NAVAL AVIATION NEWS

MAY 1955

NavAer No. 00-75R-3

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CORREGIDOR, 1942 OUTPOST

A VF-121 Cougar flies over Corregidor, Western extreme of American military might, lost to us 13 years ago this month. Modern aircraft, the mighty ships from which they fly and the stout-hearted men who man them are our guarantee that never shall this bit of history repeat itself.

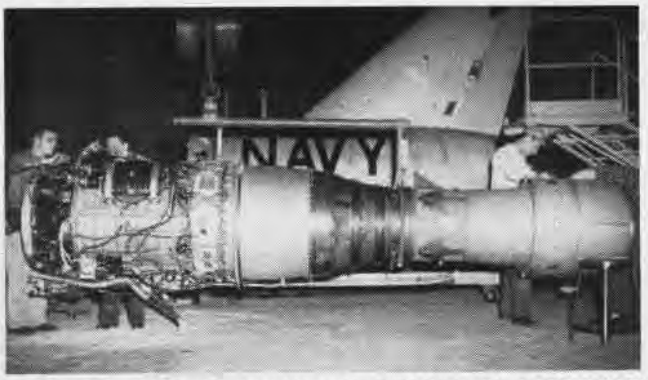
FLEET INTRODUCTION REPLACEMENT MODELS

THE ADMIRAL opened the conference with a brief and gruff comment: "Gentlemen, within three years, we need a plane with carrier operational capabilities, and with a service ceiling of over 50,000 feet, speed over Mach one in level flight, capable of carrying a useful load of over 1,000 pounds, and with a range of over a thousand miles."

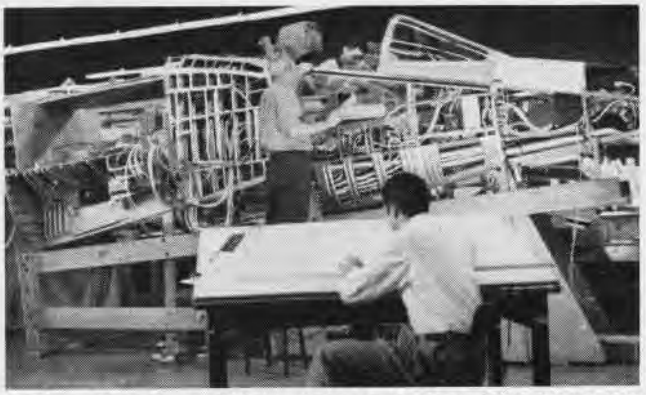
And so began the birth and growth of a new weapon for the Fleet. Specifications were written which spelled out the need, manufacturers were invited to submit the results of their research, and NACA technicians were delighted with the opportunity to have their pre-tested design theories utilized.

Bids for contract enabled BUAER to study manufacturer capabilities and reach a decision to have the plane produced utilizing the new production plan, now called "Fleet Introduction of Replacement Models." The first four planes made under this plan have been the A4D, F4D, FJ-3, and the F9F-9, all pictured above. Details and advantages of FIRM follow, with typical production pictures, which might be given the title, "Birth and Growth of a Tiger."

PRELIMINARY DESIGN GROUP PLANTS THE FIRST TIGER SEED



PLANS ARE MADE TO UTILIZE J-65 TURBOJET AS POWERPLANT



THEN A FULL-SIZE, PLYWOOD MOCK-UP IS MADE FROM THE PLANS

THE TIGER MOCK-UP IS COMPARED WITH SPEEDY F9F-6 COUGAR

Birth and Growth of a Tiger

THE GRUMMAN F9F-9 Tiger might well be the plane demanded by the Admiral in the opening comment. But again, it may have been one of a half dozen futuristic designs now in production or on the drawing boards.

The previous pattern of production called for a prototype, which, if it flew and met design specifications, was then put into production. Too often production models developed "bugs," expensive bugs to exterminate. Modifications of the original design were then required. This not only slowed down production, but placed a burden on O&R activities and Fleet maintenance units. The new plan obviated these difficulties and presented the possibility of giving a completely tested plane to the operating forces.

Briefly, FIRM calls for a low rate of production on a new plane during the first three years, with all production going into a test program immediately. Fleet delivery of planes is withheld until the entire test work is virtually completed so that changes required, as a result of tests, can be made on the production line.

The vastly increased complexity of modern jets has made long range accurate forecasting of production deliveries extremely difficult for BUAER. In present combat aircraft, many of the complicated supporting components, particularly electronics and engines, must be selected while the components themselves are in varying stages of development.

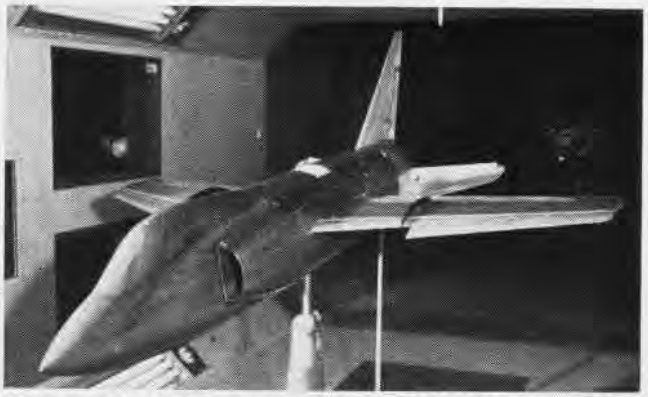
To reduce the problems of selecting components, a program is being proposed in which various types of complex equipment will be produced on a "pilot line" basis before they are selected for a specific aircraft installation. Attention is also being given to the matter of alternate or "back-up" installations, so that when serious developmental problems are encountered, a comparable item can be substituted without seriously retarding the airframe schedule.

Basic principles of FIRM were originally the subject of a presentation to the Air Board some two years ago by Capt. J. N. Murphy. The Navy first put production of certain models partially under the system, but future models will come entirely under it. The first production aircraft to come under the plan was the Grumman S2F-1.

BUAER requires accelerated service evaluation to demonstrate that the model is operationally usable prior to the commencement of Fleet deliveries, and to indoctrinate selected Fleet personnel in its operation and maintenance. This assures high-quality, standardized aircraft, reduces the likelihood of costly modifications, and permits the most economical production program. Any acceleration of the production schedule will be delayed until the Fleet-ready configuration has been established by the test program.

The Navy policy further requires that specified contractor tests and demonstration of a new aircraft be completed prior to the delivery of any airplanes to the Navy for accelerated service tests and trials. By utilizing a larger number of test planes, the required testing is accomplished in a much shorter time than would otherwise be possible. It is not necessary to take airplanes off flight status for extended periods during a program to change the test instrumentation configuration for the following phase. The most urgent tests can be transferred to another instrumented plane in the event of unexpected delays in the program.

WIND TUNNEL MODELS ARE MADE TO SCALE FROM DESIGN PLANS



SCALE MODEL WIND TUNNEL TESTS PROVE DESIGN THEORIES

TEST PILOT FOLLOWS PROGRESS FROM MOCK-UP TO FLIGHT TEST

STATIC TESTS ARE MADE TO SEE IF STRENGTH CAN MEET LOAD

TYPICAL scheduling on a new carrier aircraft put in production is as follows:

- The first six aircraft would be assigned to the contractor for general performance and flight safety test demonstrations. Any modifications found necessary during these and subsequent tests are incorporated in the production line.
- The next seven would be assigned to the Navy Board of Inspection and Survey for trials and for determination, as required by Navy regulations, of the fulfillment of contractual guarantees and Fleet suitability.
- The next four would go to the Naval Air Test Center, Patuxent River, for accelerated evaluation and service tests.
- The next six planes would be assigned to Fleet introduction test program, normally at Patuxent River. The operational objectives of this phase of test work are to determine the service acceptability of the plane for immediate introduction into the Fleet as an operationally suitable aircraft to perform its designed mission; and to transfer to Fleet operating personnel (both pilots and ground crews) the technical know-how on operating techniques and maintenance procedures for the new craft and its installed equipment. Fleet operating and maintenance personnel will be brought to Patuxent River for this phase.

The "Fleet Introduction" phase consists of reaching the pre-determined goal of a set number of flight hours. Working hours typical of a squadron undergoing training are followed. Sometimes it is necessary to vary work days and hours in order to achieve the hour goal and the target date of completion. In addition to training Fleet pilots and men, information is obtained on aircraft availability, usage data on all spare parts, operational difficulties and operational techniques peculiar to the aircraft. During this period of the project, maximum assistance is made available to Fleet pilots and ground crews by the Naval Test Center, the airframe and engine contractors (including field service representatives), and airplane equipment contractors' representatives.

First plane to come fully under the new plan, from "go ahead" to production deliveries to the Fleet, was the North American FJ-3 *Fury*. The Fleet introduction test phase took place at NATC PATUXENT RIVER from August 7 to September 17 1954. Fleet pilots from both East and West Coast carrier squadrons, as well as maintenance personnel were brought to Patuxent. In addition, some service test pilots from Patuxent were used.

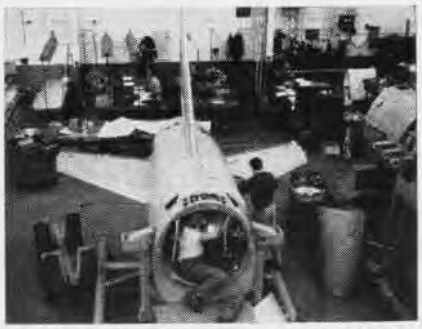
IN THIS six-week period, with six FJ-3 aircraft available, a total of 803.4 hours was logged on the test program. This clearly proved that the plane was ready for Fleet deliveries. This fighter began appearing at Fleet installations shortly thereafter.

On the basis of satisfactory release of the aircraft after the service test, production is accelerated consistent with the number required. Later changes found desirable can be incorporated in the program without seriously disrupting production. On the other hand, should any of the test phases show a major design deficiency, production can be economically held at a low level until corrective measures can be taken, without a costly and time-consuming program of modification for large numbers of completed planes.

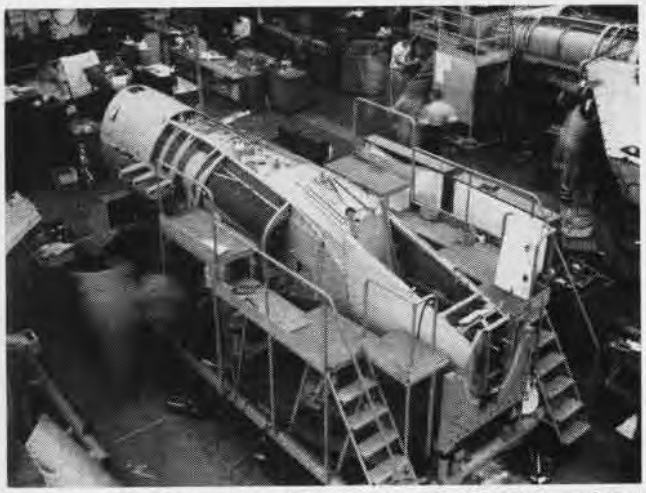
Contractor tooling problems have long been a financial

FINAL DRAWINGS ARE MADE AND RELEASED

WORK BEGINS ON PROTOTYPE NOSE UNIT

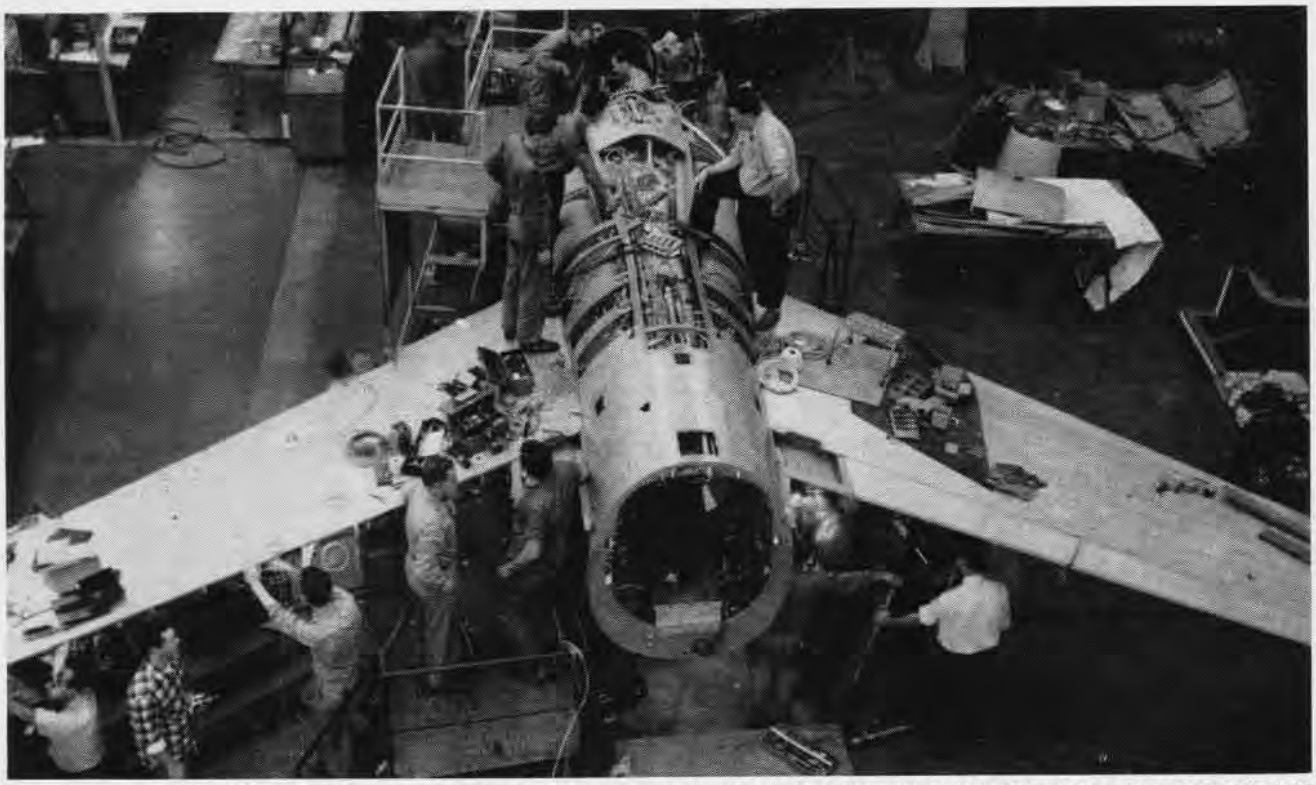


SUB-ASSEMBLY WORKS ON A TAIL SECTION



A TIGER HAS BEEN BORN—AND BEGINS ITS GRADUAL GROWTH

AND IT KEEPS ON GROWING. THIS IS THE TIGER PROTOTYPE



AS THE TIGER BEGINS TO TAKE FORM AND MATURITY NEARS, THE WORKERS BEGIN TO TAKE FATHERLY PRIDE AND DEEP INTEREST

FINALLY COMES THE DAY TO FEED FLEDGLING AND MAKE IT FLY

TEST PILOT H. C. (CORKY) MEYER PREPARES TO FLY THE TIGER

bugaboo, but with the advent of FIRM, many of them have been resolved. In the past, the standard procedure for tooling a new aircraft design consisted of building the initial "X", or prototype model by "job shop" methods, "stop gap," or temporary techniques. This was followed by the construction of "rate type" production tooling when a quantity order for the aircraft was placed.

