quadratics as a minimum and have had at least one year's sea duty. For applied communications, one should have had a good communications duty background.

For the non-Academy officer, postgraduate courses will normally come after the individual has completed five semesters of college work and one year at the General Line school. However, if an officer has the necessary requirements for a particular course, his chances will not be impaired by lack of the General Line course.

STUDENT OFFICERS STUDY THE NAVY'S "BAT"

Postgraduate school catalogs have been mailed to naval districts, all professors of naval science, large combatant vessels, and squadron commanders of destroyers and submarines in order that detailed information be available to officers desiring postgraduate training. A careful study of each curriculum in the catalog should be made by all applicants. If the current catalog is not available when applications are submitted, the previous catalog may be referred to, knowing that the curricula in the latest catalogs have been expanded.

THE FOLLOWING is a list of postgraduate schools open to aviation officers; location, length of course, and a short summary of mission are included:

Aerological Engineering—Course is given at Naval Academy postgraduate school, normally two years duration. However, outstanding students may be given a third year in meteorological development and exploitation at civilian institutions. Requirements include equivalent of engineering degree. Intended mission: To prepare officers to become competent weather forecasters for naval purposes and to improve weather forecasting methods at sea.

NATIONAL WAR COLLEGE AT WASHINGTON DC IS ONE OF NATION'S SENIOR MILITARY SCHOOLS

Requirements Vary For The Different Schools; Usually Follow First Completed Tour Of Duty

Applied Aerology—Course given at Naval Academy PG school, length, one year. Requirements include mathematics through quadratics and one year's sea duty. Intended mission: (Same as Aerological Engineering.) Class convenes in July.

Aeronautical Engineering—Course covers three years, first two at Naval Academy PG school, third year at M.I.T. Cal. Tech., R.P.I. or University of Michigan. Requirements include equivalent of engineering degree. Mission: To supply competent graduate officers able to understand and interpret for the service, technical data incident to the theory, design, construction and development of aircraft; in the case of selected individuals showing aptitude therefore, to be assigned duties dealing more especially with the research and design side of aircraft engines and structures, to serve in administrative billets concerned with aeronautical engineering. Course convenes in July.

Aeronautical Engineering (Armament)—Course covers three years, first two at PG school, third year at M.I.T. Requirements include equivalent of engineering degree. Mission: To supply competent officers to undertake work relative to the design, specification, research, and development of all aviation armament equipment coming under the cognizance of the Bureau of Aeronautics with a thorough understanding of the effects of such equipment. Course convenes in July.

Applied Communications—One year course given at Naval Academy postgraduate school. Requirements include mathematics through quadratics and one year's sea duty. Mission: To prepare officers to perform various administrative duties of the Naval Communications Service; to be competent supervisors over the service operation of all types of apparatus utilized by the Naval Communications Service; to be competent tactical officers; to better perform General Line duties by broadening their general professional knowledge Class convenes in July.

Electronics Engineering—Three year course, normally all given at Naval Academy PG school, however, last year may be given at some outside civilian school. Requirements include equivalent of engineering degree. Mission: To prepare student officers to become competent supervisors over work relative to the specification, design, research and development problems of radio, radar, sonar, RCM and other electronics apparatus utilized by the Navy; to be competent supervisors over the installation of same equipment. Class convenes in July.

Law—Three year course, given at George Washington, Georgetown and Catholic Universities. Requirements include four years' sea duty for Naval officers, three years' sea duty for Marine officers. Mission: To provide legal training for selected naval officers who will perform law duties in the Judge Advocate General's office, in Naval Districts, on Staffs Afloat, and elsewhere in the law organization of the Navy. Officers are ordered to the J.A.G. office in June to receive practical experience until the course convenes, which is in September.

Naval Intelligence—One to two year course given at Naval School, Anacostia, D. C. Students study intelligence for six months, proceed to sea for 10 weeks practical work, after which they return for language instruction. The length of time required to complete the entire course will depend on the language majored in. Each student will be required to become proficient in one foreign language. Mission: To train naval officers selecting intelligence as their specialty in all phases of intelligence, counter-intelligence, and combat intelligence required by the Navy; and to conduct intensive instruction in foreign languages to meet the Navy's need for linguistic officers. Course convenes in July.

Ordnance Engineering—Three year course first year at Naval Academy PG school, thence to various universities. Requirements include equivalent of engineering degree. Students selected will be divided into groups during their first year as follows: Ordnance engineering (Physics Electronics-Radar), (Physics Electronics-Subsurface), (Physics Electronics-Guidance), (Metallurgy), (General), (Fire Control), (Jet Propulsion), (Chemical), or (Mechanical-Electrical Propulsion). Mission: To prepare selected officers for duties as inspectors of ordnance material and to equip them to deal with problems of ordnance design, research, and development, and to train them as supervisors over the installation, operation, maintenance and test of ordnance and associated equipment. Class convenes in July.

CLASSROOM IN AERO ENGINEERING, ANNAPOLIS

Personnel Administration and Training—Fifteen month course at Stanford, Northwestern or Ohio State University. Requirements include bachelor's degree from an accredited college or university. Mission: To develop and maintain in the Navy by advanced formal education a group of general duty officers who will apply standard scientific principles and recent developments in civilian personnel practices to the needs of the Navy. Class convenes in June.

Business Administration—Two year course at Harvard University. This course is restricted to EDO aviation officers only. Mission: To develop in selected naval officers those abilities and understandings which characterize the able business administrator. Officers nominated by Bureau of Aeronautics. Class convenes in October.

Advanced Science—Three year course. Students will be chosen during first year from aeronautical, aerological, electronics, ordnance and naval engineering groups for further specialization in scientific fields at civilian universities. Selection will be from officers in other courses. Mission: To train selected officer personnel to deal with the problem of fundamental research in the separate natural sciences of general physics, nuclear physics, and chemistry, and in applied mathematics.

IN ADDITION to the postgraduate schools listed, there are a number of

short courses in specialized fields open to aviation officers. The following is a list of these schools:

Radar School—Six month course, school was formerly located at St. Simons Island, Georgia, being re-established at Naval Air Station, Glenview, Illinois. Mission: To train officers in the integral and associated components of the combat information center and to give realistic practice and experience in all phases of Combat Information Center operation. It is planned to convene classes every second month when the school is re-established at Glenview.

Electronics Maintenance—Course, one to one and one-half years, located at M.I.T. Mission: To train officers in the maintenance and repair of electronics material; to qualify them to assume duties relative to the supervision of maintenance and installation of future models of electronics equipment. Class convenes every four months: February, June, etc.

Photo Interpretation—Course covers 15 weeks; however, selected students may be retained for an additional 15 weeks of photogrammetry and cartography. School is located at Photo Intelligence Center, Anacostia, D. C. Mission: To train officers in photographic interpretation, photogrammetry and cartography. Class convenes every sixteen weeks, beginning 17 January, 1947.

Army Schools—From time to time, Army schools allot quotas to be filled by naval officers. These schools might be on any

ELECTRONICS LABORATORY AT THE PG SCHOOL

subject and applications are requested to fill quotas when open; requirements vary and are stated in request for applications.

Misc. Schools—At various times other special courses are open to aviation officers, depending upon the needs of the service. These schools are announced by ALNAV or NAVACT from time to time. Requirements are listed with request for applications.

IN ADDITION to these specialist schools, there are several Command and Staff courses which senior naval aviators may attend if eligible. These schools are by nomination and in some cases, application:

National War College—Located at Washington, D. C., this is a joint Army-Navy College, senior among military colleges. Selection is by nomination. Present class consists of officers with from 22 to 26 years of service. Course is two semesters, total of 10 months. First semester is devoted to close and systematic examination of international relations and world affairs; of the international consequences of the atomic bomb; of U. S. commitments and responsibilities abroad; and of the formulation of U. S. policy and its implementation through methods short of war. Second semester is devoted to the study of grand strategy; the strategic areas of the world, and the scientific and technological advances, which have complicated the task of maintaining the national security.

Advanced Course—Naval War College—This course is restricted to small number of Flag Rank officers and is a refresher course. Class convenes as required. Selection by nomination. Located at Newport, Rhode Island.

Industrial College of the Armed Forces—Ten month course, given at Washington, D. C. Selection by application. Present class consists of officers rank of commander and captain. A joint Army-Navy college, course convenes in September. Mission: To train officers of the armed forces for duties involving all aspects of procurement planning, procurement, mobilization of the national economy and economic warfare; to evaluate the economic war potential of foreign nations; to conduct studies and research in these fields, and to foster close relationship between the armed forces and civilian engineering, scientific, educational, and industrial groups in the study of social, political and economic impact of war.

Senior Course—Naval War College—School is located at Newport, Rhode Island. Present class is composed of officers with rank of captain and senior commander. Ten month course, convenes in July. Selection by application and nomination. Mission: To indoctrinate naval personnel in a common concept of the exercise of command by providing opportunities for student officers to develop their abilities in the estimate of the situation leading to sound decisions, formulation and interpretation of operational plans and orders, supervision of the planned action, utilization of the naval staff, analytical study of naval operations, solution of logistics problems. Objective: To provide the training necessary for selected officers for the exercise of command and staff duties.

MAHAN HALL AT NAVAL WAR COLLEGE NEWPORT

Armed Forces Staff College—Five month course, given at Norfolk, Virginia. A Joint Army-Navy college; selection is by application. Present class is composed of commanders and captains. Mission: To prepare selected officers of the armed forces for the exercise of command and the performance of Joint Staff duties on the theater and major joint task force levels. Course convenes in February.

Logistics—Naval War College—Ten month course, school located at Newport, Rhode Island. Selection by application and nomination. Present class is composed of commanders and captains.

Junior Course—Naval War College—Ten month course, school at Newport, Rhode Island. Selection by application and nomination. Present class is composed of commanders and senior lieutenant commanders. Course convenes in July.

ADMIRAL SPRUANCE'S FLAG FLIES OVER THE NAVAL WAR COLLEGE AT NEWPORT, RHODE ISLAND

LT. (NOW REAR ADMIRAL) C. R. BROWN, WITH PLANE IN WHICH HE SCORED 100% RECORD

AERIAL GUNNER GOT 100% HITS

WHEN NANEWS for June 1947 printed a story about an aerial gunner who got 87% hits, there did not seem to be much room for argument. Surely no one had ever surpassed such a score. The editor resignedly challenged anyone to recall any score equalling that set by Lt. (jg) Cheuvront of ACAG-1 in his F4U.

Answers were not long in coming. An Army officer revealed that several pilots of his group had shot upwards of 90%. (See—*Letters to Editor*, Pg. 40.) But the score to end all scores turned up soon afterward.

A tip from a senior aviator in the Navy Department disclosed that a certain Lt. Brown had once got 100% hits in Fleet Gunnery competition. A note to Rear Admiral Charles R. Brown, USN, at Maxwell Field, Ala., confirmed the fact.

Admiral Brown rang up the high fixed gunnery score sometime in the late fall of 1930 when, as a lieutenant, he was attached to old VF-6, the "Krazy Kat" squadron. The outfit, a Saratoga squadron, was shore-based at North Island during the Fleet competition.

They were flying the F3B, an excellent gunnery plane according to the Admiral. It carried two synchronized fixed 30 caliber machine guns which fired through the propeller disc.

The record was made in Individual Battle Practice (IBP) and the rules allowed the use of only one gun. Five approaches were required: two low-side, two high-side and one overhead. Twelve shots were fired on each approach.

This was accomplished by inserting a drill cartridge in every 13th round, the total number of live rounds being 60. Automatic stoppage occurred after 12 rounds and immediate action had to be applied before beginning the next run.

Admiral Brown's story continues: "The low side (humming bird) approach gave 12 certain hits each time for any good gunner so, to avoid skulduggery, the plane was loaded with only 24 live rounds at first and the pilot required to make the low-side approaches with these.

"Then he had to return to base and receive his other 36 rounds to complete the one overhead and two high-side approaches. Otherwise a slick pilot might apply immediate action during a low-side approach and get off two strings with a probable 24 hits on that one run alone. Then, to cover up, he would make one of the other approaches a dummy approach.

"Competition was high and umpires were from rival squadrons so compliance with all rules was strictly enforced. The rounds were counted by an umpire who watched them being inserted in the gun. The second gun was disabled and that was also checked.

"The firing plane was escorted by an umpiring plane which took off and landed with it. The towing plane was similarly chaperoned and the target was carefully checked ahead of time.

"At the time of this particular practice, C. B. (Doc) Jones (now Captain) and I were top guns in the squadron so we were doubly checked. I had scored some near perfect practice runs which, being unofficial, aroused some good-natured ribbing about the method employed and brought forth the promise that we would get away with no tricks on the day of the record.

"That about completes the story. I got hot on the day of the record and knew before they ever brought the sleeve in that I had out-done myself. We were firing on the round sleeve so we needed two holes for each accredited hit. An odd hole was counted a hit. My sleeve had 120 holes in it and I was officially credited with a perfect score."

Rear Admiral Brown is now the Chief of the Naval Division of the Air Tactical School of the Air University, Maxwell Field, Alabama.

Majuro Air Base Is Closed

Ammunition Disposal Creates Clouds

NAF MAJURO—This atoll in the southern Marshalls has recently been the scene of several "atomic mushrooms." These clouds were caused by the explosions of hundreds of tons of old ammunition necessary for the roll-up of the aviation activity at this base. Over a hundred tons "blew."

Ensign Reese assisted by Chief Mineman Womack and AOM 1/c Kubacki set loose all this energy to the amazement of native Marshallese, some of whom believed a war had started.

OVER A HUNDRED TONS OF OLD AMMO LETS GO

NAVY, UNIVERSITY HEADS WHO MADE THE TESTS

Famed Aviator Tries GCA

Capt. Hancock In Several Landings

NAS MOFFETT FIELD—A group of University of Southern California School of Aeronautics officials checked out on Moffett's GCA system and were loud in their praise of its operation.

Piloting the school's DC-3 for the demonstration was Capt. Allan Hancock, one of the West Coast's aviation pioneers. In the spring of 1928, when Capt. Hancock was flying with Sir Charles Kingsford-Smith in a tri-motor Fokker, the historic "Southern Cross," Sir Charles proposed to fly his ship to Australia. Capt. Hancock studied the idea, agreed to back him, and laid careful plans for the flight. The plane flew around the world.

In the accompanying photograph, Capt. Hancock is fifth in the front row. Others in the picture are Navy and University officials.

Marines Fly Across Country

Long Hops Teach Practical Navigation

MCAS EL TORO—A series of long range (protracted) cross country navigational training flights has been inaugurated for VMF 323. The first flight consisted of the commanding officer, the flight officer and the navigation officer in order that experience gained could be passed on by these pilots to subsequent flights.

The flight left El Toro for the East coast via Albuquerque, Oklahoma City, Indianapolis, Columbus and New York, each being led by a different pilot to insure actual experience as a flight leader. The flight returned via Quantico, Atlanta, Amarillo and Albuquerque.

Much valuable experience was gained, especially in planning flights to suit weather conditions, flying under varying weather conditions and practical navigation over long distances and unfamiliar terrain. Navigation was primarily by dead reckoning, but radio range facilities were utilized for training, weather reports and dead reckoning check. The hop proved worthwhile.

PBY DROPS THE AR-8 LIFEBOAT

NAS PEARL HARBOR—Utility Squadron ONE recently made a highly successful drop of the AR-8 lifeboat over the seaplane area at NAS KANEOHE BAY. Released at 500 ft. at 90 kts. IAS, all chutes opened and descent was normal. Squadron personnel boarded the boat immediately finding the interior quite dry. Returned to the beach under its own power, the boat was not damaged in any way.