Manufacturing difficulties experienced with heavy wing skins, large forgings, etc., of the type required for transonic and supersonic aircraft made the "job shop" methods extremely costly and inefficient. The makeshift tooling used in constructing the initial aircraft could not be used for production runs, and was therefore a completely non-recoverable cost. Further, the construction of a modern aircraft by "stop-gap" methods is an extremely costly operation because of the complexities of the structures involved.

In order to make the transition from prototype to quantity production more economical, increased stress is being placed upon designing the initial article for quantity production and producing the early aircraft on tooling designed accordingly. Although this makes the initial phases of the program more costly, it is, in the long run, economical. Tooling constructed for quantity production which will come later represents a recoverable cost. Such tooling can be supplemented or duplicated to accommodate any desired production rate.

The success of this procedure is entirely dependent upon careful preliminary design studies, wind tunnel tests and sound production engineering. The extremely high cost of modern aircraft warrants such action. Progress, very gratifying to date, is expected to result in a much more economical, efficient, and orderly introduction of new designs into full production.

Besides being a technically sounder and less expensive basis, the new plan gives the Navy a better chance to evaluate thoroughly a new product before actually committing large production funds. At the same time, the contractor has a more dependable goal for his own planning, resulting in more orderly and stable operation for the aircraft industry. And with rapidly advancing designs, leading to increased speeds and altitudes, such stability is highly desirable.

TEST OVER, HE IS CONGRATULATED BY RADM. APOLLO SOUCEK

GRAMPAW PETTIBONE

Mental Block?

A Weekend Warrior in a TBM-3S2 was completing a VFR cross-country night navigation training flight from a local Reserve Station. Arriving at his destination, he called the tower for landing clearance and proceeded as directed for a landing on Runway 22. Turning base he called "gear down and locked" and received final clearance to land.

The landing was normal in all respects, so the pilot reached down to raise the flaps. Shortly thereafter the

EEK! a Freak!

starboard gear collapsed, followed immediately by the port gear, and the aircraft slid to a stop with loud and unusual noises emanating from beneath the fuselage. A spot check of the flap handle revealed it to be in the "gear up" position.

The pilot states, "The above accident could have been prevented, in my opinion, by further cockpit separation of the operating levers for wheels and flaps. I remember definitely grabbing the outboard lever and operating it in belief that it was the flaps handle. Why would a pilot with over 700 hours in type pull such a trick?"

Grampaw Pettibone Says:

Well now, that's a new approach to an old problem. It sorta leaves you up in the air searching for an excuse, rather than pounding the table and shouting, "Why did you do it?" The question reminds me of a switchman on a local railroad years ago. For 15 years he opened and closed switches to put cars on and off sidings. For 15 years he wondered what would happen if he should pull the switch when a car was half on one track and

half on the other. The last I heard of that fella he was putting in his last few years in the baggage room.

But getting back to the accident, there are many reasons why a pilot will pull the wrong handle at the wrong time. Habit is one of them. You can fly out of one field for several months, and everything gets so routine it gets monotonous. You get so used to doing things without thinking that you begin to believe you'll never make a mistake. Then one day you find yourself coming into a strange field at night.

Everything is different. The Tower Operator has an accent, the runways don't look the same, the field elevation is 800 feet less, you wonder if there are any obstructions on the final, you even give a passing thought to taxiing and where you'll park. In other words you are forced to think a little, and it disturbs you for a while as Old Man Habit has been taking care of everything up to now. You even wonder if you have forgotten something and maybe, just maybe, you'll cheat a little and take a peek at the check-off list to make sure you're ready to land.

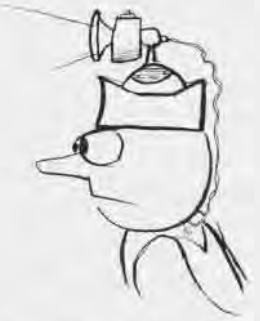
When you touch down and find yourself rolling along in good shape a weight lifts from your shoulders and you mentally sneer at yourself for such elementary thoughts. But the feeling is so good you get brazen, and do something you would never think of doing back at the home station. You reach for the flap lever. You know you shouldn't, but then that CNATRA instruction about not raising flaps was written for those hundreds of pilots who inadvertently raised their wheels during the landing rollout. Besides, no one could see your flaps in the dark. All you have to do is grab the wheel on the lever on the left, pull the safety lock aside and the flaps come . . . ooooOOPs!

How can an experienced pilot pull the wrong handle? It's easy son. When a pilot is in the act of doing something he *knows* he shouldn't do, ANYTHING can happen.

To the Rear . . . March!

Once in a blue moon an accident occurs which has no rhyme or reason. Such a one is quoted below exactly as written in the report:

"On the date of the accident, the SNJ-6 was being towed by a line tractor. The tow lines were connected to the two (2) main (front) wheels of



the plane. The tractor was approximately six (6) feet in front of the propeller. Speed of the tractor was approximately four (4) miles per hour. The driver states that while towing the plane he felt a 'thud' which caused him to stop his tractor. On investigation he found an injured man lying on his abdomen approximately two (2) feet behind the left wing of the aircraft. The time of the accident was 1825. The area was not well lighted. There were head lights but no tail lights on the tractor. There were no lights on the plane. It is noted that there was a heavy fog at the time of the accident. Improved lighting is recommended. This may be accomplished by putting flood lights on the rear of the tractors."

Grampaw Pettibone Says:

This will no doubt make it easier to find the bodies.

The Trusting Soul

An F9F-6 pilot made a landing at the Philadelphia International Airport recently. Now, an emergency landing is ordinarily made because of malfunction or failure of some system in the aircraft. In isolated cases, emergency landings are made when it becomes evident that in the event of an emergency, the emergency system set up for the emergency will not function. These are called precautionary landings. But it is anybody's guess what type of landing this was as the pilot stated he landed "because of a bouncing seat."

It appears there had been a slight delay in getting his plane ready for the flight, and he had expressed his impatience in no uncertain terms. Whether his impatience had any effect on what followed is unknown. However, it indicated haste on the part of the pilot, and he soon found himself in the air in the most unheard-of situation imaginable. The quickest and safest way out of the unusual situation was to get back on deck as soon as possible, which he did.

A check of the aircraft revealed a few major discrepancies in the ejection seat such as (1) the upper trunnion bolts fastening the seat to the catapult were not lock-wired, (2) the catapult firing mechanism was not screwed down tight against the cartridge face, (3) the firing head mechanism was improperly aligned, (4) the catapult holdback jaws were not engaged. This latter condition results in the revolting development of the seat and pilot not being fastened into the aircraft.

Grampaw Pettibone Says:

Great Balls of Fire! If I hadn't seen the official report on this, I would say somebody must be pulling my leg. How he ever got away from the line in the first place was not made known, but it's a lead pipe cinch that he didn't bother to preflight his airplane properly or he'd have discovered something wrong. He knew the mechs were installing the seat yet he asked no one if the job was completed. He didn't check the yellow sheet to see if it was written off as completed. In fact, I'll bet a ream of AAR forms he didn't even SIGN the yellow sheet.

This lad is a good example of the "Trusting Soul"—who gets away with everything in everyday life, but around airplanes he is like a giraffe. His neck is out all the time.

He knows he has an ejection seat and how to use it, but that is as far as his knowledge of the seat goes. He either thinks he will never be forced to eject, or he feels that when the time comes all he has to do is pull the lever and the curtain and out he goes. He doesn't want to clutter up his mind with incidentals such as how to make sure the seat will work in case he has to use it. Being an airplane driver he feels that his job is to fly the guns around, not maintain them.

With modern airplanes this is a dangerous attitude. You don't just set her down in some farmer's pasture any more when something happens and get by with a scratched wingtip. The modern plane is too heavy and too fast—not to mention the fact that the wingtip probably costs as much as the old time airplane itself. You have to know more than just enough to get by when flying jets, but that itself isn't such a large order.

If you know WHAT you have in your airplane and HOW to use it, all you have to do is make sure it is going to work when you need it and that is done in a preflight inspection. Of course, if you are from the new school you may think that it's getting so a pilot learns less and less about more and more until he knows nothing about everything. For the "Trusting Soul" that is probably true. But for the aviator who values his life and has enough pride in his airplane to want to bring it back in one piece, you can bet he is going to do a little checking around before he takes off.

He'll make sure someone else didn't overlook something, not that he doesn't trust them, but just as an added precaution. Besides, it's squadron doctrine. It is not how little you know that gets you in trouble, it's believing that what little you know is enough to keep you out of trouble that puts you behind the eight ball.

Jet Style Dilbert Dunker

VC-62 Adds Realism to Training

Cdr. W. D. Dietz, CO of VC-62, decided that his pilots must face reality in learning how to get free of a plane that has been forced down at sea. To develop this "realistic" phase of pilot survival training, he instructed Lt. Alex Waters and his crew to work out the details.

Heretofore the pilots had been going through the "Dilbert Dunker" in bathing suits, an old parachute harness with a block of wood on it and nothing else. This is a far cry from what a pilot actually wears while flying one of today's fast jets. The aviator's gear includes immersion suit, G-suit, parachute, hard hat, Mae West, oxygen mask and miscellaneous cords to disconnect or pull free.

Before VC-62's flyboys go into the dunker, however, each will be given the opportunity to walk around weighted down in flight gear on the bottom of NATTC pool while he breathes forced oxygen. Goggles with dark lens have also been added to give an illusion of depth.

When one of the pilots goes into the drink in the Dilbert machine, he will know that he has plenty of time to get free while breathing 100% oxygen.

Lt. Waters has made several trial runs in the dunker and he has begun to enjoy it. Every detail to make the training more realistic has been added.

Teamwork Saves Banshee

Jet Exhaust Extinguishes Blaze

A Marine captain flying with the *Black Sheep* squadron from MCAS KANEOHE BAY, recently performed a stunt that "takes the cake." He utilized the jet blast of his F2H *Banshee* to extinguish a fire in the engine of another *Banshee* flown by an Air Force exchange officer.

Marine Capt. G. O. Badger and AF Capt. Gene Johnson were on a routine training hop from the station. Over an island in the Hawaiian group, Badger radioed Johnson that he was experiencing engine trouble and was landing on the emergency strip at Barking Sands.

Badger set the *Banshee* down on the tiny strip to achieve a "first," the first time a jet had been landed there. Johnson followed him down to make sure he was all right.

Upon touchdown Johnson's jet engine started to blaze, cause undetermined, so Badger swung the stern of his *Banshee* around and revved-up the engine. The blast from his jet extinguished the blaze in Johnson's plane.

With the assistance of the station caretaker of the small strip, fuel was obtained to fly the jets back to Kaneohe, but they couldn't get the planes started. The station flew in a jet starter, then more trouble arose.

No equipment was available to unload the starter from the transport. A manure spreader was located in a nearby cane field, and arrangements were made to utilize it. The spreader was the same height as the transport's door. The starter was put on the spreader and transported to the two jets. The planes were started.

BADGER AND JOHNSON DID A NEW TRICK

Look, Ma, I'm an Aviator!

Eaglebeak Creator at NAAS Saufley

"Eaglebeak," the hawknosed little injun of NABTC fame, is a constant source of enjoyment to Naval personnel. He makes every mistake one would expect a knotheaded pilot to make but survives each encounter with the grim reaper. His antics point out what fledgling pilots in basic training should not do. Now his creator, Ltjg. Tony Couch, has begun a new series called "Dear Mom."

The "Dear Mom" series shows how safe it is learning to fly. The pointed-faced character illustrates the exaggerated efforts made by the students in their first attempts at formation flying, night flying, and cross country navigation. His cartoons are splashed with midair crashes, rickety planes, harassed instructors and confused students.

The last of the series of three skits was made for Barin Field where students learn gunnery and carrier qualifications. It is full of gun-happy students who spray the air with everything from bayonets to hand grenades in an attempt to fill target sock with holes.

A MOTORIZED *mule maneuvers the Navy's XFY-1 Pogo into position for housing in its unique hangar at NAAS Brown Field near San Diego. The tepee-shaped hangar on wheels enfolds the plane like halves of a clamshell and incorporates a triple-deck work platform for easy access to every part of the revolutionary new vertical take-off fighter. The Pogo's hangar is the smallest ever devised for a Navy plane. Built of steel framework and wood, the hangar is fire resistant.*

WEATHER BY THE NUMBERS

THERE is a new kind of numbers game today. It is legal. It is being played for great stakes. It is being built around that perennial gamble—the weather!

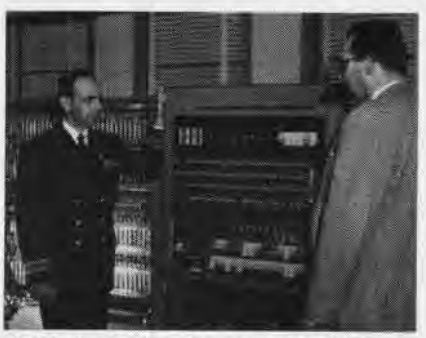
Weather prediction cannot be called an exact science. The weather observations are collected, plotted on a map, and the map is analyzed—all very scientifically. And then—and here is where weather prediction becomes an art—the forecaster, using today's analyzed maps, intuition and experience draws another map which is supposed to show what tomorrow's weather chart will look like. From this forecast map, he makes his weather prediction. Now a new tool is being designed to help him bridge the gap between today's map and tomorrow's.

This month the big IBM 701 Electronic Data Processing Machine is being placed in operation at the Weather Bureau facility at Suitland, Md. Called "Seven-Oh-One," it will be the heart of the Joint Numerical Weather Prediction Unit (JNWPU) established last July under the direction of Dr. George Cressman.

Actually the beginning of this present venture into weather by the numbers goes back to late 1946 when the Office of Naval Research established a contract with the Princeton Institute for Advanced Study with a view to developing electronic methods of computation for forecasts. Intensive efforts were begun under this Navy contract in 1947, and in 1951, the Institute's project in meteorology was supported also by the Geophysics Research Directorate of the Air Force Cambridge Research Center.

The whole group, led by Dr. John von Neumann, recently appointed to the AEC, and Dr. J. G. Charney, and staffed by some of the most promising younger meteorologists from over the world, developed electronic methods of numerical prediction.

By 1952 electronic machines had been developed to such a degree that researchers at the Princeton Institute, the Cambridge Research Center and several foreign universities had made a number of forecasts from past data using numerical techniques. So successful was the method that the Joint Meteorological Committee—Navy, Weather Bureau and Air Force—decided to put machine forecasting on a daily basis. Out of this came JNWP now housed in a new and modern building which is Weather Analysis Center of the Weather Bureau in Suitland, Maryland.



STICKLES, SMAGORINSKY AT THE CONTROLS

All this came about because of the progress made in electronic machines capable of handling data at terrific rates. The equations involved in determining weather forecasts have long been known, but there were not hands or heads enough to do it if the forecast decision were to be reached before the weather itself arrived.

IN 1922 Professor Lewis F. Richardson, an English scientist, published a book entitled "Weather Prediction by Numerical Processes." He proposed the first complete system of numerical prediction. The difficulty was that the number of computations required was simply enormous. Richardson himself made an estimate that indicates the scope of the problem. When Richardson was making his proposal, the tools of that day—slide rules and desk computers—and 64,000 men to use them would have given us weather forecasting on a world-wide scale within a reasonable period of time!

But now with Seven-Oh-One, Richardson's principles can be given practical application. His basic approach was sound, and the essential features of his approach to the problems of numerical weather forecasting are actually the basis of scientific forecasting as it is now being worked out.

JOINT Numerical Weather Prediction Unit is organized under a special agreement between the U. S. Weather Bureau, the U. S. Air Force and the U. S Navy.

The 30 professional meteorologists and mathematicians on the staff of JNWPU are divided into three sections: Analysis, Computation and Development. These sections are headed by Mr. Edwin Fawcett, Dr. Joseph Smagorinsky, and Maj. Phillip Thompson, USAF. The two operators of Seven-Oh-One are Mr. Harlan Vinnedge and Mr. Arthur Kneer. Program coders and Mr. George Collins, Dr. Isadore Silberman, LCol. Herbert Zartner and LCdr. A. L. Stickles. LCdr. Milton Moreland and Lt. William Hubert, USN, work in Analysis.

The Seven-Oh-One, now undergoing tests in preparation for full-scale operations, will compute and prepare the data which the weatherman needs and uses, showing pressure, temperature, precipitation and large-scale vertical air motions.

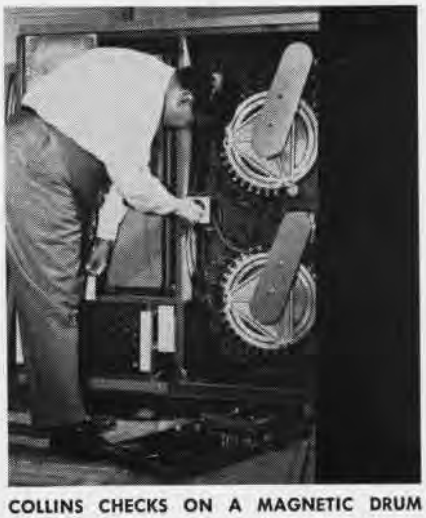
Using the machine, the weather forecaster will be liable to fewer big misses —miscalculations of storms just being born or of paths of storms. The machine will take away much of the drudgery and uncertainty of the forecaster's work, freeing him to do the work he alone is capable of doing. He will have more time to take into account such local variations as near-by mountains, valleys, coastlines and tailor his forecasts to meet special requirements.

Type 701 which makes this new day possible is a general purpose digital computer utilizing electronic tubes, magnetic drums and high-speed magnetic tapes on which to store the information and orders needed to solve the atmospheric equations of motion. Some people have mistakenly called such a machine an electric brain, but actually it is no such thing. Although the machine is capable of extremely rapid calculation—2,000 multiplications per second—it must depend on the human brain for direction.

As someone has put it: "This machine or any other electronic computer cannot stand any sort of comparison with the human brain. The machine can best be visualized as some sort of gigantic, fast, desk calculator. It is a stupid creature and cannot do anything for which it does not have detailed and explicit instructions."

This means that the computer must be given instructions in terms of elementary additions, subtractions, multiplications and divisions. Following in proper sequence its instructions, it will do an addition of two numbers, then a multiplication of two other numbers and so forth, through millions of arithmetical operations until it arrives at the solution of the equations. Thus the preparation of the instructions for the machine is tremendously involved.

OPERATOR PUNCHES DATA ON IBM CARDS



COLLINS CHECKS ON A MAGNETIC DRUM

STICKLES, HUBERT OPEN MEMORY DRAWER

It is the task of the Computation Section to prepare the sequence of orders which the computer must follow in order to feed itself the necessary data, solve the equations and check itself. Part of the program or "code" will cause the "output" to appear as a weather map that is ready for immediate use by a station forecaster.

The information fed into the 701 is obtained from observations assembled by teletype from all the corners of the Northern Hemisphere. The amount of data received by the Analysis Section in the form of surface synoptics, radiosonde soundings, pilot balloon soundings and aircraft reports is tremendous. At present, these reports are sorted by hand and plotted on charts which are then carefully analyzed. The input data are then read from these charts, checked by hand, punched on cards and fed into the machine.

All this preparation consumes time, too much time when compared with the few minutes needed by the machine to perform the thousands of elementary operations to compute the results. Plans are therefore being completed to tie the Seven-Oh-One in with the teletype on which data is forwarded so that it can do its own data sorting, analyze the preliminary weather charts, pick off the information it needs and feed itself these data. One enthusiastic weather predictor says, "Give us the loud speakers and we can make it sing 'Stormy Weather.' "

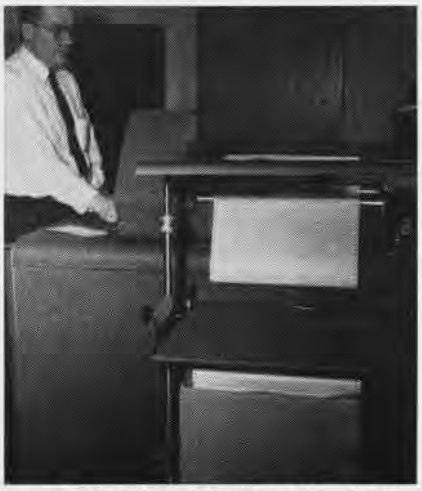
Essentially, the machine uses the equations which have been fed into it to show how a "model" atmosphere having the characteristics of today's weather will change over a 24-hour period. The accuracy of the result depends upon how close the model is to the real atmosphere.

Right now, JNWPU is determining which "model" of the atmosphere is most suitable for operational use. It is probable that the unit will start operations with a relatively simple three-level model which will yield prognostic charts for the constant pressure surfaces at 24,000, 10,000 and 5,000 feet and the earth's surface and mean vertical velocities between these levels.

Once Seven-Oh-One is fully operational, it is only a matter of time until computations will be sent out to weather stations all over the country by either code or facsimile transmission just as it is done now over a wide teletypewriter circuit.

What the Navy aimed to do in 1946 when it initiated the ONR contract with the Princeton Institute for Advanced Study has been accomplished. While it is true that there are still problems to be solved and new measures to be taken, the hard, pioneering part of the work is over and the tremendous potentialities of numerical weather forecasting, so long dreamed of, may well be within reach.

MORELAND AND COLLINS STUDY PROBLEM



KNEER OBSERVES WEATHER DATA PRINTER

ELECTROSTATIC MEMORY UNIT SHOWN HERE

VF-22 HOLDS LATEST NANEWS DEW JUG

CRACK ORDNANCE CREWS, HOT PILOTS AND EFFICIENT CREWMEN MADE VF-22 A NATURAL FOR THE SECOND 'DEW JUG' AWARD

Fighter Squadron 22 has come into possession of NANews' latest "Dew Jug". The squadron's high score of 47.9% was won last June when the squadron was flying the F2H *Banshee* at Guantanamo Bay. At that time, LCdr. M. J. Wooley was CO.

At ceremonies a few weeks ago at NAS Jacksonville, the present commanding officer of the squadron, LCdr. J. C. Davis, Jr., received the award from Capt. R. O. Greene, Chief of Staff, ComFAirJax.

At the same time, Ltjg. "Shootin'" Sam T. Martin, high man in VF-22 and the Navy, accepted a smaller version of the latest of the brown jug series for his remarkable high of 80.7%. He was also awarded an individual "E" for his proficiency in aerial gunnery along with two other squadron members: Lt. W. M. Russell with a score of 74.1% and Ltjg. W. K. McManus with 65%.

BARFIELD, MARTIN, CASPER AND KOEHLER

The first squadron winner in the Dew Jug series was VF-81; the first individual winner, LCdr. J. W. Lankford.

Success of VF-22 in markmanship is properly shared by the squadron ground crewmen and ordnancemen, such as J. W. Casper, AOC, R. L. Barfield, AO1, and J. D. Koehler, AO1, who worked long and hard to keep the guns in top firing condition.

Navy and Marine squadrons are eligible to enter competition. Henceforth rules for competing will be in accordance with regulations set forth in FXP-2 (Naval Aircraft Exercises).

Squadron CO's and group commanders are invited to submit by 1 July 1955 to the Chief of Naval Operations, Op-561E, Navy Department, Washington 25, D. C., claims for new records made by either squadrons or individuals on the basis of rules set forth in FXP-2 (Air-to-Air Fixed Gunnery) for the 25,000 foot altitude only. All claims will be checked by Cdrs. L. B. Libbey, A. "Ace" Johnson, and Maj. C. E. Call.

If the record submitted is a winner, the Dew Jug will be forthcoming.

CDR. HOWLAND, CAG-4, WAS ON HAND

Squadron Honors
Fighter Squadron 22
47.9%

Individual Honors
Ltjg. Sam T. Martin, Jr., VF-22
80.7%

THESE MEN DETERMINE GUNNERY RECORDS

WV-2 Locates Downed B-47

Three Survive Crash of Stratojet

A WV-2 from NATC PATUXENT RIVER played an important role in the rescue of three Air Force survivors of a B-47 *Stratojet* which crashed in the wilderness of northern Saskatchewan in early February. The WV-2 and a P2V-7, which also assisted in the search, were engaged in cold weather operations at the Canadian Joint Training Center at Rivers Camp, Manitoba, Canada, when the call was received.

The two planes were assigned search sectors along with other planes assigned to the mission. After completing about 60% of the sector, Cdr. K. S. Scott (MC) and E. S. Patterson, AT2, crew members of the WV-2, spotted smoke while their plane was flying at an altitude of 1,000 feet, 250 miles north of the training center.

Lt. R. M. Davis aboard the WV-2 picked up a message from the survivors who were using walkie-talkies, but was unable to communicate with them. He alerted the nearest town, The Pas, about 80 miles away. Then the plane orbited until two *Dakotas* from the Search and Rescue Unit of Winnipeg arrived and took over.

The B-47 was on a routine training mission when it crashed in weather that was 25° below zero. Three of the four crew members survived the crash.

T-3 Reoccupied in April

Scientists Will Stay Until September

The floating ice island in the Arctic Ocean known as T-3 or "Fletcher's Ice Island," was reoccupied in April by a small scientific party of the USAF Air Research and Development Command.

Purpose of the re-occupation is to continue scientific studies already started in the Arctic area between Northern Canada and Greenland. The team headed by Mr. Albert P. Crary, geophysicist from the Terrestial Sciences Laboratory of ARDC's Cambridge Research Center, will remain on T-3 until the first of September.

The scientists will study the island through surface and subsurface observations. They will also study marine biology of the Arctic Ocean and gather miscellaneous geophysical data, such as gravitational, magnetic and oceanography aspects of the island as well as sea depths and ice thickness.

SNORKELS FOR THE SKY AND THE SEA

Navy's new flying radar laboratory, the R5D2-2, provides a new silhouette in the skies which echoes the new look in submarines as exemplified in the USS Nautilus. The aircraft's 'snorkel' can be raised and lowered in flight, but it leaves all submerged runs to the undersea ships. Actually the mast houses meteorological instruments. The Naval Research Laboratory is using the R5D2-2 as a special tool to probe the skies and gather data on radar and radio wave propagation.

BTU-1 Sets Flight Record

8055 Hours Logged in Day Flying

Pilots of BTU-1 at NAAS WHITING FIELD broke all station records when they flew a total of 8,054.8 hours during the second week of March. The previous record of 7,889.2 hours was set in June 1954.