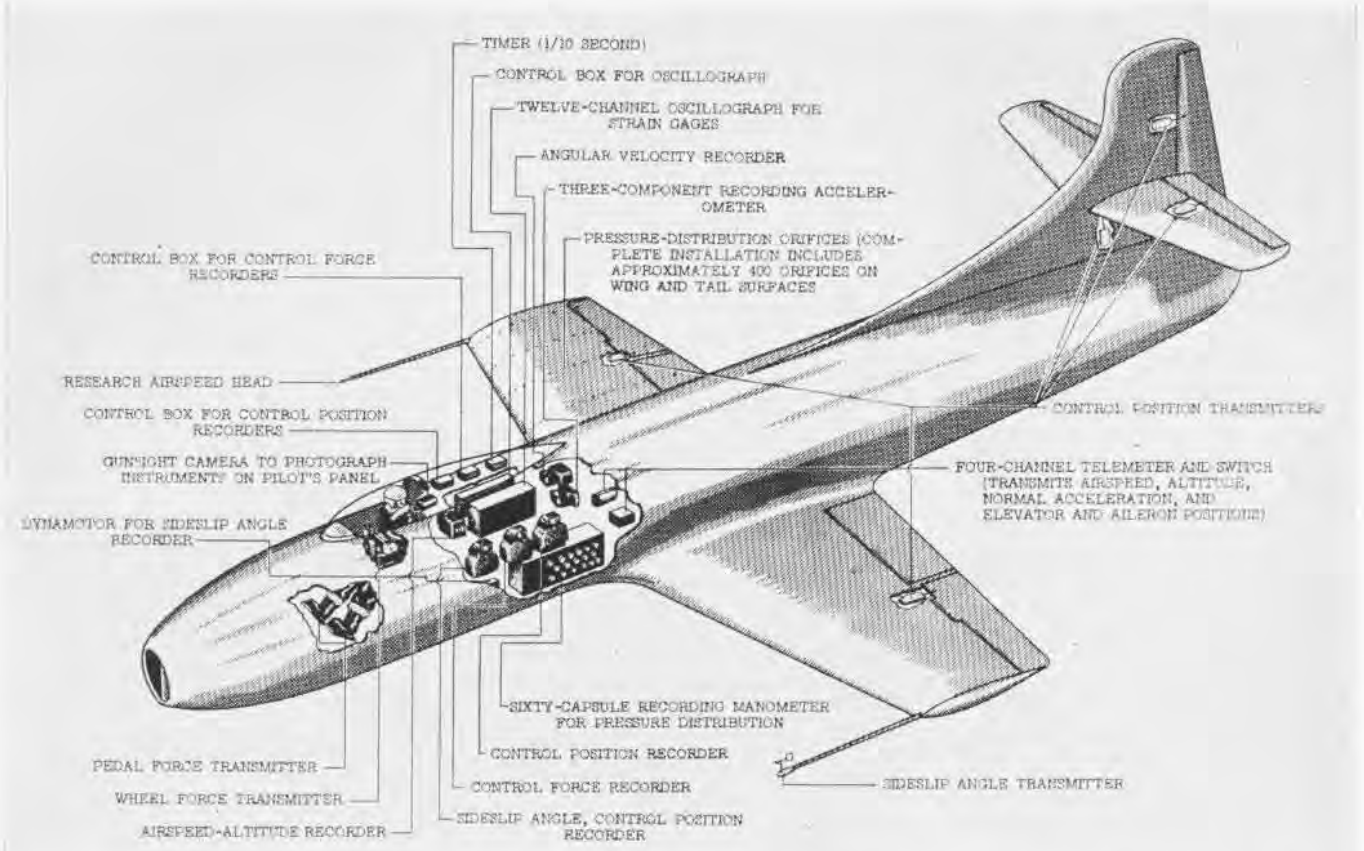
This squadron maintains two AR-8 lifeboats to supplement the Search and Rescue facilities in the Hawaiian Area. These boats are painted a bright yellow inside and out. They are given weekly inspection and an engine check. Periodic drills are conducted in loading the boat. The average loading time is 15 minutes, the fastest being 11 minutes.

➤ ***BuAer Comment***—**It is most gratifying for the Airborne Equipment Division of BuAer to receive a report of this nature. This was plainly the result of proper indoctrination, teamwork and practice. Utility Squadron One should be complimented for its interest in proper maintenance and operation of this useful rescue equipment.**

PARACHUTES STREAM AS PBY DROPS LIFEBOAT

RELEASED FROM LOW ALTITUDE, BOAT IS LOWERED SAFELY TO THE WATER IN A FEW SECONDS

AUTOMATIC HYDRAULIC DEVICE RELEASES CHUTES UPON CONTACT OF LIFEBOAT WITH THE WATER



NACA RESEARCH INSTRUMENTATION INSTALLED IN NAVY'S SKYSTREAK WILL RECORD THE DATA OBTAINED IN FLIGHT AT TRANSONIC SPEEDS

NAVY PREVIEWS TWO NEW JETS

TWO MORE new Navy jet planes have flown for the first time, the McDonnell XF2D-1 *Banshee and* Douglas's D-558 *Skystreak*. The *Banshee* is an operational configuration while the D-558 is a high-speed research airplane. Now undergoing demonstration and performance flights at Muroc Lake, California, the stubby-winged *Skystreak* is the result of over two and one half years of intensive design and engineering research.

After these primary flights are completed, the D-558 project will be turned over to the National Advisory Committee for Aeronautics, and then will begin the research program for which it was designed and built.

GENE MAY FLEW D-558 ON ITS FIRST FLIGHT

The mission of the D-558 is to obtain information and data on the problems of high-speed flight in the transonic zone—approximately 550 to 800 mph. Some 500 pounds of instrumentation is installed in the airplane to measure and record the effects of transonic speed upon stability, control and load distribution.

The tests will be flown at progressively higher speeds from a Mach number of 0.8, about 610 mph at sea level, upward. The *Skystreak* will not make any spectacular flight through the troublesome speed zone, but will carefully feel its way forward. After each flight the information gained will be correlated and studied before another extension of speed is attempted.

Research instrumentation of the D-558 consists of ground equipment and airborne recording and radio transmitting equipment. The instruments now installed during the preliminary tests are approximately the same as will be used in the later advanced NACA tests. These instruments will provide a continuous time record measurement of the position of the controls, control operating forces, accelerations, rolling velocity, airspeed, altitude, slip angle, structural loads and pressure distribution.

Control positions will be measured and recorded by control position transmitters which are mounted on the rudder, elevator, ailerons and horizontal stabilizer.

The control forces exerted by the pilot are measured by the use of strain gages attached to the rudder pedals, the control column and the control wheel. These forces are continuously recorded by a Control Force Recorder.

The deviation of the airplane from steady flight is indicated by the use of a "recording accelerometer." This device makes a record of the longitudinal, lateral and vertical accelerations of the airplane. The accelerometer consists of three spring mounted masses, properly damped, which are displaced from their normal position by any movement of the airplane, their displacement varying directly with the acceleration of the aircraft in a given direction.

The rate-of-roll is measured by recording the precessional forces of a fixed gyro. As the airplane rolls the gyro tends to remain fixed in space and its resistance to rotation, which increases with the speed of the roll, is measured.

Airspeed and altitude data are obtained through a conventional airspeed

LOOKING MUCH LIKE THE PHANTOM THE BANSHEE BOASTS AN EXTRAORDINARY RATE OF CLIMB

head, which produces readings of static and dynamic pressure. The airspeed head is located on the right wingtip one chord length ahead of the leading edge of the wing, which removes it from the effects of the wing airflow.

The angle of attack and side-slip angle are measured by a small weathervane mounted on the forward end of a supporting boom projecting from the left wingtip of the airplane. As the plane slips, or changes angle of attack these tiny vanes "weathercock" into the wind and actuate the galvanometer elements of a recorder.

STRUCTURAL loads are measured by the mounting of strain gages on the spars in the root section of the wing and tail to provide data on bending moments and shears occurring by virtue of high-speed flight maneuvers. Some 400 points for measuring structural loads are located throughout the airplane. The wing and tail also have some 400 tiny pressure orifices, each of which contains a pressure tube leading to a recording manometer in the fuselage. There are six chordwise rows of orifices in the wing and four chordwise rows in the tail. These data on the pressure changes over the wing provide information for the analysis of aerodynamic loads, pressure distribution and changes in airflow occurring over the wing and tail.

All of this information is transmitted by each measurement instrument (transducer) to a recorder where a continuous tape makes a permanent photographic record of the various quantities for later study on the ground. The method by which these data are recorded are: a source of light, a mirror and a strip of photographic film.

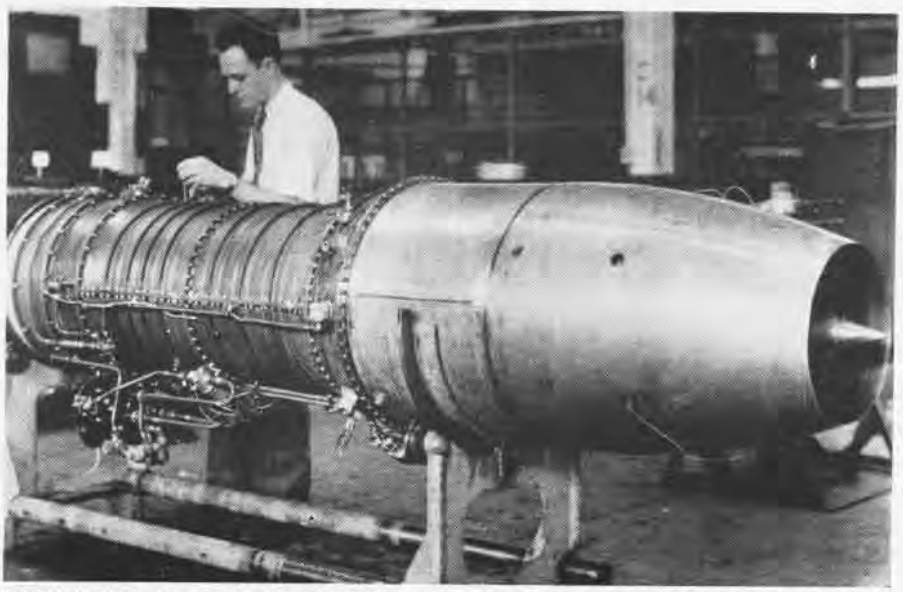
The beam of light is directed towards the mirror which, in turn, reflects it onto the film. The mirror is actuated by the intelligence from one transducer so that a slight turning of the mirror forces the light beam away from its normal position on the film. By arranging the instruments described above to turn these mirrors, a continuous line of light is traced on the film, moving up and down as the quantities vary.

Through the use of recorded time pulses and suitable reference lines on the film, an accurate record of the data obtained is made available for scientific study in the laboratory following a flight. When the flight is finished, the film is a permanent record of exactly what forces were exerted on all surfaces and structural parts of the airplane, in what attitude, at what speed and time.

The D-558 was designed and built taking into consideration all of the known or anticipated flight conditions that it is expected to operate under. For example, it is strong enough to take an 18 G load—more than any previous aircraft. A very elaborate cooling system is incorporated to keep the temperature down in the cockpit, around critical areas, and where precision instruments are installed. The airplane's overall temperature will rise approximately 64 degrees over atmospheric temperatures if flown at 600 mph for a sustained period of time.

THE XF2D-1 was designed as an operational carrier-based fighter and is a subsonic aircraft though in the 600 mph class. The *Banshee* looks much like the *Phantom*, but is powered by two 24-C Westinghouse turbo-jet engines giving it a combined thrust of 6000 pounds as against the 3200 pounds thrust the *Phantom* gets from its two 19-XBS. The new McDonnell jet has a short take-off run and a rate of climb of over 9000 feet per minute, which makes it an ideal carrier plane. Five self-sealing tanks give it a long range cruise radius. Like the *Phantom*, the *Banshee* is designed to cruise on one engine for economy at low altitudes. The tricycle landing gear, catapult hook and tail hook retract into the fuselage in flight and are covered by flush type doors. Wings, wheels and flaps are operated electrically.

The bubble canopy cockpit set well forward of the wings gives the pilot of the *Banshee* 360 degrees vision.



WESTINGHOUSE 24-C TURBO-JET PROVIDES THE THRUST FOR NAVY'S NEW XF2D-1 BANSHEE

JAPANESE EMILY 22 A MADE-IN-JAPAN PRODUCT

FLIGHT TEST AT PATUXENT RIVER, MD. PUTS THE BIG KAWANISHI FLYING BOAT THROUGH ITS PACES TO STUDY HYDRODYNAMIC CHARACTERISTICS

A STUDY of the Japanese Kawanishi flying-boat, the *Emily* 22, has just been completed at Patuxent River. The analysis bore conclusive evidence that the over-all performance and design of the *Emily* was far below American standards; however, in some respects the big boat had some good qualities.

At the *Emily's* maximum gross weight of 68,000 pounds, she had a range of 4400 miles with a gas load of 4400 gallons. She cruised at approximately 170 miles per hour, had a top speed at sea level of 245, and a maximum speed at best altitude—19,500 feet—of 294 miles per hour. The *Emily's* service ceiling was something over 31,000 feet and it could climb to 20,000 feet in eighteen minutes.

For comparison, our own four-engined *Coronado* (now obsolete) at its maximum gross weight of 68,000 pounds—same as *Emily's*—had a range of 3100 miles with a gas load of 3300 gallons. The *Coronado* cruised around 140 miles per hour, had a top speed at sea level of 195, and a maximum speed at best altitude, also 19,500 feet, of about 225 miles per hour. Time to climb to 20,000 feet was around 57 minutes. The *Mariner*, our operational two-engined seaplane, has an air performance very close to that of the *Coronado*.

The *Emily* was the most heavily armored and had the best protected fuel system of any Jap plane. It also had fairly good self-sealing gas tanks. For armament, she carried five 20 and six 7.7 mm guns. The *Emily*, however, could carry no bombs internally, and she could only carry 4400 pounds externally—and this at the expense of some of its speed and air performance. The guns were electric-hydraulically operated and had an emergency compressed air system. Each engine had its own air compressor.

The Kawanishi's engines were Kasei 22's. They had a normal power rating of 1825 hp. each, which could be boosted to 1880 hp. each with water-injection. This was the answer to much of the *Emily's* superior air performance. Our *Coronado* had four 1200 hp. engines and the *Mariner* two 1900 hp.

HYDRODYNAMICALLY the *Emily* was a poor performer. She had bad porpoise tendencies, a critical CG loading factor, and very poor longitudinal control on the water. With the flaps fully extended, the elevators were completely blanked out, and on take-off elevator setting was restricted to 7 degrees. The hull was of fairly weak construction and the seams had to be covered with specially treated silk strips to make it watertight.

PBM MARINER, FAMILIAR GUARDIAN OF FLEET

Workmanship was poor in the plane; some of the hydraulic return lines were bamboo poles—these would hardly pass Naval inspectors. The engines had a decided cooling tendency, and pilots were warned not to descend too rapidly lest their engines over-cool and stop.

THE *Emily* was a one-design plane—patrol reconnaissance. She could not carry out any of the manifold duties required of our seaplanes, such as air-sea rescue, auxiliary bombers and offensive bomber-attack. Our seaplanes were designed to carry out all the missions of our land-based bombers. They moved in with invasion forces and operated off of available sea-dromes, whether open-sea or poorly protected lagoons, until airfields had been made ready for our faster, more efficient land-planes. Any U.S. seaplane restricted to 18 inch seas would have been declared useless by our fleet commanders early in the war. And it is indeed doubtful if our downed Army and Navy fighter and land-based bomber pilots would have graciously accepted the 18 inch rough water restriction of the *Emily*. In addition both the *Coronado* and the *Mariner* could carry 8000 pounds of bombs internally and some 4000 pounds externally. With this armament, they made very effective combat planes. The Japs had a good airplane in the *Emily*. The U. S. had some good seaplanes.

AFLOAT AND ASHORE

NAS Barbers Point—The first Navy GCA demonstration ever effected in Hawaii was recently witnessed by top military officers and territorial and federal aviation officials. Sponsored by Commander, Naval Air Bases, Fourteenth Naval District, the demonstration was completed without a hitch.—NATS *News Letter*

✧

VR-8—R5D bounce drill training continues at a stepped-up rate in an effort to afford the flight phase of the co-pilots' training syllabus to as many new co-pilots as possible while a plane is still available. —NATS *News Letter*

✧

VR-5—Summer Fog has hit the Aleutian Route of VR-5 again and low approaches are becoming the rule rather than the exception.—NATS *News Letter*

✧

NATS Asia—This month has seen NA TS Asia Wing Radio Station at Tokyo activated and equipment procured for the activation of a Wing station at Tsingtao. The Wing Station at Samar was deactivated 30 May and personnel returned to Guam for redistribution to other stations. NATS' station at Guam, which guards NATSPac CW circuit, NATSAsia CW and the voice circuit has been completely renovated.

✧

MCAS El Toro—Three squadrons of MAG-31, Hedron 31, Seron 31 and VMF(N) 534 were decommissioned along with the Group, effective 31 May. VMF(N)542, the only squadron not decommissioned, is presently reforming into a composite night fighter squadron of 12 F7F-3N's and six F6F-5N's.

✧

NAS Jacksonville—For the first time in history, A&R department has exceeded the BuAer aircraft overhaul program for two consecutive months. During the month of March, 39 *Corsairs*, 38 *Helldivers and* three R4D's were turned out, exceeding the BuAer schedule by five planes. To solve some supply problems, special salvage operations have been established to provide an adequate supply of nuts, screws and bolts to keep the production line in high gear.—*Jax Air News*

✧

VP-HL-13, Pacific—This squadron dispatched four planes and crews to Midway to search for the two sections of the U.S.S. *Dearborn* and possible survivors, Since the search area was so far from home base, the flights were long, ranging from 12 to 14 hours. Unfavorable weather made the long overwater patrols extremely difficult and crews gained much practical experience in overwater navigation.