In addition to the new flight record, 88 student pilots made their first solo flight and 75 students completed the primary stage of basic training.

When the last of the SNJ's were back on the flight lines, not only had new records been set for aircraft hours, solos and student completions, but 5,885 instructional hops had been flown and more than 36,000 landings logged.

Eighty-five percent aircraft availability made the records possible. Airplanes were used on an average of 5.75 hours daily with some of the SNJ's in flight as much as eight hours a day.

Weekend Warrior NEWS

CDR. REMMERT'S BARTU, NEW YORK, HAS GROWN SINCE THE MARCH '54 COMMISSIONING

BARTU IS RESERVE CORPS OF EXPERTS

If the Navy recruited members for the Bureau of Aeronautics Reserve Units with a classified ad, it would read something like this: "Wanted—1,000 experts. If not a specialist, do not apply."

The Navy's policy that the men and women of its active forces must be backed up by a vital, trained reserve, ready for action with a minimum of training, applies equally to all of its far-flung activities—fighter plane, or factory, typewriter or tender, desk or destroyer escorts.

Still uncomfortably fresh in the minds of everybody at BuAer is the memory of the problems of obtaining qualified personnel for the Bureau and its field activities at the beginning of WW II. Even though a large number of persons voluntarily offered their services, it was very difficult to find qualified personnel to do the technical jobs concerned. People, yes, enthusiastic, patriotic people, but no expert technicians! With guns roaring, and bombs falling in a shooting war, there's little time for the bottleneck-producing process of training a man to be a specialist in creating tools of war. With a shudder at the recollection of 14 years ago, BuAer is determined not to be caught again with its reserves down.

In case of mobilization, there are approximately a thousand officer billets in the Bureau of Aeronautics and its field activities which must be filled by Reservists now on inactive duty. It's as if the Bureau has a thousand piece jigsaw puzzle to solve. The spaces on the board are the thousand billets, each with certain dimensions. The problem facing BuAer is to fit the pieces of jigsaw puzzle into the spaces, that is, to find the person with the exact dimensions, qualifications-wise, to fit each of the 1,000 jobs.

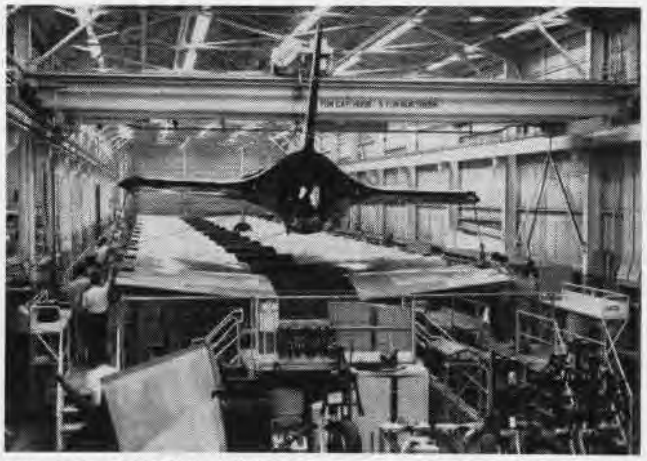
This is where the Bureau of Aeronautics Reserve Training Units (BARTU's), fit into the picture. Conceived by RAdm. Paul E. Pihl, former BuAer General Representative (BAGR) at Dayton, Ohio, the BARTU's, relatively new as Reserve units go, make up an elite corps. They are the reservoir of trained specialists who will move in and assume duties within BuAer, beginning with Mobilization Day. With the blessing of CNO and upon request of the then BuAer Chief, RAdm. T. S. Combs (now Vice Admiral), the first BARTU was formed on 20 May, 1953 at Cincinnati, Ohio.

Geographical location of the units is in line with certain determining factors: They must be formed where a sufficient potential of qualified personnel is available. They must be near a BuAer activity which they will support. They must also be based close to a NARTU or an air station of the Naval Air Reserve Training Command, through which CNARESTRA exercises military command and administrative supervision.

Like any other command in the Navy, a BARTU is a military organization with a commanding officer, executive officer, and an allowance of officers who have military duties to perform. Members of the unit have such billets as personnel, maintenance, electronics, training, all of which must be filled. In a BARTU, however, these officers are also qualified for mobilization into a BuAer billet. Reserve units, consisting of 33 officers and seven enlisted men as regular members, with additional officers as associate members, exist solely for their planned contribution to BuAer's wartime needs. There are no unit-level restrictions as to the number of members in one specialty in the unit.

As the sponsoring agent, BuAer does its share of groundwork necessary to uncover the specialists in each area that give promise of being able to support one of these elite units. BuPers records, with IBM selector cards, are first called into play in a search for Reserves, not attached to drill pay units, from ensign through commander, who possess specialist qualifications desired by BuAer. A conservative average of six weeks' time

COLUMBUS UNIT VISITS PATUXENT. NOTE READING MATERIAL!



F4D TAIL ASSEMBLY INTERESTED BARTU ON EL SEGUNDO VISIT

is necessary for this preliminary sifting of records.

To those officers selected go letters of invitation to a first exploratory meeting. Further BuAer assistance entails careful study of personal data furnished by the officers, resulting in hand picking of each person. Notification of selection, and a second meeting for BARTU organization follows.

The qualifications for these specific BuAer mobilization billets may result from several sources, civilian or military experience, or education. Not uncommonly are found on the personal data sheets a Ph.D. or two master's degrees from technological colleges—oftentimes with *magna cum laude* or *summa cum laude*.

Training to acquaint the BARTU members with organizational and administrative matters in the Naval Establishment and the Aeronautical organization is accomplished during semi-monthly training periods. Technical information and practical application of their specialties is usually reserved for annual training duty.

Regular members attend 24 training periods each year, 12 with pay. All contribute to promotion and retirement. Annual active training duty, with pay, is provided, on an individual basis, with each member taking his training in his mobilization billet.

Field trips are arranged by the BARTU's themselves for their own unit. These visits aboard ship, to various leading aircraft manufacturers, or to the Navy's technical aviation activities, such as NATC Patuxent or O&R San Diego, present opportunities for BARTU members to be kept abreast of today's aeronautical developments.

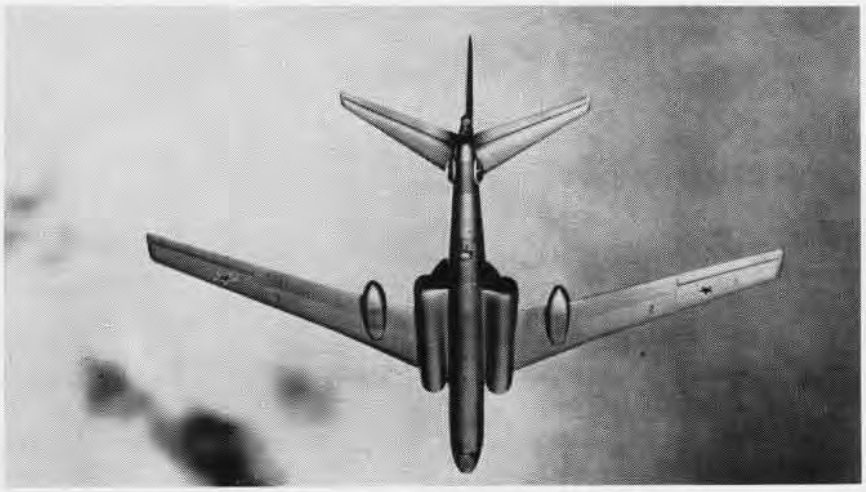
Sparked by BuAer, the BARTU program is attracting members from among top-flight technicians throughout the United States. In the short 24 months since organization of the first unit at Cincinnati, nine others have been put in commission: Chicago, New York, Philadelphia, Los Angeles, Pt. Mugu, Oakland, Cleveland, Detroit, and St. Louis. Additional locations are now being considered at Norfolk, Anacostia, Boston, Trenton, Johnsville, Richmond and Dallas.

Two more units are needed on the West Coast, one at San Diego, and a second, possibly, at Los Angeles. With the commissioning of these two, the West Coast requirements will be filled. When BARTU Dallas is established, all the requirements of the Middle West will have been cared for. Under provisions of present planning, the remainder of the units will be established along the East Coast to provide for the needs of that section of the country.

Membership in a BARTU is not a one-way street. Members give of their time, energy, and technical knowledge, hard won through years of study and work in their specialty. They can be depended on to serve if mobilization should come. In return, they profit from the many advantages of being an active part of the Naval Reserve.

At all times subject to the over-all needs of the Navy, these specialists, members of a BARTU, are assured of a mobilization billet that will take full advantage of their technical capabilities in the eventuality of conflict.

CDR. HOCKIN, CO, WITH LOS ANGELES BARTU-776 TOURED NAOTC, INYOKERN, CALIF.



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RUSSIAN BADGER

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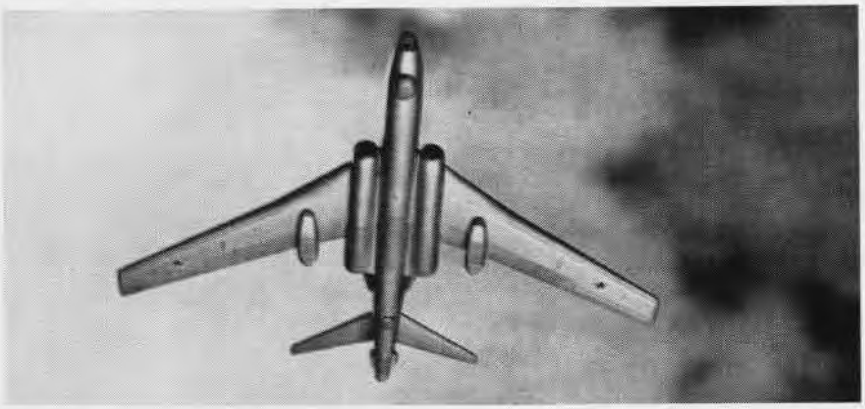

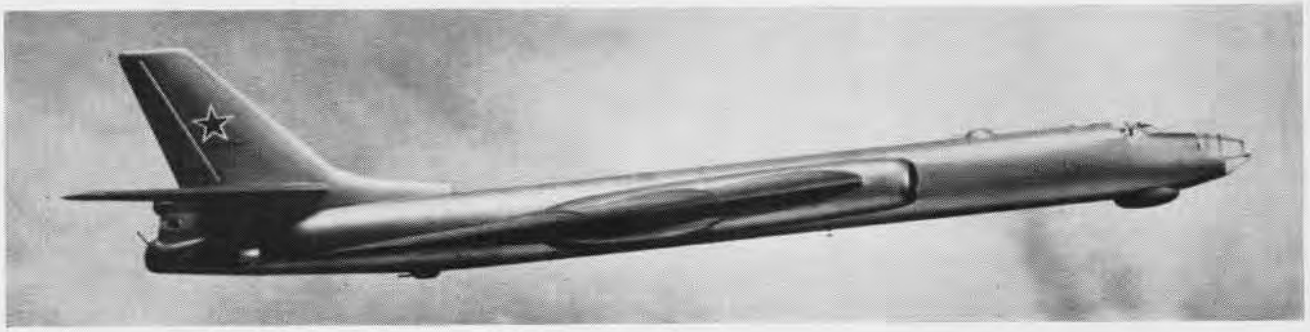

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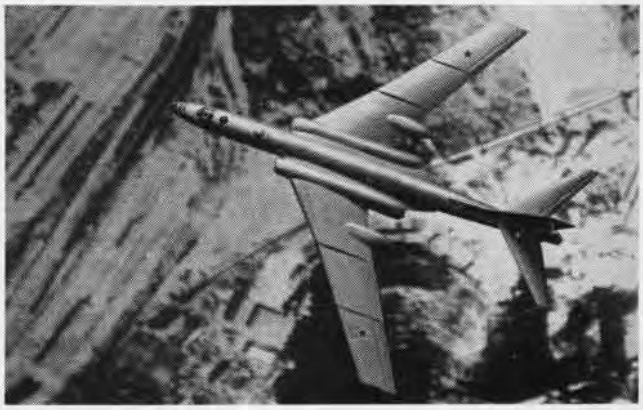
In size, range and performance, the Russian Badger has been compared to the USAF's B-47, and the British Valiant. The jet engine nacelles hug the long, slender fuselage. Note that the nacelles extend slightly forward of the leading edge, but well aft of the trailing edge. Pods, located outboard of the engine nacelles, house the landing gear. Wing plan reveals a break in the sweep of the leading edge and, viewed head on, shows marked cathedral or 'droop.'

Armament includes gun turrets on both the dorsal and ventral sides of the fuselage—something unique in jet bomber design—as well as a stinger in the tail. When viewed from the side, the tail seems extremely large. Its raked vertical fin is squared off on top. The horizontal stabilizer, swept back like the wing, is set very low on the fin.



TECHNICIAN *readies a missile model for wind tunnel test. Problems in missile design are under constant study in the supersonic wind tunnels of NACA's Ames Aeronautical Laboratory. Missile above has cruciform wings and tail, is one of numerous types being studied.*

FROM FANTASY TO FACT FOR FORTY YEARS

GENIUS is always ahead of the world. Galileo, da Vinci, Bacon, Newton, Edison, the Wrights, Einstein, all of them working alone were impelled by strength of mind and imagination to push ahead beyond the edge of the knowledge of their day.

Today, the debt of the world of science to these men and other forerunners is very great.

But while men have often worked alone fruitfully, there are instances where combining forces has yielded tremendous and valuable achievements. Just as the great scientists of the past were years ahead of their time, so was the National Advisory Committee for Aeronautics. From a standing start, just forty years ago, NACA forged forward, and in a few years it was ahead of the world. In 1955, it is still ahead.

Only a year ago, RAdm. Robert S. Hatcher, Assistant Chief for Research and Development of BUAER said: "The many accomplishments of NACA in the past have been the key to the development of superior naval planes.

"NACA research effort must be continued aggressively. The supersonic airplane, the high-performance seaplane, and the vertical risers were made possible, to a very large degree, by the application of earlier NACA research programs. . . ."

That statement, in paraphrase, has been duplicated many times during the past decade in comments by high-ranking officers of the military services.

This spring, the National Advisory Committee for Aeronautics is observing its 40th anniversary. A few days ago, past members of "the Committee," which is the 17-man group that functions as the policy-making board of directors of the NACA, were invited to attend the monthly meeting of the group. Afterwards there was a dinner in the Great Hall of the Smithsonian Institution. It was a private affair; the NACA believes it is serving best as a member of the nation's air team by performing instead of talking.

But even so, it may be in order to give a quick look back over the 40 years of NACA's history. One cannot help but be struck by the intimacy of relations between this little known but all-important agency and the Navy which began early in 1915, when the authorizing legislation, establishing the NACA, was attached as a rider to the Navy Appropriations Bill!

The original Committee, appointed in April, 1915 by President Wilson, was composed of 12 men. The Navy representatives were two—Capt. Mark L. Bristol and Cdr. Holden C. Richardson. Today's Navy members are VAdm. Thomas S. Combs and RAdm.

SMALL SCALE *model of the XP6M-1 Martin Seamaster is shown undergoing evaluation tests of hydrodynamic characteristics at a towing tank of the Langley Aeronautical Laboratory of NACA. Take-off and landing evaluation tests were made in both rough and smooth water.*

Lloyd Harrison, Deputy Chief, BuAer.

The first report the NACA published, also in 1915, was by a young Navy officer who was, at the time, detailed to the Massachusetts Institute of Technology where he was setting up a course in aeronautical engineering. That report was about stability and control problems of the JN-2, predecessor of the JN-4 *Jenny*. Today, the same aeronautical wizard, Dr. J.C. Hunsaker, is Chairman of NACA. His personal achievements during the past 40 years of NACA history were fittingly recognized last month when he received the Langley Gold Medal from the hands of the Chief Justice of the United States, the Hon. Earl Warren.

This was the first occasion since 1935 that the Smithsonian Institution has conferred this paramount aviation honor. Past winners of the Medal have included Wilbur and Orville Wright, Glenn Curtiss, Charles Lindbergh, Richard E. Byrd, Charles M. Manley, and Dr. Joseph S. Ames.

The early years of the NACA were a period of slow growth. At first, for several weeks, there was no paid organization. Members of the Committee serve their country without compensation. The first employee, hired in June, 1915, was John F. Victory. In 1917 he was named assistant secretary of the Committee; in 1927, secretary, and in 1945, executive secretary. In the latter capacity, with 40 years of unbroken service, he shares administrative responsibilities for operation of the agency with Dr. Hugh L. Dryden.

MULTIPLE *exposure flight photo of scale-model Convair XFY-1 in Langley full-scale tunnel.*

Dr. Dryden is the director of NACA. From 1918 to 1947, he concentrated on turbulence and boundary layer problems at the Bureau of Standards. Then he was called to NACA to succeed the late Dr. George W. Lewis.

It was not until 1920 that the first of the NACA's wind tunnels was placed in operation at the Langley Aeronautical Laboratory, near Hampton Roads, Va. But by the late twenties, the aeronautical research of the NACA had overcome the long lead which earlier had been enjoyed by the European nations. In 1929, *The Aeroplane* of Great Britain commented: "The only people so far who have been able to get something like accurate results from wind-tunnel experiments are the workers at the experimental station, Langley Field, run by the National Advisory Committee for Aeronautics."

This leadership continued well into the thirties. During this period, the NACA developed more than 100 wing sections or airfoils. The "two-thirty" series of wings were among the most successful, and became the most widely used wing sections in the world. In the years since, the NACA has continued to develop improved wing sections providing improved performance. For

VERTICALLY *rising model shown in hovering flight at the Langley Aeronautical Lab.*

the WW II period, low-drag airfoils with laminar flow characteristics were developed. Since then, emphasis has been on wings which would enable the supersonic speeds demanded, while at the same time assure good performance in the transonic and subsonic ranges.

DURING WW II, for the most part, the NACA had to switch its program from fundamental research to specialized research on projects to bring immediate improvement to military aircraft already designed. Fortunately, its work had resulted in accumulation of a considerable backlog of technical information awaiting use. High-speed propellers, new devices for maintenance of stability and control, improved systems for cowling and cooling engines, at high speeds, and special knowledge of structural elements—the results of basic research on fundamental aeronautical problems carried on for 20 years—all were available for ready use.

Working around the clock, seven days a week, the NACA between December 1941 and December 1944, made design studies and tests of 115 types of airplanes. In this work the NACA functioned in close collaboration with the technical branches of the military services, and with the engineering staffs of the aircraft and engine manufacturers. Month by month, the workload increased until, in July 1944, the NACA had 78 different airplanes under study simultaneously.

Of this period the late Frank Knox, then Secretary of the Navy, said: "New ideas are weapons of immense significance. The United States Navy was the first to develop aircraft capable of dive bombing; this was made possible by the prosecution of a program of scientific research by the NACA. The Navy's famous fighters—the *Corsair*, *Wildcat* and *Hellcat*—are possible only because they were based on fundamentals developed by the NACA. All of them use NACA wing sections, NACA cooling methods, NACA high-lift devices. The great sea victories that have broken Japan's expanding grip in the Pacific would not have been possible without the contributions of the NACA."

Development of the turbojet and rocket engines for aeronautical use presaged an aeronautical revolution which found most dramatic expression in the supersonic research airplane program conducted jointly by the Navy, Air Force, aircraft industry, and NACA—working as a team. The first supersonic flight was by a USAF plane, the Bell X-1, on October 14, 1947, and for this achievement, John Stack of the NACA was a co-winner of the Collier Trophy. In the citation he was credited with having conceived the program of the high-speed research airplanes. The two other co-winners were Lawrence D. Bell, president of the company which designed and built the X-1, and Major Charles E. Yeager, who flew the airplane.

In November, 1953, it was a Navy-financed airplane of the research series, the Douglas D-558-II, which made history. Piloted by Scott Crossfield, one of the NACA's aeronautical research scientists, it flew, for the first time, beyond a Mach number of 2, twice the speed of sound: Other Navy-supported aircraft in the high-speed research airplane program include the Douglas D-558-I and the Douglas X-3.

THIS *research model was used to study aerodynamic heating in flight recorded at Mach 5.6.*

RESEARCH *model of transonic airplane is being readied for flight from launcher by technician.*

Since WW II, the NACA has been pressing forward vigorously on two fronts: (1) gaining the new aeronautical knowledge that will lead to development of aircraft and missiles of even higher performance; and (2) providing the information, needed today, which can be used in exploiting the performance possibilities of jet and rocket and other forms of power.

At the Langley Aeronautical Laboratory, largest and oldest of the three major research establishments of the NACA, the range of problems studied includes, in addition to aerodynamic investigations ranging from low speed to hypersonic, hydrodynamics and struc-

ENGINEER *at NACA towing tank prepares model with hydro-skis for a speed test run.*

tures. Over 3,000 scientists and supporting personnel are stationed at Langley, which also operates the Pilotless Aircraft Research Station off the Virginia Coast, at Wallops Island, near NAS CHINCOTEAGUE.

At the Ames Aeronautical Laboratory, staffed by nearly 1,500, emphasis is on study of aeronautical problems. The 40 x 80-foot wind tunnel has a relatively low speed, but it is being used intensively in the study of the landing and take-off problems of supersonic aircraft. Some of the research facilities at Ames permit study of aerodynamic behavior at speeds beyond Mach ten, 7,600 mph at sea level.

At the Lewis Flight Propulsion Laboratory, power plant problems across

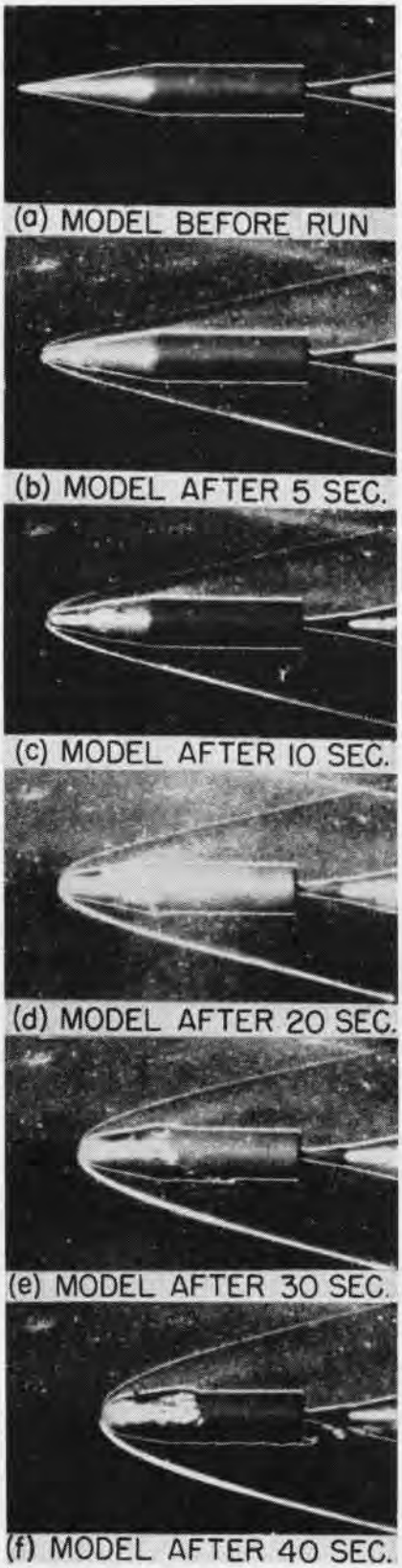
WIND *tunnel at NACA Ames Laboratory uses multiple-tube manometer, for recording tests.*

the board are investigated intensively by a staff nearing 3,000. Fuels and lubrication problems are matters of concern in addition to the many problems faced in the drive to develop engines more powerful and more efficient for tomorrow's aircraft and missiles.

At Muroc, the NACA has its High-Speed Flight Station where, in addition to the high-speed research airplanes, other supersonic and transonic aircraft are flown.

Beginning in 1945-46, scientists at NACA's Lewis Laboratory began fundamental pioneering work on the principle of afterburning. By burning additional quantities of fuel, aft of the turbine in a turbojet engine, power increases of as much as 100% are possible. The gains can be attained with only slight increases in weight of the engine. Today, many of the transonic and supersonic aircraft utilize the afterburner.

For nearly a decade, the NACA has



SOLID *conical nosed model shows effect of aerodynamic heating in low melting point alloy.*

been conducting basic research on the problems involved in an airplane which can take off and land, vertically. The development of the turbojet and turboprop engine has made such an aircraft, with all the advantages which vertical rising provide, an object of great interest. The Lockheed XFV-1 and the Convair XFY-1 embody basic information, especially concerning stability and control, provided by the NACA. So do other VTO's, now being developed.

Aerodynamic and hydrodynamic characteristics of flying boat hulls is another field of aeronautical interest intensively studied by NACA in the years following WW II. Whereas conventional flying boat hulls had a length-beam ratio of six, NACA demonstrated

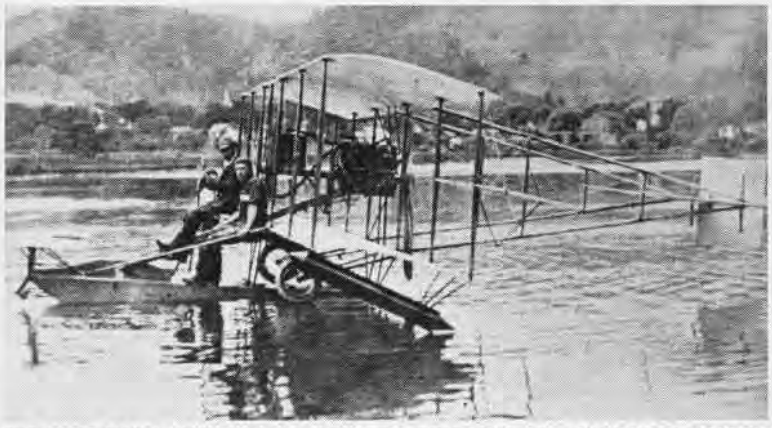
ENGINEER *operating rig used for studying film-cooling of combustors at the Lewis Lab.*

that large performance gains could be achieved through the use of hulls with length-beam ratios of 15 or more. The result of this work is reflected in such aircraft as the Marint P5M, the Martin XP6M-1, and the Convair *Tradewind*.

Research by the NACA led to successful development of hydro-skis, as exemplified by the Convair F2Y *Sea Dart*. This work, begun in about 1947, enables construction of high speed Navy aircraft capable of landing and taking off from water, snow or sod.

Other important, basic research by NACA has included such projects as a transonic compressor which makes possible turbojet development with higher inlet velocities and greater mass flow of the air; development of wing sections which are more efficient at transonic and supersonic speeds; and determination of the most efficient inlet design. Work on radical types of helicopters has been done for Office of Naval Research.

Almost FORGOTTEN EVENTS



THE FIRST NAVY PLANE WITH CURTISS AT CONTROLS AND PASSENGER ELLYSON

AN ANNIVERSARY CELEBRATED

On the afternoon of 5 May 1948, the first carrier-based jet squadron became carrier-qualified. After a minimum of eight take-offs and landings, every pilot from VF-17A and CAG qualified in the FH-1 *Phantom* jet aboard the light aircraft carrier, USS *Saipan* (CVL-48).

The month was appropriate, for 37 years before, on 8 May 1911, the Navy ordered its first aircraft, the *Triad*. Designated the A-1, it was purchased from Curtiss.

Specifications for the then novel craft were: "One Curtiss eight-cylinder biplane or 'Triad' fitted for rising from or alighting on land or water, including land equipment, water equipment, and combination equipment." It was to be outfitted with engine panels and chassis and four other interchangeable wing panels covered with rubberized linen on top and tight woven special sail cloth on the bottom. One main pontoon and a pair of balancing hydroplanes with wing pontoons and hydro-surface were called for to enable the machine to float on the water.