✧

MAG 31, Miramar, Calif.—Members of VMF(N)-534 recently operated as Marine Miramar Shore-based Aircraft Attack Unit in conjunction with Marine El Toro Shore-Based Aircraft Attack Unit in exercises with the First Task Fleet as the "Enemy" forces. The pilots, flying night intruder missions, were complimented by Major Gen. Louis E. Woods, Commander, Marine Air West Coast, for their excellent position reports.

✧

MCAS El Toro—Station Operators Department has initiated an instrument syllabus which gives each pilot a general refresher and familiarizes him with surrounding radio facilities. This will allow El Toro pilots to complete the instrument let-downs and hours under the hood as required by ACL. 19-44. Pilots from the station Instrument Training Unit, Operations, MAG-25 and VU-8 are now qualifying in CCA letdowns.

✧

NAS Moffett—"Certificates of Completion" are awarded to employees of the NATS Hydraulic Shop who complete a basic course conducted by L. B. Carlton, Air Mech General. The hydraulic course covers 120 hrs on trouble shooting, adjustment procedures and preventive maintenance of landing gear, wing flaps, nose wheel steering, brakes, cowl flaps and windshield wipers.—*The Moffett News.*

✧

NAS Jacksonville—The A&R department recently closed down for a two-week period and civilians and naval personnel enjoyed a vacation while maintenance men installed new equipment and repaired existing machines. Production resumed on 1 July.—*Jax Air News.*

✧

VMD 254—El Toro—This squadron shows its versatility by not only carrying cameras but guns, bombs and rockets while participating in the weekly group problems. Flying all photographic missions with its own fighter escort, this squadron also supplies fighter bombers for all the attack and ground support missions.

✧

VMF 223, El Toro—Lectures on Naval Law are conducted twice weekly for all officers by a former student of the Naval Justice School, Port Hueneme. Classes include mock trials in which the officers rotate the various functions.

✧

SERON-33, El Toro—Several aviators of this command fly with the tactical squadrons to maintain their flight efficiency. Group training problems help keep the aviators familiar with combat problems.

✧

VMF 224—El Toro—The enlisted personnel of this squadron are being qualified in an aviation specialty by "on the job" training or by being sent to specialty schools on the station.

These Navy *nurses preparing a patient for transportation by air are part of the corps which recently celebrated its thirty-ninth anniversary. Long an integral part of the Navy, the nurses have served with efficiency, skill, and sympathetic care through two major wars. A specialized group of the Navy Nurses Corps, flight nurses, came into being in 1944 to carry on their missions of mercy on all types of evacuation and hospital flights.*

HELICOPTER PILOTS FOR OPERATIONS CROSSROADS AND HIGHJUMP WERE TRAINED BY VX-3

DEVELOPMENT SQUADRON

WHEN ANY new material or method is adopted by the Fleet, there must be no guesswork. New aircraft or operational methods must be proved and ready to go.

To close the gap between type or experimental tests and actual operational use, the Navy has formed a new type squadron. Aircraft Development Squadrons are still a comparatively new and unknown part of the aeronautical organization of the Navy.

Under the operational control of Commander, Operational Development Force, U.S. Fleet are VX-1, VX-2, VX-3, VX-4 and CVLG-1. This force has as its mission the operational evaluation of new material and methods for the Navy —as distinguished from type tests and experimental tests to determine specification performance.

The conduct of development squadron operations usually involves integrated operations with aircraft and surface craft of various types. This calls for various services not generally at the disposal of either aircraft units or shore establishments.

Although the composition of the Operational Development Force varies from time to time, projects are normally accomplished by coordinated scheduling within the Force. Force squadrons carry out this mission in connection with projects assigned by CNO.

Administration of a development

DRONE OPERATORS ARE 'ARMCHAIR' AVIATORS

squadron offers numerous problems in addition to the major mission. The actual number of aircraft used is approximately the same as in conventional squadrons. But there is a multiplicity of types which adds up to an engineering officer's nightmare.

This same feature gives the operations and training departments a workout in the scheduling of operations, and the training of both officers and enlisted personnel for individual project requirements. These problems become even more involved by the addition of project work calling for special equipment and technically trained men.

AIRCRAFT Development Squadron ONE (VX-1) is located at Key West with anti-submarine warfare as its primary mission. The squadron has one or more of nearly every service type aircraft.

Lighter-than-aircraft of BLIMPRON Two operate with VX-1. Most operations are in close collaboration with OPDEVFOR's Surface Anti-Submarine Development Detachment, also located at Key West.

Stationed at Chincoteague, Va., VX-2 has as its mission tests and operation of pilotless aircraft, guided missiles and general electronics. A large portion of VX-2's operations is providing heavy drone (F6F-3K) services to other high priority gunnery projects of the Force. A detachment provided the drones for the atomic bomb test at Bikini.

Helicopter Development Squadron THREE (VX-3), at Lakehurst, N. J., is engaged in helicopter service evaluation and training. At present it is the Navy's only reservoir of helicopters and personnel. Projects involving carriers, cruisers, battleships, amphibious and submarine warfare are assigned as adequate helicopters become available. This unit has trained personnel for *High Jump* and other fleet operations.

VX-4 is composed of PB-1W aircraft, (modified B-17's). The specialized nature of aircraft, equipment installation and operation mission require special flight crew organization and training. This squadron is located at Quonset.

Light Carrier Air Group ONE (CVLG-1), composed of three types of VF, VF(N), VA and TBM-3W's, is the regularly assigned group for the *Saipan* (CVL-48). This group carries out projects requiring carrier aircraft and furnishes services required of carrier-type planes for other projects of the operational Development Force.

F6F DRONE LANDS NEAR VX-2 CONTROL TRUCK

GUNFIRE DAMAGED DRONE LANDING WHEELS-UP

1

2

NAVY HOST TO SCIENTISTS

OVER 100 members of the Institute of the Aeronautical Sciences recently visited the Naval Aircraft Modification Unit at Johnsville, Pa., and Naval Air Material Center, League Island, Philadelphia. Institute members, all outstanding men in the field of aeronautics, spent two days investigating the various phases of experimental test and development. They studied developments in guided missiles, drones, carrier operations and toured the Naval Aircraft Factory. The exhibits gave all members a review of the Navy's contributions to military sea power and served as a preview of things to follow.

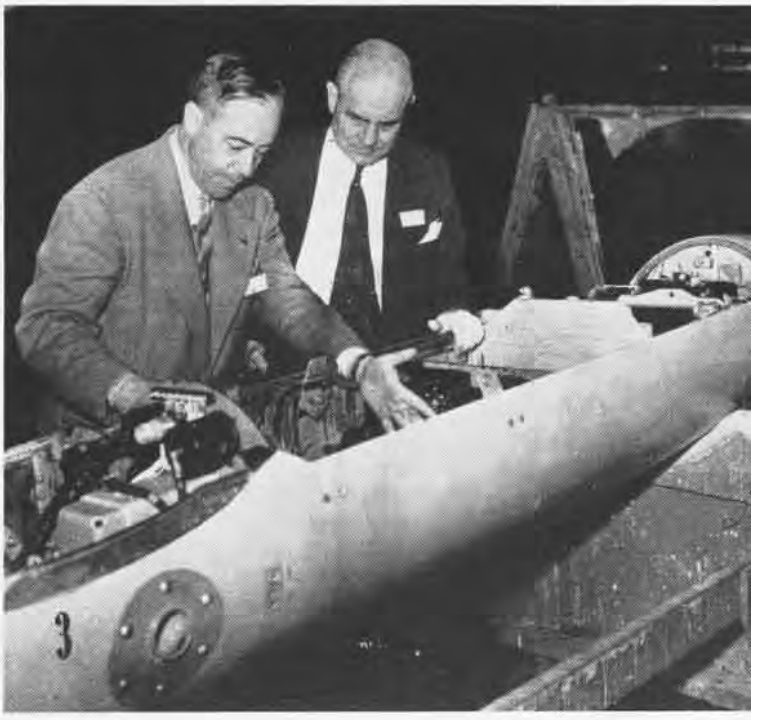
1 **Institute** members watch a German Arada seaplane being launched from catapult Nazi's Prinz Eugen.

2 **Scientists** Richardson, Lindbergh and Doolittle listen as Capt. Kirkbride explains TD2C-1 drone.

3 **Gorgon,** exhibited at NAMU, drew wide interest; Capt. R. S. Barnaby, USN(Ret) explains workings.

4 **Dangerous** German A-4 missile was designed for remote wire controlling, detonation by parent plane.

5 **Institute** members witness NAMC test on the seat ejection tower; net in background catches seat from P-82.



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RESERVES GO ALL OUT DURING ACTIVE DUTY CRUISE

THIS SMILING GROUP FROM NAS MIAMI HAVE ESTABLISHED A MARK FOR OTHERS TO SHOOT AT

AMID THE flood of heavy weather reports from a majority of the Reserve stations in May, the above group photo shone as sunny as a Florida Chamber of Commerce ad. The boys look very happy, and they have every right to be. The eight pilots, three enlisted men and one ground officer, are members of VF-81E, stationed at NAS MIAMI. And they have just finished a record breaking two weeks active training period. During the cruise the 8 pilots flew a total of 472.2 *syllabus* hours, an average of 59.02 hours per pilot. Approximately 97% of this time was in *Hellcats* and *Corsairs*, with the remainder being flown under the hood in SNJs.

All flying was straight *syllabus* stuff, rocket firing, gunnery, bombing, instruments, navigation and tactics. Sandwiched in the middle of the training period was one overnight navigation hop to an air station of the pilot's choice. This flight furnished a pleasant break in the arduous schedule and at the same time covered an important training phase.

The flight leader, Lt. Comdr. Taber, states that a great deal of credit is due all Navy groups the outfit came into contact with during the training period. Cooperation was excellent in all cases. VCN-2 at Key West, gave the group permission to use their rocket range and not only manned the range during firing, but armed and serviced the visiting planes for two days while the group was working. The Maintenance department at Miami gave the group maximum availability, and flight operations were never slowed by a shortage of planes ready to fly.

Lieut. Comdr. Taber says results were far beyond expectations . . . "the boys really got in the 'groove' and all feel they have regained the old skill so necessary to combat pilots." When asked if he felt the group would be ready to go aboard ship in 30 days, he came up with the following analogy:

"A tin-can sailor was given one hour in which to get off his ship—anchored in a pleasant little Bay in the middle of the Pacific—and aboard a NATS plane bound for the States. He managed to get safely aboard the plane in plenty of time and was asked if the one hour deadline had been hard to meet. Replied the Salt, 'Oh, I didn't mind the one hour's notice—but boy, how that last 59 minutes dragged.'"

(*Photograph—standing left to right:* Lieut Chesson, Lt. Comdr. Taber, Lt. (jg) Scharrer, Lt. (jg) Jackson, Lieut. Donahue, Lt. (jg) Sutton and Lt. (jg) Williams. *Front row:* Lieut. Brodka, Edwardson, AS, Hickey, Ylc, Bass, S1c, and Lt. (jg) Perez.)

● NAS ANACOSTIA—The Rains Came (*see photograph*) and the station folded its wings and went fishing; however, the station still managed to get over 400 hours in between thunder showers. The Anacostia NARTU beauty queen came out on 14 May and christened the *Goodyear* Blimp as it was launched into inactive duty.

● NAS MEMPHIS—Lieutenant Thomas H. Streeter of VMF-124 bailed out of a disabled *Corsair* on 22 May, and though apparently uninjured, his actions have been strangely erratic since. He took another leap two days later—this time a marital one. Living proof that the Marines have lost none of their ability to take it.

AND DOWN ANACOSTIA WAY CAME THE RAINS—HO HUM—NOTHING LIKE A LITTLE FISHING

During May, the Marine Air Detachment had 15 Reserve pilots and three enlisted men on annual two weeks active duty. In addition VMF-124 held two drill periods and as a result, the pilots have amassed a record 700 hours flying time for a thirty day period.

● NAS ATLANTA—This station has inaugurated a training program for stationkeepers and organized reserves. Close cooperation with Maintenance has made it possible for them to advise training of their immediate needs in various lines of instruction. Organized reserves are divided into two classes, viz., basic and refresher, and then assigned to specific duties within their rates on types of aircraft used by their own unit. The Maintenance department is apparently pleased with the much needed assistance received from the reserves, and the organized reserves are much more satisfied knowing that they will actually perform the work that is taught in the classroom.

● NAS BROOKLYN—Results of the GCA demonstration staged here last January for members of the press, continue to appear. The latest is a story in the 18 May issue of Parade magazine. Arrangements were made for one television and one radio program during the month. Captain Kivette appeared in the television show (WNBT) on 18 May, opening day of Naval Reserve week.

● NAS OAKLAND—Recruiting returned to the soil this month, when four planes were assigned to a state-wide tour with the *Flying Farmers* of California. Over 50 small planes plus the four reserve craft visited 27 California cities and towns during the four day tour. At each stop, the planes were met by large crowds who displayed great interest in the Navy planes. A loud speaker system was carried by the group, over which reserve spot announcements were given. Pamphlets and posters were passed out at each stop. In addition to the reserve officers and men, there were 111 individuals participating in the 1,690 mile trip.

AN OLD NAVAL AVIATION BOOSTER, ZACK MOSLEY, PUTS HIS OKAY ON NARTU JACKSONVILLE

● NAS ST. LOUIS—On 21 May a national press party was held at McDonnell Aircraft, Lambert Field, for the first showing of the new McDonnell Navy jet plane, the *Banshee*. Press and radio representatives from New York, Washington, Chicago and many other points were on hand. The following Sunday, the *Banshee* had its first public appearance as the feature of Naval Reserve Day Open House at NAS. Some 5000 people attended.

● NAS JACKSONVILLE—"Smiling Jack" Zack Mosley visited the station recently (*see picture*) and offered congratulations on the entire reserve program and to NAS JACKSONVILLE for its peacetime work. How he finds time to visit air stations when "Smiling Jack" and his latest girl friend "Sable" are almost in the hands of Carlottalotta and her cohort is unknown.

IN BERMUDA THE SUN WAS SHINING AND THE BOYS FROM NORFOLK TRIED A SPIN IN THE PARK

● NAS SEATTLE—During the formative period of the Naval and Marine Air reserve program, the keynote struck by Captain C. F. Greber and followed by all under his command in the publicity endeavors and public speaking campaigns has been to emphasize the fact that the reserve program and the Naval Air Station belongs to the community—it is *theirs*. It is becoming evident that personalizing the program in this manner is a most successful approach to make. The payoff is here, and now the citizens of the area appear to consider the Naval and Marine Air reserve and its supporting facilities as their own. This was illustrated during the Washington-California crew races, when the Naval and Marine reserves put a flight over the area. A crowd of 100,000 people crowded the shores of Lake Washington for the event. As the flight proceeded back and forth over the course in formation much comment was noted to the effect that *those* were Navy and Marine planes, and with justifiable pride were further identified as "*our* boys from Sand Point."

● NAS NORFOLK—The outstanding feature of this month's two weeks training duty, was the successful completion of the first survey flights for the recently authorized long distance patrol training hops to Bermuda. The trip lasted approximately four hours each way and a pleasant overnight stay in Hamilton was enjoyed by all. (*See Pix*)

Additional Bermuda flights, all preceded by intensive training and preparatory long distance overland flights, are planned for subsequent active duty periods this summer for navigation training purposes.

AND THERE I WAS...

Universal Understanding

Just prior to the United States' entry into World War II when all our moral support was being extended to the British, I was a primary flight instructor at Pensacola and was assigned a group of British students from among the first contingent to report for flight training. After the first few days we had learned to speak each other's lingo and had settled down to getting the word across.

One day, while doing figure eights around the pylons, I noticed a car parked on one of the lonely roads that wind through Florida blackjack brush. The situation below had every indication of being a highly interesting petting party and the irresistible urge to investigate from our vantage point of view could not be suppressed. The exact spot was carefully calculated to cut the gun for a simulated engine failure and the "Limey" used good judgment, nosed over, brought the plane around into the wind and squared away for a landing in the little clearing alongside the car. As I applied the throttle, took over control and pulled up I pointed over the side and remarked through the gosport, "Great American Sport." Up until this time he had been so engrossed in the pylon pattern and simulated emergency that he had been completely oblivious of everything else, but as he caught sight of this romantic scene his eyes lit up and he raised up in his seat and shouted over the roar of the motor, "GREAT BRITISH SPORT, TOO!"

I'm Confused—Who're You?

The very first hop cadets took in the final squadron at Waldron Field wasn't as "hairy" for the instructor as the second because on that first one the cadet rode in the rear. He just sat back there "goldbricking" and attributing all kinds of super-human powers to the man in the front seat.

It was on one of these "dual fams" that "Wild Bill H—" pulled a hot one on his unsuspecting student.

Bill pointed out all the land marks, indicated all the outlying fields, and showed the cadet the boundaries of the practice area. Then he dropped his wing and jabbed a thumb at Field 25, 6000 feet below. Two or three "J's" were parked on the mat.

"See those people down there?" he asked the cadet.

"Yes sir!" pined the student.