The *Triad* was to be equipped with metal tipped propellers designed for a speed of at least 34 mph. It was to have a capacity of one passenger who would be seated beside the pilot so that either could control the plane.

MCDONNELL'S PHANTOM WAS FLOWN BY VF-17A IN CARRIER QUALIFICATIONS

Mech Lauded for Heroism

Given Navy Marine Corps Medal

Last August Gerald H. Smith, AD3, of VF-44, risked his life when he jumped into the cab of a flaming jet fuel tank truck and drove it from a congested area near Hangar 115 at NAS Jacksonville.

Recently his heroic deed was officially recognized as he stood before the squadron and received the Navy and Marine Corps Medal for personal heroism from his CO, Cdr. C. A. Crow.

The medal, the Navy's seventh ranking decoration, was accompanied by a citation signed by the Honorable C. S. Thomas, SecNav, for the President.

Adding his comments to that of SecNav, Cdr. Crow said: "Your example will serve as an inspiration to all of us."

YOUNG SAILOR, OLD SALT SWAP SALUTES

Ready For Inspection, Sir

Los Alamitos Trains Them Young

When Admiral D. V. Gallery made the Annual Military Inspection of NAS Los Alamitos, a sailor whose name appears nowhere on the roster stood the inspection.

Six-year-old Bobby Wicks saw his father, Seaman Carl Wicks, polishing and brushing, getting ready for the big event. The youngster did the same, donned his sailor suit and, along with his father, reported for inspection the next day.

After exchanging a snappy salute with the friendly admiral, the next thing young Bobby knew, he had been hoisted aboard the reviewing stand, from where he could watch the sailors, including his father, pass in review.

PV-2 Harpoons Go to Japan

Planes to Serve in Anti-Sub Role

The Navy has delivered 17 PV-2 *Harpoons* to the Japanese Maritime Self Defense Force. The twin-engined *Harpoons*, especially designed for anti-submarine patrol, were flown to a Kyushu base of the JMSDF by pilots from VR-23.

Pre-flight maintenance checks were conducted by both Navy and Japanese crews prior to delivery on 1 April.

The planes were given to the Japanese under the terms of the MDAP.

CREWMEN READY PLANE FOR ACCEPTANCE

Two Services Use Seamew

RN and Coastal Command Order It

An announcement in the British Government's White Paper on Defense disclosed that the Short *Seamew*, an anti-submarine aircraft, is to go into service with the Coastal Command of the RAF as well as the Royal Navy.

The announcement emphasizes the importance of anti-submarine defense. The *Seamew* is also capable of performing efficiently a number of other roles, including close reconnaissance, coastal defense, communications, survey and gunnery spotting duties.

According to the News Letter of the Society of British Aircraft Constructors, the *Seamew* can be operated from beaches and golf courses as well as aircraft carriers. The *Seamew* does not need vulnerable concrete runways on which to land, and the modification required is simple—low-pressure, large tires which prevent the aircraft sinking into a soft surface.

The *Seamew* can carry torpedoes, mines, bombs, sonobuoys or rockets.

NAVY'S AEW BLIMP MAKES ITS DEBUT

CREWS AT MUNICIPAL AIRPORT STAND BY TO RELEASE ZPG-2W ON HER MAIDEN FLIGHT

A NEW weapon was added to the nation's arsenal when the U. S. Navy and Goodyear Aircraft Corporation unveiled the new look in blimps, the ZPG-2W. The blimp made its first public appearance in February during a flight test at the Municipal Airport, Akron, Ohio. With Goodyear test pilot Walt Massic at the controls, the prototype ZPG-2W was flown for four hours.

The ZPG-2W airship is a modified version of the ZPG airship which was initially designed for ASW operations, and recently established the 200-hour endurance record. The 2W modification incorporates changes in the electronic equipment which will increase AEW capabilities of the airship. The blimp's most unusual feature is a radome bubble, mounted on the top of the envelope which houses special electronic devices for aircraft detection.

The envelope, or bag, 343 feet long, is made of neoprene-coated fabric with a capacity of 975,000 cubic feet of helium gas. Four control surfaces known as ruddevators, are mounted on the stern of the ship at a 45° angle from the vertical and horizontal. Flight control features include autopilot with power boost or manual pilot operation.

The control car has two decks with all operational stations on the lower deck. The crew's quarters and galley are on the upper deck. Airship complement is 21 officers and men. The car is made of aluminum alloy sandwich construction with a balsa wood core.

Equipped with tricycle landing gear, the blimp's power plant consists of two Wright R-1300-2A seven-cylinder, single-row engines, mounted in an engine room within the car. Each engine can drive either or both 18-foot, three-bladed, full-feathering, controllable pitch reversible props, mounted on outriggers projecting from each side of the airship car. With a speed of approximately 70-knots, the blimp has the added advantage of being able to hover over given spots or maneuver at extremely low speed.

The ZPG-2W is equipped for inflight re-fueling; it can also take on ballast by means of a water pick-up system.

VMA-324 Sets New Record

Squadron Flew 114.7 Hours Daily

Marine Attack Squadron 324 set something of a record recently during maneuvers at Puerto Rico. In 22 days of flying, the squadron amassed 2,408.9 hours with a daily average of 114.7.

Providing close air support for Marine ground troops undergoing amphibious training, the squadron's "flyingest" pilot was Capt. R. E. Hemmingway with a total of 90 hours.

Squadron CO, LCol. K. L. Reusser, said, "The squadron has reached an excellent state of training. Much of our success is due to the quality of work performed by the maintenance section." His squadron is composed mainly of pilots with only six months of flight training.

Using 18 planes, VMA-324 flew night and day missions without a forced landing. Ground crewmen put in long arduous hours. For example, MSgt. G. Mora worked 20 out of 24 hours daily.

Colonel Serving with VX-6

Kolp to Serve as XO in Antarctic

Summer heat will pose no problem this year for LCol. H. R. Kolp, Marine Logistics Officer, who has been assigned as the lone Marine member of VX-6. This recently commissioned squadron will be a part of Task Force 43 of the projected Antarctic Expedition *Deep Freeze*.

The squadron is scheduled for cold weather operations both in Greenland and the South Polar region as part of the Navy's Antarctic expedition of 1955-56.

Kolp left his old job at MCAS CHERRY POINT recently to join VX-6 which is being trained and equipped at NAS PATUXENT RIVER. He will serve as XO. One month will be spent on the Greenland Ice Cap to acquaint the squadron with cold weather conditions. After returning to Patuxent River, VX-6 will be outfitted and equipped for the South Pole project.

VX-6 was especially commissioned a few months ago to form a logistical service for the expedition. They will furnish supply drops to areas inaccessible to other modes of transportation.

Helicopter 'Scoop' Rescue

Method Developed to Save Injured

The Royal Navy has been developing new methods of helicopter rescue. Trials recently took place in the English Channel. The commander of an air/sea rescue unit is credited with the invention.

Intended for rescues from water where the victim may be struggling or injured, the device consists of a scoop net for lifting instead of the usual method of securing a strap or sling around the waist or shoulders. The net is attached to a tubular frame in the form of a D which is lowered from the helicopter, straight edge downward, into the water, where it is stabilized by a drogue.

Moving at walking pace and at a height of about 25 feet, the helicopter trails the net, with only the arc of the D above water, until it is under the survivor. He can then be drawn up into the aircraft or, if badly injured, remain undisturbed outside.

In the trials, over 100 live pick-ups were made—at the rate of 12 within 20 minutes on one occasion. The "rescued" described the ride as very comfortable.

TALL TAILS

MAMMOTH *size of the high T-tail of the P5M-2 Martin Marlin is shown as two men stand on it. This is one of the first of the new planes to be assigned to San Diego patrol units.*

AN AIR FORCE *ground crewman is dwarfed by the gigantic size of the Air Force's H-16, 40-passenger helicopter at the Philadelphia Airport. The 'copter weighs over 30,000 pounds.*

'Copter Pilot Commended

Saves Vessels from Destruction

Lt. J. B. Simon has been commended by ComCarDiv 14, Capt. Harry E. Sears, for the part he played in saving two merchant vessels from possible destruction. He is a Naval Reserve helicopter pilot attached to HU-2 Detachment 50, aboard the USS *Antietam*.

Simon received his letter of commendation for successfully depositing emergency crews on board two abandoned vessels in Genoa Harbor during the worst storm to hit that port in 60 years. His actions contributed materially to saving the vessels, SS *Atlantic Lord* and SS *Giovi*, from further damage and possibly complete destruction.

The *Antietam* recently returned to Quonset Point after operations with the powerful Sixth Fleet in the Med.

Scientists Solve Mystery

AML Men Identify Source of Sludge

Sludge was found in the intake pipe of an R4D-2 airplane engine during maintenance at NAMC MUSTIN FIELD. In order to determine the cause of this condition, and eradicate it, repairmen had first to determine what the sludge was.

A spectrascopist from the Naval Aeronautical Materials Laboratory was called in to assist in identification. At first it was thought that a preservation compound might have been the cause.

The technician used a spectograph, "mechanical eyes" that see and photograph the light given off when materials are burned. Each metal produces a spectrum which has a characteristic pattern and, therefore can be identified by this pattern, just as people can be identified by their fingerprints.

The patterns (spectra) of the sludge and the preservation compound were not similar. This indicated that the preservation compound was not the cause of the trouble.

Other materials thought to be possible causes of the sludge formation were lined up for examination. Finally one material proved to be one of the causes, but were there others?

The spectroscopist used other kinds of mechanical eyes, one designed to detect material other than metals. A "finger print" was observed that was characteristic of a non-metal—a thiokol—a plastic material. This checking revealed that a thiokol-type sealant was used in the tank, and it was suspected that aromatics in the gasoline caused deterioration of the tank sealant.

Thus the spectroscopist found an answer which could not have been obtained by ordinary chemical methods.

R3Y-1 Makes Speed Record

Makes Continental Run in Six Hours

The Navy's R3Y-1 *Tradewind* recently spanned the continent to set a new unofficial speed record for transport type aircraft. The big seaplane flew some 2,400 miles, from San Diego to Patuxent River, at an average speed of 403 mph at an altitude of 27,000 feet.

The *Tradewind* is powered by four T-40-A-10 turboprop engines, each rated at 5,500 hp. She is scheduled for a series of tests and evaluations at NATC.

FEATHERWEIGHTS VERSUS HEAVYWEIGHTS

A 40-OUNCE HAWK CAUSED THIS DAMAGE

UNEXPECTED 'PASSENGER' CRASHED IN HERE

FLYING right out of their corner into the aerial fray, birds are making their mark and losing their lives in the unequal struggle. Birdwatchers may lament this—and so do the pilots, for there are dangers once undreamed of as featherweights and jets collide.

GULL SMASHED F9F-2, TRIMMED HELMET

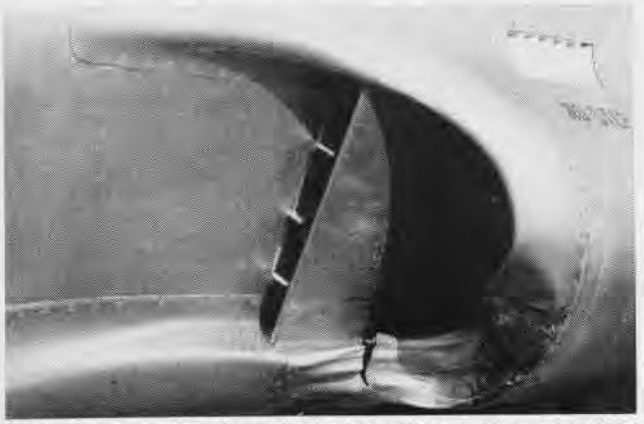
It is readily acknowledged that only a bird of the sternest mettle can remain unruffled at the roaring passage of a multi-engine airplane which hurls itself through the air. On the other hand, it's a cool pilot who can brush a fistful of pinfeathers from his brow and continue piloting in the drafty confines of a cockpit recently kamikazed by a berserk buzzard or gullible gull.

These pictures illustrate the amount of damage that the "featherweights" can do to the "heavyweights." Even a featherweight packs a wallop when the heavyweight is going at tremendous speed. The frequency of this kind of collision warrants caution.

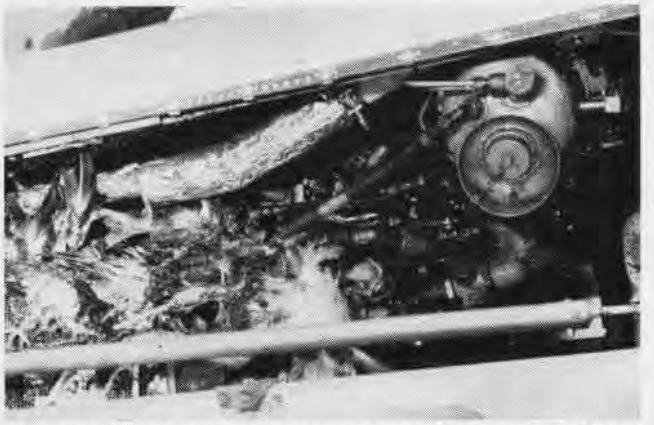
The pilot who wishes to become "the oldest living aviator" will make sure that he is prepared to deal with the emergency. Damage may seem to be superficial when actually it is critical. In event of collision the pilot of the "heavyweight" must check all visible surfaces. When available, a wingman will carefully check and double check.

The pilot will then climb to a safe altitude and thoroughly check the airplane in all attitudes. Where any doubt exists as to the extent of the damage, the pilot should land as soon as practicable for a complete airplane inspection.

SNB STABILIZER SHOWS GULL'S SAD TAIL



DAMAGE IS SHOWN WHEN HAWK WENT INTO A TV-2 JET INTAKE



AND THIS SHOWS HOW THE HAWK FARED AFTER THE COLLISION

AND THERE I WAS ...