"They're mighty good friends of mine. Haven't seen 'em in a long time. Let's go down and pay 'em a visit."

Bill shoved over and in a minute or two entered the traffic pattern.

"They haven't seen me in a long time. Boy! they'll really be glad to see me. Watch how they run out and wave when I come in!"

Bill started a model approach. At 500 feet, opposite the end of the run-way, he cut back on his throttle, put his flaps down, and started his turn. He kept her turning and losing altitude right to the wind line. There was the end of the runway. He had broken his glide and the nose was up.

You should have seen those people on the ground. They looked like "psycho's" for sure. Six of them! They were running and waving their arms and yelling. They were charging at Bill's "J" as though they meant to jump on the wing and kiss him before he got her down. No one had ever received such a welcome before. Why, this was even more than Bill himself had expected! He shoved his throttle forward and took a wave-off.

"Gosh, sir," came an excited voice over the intercom, "they sure were glad to see you, sir, —but —but —how could you recognize them from way up there?"

Bill chuckled to himself and retracted his flaps. He didn't bother with his wheels. *He hadn't put them down.*

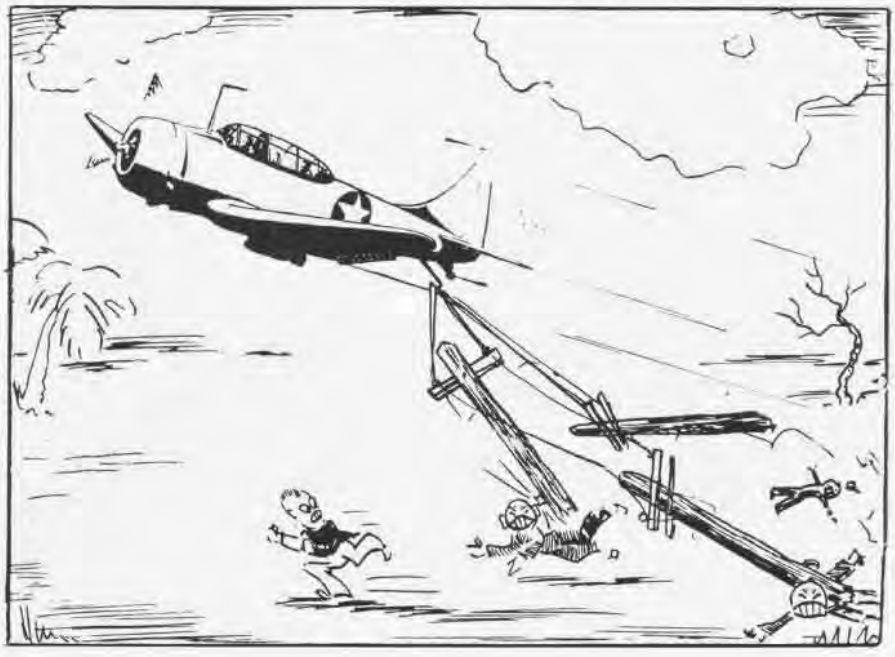
W. M. Boyan,
First Lt. USMCR

Pike Plows Palau

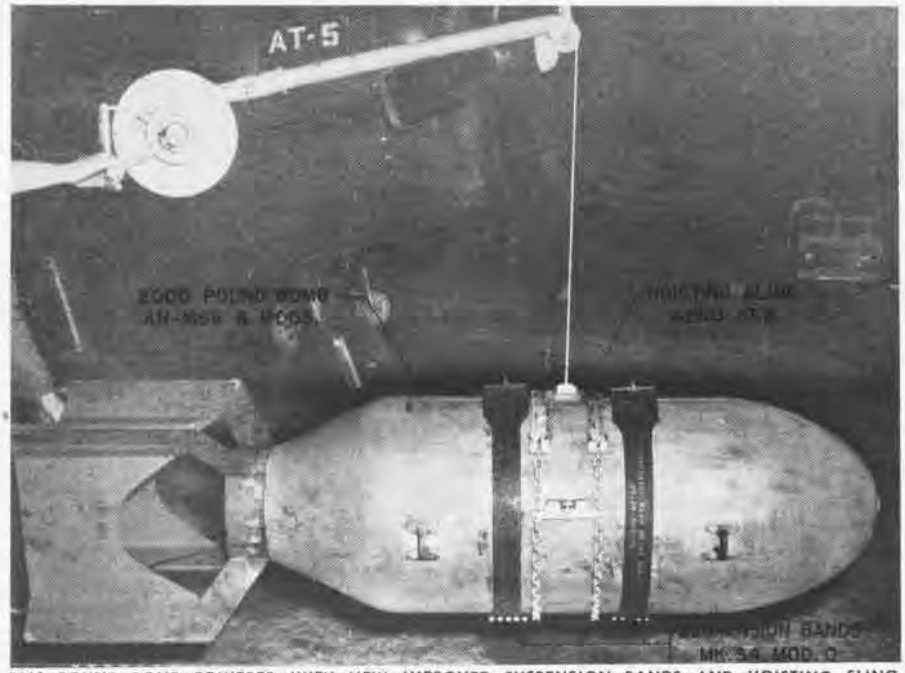
Uncle Pike was a pilot in a dive bomber. The target for the day was Palau, and it was up to Uncle to destroy the Japs as our Marines were to make a landing there soon. Uncle dropped his bombs. *—Zooom,* he strafed the entire Island *—Zooom,* and as he came in for one last pass, WHAM—an anti-aircraft shell hit the plane's tail. The terrific blast didn't hurt the plane, but it jarred loose the tail hook. Uncle tried desperately to gain altitude, but that damaged hook caught a whole string of telephone wires. Our planes were tough—but those wires were tough too. The wires stayed hooked, and Uncle Pike pulled up seventeen miles of telephone poles, dragging them back and forth across the Island, not only killing all the Japs, but those poles plowed up that Island so much, and so well, that when the Marines landed one week later they had 782 acres of fresh vegetables to serve with their favorite Spam.

LYNN H. BROWN ARM2
PUBLIC INF. OFFICE
NAS Los Alamitos

(See *Letters to Editor*)



TECHNICALLY SPEAKING



2000 POUND BOMB EQUIPPED WITH NEW IMPROVED SUSPENSION BANDS AND HOISTING SLING

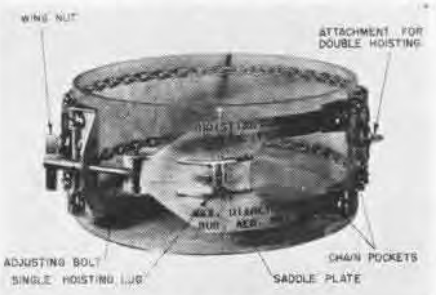
NEW GEAR ASSISTS IN BOMB LOADING

THE BOMB HOISTING Sling, Aero. 35A and the Bomb Suspension Band, Mk 34 Mod O, soon will be available for service use with the AN-M66 type 2000 lb. GP bomb.

The suspension bands are to be used when 14" suspension lug spacing is required for Navy bomb racks or bomb shackles. (The welded suspension lugs on the AN-M66 type GP bomb have 30" suspension lug spacing for use with Army bomb shackles.) The suspension band has been service tested and contains the following desirable features to improve on previous models:

1. No interference with existing sway bracing, pylons, bomb racks, or bomb shackles.
2. Less frontal area than that in present service suspension bands.
3. Lighter in weight than previous suspension bands.
4. Suitable for use with bomb ejectors.

The suspension bands are expendable. They are firmly secured to the bomb by means of 5⅜" diameter bolts on the underside of the band. In order to install the suspension bands correctly it is necessary gradually to tighten each bolt in its turn before putting the final tension on the bolts. By using this method unnecessary breakages of bolts will be avoided. The hoisting sling, which also has been service tested, supersedes the Mk 20 Mod 1 sling which is unsatisfactory for single hoisting of the AN-M66 type 2000 lb. GP bomb. The hoisting sling, Aero 35A, has a capacity of 2500 lbs, and is suitable for either single hoisting or double hoisting. It is installed by passing the chains around the body of the bomb and hooking the ends of the chains in the pockets provided for that purpose on the saddle plate. An adjusting bolt and wing nut are provided to take up slack in the chains. The adjusting bolt wing nut must be tightened very snugly; usually the wing nut provides enough leverage for tightening to be done by hand without a wrench being required.



BOMB HOISTING SLING AERO 35 A

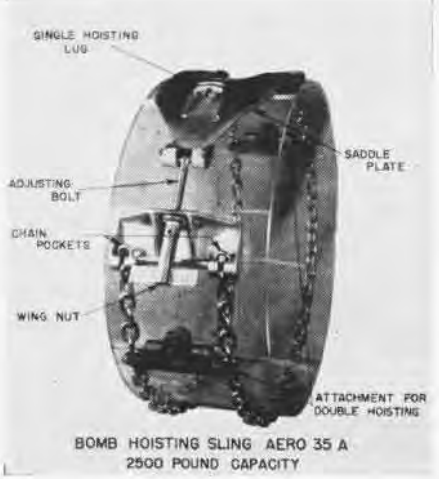
HOISTING SLING HAS CAPACITY OF 2500 POUNDS

The following data will aid in identifying the new equipment:

Bomb Hoisting Sling, Aero. 35A
Assembly—BuOrd Drawing No. 509496
List of Drawings—BuOrd Sketch No. 132531
Stock No. R-94-BUO-50946
Weight of hoisting sling complete—22 lbs.
Bomb Suspension Band, Mk 34 Mod O
General arrangement—BuOrd Drawing No. 651640
Outline—BuOrd Drawing No. 439694
List of Drawings—BuOrd Sketch No. 165607
Weight of two suspension bands complete—25 lbs.

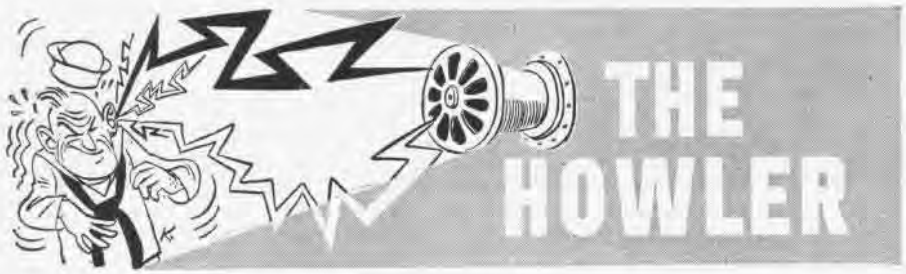
The accompanying table indicates standard hoists which are available and can be used with the Aero. 35A hoisting sling. Any combination of two of the Mk 7 Mod 1, Mk 7 Mod 2, or Mk 8 Mod O bomb hoists may be used. The Aero. 11A electric bomb hoist will not be available for service use until about January.

TYPE OF HOIST	CAPACITY OF HOIST	NO. OF HOISTS TO BE USED	HOIST FOR SINGLE HOISTING	HOIST FOR DOUBLE HOISTING	TYPE OF INSTALLATION
Manual	2240 lbs.	1	Mk 8 Mod 0	- - - - - -	Bomb Bay
Manual	2240 lbs.	2	- - - - - -	Mk 8 Mod 0 or	Bomb Bay
Manual	1000 lbs.	2	- - - - - -	Mk 7 Mod 1 or	Bomb Bay
Manual	1000 lbs.	2	- - - - - -	Mk 7 Mod 2	Bomb Bay
Manual	1000 lbs.	2	- - - - - -	Mk 6 Mod 0	Wing Type
Electric	2240 lbs.	1	- - - - - -	Mk 5 Mod 0	Wing Type
Electric	2240 lbs.	1	- - - - - -	Aero. 11A	Wing Type



BOMB HOISTING SLING AERO 35 A
2500 POUND CAPACITY

ADJUSTING BOLT AND WING NUT HANDLE SLACK



Landing Gear Uplock Release, F8F-1. Following is quoted from a recent report received from the A&R department, NAS Alameda:

"It has been observed that the hose clamp which secures the fuel line to the top of the fuel strainer may inadvertently be installed in a horizontal position with the thumbscrew pointing inboard. When installed in this manner, the movement of the landing gear uplock release bellcrank, P/N 54805, will be restricted to the extent that it will be impossible to lower the landing gear."

In view of the above information, it is recommended that all activities concerned with the operation of model F8F-1 aircraft inspect the hose clamp which secures the fuel line to the top of the fuel strainer to insure that the landing gear uplock release bellcrank, P/N 54805, clears the hose clamp and thumbscrew sufficiently when operated.

Abuse of Aircraft Mooring Reels. Several cases of failure of the aircraft mooring reel, Stock Numbers R89-R-90500 and R89-R-90800 have been reported by BuAer during the last few months.

The primary purpose of these reels is to secure aircraft aboard carriers and ashore in cases where the ordinary 21 thread manila line does not offer sufficient security. The R89-R-90500 using a 5/32 standard airplane cable has a rated capacity of 2000 lb pull, and the R89-R-90800 using a 7/32 steel cable is rated at 4000 lb. capacity.

Reports have been received that mooring reels have failed when used to secure planes while the engine is being turned up. Serious accidents have resulted from this practice, and it should be discontinued, as the reels are not designed for this purpose.

It is a known fact that the reels are used for many other purposes than securing of aircraft, and for this reason the chance of overloading is increased. All hands using mooring reels should read Technical Notes 95-45 and 68-45 covering the operation and maintenance.

Removing Damaged Exhaust Studs. Considerable difficulty has been experienced by various activities in the removal of broken exhaust studs from cylinders on R-2800-22,-34 engines. On these engines the exhaust studs have a shoulder which tends to bind in the cylinder. Attempting to remove the broken studs with an extractor after drilling a hole in the center of the stud results in excessive damage to the cylinder, in 50 percent of the cases, making cylinder replacement necessary. In all cases an excessive amount of time has been required.

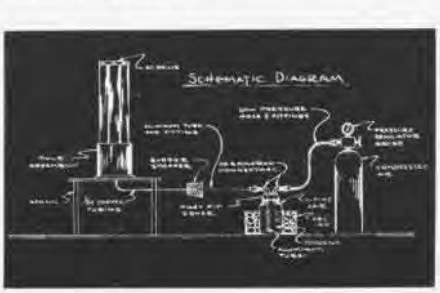
It has been found that cutting off the shoulder of the stud with an end cutting tool aids considerably in the removal of damaged or broken studs. A small end cutter made in the A&R cylinder shop, NAS Norfolk, has been used there with good results. In the majority of the cases, after the shoulder was cut off, the damaged stud could be removed without breaking it off flush and having to drill it and use an E. Z. out. However, if the stud is already broken off flush with the shoulder this end cutter can not be used.

Instructions for manufacturing the end cutting tool may be obtained from A&R, NAS Norfolk.

Valve Reworking Process Is Outlined The A&R Department at NAS Jacksonville has issued a Local Process Specification, No. 2-47 of 27 Jan. 1947, to provide instructions and procedures for rework and refilling of the bulb assembly of the oil temperature automatic control valve, Chance Vought P/N 48050, F4U-4 aircraft, when the valve does not meet required specifications during test.

The following procedure is given for refilling the oil temperature automatic control valve bulb assembly:

1. Secure a one-pint jar with tight fitting cover; drill two holes in cover to accommodate two #4 bulkhead elbow fittings. Install a piece of aluminum tube into one elbow fitting to clear bottom of jar ¼ inch.
2. Manufacture a hose assembly from low pressure hose material with end fittings adaptable to the #4 bulkhead elbow and pressure regulator gauge.
3. Manufacture a short piece of aluminum tubing with one end fitting adaptable to the #4 bulkhead elbow fitting, the other end plain as shown in the schematic diagram.
4. Drill a #40 hole half way through a one-inch diameter by one and one-half inch long rubber stopper (or equivalent); drill a hole from the other end to meet in the center of the rubber stopper, small enough to fit tight on the plain end of the aluminum tubing. (See schematic diagram.)



5. Secure a small box to accept a one-pint jar with enough room to pack with dry ice.
6. The stand is optional and may be replaced with any other suitable equipment.
7. Assemble the equipment as shown in the schematic diagram.

The following instructions cover the rework of the oil temperature automatic control valve:

1. Drill five #32 (.116) holes, one in each recessed end of the five copper tubes. Tap these holes with a #4-40 tap.
2. Manufacture five gaskets from a 1/16 inch thick neoprene rubber to an outside diameter of .250 and an inside diameter of .1250.
3. Cut off end of the 1/32 inch diameter copper tubing inside bulb assembly; thoroughly clean bulb assembly inside and out with trichlorethylene cleaning solvent and dry with compressed air.
4. Fit a neoprene gasket on each of the five AN515B4-3 brass screws, 3/16 inches long. Install them into the five tapped holes in the recessed ends of the copper tubes. The heads of the screws are to be fitted tightly into the tubes.
5. Check bulb assembly for leakage at areas other than tapped ends by applying air pressure through the 1/32 inch diameter copper tube and submerging the bulb assembly in a tank of water. Loosen screws in recessed copper tubes after test; dry and prepare bulb assembly for filling.