Ice Cream for All

It was Sunday, and the *Kula Gulf* (CVE-108), her destroyer escorts and the "enemy" submarines, among them the USS *Torsk*, had just completed anti-submarine exercises in the Atlantic.

With tact and diplomacy, the *Torsk* sent the following message to the carrier.

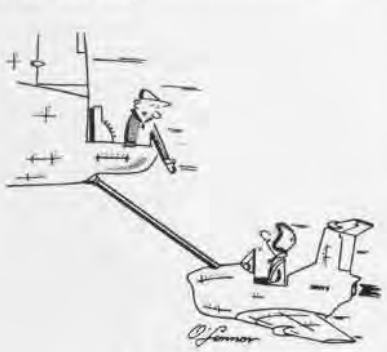
"All week long you've had your fun,
All week long we've not seen the sun,
All week long we've had a dream—
It's been of creamy cold ice cream,
Just 20 gallons do we esteem."

No duty poet was on board the carrier, but Ens. Malcolm MacGregor sat down and penned the following reply:

"To you submariners, top men of the Fleet,
The ice cream is ready, for your very own treat.
Fresh from the dairy it may not be,
But we know you'll enjoy it, you men of the sea."

The ice cream was delivered to the submarine by a helicopter from HS-1. The bard aboard the *Torsk* took to the air with a final rhyme and said,

"Oh boy, oh boy, cold and sweet,
By Santa's whirly-bird came our treat.
We gobbled and scooped
And slurped and whooped.
You're fine; you're great—
You're generous and straight.
Our thanks many times to you, men of the air,
From the men of the deep, who are in your hair."



'$183.18, PLEASE!'

Learning the Hard Way

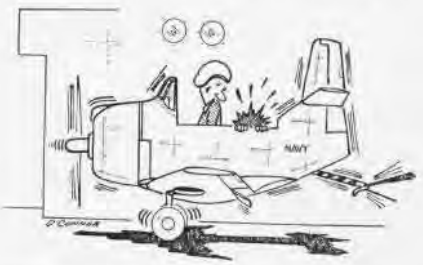
It happened at a primary flight training base during the early part of WW II. Yellow Perils filled the air and instructors wore their heads on a swivel.

Cadet Joe Lunkhead just couldn't seem to get the idea of spin recovery. He seemed to be afraid of breaking something if he should push the control stick rapidly forward, as was the approved practice in such recoveries. Joe's exasperated instructor had tried and tried to get it across, but had met with little success.

"Okay, Joe," he said, "I'll demonstrate it once more." Joe had just flubbed a recovery, but good. After climbing for altitude and checking for other planes, the instructor put the Stearman into a left spin. He let it go for two turns and then rapped the stick smartly forward, applying right rudder.

The spin stopped, of course, and the instructor told the Cadet to "take over and pull it out of the dive. You've got it," he said through the Gosport.

He waited a few seconds, but nothing happened. Still in a dive.



"Pull it out, Lunkhead." Still nothing happened. The instructor looked around to add his scowl to the spoken words. By Golly, the rear cockpit was empty. In the previous spin recovery attempt, Lunkhead had inadvertently unfastened his safety belt.

The instructor pulled out of the dive and started looking around, fearing the worst. That Lunkhead sure was a lunkhead. Suddenly, off to his right and above, he spotted an open parachute, with a confused Lunkhead dangling below.

After circling until he was sure that Joe had landed safely, he returned to the base to report the incident. Henceforth, Lunkhead has been known as "Geronimo."

Writer's Cramp

The Executive Officer of a certain naval air station was noted for his free use of red pencils in correcting and revising rough drafts of correspondence. The usual score was ten to twelve re-writes of each letter by the hard-working, long-suffering yeomen and civil service workers.

One such worker decided to do something about it, so the day before the XO's birthday, she anonymously laid a beautifully wrapped package on the Exec's desk. The other workers were highly curious, but the gal kept mum until a few days after the birthday had passed.

The explosion from the front office did not materialize as she had expected, so in answer to persistent queries, she replied, "That package contained a box of red pencils and a Bible. That ought to keep the blankety-blank happy for a while."

Collector's Item

It was cold on the flight deck of the USS *Franklin* on 19 March 1945. That is, it was cold on the forward half of the flight deck. The after end was completely covered with flame and smoke.

A short time before, the *Big Ben* had taken aboard some extra and unexpected stores in the form of two armor piercing bombs delivered by airlift in an enemy plane. Clothing was at a premium and any articles of wearing apparel that could be found were fair game for the first person that found them.

A seaman scurried on deck bent on some emergency mission wearing an officer's grey coat complete with commander's shoulder boards. As he passed a commander working on deck, he backed full, did a 180 and came alongside with the request that the shoulder boards be removed from the coat.

Thinking that the lad was smart in not wanting to be mistaken, even at a distance, as a commander, in the strain and confusion of the emergency, the officer removed the shoulder boards and started to pocket them. Whereupon the seaman spoke up. "Pardon me, sir, I'll take those if you don't mind. Souvenirs, you know."

What's in a Name?

General Andrew Harp is serving with VR-24. He's been assigned as part of the maintenance force keeping R5D type aircraft flying. A rather surprising job for a general, you say?

Well, it so happens that General A. Harp is an AL2 and has reported to the squadron after a tour at NAS Oceana, Va.

Things aren't as confused now as they once were, for he formerly served with an Admiral Dewey Wilkins. Admiral Wilkins was a steward's mate.

Can't you imagine the bewilderment on the faces of new members during muster when Admiral Wilkins' and General Harp's names are called by a petty officer.

What's in a name? Everything, especially when your first name appears to be a rank.

NAVY FILMS

Navy No.	Title
MN-6919B & C	Preventive Psychiatry in the Navy
	B. The Role of the Junior Officer Part I
	C. The Role of the Junior Officer Part II
MA-6962BD	AFIF #56: You in Great Britain
MA-6962BO	AFIF #67: You in Germany
MA-6962BR	AFIF #70: Headquarters USA
MN-8164	Malta Revisited
MN-9231	High Altitude Dive and Glide Bombing
MN-9294	Take 'er Down

Film libraries at air stations and centers furnish films needed by aviation activities.

GLENVIEW'S *VA-724 had training duty at MCAS Miami. Becker, Krug and Hardy are assembling rockets prior to training run.*

IFR-IQ?

When making a flight along Amber airways northbound on VFR flight plan and flying above 3000 feet, aircraft should fly at:

A. Odd thousand foot levels.

B. Odd thousand plus 500 ft.

C. Even thousand foot levels.

D. Even thousands plus 500 ft.

E. At any altitude if flight visibility is 3 miles or more.

Answer on Page 32.

MIDWAY'S AIRCRAFT WAS A SOURCE OF AMAZEMENT TO THE CITIZENS OF CAPETOWN, S.A.

USS MIDWAY VISITS SOUTH AFRICA

THE BONDS of friendship between the two Unions, the United States of America and the Union of South Africa, were strengthened when the USS *Midway* commanded by Capt. R. D. Hogle, visited the city of Capetown on a good will mission.

The 45,000-ton carrier moored to the wharf at Capetown threw down its gangway to welcome curious citizens aboard. They eagerly walked her decks and looked at the might of the carrier's F9F-6's, F2H's and AD's.

The officers and crew members of the big carrier were entertained at a dance and given sightseeing tours, which included a cable car ride to the top of majestic Table Mountain. An additional treat was a visit to spacious Muizenberg Beach.

Two days later amid the familiar words, "Good luck, Yank," the big carrier cast off and got under way to join the powerful Seventh Fleet.

IN HER PASSAGE THROUGH THE BREAKWATER, USS MIDWAY WAS ASSISTED BY A LOCAL TUG

SAFE EJECTION MADE AT ZERO FEET

PARACHUTING to safety even from zero feet! That dream is coming true according to a British report.

Not long ago at a deserted airfield in Oxfordshire, a new British lightweight ejection seat was tried. A 600-mph jet fighter was chosen for the tests, and a new seat, complete with dummy pilot, was fitted into the rear cockpit.

A test pilot taxied out to the end of the runway. A thousand yards away, before the fighter was off the ground and just as the airspeed indicator touched the 100-knot mark, the ejection seat was fired.

There was a puff of smoke from the cartridge, throwing the seat high in the air, and instantly the Irvin parachute snapped open, the seat fell away, and the dummy floated lightly, safely to earth. Observers were convinced that had the dummy been a human pilot from a crippled plane, he would have escaped without injury.

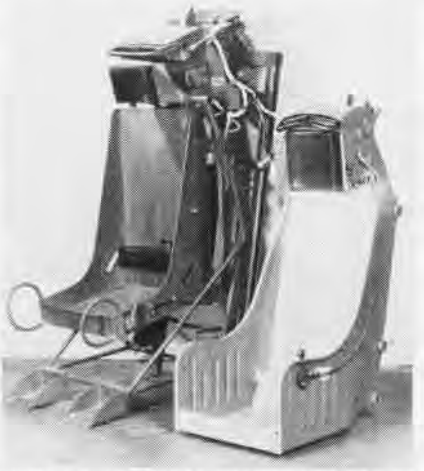
The seat weighs only 66 pounds, two-thirds of the weight of a standard Martin-Baker ejection seat. A similar successful ejection off the runway using a standard seat was recently demonstrated to senior officers of the RCAF.

On this side of the Atlantic, too, rapid progress is being made in the design of fast ejection seats. Chance Vought Aircraft, Inc., reports that a simplified pilot ejection seat 100 pounds lighter than previous seats is now being built for its Navy planes. However, Chance Vought does not see safe ejections from less than 300 feet in the near future.

The seat is based on concepts used by the Douglas Aircraft Company in its A4D seat. The new CVA seat weighs only 30 pounds as compared to the 130-lb. seat installed in the F7U-3 *Cutlass*. To make the big weight saving, always an important feature in planes, the leg braces and foot stirrups were eliminated. The face curtain system of firing was retained. The drogue parachute was eliminated.

The light seats are made of 75S aluminum with fluted sides along the seat area for strength. The pilot will wear a back pack parachute and his PK-2 pack serves as a cushion.

An automatic system in the new seat releases the lap and shoulder harness



LIGHT EJECTION SEAT IS SHOWN AT RIGHT

when the seat reaches the top of its ejection rails. There is no pre-ejection handle in the plane. All the pilot does is reach up and pull the face curtain down. During the first part of its travel, it locks his shoulder and lap harness, automatically jettisons the canopy and then it fires the seat and pilot upward. The Navy 20 G cannon furnishes the ejection power.

Should the automatic harness disengagement fail to work after ejection, a handle at the side of the seat permits the pilot to free himself from the seat and use his parachute.

The British designed ejection seat uses the same manner of ejection. The flier needs only pull down his face blind, and his hood is automatically flung clear by a cartridge explosion. A second later, the ejector seat operates automatically, and the pilot is safely on his way.

The Hawker *Hunter* and Gloster *Javelin*, two of the new transonic fighters now in quantity production for the RAF, are to be fitted with Martin-Baker seats of an even later design. They will operate in this swift, efficient way.

Engine Cover Designed

Plastic Sheeting Used by Republic

Development of a plastic cover for jet engine intakes has been announced by Republic Aviation Corporation.

The cover, made of electronically sealed vinyl plastic sheeting, is inflated into place in the scoop of the engine as soon as the engine is unpacked from its shipping crate. It provides an immediate tight seal for an aircraft's progress along the assembly line and until the engine is run up on inspection of the finished plane.

Small openings in the main fuselage duct allow easy access to a folded valve which deflates the cover and enables its removal before engine run-up.

The new "plastic doughnut" has no metal or other hard parts. If it's inadvertently sucked into the engine, the material can pass through with a minimum possibility of damage to engine parts.

Republic says the covers can be placed on engines before they are shipped from engine plants. The covers can be re-used frequently and present little storage problem, since they are inflatable and made of a material to resist elements and deterioration.

Drone Control Improved

Emergency Guidance System Built

A new, improved system for remote control of jet fighter aircraft, on special "drone" missions, pilotless intercept or nuclear tests, has been developed by the Sperry Gyroscope Company and the Air Research and Development Command.

The system provides automatic take-off and landings, with exact split-second control at all times by radio and radar during climb and dives, cruise orbiting or other aerial maneuvers. But if all control signals should be cut off while the drone is airborne, from ground power failure or bomb damage, current flight tests also demonstrate what happens in this emergency.

If the plane is below a pre-selected altitude when "carrier" signals are shut off, in five seconds an electronic "brain" takes over the plane controls and begins a full-power climb of exactly seven degrees, retracts dive flaps if these were extended, and at 200 mph changes to a climbing turn to the left until proper altitude is reached. Then it engages altitude control and continues a left-turn orbit at 265 mph at this constant level and position until signal is restored to guide the aircraft back for normal landing procedures.

Whether the plane is above selected altitude or might be in critical take-off climb when a signal shut-off occurs, safety control takes over and required measures are taken to produce a station-keeping orbit at proper altitude.

MARINE DECONTAMINATION TEAM DRILLS

MONITORS MOVE IN TO RECORD READINGS OF ALL 'HOT' POINTS

MOBILE LIFT IS USED TO HELP PILOT GET OUT OF THE COCKPIT

A PANTHER JET *comes screaming in from an atomic strike mission. She hits the runway and rolls to a stop. Then the pilot taxies his ship up to a designated spot where several specially uniformed men are standing. They are the decontamination crew.*

This was what happened recently when VMA-223 at MCAS El Toro made a very effective and successful "dummy run" of such a situation. MSgt. James E. Johnson and his 10-man decontamination team were ready when the jet fighter simulated the run-in. Their job was to get the pilot out cleanly and then rid the airplane of any or all particles of radioactive dust it might have picked up.

The pilot sat pat while Sgt. Johnson drove the fork-lift up and raised the unloading pallet to the cockpit. The pilot then slid the top back and, being very careful to touch no outside part of the plane, climbed onto the lift. The Sgt. backed away and let him down.