Instructions for refilling the oil temperature automatic control valve follow:

1. Connect the bulb assembly as shown in the schematic diagram. The glass jar should be 2/3 full of toluene, packed in a box of dry ice and covered with frost. Open the compressed air regulator until it registers one pound of air pressure. The toluene in the jar will begin to rise into the bulb assembly through the tubing, expelling any trapped air in the bulb assembly. The toluene should be allowed to rise until it overflows from all five tubes. Stop flow by closing off air pressure.
2. Tighten the brass screw in each copper tube; open the air pressure valve until seven pounds of air is registered on regulator gauge and inspect around screw heads for signs of leakage.
3. With the air pressure maintained at seven pounds pinch the 1/32 inch copper tube with a pair of pliers; cut off air pressure; remove rubber connector from 1/32 inch tube and pinch and solder end immediately to prevent leakage.
4. Place bulb assembly in tank of cold water with the ends of the five copper tubes extending about ½ inch above the water line. Solder over the five brass screws until the ends of the copper tubes are filled.

Caution: The soldering of this unit must be done in a tank of water to dissipate the heat. If this is not done, the bulb assembly filled with toluene may explode, as toluene is volatile.

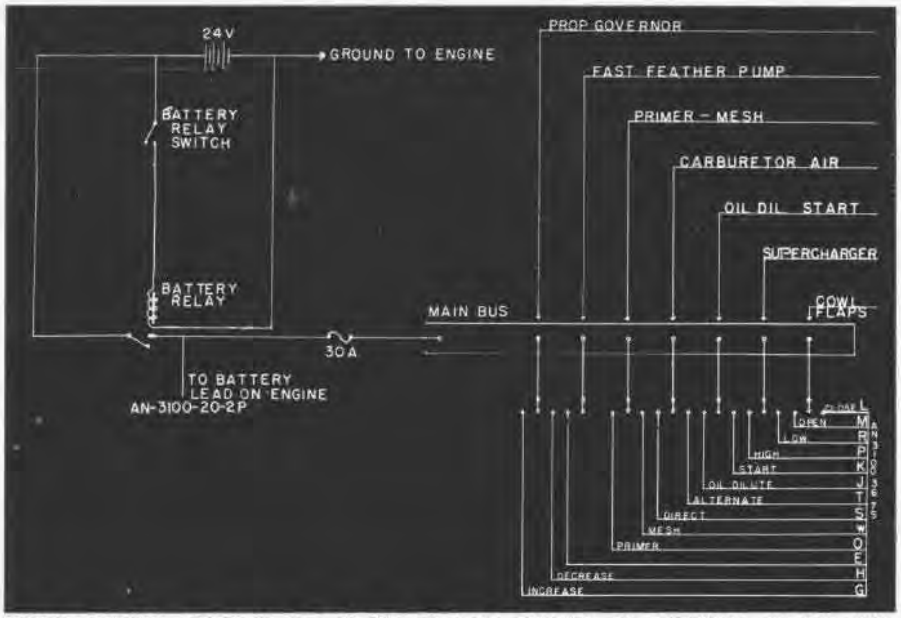
5. Test the bulb assembly as described in Chance Vought Materiel & Process Manual (Hydraulic No. 605, page 54).

NATS Avoids R5D Inspection Delays Immediately after the Eastern Airliner crashed near Bainbridge, Md., the engineering department of VR-3, anticipating directives to make extensive inspections of all R5D tail assemblies, completed practically all the required inspection prior to ComNATS and BuAer directives.

As a result of this foresight, receipt of three directives late on the afternoon of 6 June did not keep the squadron from making the schedule with the "Hotshot" on the sixth.

Shoulder harnesses will soon be installed in NATS aircraft as a BuAer R5D aircraft change will soon be issued providing both pilot's and co-pilot's seats with lap and shoulder harness assemblies and inertia reels.—NATS *News Letter.*

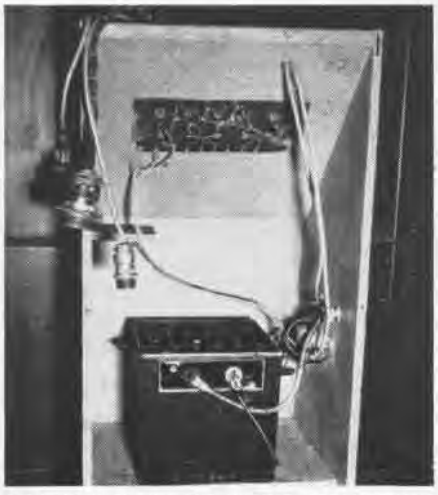
ELECTRICAL TESTER SPEEDS ENGINE CHANGES



WIRING DIAGRAM INDICATES THE EXTENT OF ITEMS CHECKED BY ELECTRICAL TESTING UNIT

FASRON 114—This squadron has developed an electrical test unit designed to test and assure proper operation of all electrical accessories and leads on an R-1830-94 quick engine change unit at time of build up. It is estimated that use of the unit will save one-third of the time required for an engine change. Although this particular unit can be used for testing only the R-1830-94 quick engine change units, a similar one for other units could be constructed very readily.

The electrical test unit, used at time of engine build up, makes it practical and possible to test electrical circuits and accessories and to make necessary adjustments on the following: 1. Check starter for energize and mesh; 2. Check engine primer solenoid; 3. Check propeller fast feathering motor; 4. Check propeller governor head; 5. Check cowl flaps for operation and set correct travel; 6. Check alternate air door actuating motor; 7. Check supercharger actuating motor; 8. Check oil dilution solenoid and diverter valve.



REAR VIEW SHOWS THE WIRING ARRANGEMENT

Materials used in construction of the electrical test unit were obtained from local stock and include the following items:

One Canon plug, AN-3100-36-7S, Stock No. R 17-R-1406-5.

One Canon plug, AN-3100-20-2P, Stock No. R 17-R-13-5-10.

Seven single pole, double throw, momentary contact switches. Stock No. R 17-S-28251.

One single pole, single throw switch. Stock No. R 17-S-28260.

One E-1 battery relay or equivalent.

One 24 volt aircraft battery.

➤ ***BuAer Comment*—Believe every FASRON and A&R should have this type unit. However, wide utilization of maintenance spare parts for time saving devices of this nature can affect validity of usage data records for ASO.**

Gear to Lower at Higher Air Speeds

NAS MOFFETT FIELD—Of interest to pilots is the fact that VR-4 Heavy Maintenance will soon incorporate a change in the landing gear doors which will give these doors sufficient strength to permit lowering of the gear at substantially higher airspeeds.

Flap design limitations and maintenance problems on flaps, as experienced in VR-4, are being studied by Technical to determine if flap operating speeds can also be increased. An increase in airspeed operating limitations of both the gear and flaps will no doubt be welcomed by all pilots because slowing down the R5D rapidly presents a problem, whether it is before encountering turbulence, starting an instrument approach or coming in to land.

Technical kits have arrived, and instruction have been received from BUAER for the installation of thermal propeller deicers. This installation will be accomplished on a plane which has the new electrical system installed and it will then be scheduled to VR-5 for use and evaluation.

BOOKS

Battle Report, Pacific Wars: Middle Phase. Capt. Walter Karig, USNR, and Cmdr. Eric Purdon, USNR. Rinehart & Co., 1947, $5.00.

The Aircraft Yearbook for 1947. Edited by Howard Mingos. Lanclar Publishers, Inc., 1947, $6.00. (Official publication of Aircraft Industries Association.)

Aircraft Engines of the World, 1947. Paul H. Wilkinson, author and publisher, $10.00. (Most complete reference book on aircraft engines available.)

MAGAZINE ARTICLES

Precision GCA or ILS? Howard K. Morgan. *Aero Digest*, Vol. 54, No. 6, June 1947, pp. 22, 23.

The "Cyclone" 18-BD. *Aero Digest*, Vol. 54, No. 6, June 1947, pp. 58-61, 128, illus. Design features of the Wright "Cyclone" engine.

Cleveland Confab. Second Annual Aircraft Propulsion Meeting. *Aeronautical Engineering Review*, Vol. 6, No. 5, May 1947, pp. 22-25, 69.

Project 611. Ned Root, Lt. Col. AC, Res *Air Force*, Vol. 30, No. 6, June 1947, pp. 12-15, illus. Status of the research and development program at Wright Field.

Pilots Are Not Supermen. James L. H. Peck. *Air Trails*, Vol. 28, No. 4, pp. 22, 23, 88-90, illus. How psychologically designed cockpit is helping eliminate pilot error.

Horten Flying Wings. Richard G. Naugle. *Air Trails*, Vol. 28, No. 4, pp. 36-38, 112-114, illus.

Super Altitude-Research Rocket Revealed by Navy. C. H. Smith, Jr., M. W. Rosen, J. M. Bridges. *Aviation*, Vol. 46, No. 6, June 1947, pp. 40-43, illus. Martin-built *Neptune* research missile being built to double ceilings of V-2's.

Power "Dividends" Seen Available for Turboprops. S. A. Tucker. *Aviation*, Vol. 46, No. 6, June 1947, pp. 44, 45, illus. Impulse-wave compressor increases power output and efficiency in locomotive unit; principles held applicable for turbine-powered aircraft.

Morphology and Nomenclature of Jet Engines. F. Zwicky. *Aviation*, Vol. 46, No. 6, June 1947, pp. 49, 50, 123. System for classifying reaction power plants.

Navy Accents Aviation Future Fleets; Will Operate 6,130 Planes. William Kroger. *Aviation News*, Vol. 7, No. 21, May 26, 1947, pp. 7, 8.

McDonnell *Banshee* Is Tested by Navy. *Aviation News*, Vol. 7, No. 21, May 26, 1947, p. 9.

Transonic Test Craft Readied by British. *Aviation News*, Vol. 7, No. 22, June 2, 1947, pp. 9, 10.

Adoption of Cross-Wind Gear May Revise Airport Program. Blane Stubblefield. *Aviation News*, Vol. 7, No. 22, June 2, 1947, pp. 13, 14.

New Contract in View on McDonnell F2D. William Kroger. *Aviation News*, Vol. 7, No. 22, June 2, 1947, pp. 22, 23.

Giant Rocket Test Center Planned for California Desert. *Aviation News*, Vol. 7, No. 23, June 9, 1947, p. 13. Joint Army-Navy group favors El Centro area for first coordinated missile experiments.

Convair Redesigns B-36 for AAF Production Order. *Aviation News*, Vol. 7, No. 25, June 23, 1947, pp. 13, 14, illus.

Gadget Heaven. John H. Lancaster. *Flying*, Vol. 41, No. 1, July 1947, pp. 35-37, 70, illus. Navy's Special Devices Center develops variety of synthetic training equipment.

Who's Afraid of Thunderstorms? Curtis Fuller. *Flying*, Vol. 41, No. 1, July 1947, pp. 44, 45, 66, 68, illus.

Jets At Sea. Lt. Cmdr. William H. Huff, USN. *Flying*, Vol. 41, No. 1, July 1947, pp. 46, 47, 76, 78, 80, illus.

AVIATION PROGRESS

(Short excerpts from Progress Reports of various BuAer sections are presented below. They represent progress during May, contained in June summaries.)

Design Elements Division

Rotor Hub Failure—An AAF Tech. Order directed that all model YR-13 (Navy Model HTL-1) helicopters be grounded pending completion of an investigation into the cause of failure of the main rotor hub support pillow block on the commercial version of this model. A dispatch quoting the Tech. Order in full was issued to cognizant naval activities directing that all HLT-1's be grounded pending results of the investigation. As a result of the investigation, AMC authorized the ungrounding of the YR-13 helicopters after replacement of the present pillow block with a steel pillow block. Naval activities were advised by dispatch that the HTL Aircraft Service Change No. Six covering pillow block replacement will be issued and that upon incorporation of the provisions of this change the grounding restrictions are removed.

Power Plant Division

Wright Engine Test—The final report on accelerated service test of R-2600-20 engine with concentric groove valve seats has been received from Service Test NA TC PATUXTENT. Five of these valve seats failed during this test. Failures occurred after an average of 896 hrs. operating time and resulted from burning of the exhaust valve seats circumferentially. Report recommended that a study be made to determine if overhaul of this type of valve seat at 700 hrs. (operating interval between overhauls for R-2600-20 engines) would improve the valve seat life and prevent failures such as occurred on this test.

Pratt and Whitney Engines—Flight tests of the XR60-1 airplane have shown that the available horsepower of R-4360-18 engine is not sufficient to meet the requirements of this airplane. New engines, Wasp Major TSB3G's with an axial power take-off, designated as the R-4360-22W engines, are being procured. The new engine is rated at 3250 BHP without water injection and 3500 BHP with water injection. In addition to the increased power the new engine incorporates all the design changes resulting from development of the Navy R-4360-20W and the Army R-4360-35 engines.

Westinghouse Turbo-jet—During acceptance flight of an FD-1 and on subsequent ground checks, J30-P-20A, turbo-jet engine operated very erratically in the upper speed ranges. Thorough investigation at the McDonnel plant showed that the tachometer was probably indicating 2500 RPM under the actual RPM and that the turbine blades had stretched and reduced the clearance below the minimum requirements. Cause of the faulty tachometer indication has not been reported but it is believed to have been due to overspeeding. BAR St. Louis has been requested to determine responsibility for the failure.

Ships Installations Division

Shop Facilities—BuShips has been requested to review Shipalts and plans for existing aviation electronics shops in aircraft carriers and seaplane tenders with a view toward installing complete and standardized shop facilities. Present Shipalts are considered to contain insufficient information. A recommendation has been made that plans now in use be revised in collaboration with a representative of ComAirPac.

Carrier Catapults—A study made for DC NO(Air) to determine the effect of various catapult installations on the CVL48 class carrier operations. It was determined that the H-8 would be the most acceptable, from an operational standpoint, as it will efficiently handle any of the present service and experimental airplanes; the H4-3 will handle all ASW type airplanes now under consideration; the H2-1 catapult will handle only a proportion of these airplanes.

AD-1 Arresting Hook—Difficulties were experienced at Patuxent in arrested landing tests due to the breaking of the AD-1 hook. It was determined that these troubles were due to an improper trail angle set on the hook. Both Douglas and Patuxent have been requested to take proper action.

Catapult Hook—Due to shedding troubles, the first catapult hook on the AD-1 was not considered completely satisfactory. Tests at NAMC on a revised catapult hook, which had the toe twisted parallel to the thrust line, relieved the shedding difficulties. The new hook was approved for AD-1 airplanes, BuNo. 09305 to 09351, AD-1Q's BuNo. 09357 to 09386 and all AD-2 and AD-2Q airplanes.

Carrier Modification—This division is investigating the modifications necessary to make the CVL22 class an operationally efficient ASW ship. Evaluation was made using the AF-1s(2s) as the ASW airplane spotted in combination with the F8F-1s. It was concluded that extensive modification to the ventilating ducting of the ship is necessary to permit the CVL 22 class to operate efficiently as an ASW ship.

Armament Division

Torpedo Nose Cap—Five prototypes of these releases have been given to the Installations Branch who are arranging to have them installed on an AM-1 and an AD-1. Change Requests have been initiated calling for the design study and installation of the units by the manufacturers of both these airplanes. Douglas and Martin have been informed verbally that provisions will have to be made to install the "long type" on their respective airplanes.

Guns, Rounds Counter—The units forwarded by Buder-Root, Inc., will be tested for compliance with service requirements. Test project at the NGF has been established.

Rocket Launcher, Mk 10 Mod 0—This launcher has a flat type feed and is designed for installation in an aircraft wing. The unit is powered by a 3.5 hp electric motor and will fire 5.0 GASR at a cyclic rate of approximately 150 rounds per minute. Preliminary ground firing of the launcher deformed the firing chamber and

IN AN EFFORT to reduce the noise level of airplane engines, the National Advisory Committee for Aeronautics modified this Stinson L-5 by muffling the exhaust and installing a new type 5-blade propeller. The prop is driven at 1000 rpm by an engine geared-down to a ratio of 2.8 to 1. The reduction in tip speed reduces the noise level from 90 decibels to 66 decibels. This represents a reduction in noise pressure of more than 90 per cent.

the unit is being redesigned to strengthen critical parts.

AA Rewind Truck—All units covered by AA rewind truck and trailer project have been completed by NGF. Allocation to service activities is being made by Maintenance Division. Project is complete.

Airborne Equipment Division

X24C Development—A contract is being initiated for procurement and service type testing of one set of magnesium-cerium blades fabricated by the precision casting methods. If this application is successful, significant savings in weight and cost may be expected.

Turbine Blade Testing—A pneumatic device for vibrating turbine blades has been constructed and successfully operated. Compressor blades with natural frequencies of 700 cycles per second and 1200 cycles per second were vibrated and blade failures occurred within five to seven minutes. Attempts to vibrate heavy blades of 2000 cps natural frequency were successful.

NAMC Electroplating—Installation of permanent laboratory equipment has been completed and personnel have been assigned. The laboratory in conjunction with other Naval Air Experimental Station equipment provides the Navy with good facilities for reesarch and development work in the field of electroplating and surface treatment.

Statistical Studies—An acceptance sampling plan based on variable measurements has been proposed for specification AN-P-61, Plating; Cadmium. This is considerably more efficient than the attribute type of plan in which each sample specimen either does or does not pass the test requirement. The net result should be reflected in better corrosion protection of aircraft parts.

Non-inflammable—Hydrolube "U" Hydraulic Fluid—NATC PATUXENT has accumulated a total of 252.4 flight hours on the 3000 psi hydraulic system of the model XBT2D-1 with no failures.

Hydraulic System—Service tests have been conducted on nine F4U-4's extending over a one year period with complete success. Hydrolube "U" fluid is considered suitable for use in 1500 psi hydraulic systems. Action is being taken to terminate this project.

Lab Tests—In order to determine the suitability of hydrolube "U" fluid for low temperature operation, a project has been established at NAMC to determine the exact viscosity requirements of a fluid in order to enable a hydraulic system to function at extremely low temperatures of −65°F.

Shoulder Harnesses—Tests conducted jointly by the AAF and NAMC showed that by removing the metal "L" fittings in the lower end of the shoulder harness and replacing them by sewn webbing loops, the breaking strength of the shoulder harness was increased from 2800 lbs. to about 3600 lbs. NAMC has completed drawings of this change and it is now being incorporated in current belt contract.

Jet Temp Indicators—It was agreed at the 23, 24 April AN instrument conference to standardize on a 1⅞ in. exhaust temperature indicator with a range of 400° to 1000°C, the AN specification to be based on AAF specification 27528B.

Pilotless Aircraft Division

KDD-1—All but two of the 100 KDD-1's on order have been delivered. The two remaining will have autopilots installed for flight testing by NAMTC.

KDG-1—The power plant manufacturer has accomplished a redesign of the main bearing, incorporating an anti-friction type bearing. Tests will be made at NAMTC upon receipt of these engines.

KDG-2—The mock up of the 0-90-4 engine indicates that the KDG-2 cowling will have to be redesigned to provide adequate cooling and to accommodate ignition shielding. Airframe spare parts provisioning meeting is scheduled for 10 June 1947.

KD2G-1—Procurement Division is preparing the contract for 30 articles. Engineering and cost proposals covering changes recommended by the mock up board have been received.

KD3G-1—Proposal has been received from Globe Corporation to convert the last 60 of the 400 articles from a six-volt electrical system to a 28-volt system.

KD2R-2—Coordination of Detail Specification is being completed and formal contract is being written.

AM-1, AM-1Q—Contractor making all-out effort to solve remaining engineering, tooling and production problems and commence delivering airplanes. Expect deliveries to test activities to commence in June.

TBF/TBM—The TBM-3s prototype BuNo. 86027 was inspected by Bureau representative 21 May. The prototype is expected to be ready for transfer to VX-1 for operational evaluation about 2 June.

FD-1—Letter being processed extending engine time between overhauls from 50 hrs. to 100 hrs.

SC-2—A modified airplane with trial board changes incorporated is scheduled for return to Patuxent about 15 July.

HRP-1—The first of the 10 helicopters is estimated to be 33% complete and the last one is 13% complete. With expected increase in production, the first delivery is estimated to be 15 July.

HTL-1—Grounding restrictions have been removed from these aircraft.

XJL-1 Amphibian— Flight testing of the first airplane and construction of the second airplane continues.

XJR2F-1 Amphibian—The first hull is well underway and the following have been completed: one center-section, two stabilizers, one rudder, two elevators (not covered), the nacelles and cowling.

TBM-3J—The prototype of this aircraft has been assigned to NAS SAN DIEGO.

JRM-2—The airplane is undergoing complete engine change at Patuxent. New propellers with 1052 blades will be installed on the inboard engines to determine effect on hull vibration while in flight.

XNQ-1—Final demonstration was completed successfully 23 May 1947, subject to demonstration of dive no. six with the second airplane. The two airplanes are equipped with canopies of different materials and it is the Bureau's desire to have dive no. six performed with each canopy.

MODIFIED WRENCH AND PLIERS SPEED REPAIRS

Tools Expedite Radio Set Overhauls

NAS ALAMEDA—The electronics division of the A&R department has developed two simple and inexpensive tools to expedite the overhaul of ARC-1 transceivers. These tools were made from a 5/16" end wrench which was bent into an "L" shape and a pair of ordinary gas pliers ground to fit between the clutch assemblies.

In some assemblies when these clutches became loose it was necessary to remove the front panel to repair the assembly. This required one and three-quarters man-hours, whereas the use of these tools reduced the time to five minutes.

➤ ***BuAer Comment***—**This is a very practical set of tools.**

Minor Change Will Improve GCA Unit

COMNATS' Headquarters recently received information that a simple modification to GCA equipment has been developed which will prevent the loss of an aircraft target in heavy rain or snow. The modification is known as a "fast time constant" circuit.

It consists of a properly matched resistance-capacity network connected between the intermediate amplifier and the detector stages of the radar receiver. In the regular GCA scopes a heavy rain or snow squall causes the face of the entire EPI scope to become bright so that planes are lost because they are no brighter.

The effect of the "fast time constant" circuit is to break this glow up into streaks through which the target plane can be followed. Wave shape of the returned pulses from rain or snow is altered in such a manner that, instead of solid brilliance across the face of the scope, the returned radar energy appears as a series of smaller streaks of brilliance between which a target will show up.

Modification kits and diagrams are being developed by BUSHIPS to provide this FTC for use on Navy GCA units but the project is not yet completed. Diagrams of such a modification developed by Gilfillan Company have been submitted to the Bureau by COMNATS for study. Authorization for GCA units to make this change with parts available on a trial basis prior to receipt of kits was requested.

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Issuing of Flight Clothing

Those aviation personnel who are entitled to a prescribed outfit of flight clothing on a personal custody basis and who are attached to aviation shore activities and ships tending aircraft, which have a regular organized supply department, do not usually experience too much difficulty in obtaining replacement flight gear.

Apparently some aviation personnel who are attached to BACR's and similar activities are not too certain as to the correct procedure to follow in obtaining items of flight clothing to which they are entitled, either as replacements or as original outfits. Such activities do not have a regularly organized supply department; hence stocks of flight clothing are not readily available locally. This fact, however, should not deter the drawing of required items in the normal manner.

Since, in the case of missing items, a survey is required in order to obtain replacements, and for other reasons of expediency, it is considered impracticable to conduct such transactions on a mail order basis. In most cases it is often both convenient and desirable to contact the supply officer of the nearest or most conveniently located aeronautical activity to consummate these transactions on an over-the-counter basis. Instructions contained in Article 26242-3, Bureau of Supplies and Accounts Manual, are interpreted to allow any supply officer who carries stocks of aeronautical material to make issues to any authorized individual regardless of activity to which attached.

Individuals who desire to draw flight clothing items from the supply officer of an activity other than the activity to which attached should present their flight log books, NavAer 4111, and, in the case of naval aviators, a certified copy of their designation, or, if not naval aviators, a certified copy of their orders to duty involving flying.

If the desired items are not available in stock, arrangements can be made with the supply officer of the activity concerned to order and obligate the individual requirements and complete the transaction upon receipt.

New Navy Supply System

The plan for the "Navy Supply System," recently approved and promulgated by SecNav, is basically an extension of the Aviation Supply Office–Bureau of Aeronautics–Bureau of Supplies and Accounts relationship approved by the first Integrated Aeronautical Program Board and effectuated by the SecNav directive of 24 June 1944, which defined the mission of ASO. In this connection it is to be understood that some features of approximately thirty supply systems in effect during World War II were amalgamated in creating this new supply system. Since, however, practically all those features already had been embodied in the Aeronautical Supply Organization, this statement is frequently heard: "The Aviation Supply Office was used as a pattern in creating the new plan."

It is felt that all hands in the Naval Aeronautical Organization will take pride not only in this fact but also in the fact that it results partially from the fine record of achievement of the Aeronautical Supply Organization in World War II, the accomplishment of which resulted from excellent teamwork of all hands in naval aviation.

It is also of general interest that the new Navy Supply Plan fully recognizes the increasingly complex nature of technical materials required in the support of ships, airplanes, electronics, submarines, ordnance, etc. This condition necessitates the coordinated efforts of the parent technical bureaus and of BuSandA to the end that the right amount and kind of support material is procured and that it is distributed economically at the right time and to the right places with correct identification and protection.

Wider Use of Substitutes

As a matter of economy suitable substitutes must be used in an increasingly large number of instances. For example, pilots must realize that it may be necessary for them to accept shearling lined jackets which are available in fairly adequate supply instead of other kinds of flight jackets which are in short supply. Mechanics often can use common stock tools instead of the more desirable but very costly "special tools." In fact, in many instances they will have to accept common tools as the "best available," since limited appropriations may not permit additional purchases of the "specials."

These two specific instances are cited to emphasize that we must use "what we've got" (if it is a safe substitute) to make possible the consumption of wartime stocks of obsolescent or otherwise less desirable material, and at the same time we must reduce to the absolute minimum the disbursement of appropriated funds for such categories of material. Pilots and mechanics must be reconciled to the fact that their supply officers will suggest more and more possible substitutes for specific items requested, where safety of flight is not a dominating limitation and efficiency will not be greatly impaired.

ASO Simplification Parley

A joint Army-Navy-Industry Conference on standardization and Simplification was held at the Aviation Supply Office, 8 and 9 May. The purpose was to explore ways and means of simplifying the jobs of groundcrewmen (mainly mechanics and storekeepers) in keeping planes flying and keeping their equipment operable, largely through use of Army-Navy standard bolts, screws, clamps, packings, lubricators, extrusions, etc., and furthermore using as small a range and variety of these standard items as practicable.

Much attention has been given to cockpit design and other ways and means of easing the jobs of pilots and aircrewmen. Now attention is being focused on the problems of the groundcrewmen who expend over twice as many hours on the maintenance of an airplane as are required in its original construction. Helping them to maintain a higher percentage of airplanes available for operation is, of course, of tremendous military importance, and it is hoped this can be attained in spite of the increased technological complexity of airplanes and their equipment.

Steel Drum Engine Storage

From a ComAirPac report, it is understood that an R-2800-10W engine which has been stored in a steel drum engine container for two years in the Hawaiian Area recently was inspected by the A&R department, Pearl, and ComAirPac. The inspection revealed that the engine was in perfect condition. This fact indicates that the steel drum is probably the best means now available for preserving engines in long term storage.

New Sections for Catalog

The following Sections of ASO Catalog were distributed during the months of May and June 1947:

May — 1650, 8220, 8686D, 8696E, 8702A, 8810C, 8810E, 9307, 9411.

June—1670A, 1718, 8325, 8689, 8810F.

"Info from ASO" shows detailed listings and how to obtain the new sections in case they have not been received.

✧

VR-6 Pacific—The first ground school class to which enlisted aviation pilots were assigned was recently graduated. The entire group will be assigned duties as second navigators on scheduled flights until they qualify as first navigators.

✧

NAS Santa Ana—Control tower, station operations and emergency equipment personnel recently showed their efficiency when a TD2C landed wheels up because of hydraulic trouble. The field was closed for only 20 minutes. *Santa Ana Ballonet.*

✧

VMF-115, Pacific—This squadron has instituted a program for taking advantage of the F4U-4 Mobile Training Unit located on the station. Instruction is given on all cut-away components of the *Corsair.*

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

SIGHT IS MOUNTED TO OVERHEAD IN COCKPIT

Novel Mounting of Mark 8 Sight

Until the advent of the P2V-2 Aircraft, fixed guns and rocket installations in VP-type planes have been aimed by means of an Illuminated Sight Mk 9. To provide the pilot of the new P2V-2 aircraft with a larger gun fire reference, it was considered advantageous to install a larger Illuminated Sight Mk 8 Mod 8 with an adjustable reflector.

This installation is used for aiming the six 20MM guns and for firing rockets. In addition the adjustable reflector on the sight can be used for bombing missions if needed. The accompanying illustration shows the novel means by which the sight is mounted. It is also to be noted that the sight can quickly be removed and stowed when not in use.

Although such a demountable installation is less desirable than a fixed mount for boresight accuracy, the other factors involved such as added pilot vision makes this type of installation necessary. In addition the type of target, generally strafing either ground or A.S.W., does not need extremely accurate boresighting.

Shotguns Returned Minus Vital Parts

Reports from shotgun overhaul activities and a review of the shotgun overhaul parts requirement indicate that Remington models 11 and Sportsman autoloading skeet shotguns are being returned to overhaul minus many parts. It is evident that shotguns are being cannibalized for replacement parts for repair by skeet training activities instead of being returned to overhaul activities for repair.

Certain parts such as the barrel assembly, the breech bolt, the locking block, the receiver, and the trigger plate require careful fitting, by personnel experienced at such work, when being replaced. The aforementioned parts if not correctly fitted, result in damage to the gun and can damage the gun to such an extent that it is beyond repair. For that reason using activities are requested not to interchange parts from one gun to another or to cannibalize guns for replacement parts.

Before using the Remington model 11 or Sportsman shotgun, correct recoil adjustment, for the powder load being used, will insure good gun performance by reducing recoil forces and wear on parts. Recoil adjustment is made by positioning the friction ring and the bronze friction piece, as shown in the figure, for heavy loads, light loads, and for guns equipped with cutts compensators.

Although the Remington model Sportsman is shown in the illustration, the adjustment is the same for the Remington model 11. To make the recoil adjustment, remove the fore-end, the barrel, the recoil spring, the friction ring, and the bronze friction piece and proceed as follows:

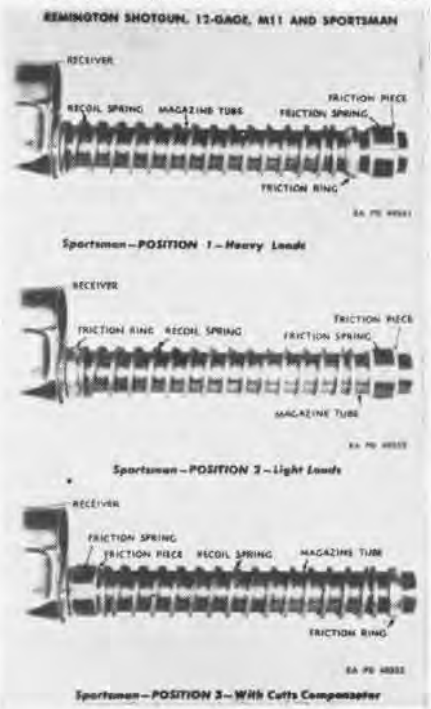
1. Heavy Load—3¼ to 3¾ drams of powder. Place recoil spring on magazine tube next to receiver; then friction ring with outside bevel next to recoil spring towards receiver; then bronze friction piece. Refer to position 1.
2. Light Loads—3 drams of powder or less. Place friction ring on magazine tube, next to receiver with outside bevel away from receiver towards muzzle; then recoil spring; then bronze friction piece. Refer to position 2.
3. With Cutts Compensator. Place bronze friction piece on magazine tube next to receiver; then recoil spring; then friction ring with outside bevel forward towards muzzle. Refer to position 3.

Changing the recoil adjustment from position 1 to position 3 progressively reduces the friction. When using heavy loads it is very important that the friction ring arrangement shown in position 1 be used. Failure to make the adjustment will result in excessive recoil, broken forends, and excessive wear of parts.

Another important factor to consider for increasing the life of the gun is cleaning and lubrication. After firing, the fore-end and barrel should be removed from the receiver. Clean the barrel using Cleaner, Rifle Bore OS1426, wipe dry and lightly oil with oil OS1361. Remove groups from receiver and clean with Stoddard Solvent PS661 and lubricate with oil OS1361. The following parts should be lubricated:

1. Outer surface of barrel extension and barrel extension guides.
2. Friction piece and friction ring very lightly where they bear on magazine tube. Magazine tube should be kept clean and lightly oiled. Do not over oil.
3. Brush bolt guides and surface, occasionally.
4. Link pin, connecting locking block with link.
5. Locking block guides.
6. Trigger and hammer pins.
7. Carrier (trunnion) screws.
8. Action spring follower.
9. Safety sear stud and spring follower.

Lubrication must be very light. In very cold climates oiling should be reduced to a minimum. Only those surfaces showing signs of wear should be lightly oiled.



✧

MAG 33, El Toro—Marine Photographic Squadron 254 recently sent an observer and a landing signal officer aboard the escort carrier U.S.S. *Badoeng Strait*. Five pilots flew from the Marine Corps Air Station, El Toro, to the *Badoeng Strait* for carrier qualification. Four pilots qualified. One pilot, on his second landing, caught the number eight cable and hit the barrier, causing minor damage to the aircraft. Captain R. W. Watson made the 2000th landing aboard the carrier.

✧

VRU-1, PACIFIC—The Navigation department has reproduced GCA approach procedure charts for incorporation in HO 503 manuals. The approach charts are drawn in india ink, photographed and printed on 8" x 10" glossy paper.

✧

VR-6, PACIFIC—A new class in ground training and navigation is now in progress. It is organized so that new students may be added to the course as they come available. Of the aviation pilots graduated from the two previous courses, two have qualified and are now first navigators and the others will soon have completed the required number of trips as second navigators.

✧

NAS TILLAMOOK—This station is believed to be the only naval activity with a private cemetery in full commission (two burials per month). When the station was acquired by the Navy Department, all the land surrounding the cemetery was condemned, completely isolating it. Only access is through the main gate to a point near the end of the runways. This plot stands as a grim reminder of what might happen to all pilots landing or taking off.

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the 15 June Interim Report of Service Test, ATC Patuxent, and does not necessarily reflect BuAer policy.

F8F-1 (385 Hours)

Power Plant. The following parts were replaced because of oil leaks: 4 push rod packings, 16 rocker cover gaskets, 5 intercylinder drain hoses. The No. 18 cylinder intake stack (short extension) was changed when a gas leak occurred at the sleeve clamp due to improper fit of the mating surfaces.

Following removal of carburetor after 331.8 hours, the impeller and fuel discharge nozzle were inspected. Impeller was found free from scratches and nicks, and there was no excess play in the shaft. The phenyl resin coated discharge nozzle was found free from corrosion.

Power Plant Accessories. Automatic mixture control unit, P/N 395485, for model PR 58E2 Stromberg injection carburetor, P/N 395516-13B, was changed after 249 hours of flight because of complete cutting of the engine after approximately 10 minutes of operation in auto lean at various power settings and altitudes, and loss of 150 BHP (10 to 12 pounds on the torquemeter) when shifting from auto rich to auto lean at maximum cruising power (32" and 2200 RPM). Examination of mixture control unit showed excess of carbon (probable source—backfiring during starting procedure) on the needle and lower screen. Believed that carbon caused needle to freeze in extended position causing leaning out of fuel air mixture by restricting flow of air to the "A" chamber of carburetor.

Automatic spark advance system malfunctioned after 331.8 hours and was rendered inoperative in the 20° spark advanced position by the method described in P&W R 2800 Engine Bulletin No. 265. Condition was indicated by RPM drop on each magneto during a ground check at setting of 1400-1900 RPM, where a drop-off is normally not expected. Investigation of nose operating unit showed fuel outboard of the diaphragm. The line leading from the carburetor control unit to the nose operating unit had chafed through. This installation is considered a fire hazard because, due to the design of the automatic spark advance system in the carburetor control unit, there is invariably fuel in the line leading from the carburetor control unit to the nose operating unit. *Recommend* that automatic spark advance system be isolated from all R-2800-34W engines with numbers higher than P-52149.

Exhaust System. Prototype 3S exhaust system, incorporating modified strap type end-clamps, has been satisfactory for over 180 hours of operation to date. No broken studs or loose stack nuts, particularly watched for on daily pre-flight inspections, have been found.

Induction System. Chafing of carburetor header assembly, P/N 55575, against duct assembly, P/N 55581-1 L&R was encountered after 331.3 hours due to motion of engine in dynafocal mounts. Clearance between header and assembly was found to be 9/16". *Recommend* that clearance be increased to 1" by trimming header and duct assembly at flexible sleeve connections to allow for maximum rotational deflection of engine in dynafocal mounts.

Engine Section Baffle Ring. Synthetic rubber seal, P/N 55014-3, on engine baffle ring, P/N 55014 deteriorated so as to require removal after 340.5 hours.

Electrical System. A metal screw at terminal strip of distribution box assembly 56413 was responsible for a short circuit in the tachometer circuit after 340.5 hours. The screw shorted out wires NO. 152-20 and 189-20 (B leads of the tachometer circuit) to wires NO. 953-18 and 957-18 (power leads to bombs and R.P. arming). A piece of cardboard 9" x 7½" was found between radio equipment leads and the terminal strip. Cardboard was replaced with a rubber insulator.

Fuel Pressure. Pressure has fluctuated on frequent occasions. In each case air has been found in line leading to the indicator. Believed that air enters fuel system during inverted flight when fuel in main tank is below 60 gallons, and the engine driven fuel pump draws air into fuel system lines.

XBT2D-1 (374 Hours)

Main Fuel Tank Filler Unit. There is no provision to conduct fuel spilled during fueling operations away from the airplane. *Recommend* that contractor comply with para. 769 of Spec. SD-24E.

Carburetor Air Scoop. Carburetor air scoop seal assembly, DOUGLAS P/N 5250659, is composed of two aluminum rectangular frames with rounded corners between which a 2" thick foam rubber wall is sandwiched. A 1/16" thick rubber insulating gasket is cemented to the top flange of the upper frame to prevent chafing between frame and air scoop base. A screen is attached to lower rectangular frame. Following discrepancies were noted at 169 hours flying time:

The 1/16" insulating gasket had separated from flange and forward section was found lying on the screen. Complete loss of this insulating strip would result in metal to metal contact with the air scoop base presenting a possibility of metal particles, resulting from chafing, being drawn into the induction system.

Errors in E&M Handbook. AN01-40AQ-2, Erection and Maintenance Handbook for AD-1 dated 15 Jan. 1947 and NAVAER 01-40AQ-504, Illustrated Maintenance Parts List for Model AD-1 dated 1 March 1947 contain discrepancies. Fig. 4-83 of AN01-40AQ-2 lists the part number of the lower left and lower right accessory cowling panels 5256362 and 5256362-1, while figure 109 of NAVAER 01-40AQ-504 lists them as 5258895 and 5258895-1. Index numbers 14 and 16 of figure 109 do not point to the pieces described on the adjacent page. *Recommend* that the part numbers be determined and revision to the publications be issued.

Bullet Resistant Windshield Assembly. Two windshields, DOUGLAS P/N 5250616-2, have cracked approximately 4 inches through the gun sight support bolt hole. Gun sight support bolt had been torqued to 50-60 inch pounds as recommended in para. 4-2179h of AN-01-40AQ-2. Reducing the support bolt torque to 40 inch pounds prevented cracks in the glass but allowed the gun sight to rotate around the support bolts. *Recommend* that contractor support the gun sight clear of the bullet resistant windshield.

SC-2 (167 Hours)

Main Float Fuel Tank Vent. In flight the float fuel tank runs dry when gauge indicates between 60 and 80 gallons. Upon landing the quantity gauge hand drops to empty. Investigation revealed that a sub-static pressure, created by the float tank vent line opening at the rear of the float pedestal, was collapsing the walls of the Marong type (non self-sealing) fuel cell as fuel was drawn from the tanks, and that the fuel level transmitter float arm was held in suspension at the 60 to 80 gallon point. Temporary fix replaced present vent tube with one 2" longer, having an increased mouth opening and installed at an angle to obtain ram.

Damage from Porpoising. The following damage occurred during a downwind taxi run (wind 6 knots) when the airplane crossed a 1½ foot wake of a 45 foot ARB crash boat which caused the plane to porpoise: Upper surface of left elevator was dished in spanwise at forward spar to depth of one inch at station 43.96 and was dented from leading edge to the spar between stations 35.95 and 51.97. On the right elevator the balance surface at station 78.94 was bent down and the outboard hinge partially ripped out from the elevator. The tube assembly (elevator push-pull) parted at the rod end attached to the elevator aircraft grounded.

Bearcats Are Strengthened by A&R

NAS NORFOLK—Repeated hard carrier landings by the F8F resulted, in some instances, in a noticeable buckling of the wing center section main beam, as well as wrinkling of the wing center section upper and lower skin, plus some wrinkling of the fuselage skin.

In an effort to solve this problem, BUAER Service Change 24 for F8F aircraft was developed. NAS NORFOLK, was one of the service activities designated by BUAER to effect the modification. The change consisted of the reinforcement of the wing main beam and skin and the fuselage skin aft of the firewall. The wing beam was strengthened by the installation of reinforcement angles aft of the wheel wells. The fuselage and wing skin were strengthened by the addition of appropriate plates and stiffeners. To install the strengthening attachments, it was first necessary to remove the fuel tank to provide proper access to the areas to be reinforced. Modification of each aircraft was effected in three stages: disassembly, modification, and reassembly, with separate groups working on each stage.

A high priority was assigned the work, and the Assembly and Repair Department was given the go-ahead signal on Friday, January 3. Fifty change kits were manufactured over the week-end. On the following Monday the first aircraft were put into process. In one week's time five planes had been completed and delivered to Acceptance and Transfer. As familiarity with the work was acquired, the tempo increased until the modifications were being completed at the rate of ten per day. Within six weeks after the work was started, a total of 262 aircraft had been completed.

In addition to the installation of Change 24 the aircraft were brought up to date by incorporation of all pertinent changes and bulletins which in some cases totalled nine. Initial man hour estimates indicate that the work was carried on by those concerned with the modification program with a commendable degree of efficiency.

Wood Rack Aids Shipping of Props

NAS ALAMEDA—Development of a wooden rack to transport three and four-blade propellers for shipment brought a Beneficial Suggestion award to a jointer on this station. The idea saved an estimated $2,000 a year.

Propellers are supported by pipes welded to a quarter-inch steel plate, which in turn is bolted to the wood framework of the rack. Pipes and steel

PROPELLER RACK SAVES STATION TIME, MONEY

plates are padded with felt and tape to prevent possible damage to the prop shaft hole. To prevent the props from working off the pipes, straps are placed around the blades and secured to the framework.

Prior to introduction of this suggestion, wood boxes were manufactured to accommodate three and four blade props, consuming considerable time and material.

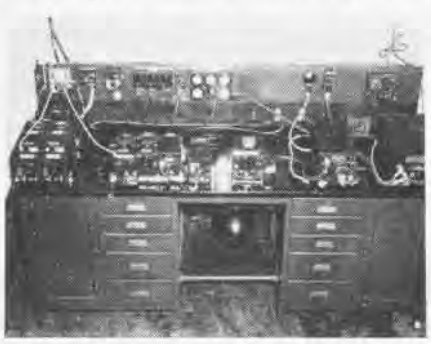
[DEVELOPED BY WILLIAM T. HALSEY]

Test Bench Serves For Training Men

VJ-7, NAS SAN DIEGO—This squadron recently devised electronic test and training benches which duplicate the operational communications equipment installed in squadron aircraft. These benches are being used to increase the knowledge of pilots and flight personnel concerning the limitations, capabilities, operational discrepancies and proficient use of the equipment.

The program has paid dividends in that the number of minor radio troubles has been substantially reduced. Starting at the rear right hand corner to the front right hand corner is the following gear: ARN-7 control box, ARB control box, ARB manual tuner, ARC-5 receiver test set, ARB-2 control box, three ARC-5 manual tuners, AIFT-13 control box, ARC-5 transmitter control box, Antenna current meter, ARC-5 transmitter, ARC-5 automatic spot tuner, ARC-5 receiver, two ARB-2 receivers, LM-10 frequency meter, ARB receiver and an ARN-7 automatic direction finder.

➤ *BuAer Comment*—**This bench setup appears satisfactory for operational training and for operational tests utilizing the substitution method. The close spacing of units precludes any general servicing such as point to point voltage and/or resistance analysis, alignment or visual inspections of component parts under power. Therefore this setup is considered unsatisfactory as a maintenance setup. If approved by CNO it is satisfactory for training or operational tests.**



BENCH AIDS OPERATIONAL TRAINING AND TESTS

Marines Testing Reversible Propeller

MCAS CHERRY POINT—Reversible pitch propellers are now being installed for test in several of MAG 53's F7F's. These planes will form a test squadron to evaluate the props for night fighter aircraft.

The new propeller may be used to decrease a plane's landing distance and as an air brake when diving. It cuts normal F7F landing distance, 2500-3500 ft., to a meager 500-700 ft.

China Marines Use the Link Trainer

MAB TWO, TSINGTAO, CHINA—The air base Link department has offered VMF 211 a training syllabus in the NAV BIT 1-CA-1 links. One of the trainers is being set up so the instrument readings and control pressures are similar to those encountered in the squadrons' *Corsairs*.

The training syllabus is designed to present to our pilots instrument problems and conditions they would most likely encounter in fighter-type aircraft. The training periods included familiarization, patterns, orientation, fades, beam bracketing, let downs, ground control approach, PG beacons, interceptions and cross country with voice procedure and ATC clearances.

New Radar Will Scan The Horizon

The Navy, early in 1948, will install APS-42 radar sets in the noses of NATS transports to help pilots "see" through clouds and fog and avoid collisions with terrain or other planes.

Contract for purchase of 100 of the sets, developed under a joint project with American Airlines (NANEWS, April 1947), has been let to Houston Corp., Los Angeles, Cal. in the amount of $1,000,000.

The sets weigh 150 pounds. The radar scanner will be in the nose of the transport, covering 220 degrees of terrain ahead or under the fuselage. This will give the pilot a 360-degree map via radar. A 5" PPI scope will be mounted in the pilot and co-pilot positions and in some the radio compartment will have a 12-inch scope for use in navigation on long over-water hops.

By using the radar, the pilot can "see" land masses up to 100 miles ahead of him. For terrain clearance, a pencil-beam is used. This swings around the plane like a searchlight and, in effect, presents a safety circle in which the receipt of any echo indicates danger. When used with radar beacons, bearing and distances may be determined up to 225 miles. The gear is for exclusive use on transports.

✧

VMF-218—Last month this squadron bade farewell to Peiping and moved to Guam via Tsingtao and Shanghai. Twenty-three Corsairs were ferried to Shanghai without incident. The remainder of the trip was made aboard a CVE. The squadron's Corsairs are being preserved for return for overhaul and the entire unit is eagerly awaiting the arrival of new planes.

JUNE SUPPLEMENT

Publications Index

Aviation Circular Letters

Title	Order No.
Report of Officers (including Chief Warrants and Warrants) on board as of 1 July 1947 who are trained in aviation electronics; Submission of.	A.C.L. 55-47
Aeronautic Technical Publications; Distribution of.	A.C.L. 57-47
Reports Control Program.	A.C.L. 58-47
Overhaul Discrepancy Report—Policy for Handling of.	A.C.L. 59-47
Class 88 Aircraft Instruments—Minimum Serviceability Expectancy Period for.	A.C.L. 60-47
Initial Outfitting and Replenishment with Aeronautical Material and Equipment of all Vessels Tending or Having Aircraft Assigned.	A.C.L. 61-47
Frequency Tolerance; Adherence to.	A.C.L. 62-47

Technical Notes

Webbing, Safety Tow, Assembly, ASO Stock No. R94-W-90800, Information on.	T.N. 9-47
Mark 5, Mark 5 Mod 1, Mark 5 Mod 2 External Auxiliary Fuel Tanks—Removal and Prevention of Internal Corrosion of.	T.N. 10-47
Aircraft Instruments—Usage Rate, Improvement of.	T.N. 11-47
Comparison of B and Offset Center PPI Radar Scopes.	T.N. 12-47
Notes on Night Vision.	T.N. 13-47

Technical Orders

Pararaft Kit, Model PK-1, and Multi-Place Life Rafts Inspection, Maintenance and Age Limitation of.	T.O. 12-47
Blask Effect of Five Inch Guns on Aircraft Control Surfaces.	T.O. 13-47
Safe Handling of Radio Active Luminous Compound.	T.O. 14-47

General Engine Bulletin

Vent Line from Derichment Valve to "fill Valve" Fitting, Supplement No. 2, June 13, 1947.	97

Flight Safety Bulletin

Personnel Hazards in Ground Operation of Jet Propelled Aircraft, June 13, 1947.	2-47

Allowance Lists

BuAer Allowance List Section D Catapult-Type HE, Mark 1 February 1947.	NavAer 00-35QD-2
§ Allowance List Section D Catapult, Air and Powdor Type Spare Parts and Accessories, Revised April 14, 1947.	NavAer 00-35QD-5
BuAer Allowance List Section E Mark 4 Arresting Barrier Gear Spares for CVE 105-123, Reissued February 1947.	NavAer 00-35QE-18
BuAer Allowance List Section 0 Aviation Armament Material Arming Ground Handling Target, Navy and Marine Corps, May 1947.	NavAer 00-35QO-1
§ BuAer Allowance List Section R Aeronautical Electronics Material for AN/AIC-4 Aircraft Maintenance Activities, Naval and Marine Corps, June 1947.	NavAer 00-35QR-39

Airplane Bulletins, Changes

Title	Order No.
F4U-FG	
Bulletins Electronics—Combination Earphone and Mask Microphone Cord, Type CX-922/AR—Installation of, June 4, 1947.	302
Engine Section—Engine Mount to Fuselage Attachment Bolts—Inspection of, June 13, 1947.	306
F8F	
Changes Electrical—Eclipse 914-15A Generator Installation—Modification of, June 18, 1947.	22
Wing—Center Section—Skin Joint—Reinforcement of, June 18, 1947.	33
Bulletin Armament Provisions—.50 Caliber Gun Ammunition Link Ejection Chutes—Inspection of, June 25, 1947.	33
FR	
Bulletin Fuselage—Air Seal—Carbon Monoxide Control, June 25, 1947.	28
HO3S	
Change Transmission System—Intermediate Gear Box—Modification of, June 18, 1947.	4
HTL	
Bulletin Rotor Group—Main Rotor Grip—Adapter—Rework for Interchangeability to, 6-25-47.	3

§ Designates New Publication

Title	Order No.
JD	
Bulletin Fuel System—Wing Tank Syphon Vent Line—Inspection of, June 25, 1947.	7
PBM	
Changes Engine Nacelle—Inner Crankcase Baffle—Installation of Seal at Distributor Breather Line, June 18, 1947.	194
Tail—Fin Center Hinge—Upper Bracket Support—Reinforcement of, June 13, 1947.	195
PBY	
Change Hull—Bottom—Reinforcement, 6-25-47.	198
PB4Y	
Bulletin Engine Section—Carburetor Airscoop—Modification of, June 25, 1947.	240
R5D	
Bulletin Fuel System—Nacelle—Controls—Modification of, June 11, 1947.	99
Hydraulic System—Dual Brake Shuttle Valve—Information Concerning, June 18, 1947.	103
Radio—Command Receiver System—Modification of, June 13, 1947.	105
Engine Accessories—Exhaust Tube Ball Joint—Anti-Rotation Clamps—Inspection of, 6-20-47.	107
SC	
Change Main Float—Water Rudder—Counterbalance—Removal of, June 6, 1947.	59
TBF-TBM	
Bulletin Heating and Ventilating Equipment, Windshield Defogging, June 25, 1947.	235

Propellers

Hamilton Standard Service Bulletins:	
Hamilton Standard Service Bulletin No. 120—Approval of, May 28, 1947.	58
Hamilton Standard Service Bulletin No. 121—Approval of, May 28, 1947.	59
Hamilton Standard Service Bulletin No. 122—Approval of, May 28, 1947.	60
Hamilton Standard Service Bulletin No. 123—Approval of, June 13, 1947.	61

Airframes

Aircraft Parts Catalog, Navy Model F4U-4 Airplane Reissued June 1, 1947.	AN 01-45HB-4
Parts Catalog for Army Models AT-6D, AT-6F, Navy Models SNJ-5, SNJ-6 Airplanes, Rev. April 1, 1947.	AN 01-60FF-4
§ Source Coded Numerical List of JD-1 Airplane Parts (Coded in accordance with Aviation Circular Letters 128-44 and 82-45), May 1, 1947.	NavAer 01-40AJ-513
Pilot's Handbook for Navy Model F4U-4 Airplane, Reissue April 15, 1947.	AN 01-45HB-1
Pilot's Handbook for Army Model C-54G, Navy Model R5D-5 Airplanes, Revised April 1, 1947	AN 01-40NU-1
Erection and Maintenance Instruction for Army Models AT-7, AT-7C, Navy Models SNB-2, SNB-2C Airplanes, Revised April 16, 1947	AN 01-90KA-2
Erection and Maintenance Instructions for Models A-26B and A-26C Airplanes, Revised 4-18-47	AN 01-40AJ-2
Erection and Maintenance Instructions for Army Models C-45B, C-45F, Navy Models JRB-3, JRB-4 rev. April 28, 1947	AN 01-90CD-2
Pilot's Handbook for Navy Models AD-1 and AD-1Q Airplanes Reissued April 1, 1947	AN 01-40AQ-1
Erection and Maintenance Instructions for Army Model AT-11 Navy Model SNB-1 Airplanes, Rev. April 28, 1947	AN 01-90KC-2
Handbook of Erection and Maintenance Instructions Navy Models SB2C-1, SB2C-1C, SB2C-3, SB2C-4, SBF-1, SBF-3, SBF-4 SBW-1, SBW-3 and SBW4 Airplanes, Rev. June 1, 1947	NavAer 01-25RA-2
Erection and Maintenance Instructions for Army Model OA-10B Navy Model PBY-6A Airplane, Rev. May 15, 1947	AN 01-5MC-2

Aircraft Carrier Bulletin

Aircraft Carrier-Light for Night Flight Operations (Confidential) June 6, 1947.	14

Power Plants

Fuel Pumps, d-32, Pesco Fuel Pumps, Type R-600—Overhaul of—Information Concerning.	3-47

Manuals

§ Overhaul Instructions for Model J35-C-3 Turbo-Jet Engine Feb. 18, 1947	AN 02-105CA-3
Overhaul Instructions for Aircraft Engines Models R-2800-8, 10 and 10W, Rev. Feb. 1, 1947.	AN 02-10GB-3
Overhaul Instructions for Aircraft Engines Models R-2800-14W, 22, 22W, 34, 34W, 57, 73, 77, 81, 83, 85, Rev. Mar. 1, 1947.	AN 02-10GC-3

§ Designates New Publication

Title	Order No.
Service Instructions for Aircraft Engines Models R-1830-82 and -92. Mar. 15, 1947 Reissue	AN 0210CC-2
Modification Instructions for Aircraft Engines R-4360 Series. Rev. June 1, 1947.	NavAer 02-10H-500
Overhaul Instructions for Models R-2000-7 and R-2000-11 Aircraft Engines. Rev. Mar. 15, 1947	AN 02-10FA-3
Modification Instructions for Aircraft Engines R-1820 Series Rev. May 15, 1947.	NavAer 02-35G-500
Overhaul Instructions for Models J33-A-9(1-40-9), J33-GE-11(1-40-11) and J33-A-17(1-40-17) Turbo-Jet Engines. April 25, 1947.	AN 02-105BA-3
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Modification Instructions for Aircraft Engines R-2800 Series. Revised May 15, 1947.	NavAer 02-10G-500
Service Instructions for Models R-2800-8, SW, 10, 10W and 65 Aircraft Engines, Reissue April 1, 1947.	AN 02-10GB-2
Overhaul Instructions for Aircraft Engines Models R-2800-21, -27, 31, -43, 51, -59, -63, -71, -75 and 79. Revised Dec. 15, 1946.	AN 02-10PA-3
§ Parts Catalog for Aircraft Engines Model R-3350-26W. May 15, 1947.	AN 02-35JG-4
Carburetor Settings for R-2800-18W Engines. Revised May 1, 1947	NavAer 02-10G-500
Modification Instructions for Aircraft Engines R-2800 Series Revised June 1, 1947	NavAer 02-10G-500
§ Overhaul Standards for Aircraft Engines (Reciprocating) (Tentative Issue) May 1, 1947	NavAer 02-1-513
Handbook of Overhaul Instructions for Aircraft Engines Models R-1820-56, 56W, 62, 66, 72W, 74W and 76 Revised April 15, 1947	AN 02-35GD-3
Service Instructions for Aircraft Engines Models R-2800-14W, 22, 22W, 34, 34W, -57, 73, 77, 81, 83 and 85 Revised April 15, 1947	AN 02-10GC-2
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Drones and Wing Targets

Erection and Maintenance Instructions for Airplane Targets Army Models YPQ-14A, PQ-14A, YPQ-14B, PQ-14B. Revised May 14, 1947.	AN 09-5FC-2

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Vibration Isolators, e-3 Supplement No. 1. Torque Values for Power Plant Vibration Isolators—Clarification of.	5-47

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Parts Catalog for Hydromatic Propellers. Revised Feb. 15, 1947	AN 03-20CC-2

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Operation, Service and Overhaul Instructions for Constant Speed Propeller Governors and Controls for Hydromatic Propellers. Rev. May 1, 1947.	AN 03-20CA-2

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Handbook of Operations, Service and Overhaul Instructions with Parts Catalog, Oil Coolers and Control Valves. Revised June 1, 1947.	AN 03-15-14
Parts Catalog for Oil Coolers and Control Valves, Revised June 28, 1946.	AN 03-15-16

Carburetors

Operation, Service and Overhaul Instructions with Parts Catalog for Float Type Carburetor Models MA-3A, MA-3PA, MA-3PAA, MA-3SPA, MA-3SPAA, MA-4SPA, MA-4-5 and MA-4-5AA. Revised April 11, 1947	AN 03-10BD-1

Pumps

FUEL (ENGINE DRIVEN)

Operation, Service and Overhaul Instructions with Parts Catalog for Engine Driven Fuel Pumps. Revised May 6, 1947	AN 03-10EA-1
Operation, Service and Overhaul Instructions with Parts Catalog for Fuel and Water Pumps Engine-Driven Army Models A-1, G-6, A-2, G-9, E-10, G-10, Navy Models H2E3, H4E3, H4E4, H7E4 Revised 7 May 1947.	AN 03-10ED-1

FUEL BOOSTER

Operation, Service and Overhaul Instructions with Parts Catalog for Fuel Booster Pumps Models 2E-614-F, 2E-614-G and 2E-617 Revised 6 May 1947.	AN 03-10EA-2
Operation, Service and Overhaul Instructions with Parts Calatog for Submerged Type Booster Pumps 12900 and 13000 Series (Thompson) Revised 6 May 1947.	AN 03-10EC-14
Operation, Service and Overhaul Instructions with Parts Catalog for Submerged Booster Pumps Type B-5B Revised 6 May 1947	AN 03-10EC-15

ELECTRIC TYPE

Operation, Service and Overhaul Instructions with Parts Catalog for Fuel Pumps Electric Motor Driven (Thompson) Revised 7 May 1947	AN 03-10EC-6

WATER

Operation, Service and Overhaul Instructions with Parts Catalog for Engine-Driven and Electric-Motor-Driven Water Injection Pumps Model TFD-3300, TFD-3300-1, TFD-3300-2, TFD-3400, TFD-10600-1, TFD-11100, TFD-11400, TFD-11500, TFD-11600 (Thompson) Revised 6 May 1947	AN 03-10EC-10

WHEELS

Operation, Service and Overhaul Instructions with Parts Catalog for Nose Wheels (Firestone) Revised 29 April 1947	AN 03-25HA-5

Instruments

Aircraft Instrument Bulletin: Attitude Gyro No. 2: Three (3) Wires from Receptacle Assembly to Spring Contact Assembly—Position of.	10-47

Computers

Operating Instructions Army Types E-6B and AN 5835-1 Navy Type R-88-C-1120 Dead Reckoning Computer. Rev. April 9, 1947.	A.T.O. 05-35-9

Gyro Horizons and Directional Gyros

§ Handbook of Overhaul Instructions Attitude Gyro Indicator April 15, 1947.	AN 05-20BC-3

Gage (Fuel)

§ Handbook of Operation and Service Instructions for Pacitor Fuel Contents Gage Installation for Navy Model AD-1 Aircraft (Simmonds Aerocessories) 15 May 1947	NavAer 05-65-542

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Parts Catalog for Dual Autosyn Indicators (Eclipse-Pioneer) Rev. 15 May 1947	AN 05-55B-9

Radio/Radar

Handbook of Maintenance Instructions for Radio Sets SCR-729-A and SCR-729-AZ. Revised April 21, 1947	AN 16-40SCR729-3

Ships' Installations

ARRESTING GEAR CHANGES

Replacement of Turnbuckle Type Deck Pendant Couplings with Quick-Detachable Couplings—Standardization of Thread Diameters of Purchase Cable Terminals June 20, 1947.	8A
Mark 4 Arresting Gear—Installation of Sheaves with Bushings, New Sheave Shafts and Automatic Lubrication System June 20, 1947.	9
Modification of Barrier Engines to Mark 4, Mod. 7 June 20, 1947. (Restricted)	10

Catapults

CATAPULT BULLETINS

Type H, Marck 4C Catapult Instructions, Bulletins and Changes—Current Status of. 6-11-47.	34
Type H Mark 2 Mod. 1 Catapult Instruction, Bulletins and Changes—Current Status of. June 11, 1947.	48
Type H Mark 4B Catapult Instructions, Bulletins and Changes Current Status of. June 11, 1947	37
Type P Mark 6 Mod. 2 Powder Catapult Instructions, Bulletins and Changes Current Status of. June 13, 1947	5

Photography

Photography Vol. 2 1947 Edition Navy Training Courses	NavAer 10-1-519B

Flying Field and Hangar Equipment

Preparation of Powered Ground Equipment Engines for Storage and Shipment. Reissue April 22, 1947.	ATO 19-1-49

Deputy Chief of Naval Operations (Air)

AEROLOGY BULLETINS

Ceilometer, AN/CNQ-2 May 12, 1947	7
Recording "Present Weather", Standard Phraseology for. June 10, 1947	9
Standard Aerological Publications, Amendments to. June 6, 1947	12
List of Aerology Publications June 23, 1947	13

§ Designates New Publication

LETTERS

Sirs:

NAS Moffett Field, in cooperation with the Naval Reserve recruiting drive by the Santa Cruz, California Reserve Unit, put on an aerial demonstration over the city. Several close formation flights were made in SNJs and the group then landed at the City Airport where the planes were put on public display for over two hours. After that the group went up and demonstrated tactical maneuvers.

The large civilian gathering, which had assembled at the airport to witness the show left the field thrilled and well-satisfied that the Navy had lost none of its World War II techniques and skill.

C. R. Burtz, Comdr. USN
Public Information Officer
NAS Moffett Field

Sirs:

This Public Information Officer's face is RED. It was disclosed over the Bob Burns radio show Sunday night, May 25th, that Lynn H. Brown, ARM2/c, of the P.I.O. department had enough spare time on his hands to write a story which won the Bob Burns contest. (Why wasn't he writing for me?) This brings him a new Steelcraft Cabin Cruiser retailing at $4950 and a hectic week in Hollywood.

Brownie is in the Air Reserve program as a stationkeeper. He is married and has a new three months old baby boy.

E. C. Ingraham, Lt. Comdr.
Public Information
NAS Los Alamitos

See Pg. 26 for prizewinning story.

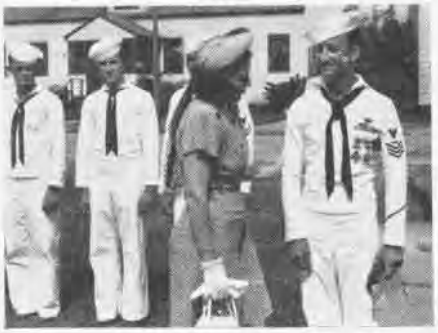
Sirs:

Not that anyone could belittle the superior gunnery of Lt. (jg) Chenvront (NANews June 1947) but a record is brought to my attention that tops your 87%. Flying at Pinellas Army Air Base, St. Petersburg, Fla., in a P-40N in 1944, a Lt. Starks shot 187 hits out of 200 rounds for a percentage of 93.5. This feat went on record as the top score in the Second and Third Air Forces in the U. S. and I'm sure this score hasn't been topped yet by any pilot in any branch of the service.

Another record was established in Pinellas AAB in 1944 when four gunnery instructors with 200 rounds each in their ships scored 600 hits out of 800 rounds fired. Pictures of said targets are still available. All the above firing was done on the regulation A-6A banner target and scored in the regulation orthodox manner.

Most of the witnesses to the above feats are lost due to demobilization, but I have the addresses of three who could verify.

Robert T. Tebbs
Group Gunnery Officer
81st Fighter Group AAF



Sirs:

Standing inspection for his wife is L. M. Smith, ARM1c, USN of Koselusko, Mississippi, on the day he received the DFC, Air Medal with four stars and a Good Conduct Medal. Citations dated back to April, 1943.

Judging from the smile, he has passed Inspection.

J. M. Parsons.
Public Information Officer
NAS New Orleans

Sirs:

In the "look alike" department we have these two sailors, Norcean and Orcean Golden of 2524 Inyo Avenue, Oakland. Identical twin brothers, both are Seamen First Class both served during the war as small Boat Coxswains; they wear the same ribbons and are now stationed together at NAS Oakland as stationkeepers.

F. E. Tonrey, Lt. Comdr.
Public Information Officer
NAS Oakland

The Cover: Anonymous expert is parking a Hellcat on an unknown carrier. Symbolic of much of the enlisted technician's labor, for him no headline but to the Navy he is "indispensable." For each plane kept in the air we need 10 to 20 ground men.

CONTENTS

* * *

Air Station Quiz—Last month's quiz answers were reversed. The top air station was Inyokern, the bottom one Moffett Field.

ANSWERS TO QUIZZES

AIR STATION QUIZ
(inside front cover)
Top—NAS New Orleans.
Bottom—NAS Glenview.

RECOGNITION QUIZ
(inside back cover
1. Le Fantasque (French), DD. 2. Pomfret, Balao Class sub. 3. Rudderow Class DE. 4. Saipan Class CVL. 5. Vanguard (British), BB. 6. Oregon City Class CA.

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