Then the two monitors of the team went to work. One carried a Radiac Instrument (measures the intensity of radiation), and the other man carried a clipboard to record the readings. The men first moved in at a distance of five feet from the plane. Circling the craft and keeping the same distance from each physical point, they recorded the delicate instrument's findings. Having completed that, the monitors then surveyed the plane surface at a distance of one foot to determine the location of the contaminated areas.

When the monitors were through, the eight-man working party went to work. They took hoses and sprayed water all over the aircraft. Then with swabs and buckets of water they washed and mopped every inch of the outside of the fighter.

COCKPIT IS CHECKED FOR CONTAMINATION

CREW IS READY WITH SWABS AND BUCKETS

After this first wash down, the two monitors went over the craft again with their Radiac Instrument for the radiation readings. Satisfied with the results, Sgt. Johnson secured the plane for 24 hours.

Had the intensity still been too great, the working party would have again gone over every inch of the craft with swabs. This process would have continued until the intensity had been decreased to a safety margin.

Normally, after the plane is secured, the spot where the decontamination process took place, if on concrete, is washed down thoroughly. It is done preferably on a dirt surface for purposes of drainage. After using the same spot for several craft, the ground is then plowed under for safety.

The pilot of the exposed craft must also take steps to free himself of possible radioactive particles he may have picked up getting out of the cockpit or some other way. A good soapy shower is the key.

In an actual atomic war, the decontamination teams would play a vital part.

- Six OMNI stations in Canada—Montreal, Ottawa, Stirling, Toronto, London and Windsor—are slated for commissioning this year.

- NATTC, Norman, Oklahoma recently was lauded by that city on the third anniversary of its reactivation. The Norman daily newspaper devoted an entire eight page section to the event.

Sea Atomic Defense Tested

British Use 50 Ships, 150 Aircraft

Early this spring the British Navy held a big sea atomic defense exercise in the central Mediterranean. Called *Sea Lance*, the sea-air operation was concerned chiefly with convoy protection and the safeguarding of vital communications.

Taking part were 50 ships of the British Home and Mediterranean Fleets and some 150 aircraft of the RAF and the Fleet Air Arm. Among the ships participating were four cruisers, two of Britain's newest aircraft carriers, seven light cruisers, six of the Navy's latest streamlined antisubmarine frigates and several submarines.

Near the end of the exercise, an underwater atomic explosion was simulated by a ship turning downwind and making smoke. As soon as there was warning of atomic attack, hoses were turned on to spray sea water over the hull and superstructure of each ship.

One observer aboard the HMS *Apollo*, a fast minelayer, said, "All members of the crew were ordered below deck, officers and men, wearing anti-flash gear and gas masks, being sent down where possible to those parts of the ship near or below the water line to obtain maximum protection from gamma rays. The bridge was vacated, and the ship was navigated by radar from the chartroom beneath it.

"The boiler rooms, where forced draught is essential, were left unattended, and ventilation to the engine room, where the staff remained on duty was shut off for the time being. Thus, the *Apollo*, turning away from the distant drifting 'atomic' cloud, was able to steam clear of the area, moving by herself for several minutes at a speed of more than 30 knots."

New weapons and equipment which will eventually be available to all the NATO navies were used in the exercise. Naval jet aircraft which have been put into squadron service recently were operated from the carriers *Centaur* and *Albion*. Each of these vessels is equipped with the angled deck.

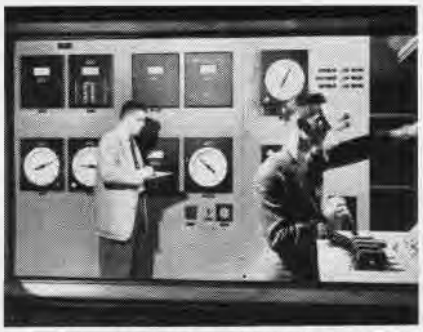
The *Centaur* also carried a squadron of *Whirlwind* helicopters equipped with the dipping asdic for submarine detection, a device opposing subs in the exercise learned to respect.

Test Center Opens Soon

Turbine Test Center Built for Navy

The Navy's new turbojet engines will soon be put through their paces in a modern $41,000,000 test center being completed in West Trenton, N. J.

The largest Naval Laboratory ever built for such tests, it covers 56 acres and can simulate altitudes from zero to 65,000 feet and speed-of-sound velocities.



EACH CELL REQUIRES METICULOUS CHECKING

In the illustration, two Minneapolis-Honeywell engineers, part of an engineering team which laid out the complex electronic control system to monitor the testing operations, check out one of the turbojet cells.

When completed the laboratory will push more than one million cubic feet of air a minute past engines in the five test cells. To do so will require more electrical power than that used by a city of 75,000 people.

Test All-Magnesium Plane

F-80C Is Second Built for WADC

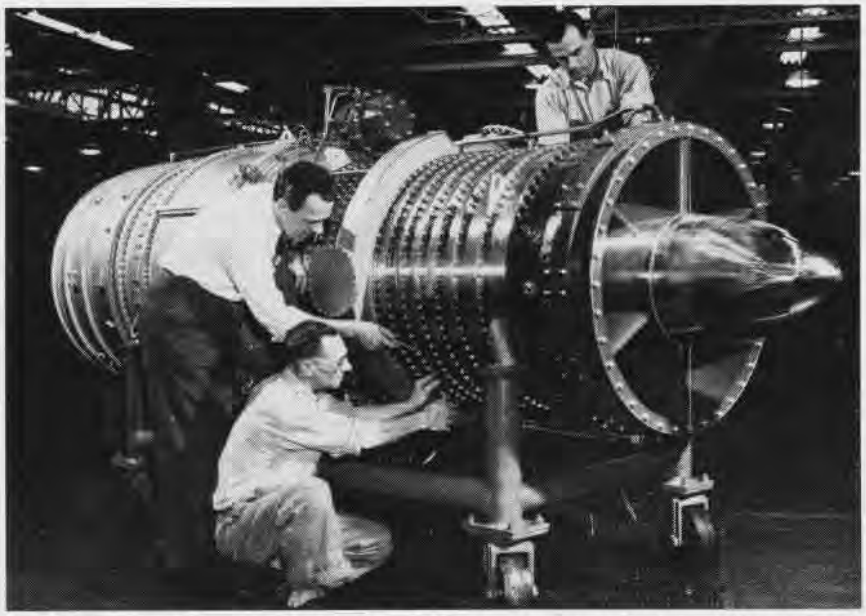
The first flight of an experimental all-magnesium airplane is expected to be held this month at Mitchel AFB, N.Y., the Air Research and Development Command has announced.

The F-80C, one of the two contracted for by the Air Force in 1949, will be almost 100% constructed from magnesium. It was built by East Coast Aeronautics, Inc.

The first plane constructed has successfully passed its static tests at the Wright Air Development Center, Dayton, Ohio, the announcement said.

Some of the possible advantages of a magnesium airframe are: *1*. It is the best substitute known for aluminum. *2*. Supply of this metal is nearly inexhaustible. *3*. It is probably the most efficient structural material throughout the usable temperature range of the light alloys. *4*. The thicker skin structure should decrease ground handling damage and the manhours required to assemble such a structure since fewer parts are involved. Over-all costs thereby, should be lowered.

With this airplane, WADC will determine the complete suitability of magnesium for use in fighter planes.



THE FIRST *successful twin-spool jet turbine engine ever developed, Pratt & Whitney's X-176, later redesignated the J-57, is readied for presentation to the Smithsonian Institution for permanent display in the National Air Museum. The J-57 was the first jet engine in aviation history to be rated officially in the 10,000-pounds thrust class. It powers the F4D and A3D.*

AVIATION ORDNANCE

NEW LUBRICANT FOR AIRCRAFT GUNS

A NEW lubricant for aircraft guns will be available shortly. It is designed to keep them in good working condition when they are subjected to extreme air velocities during purging operations. This material, designated NRL-GLT 700-60, will lubricate effectively all existing aircraft armament. This means the Mk 16 gun and Mk 8 feeder, the M3 gun and AN-M2 feeder, and the Mk 12 gun and Mk 7 feeder.

This lubricant was developed to meet certain problems encountered in the Korean conflict. At that time, the M3 20mm aircraft guns mounted in jet planes were rendered erratic and undependable by the low temperatures to which they were subjected. Gun heaters, undesirable any time where space and weight limitations are prime factors, were not effective.

The Naval Research Laboratory therefore developed a new lubricant (MIL-L-17353) used in the second winter of the Korean War which gave good results when used with the M3 gun. The feeder used in conjunction with the M3 gun was lubricated satisfactorily with grease specification MIL-G-15793.

However, this lubricant combination worked only with the M3 gun. When it was tried for the Mk 12 gun with the Mk 7 feeder system, the synthetic lubricants proved incompatible with the O and T rings, causing them to swell excessively.

Efforts were first made by BUORD and NRL to find synthetic rubbers which would not be adversely affected by the lubricants. Some were found, but they lacked other essential qualities such as toughness and durability.

At this point the new lubricant (NRL-GLT-700-60) was developed by NRL. It is compatible with standard rings and effective as a lubricant and anti-icing medium under all operational conditions. The O and T rings are standard Specification MIL-P-5516A rubber. The lubricant will soon be available in limited quantities.

This lubricant, substantially a very thin grease, has other advantages. It has superior anti-corrosion qualities owing to its greater film thickness. Its comparatively low volatility makes it capable of resisting to a remarkable degree the rapid evaporation to which most low temperature lubricants are subject. This quality is particularly desirable in the lubrication of aircraft guns, exposed as they are to extreme air velocities during purging operations.

For the Mk 12 and Mk 16 guns, the Mk 7 and Mk 8 feeders, the use of the new lubricant will be mandatory since without it these mechanisms will not function properly. For the M3 gun and the AN-M2 feeder it may be used, but this system will, of course, operate with Specification MIL-L-17353 oil and Specification MIL-G-15793 grease respectively.

The use of NRL-GLT-700-60 is not limited to aircraft armament, but will prove effective in many applications where anti-icing qualities and low temperature operability are essential.

New Sea Target Reflector

Chincoteague Makes Float Design

The U. S. Naval Aviation Ordnance Test Center at Chincoteague has worked out a design which extends the visual range of the target without increasing its size. A sunlight pulse reflector was added to a float being used about one mile off the coast of Virginia.

This was done because fluorescent yellow painted surfaces or pyramids do not present a distinct target on a sea float of reasonable size. If dive and toss bombing tests of experimental fire control equipment against a sea target were to be accomplished, something was needed to increase visibility.

TARGET REFLECTOR EXTENDS VISUAL RANGE

The sunlight pulse reflector consists basically of a five-foot square frame suspended from a thrust ball bearing and constrained from swinging by a loose sleeve bearing. Four sheets of one-eighth inch polished stainless steel, each approximately two by four feet in area, were rolled to a cylindrical shape of two-foot radius. These were then fastened at the edges of the rectangular base and converged at the thrust bearing about two feet above the base.

A set of four aluminum wind scoops were then added below the edge of the rectangular frame so that the assembly would rotate at from one to ten revolutions per second.

The pulses of reflected sunlight cover at least half the possible approach angles with an intensity and pulse frequency sufficient to attract attention against the ocean background. Practical ranges vary from three to five miles depending on atmospheric conditions.

F2H Rain Seal Modified

Jax Workman Solves Hard Problem

Because of the design and location of the canopy rain seal on the F2H, it was a very difficult and time-consuming problem to replace the MDA-23-35000-23 rain seal on the *Banshee*. Also owing to its design, the seal was frequently torn or damaged in transportation or storage as well as in the operation of the canopy. This meant a new seal had to be installed.

To meet this problem, Dominic Commisso of NAS JACKSONVILLE made the suggestion that the R33E-425-5 seal be used to seal canopy frames instead of the old seal and that 6-32 or 8-32 truss head screws be used rather than rivets.

By using this method a saving of seven man-hours and $4.68 in material cost is realized. Another advantage is that this new seal can be installed in one continuous piece instead of two. The new seal does not tear as the old seal did, and it does not interfere with the operation of the pressurizing seal.

This beneficial suggestion has been approved by the BUAER Incentive Awards Committee which recommends optional adoption by other activities.

LETTERS

SIRS:

Having read your article *Helicopters versus Submarines* (February 1955) and being fully aware of the responsibilities of all hands to contribute to the safety and effectiveness of our brothers-in-arms, the Commanding Officer of VF-84, Cdr. Herb Ladley, suggests that "the silent service" solve the problem of the helicopter-dunked sonar by outfitting all submarines with a grapnel. The endangered submarine then rushes at the offending sonar, seizes it with the grapnel, and dives. Helicopter crew may be picked up if desired for questioning.

Realizing that such a diabolical device might well revolutionize Naval warfare, Cdr. Ladley suggests that "whirly-birds" protect themselves by the immediate installation of a quick-disconnect fitting on anything they dangle in the water. Of course, the ultimate solution may be helicopters large enough to reel the submersible in, possibly to be mounted on the wardroom bulkhead of the parent carrier.

At any rate, if other units have similar weighty problems to be solved just let us know and we'll render similar prompt assistance.

C. W. GATES, LCDR.

SIRS:

May I congratulate you on the March 1955 issue of *Naval Aviation News?* It is full of fascinating material—especially the feature story on "Escape and Evasion" which is not only extremely interesting but extremely well written.

I won't list all the stories and illustrations I liked, but the whole issue was excellent.

THEODORA HILL

WASHINGTON, D. C.

SIRS:

The National Waves Reunion is being held this year at Miami Beach, Florida, July 29-30-31. Headquarters will be at the De Lido Hotel.

To make reservations, all Waves, either active or inactive, and ex-Waves, are urged to get in touch with Mary Wood Malone, 892 N.E. 82nd Street, Miami, Florida, who is serving as chairman of the event.

NELL DAVIS BOWEN
Publicity Chairman

IFR-IQ?

According to All Weather Flight School, the answer is "A."

Ref: CAR Part 60, Para. 60.32a.

SecNav Names New Carrier

Independence to be Built in N. Y.

The fourth 60,000-ton carrier of the *Forrestal*-class will be named the USS *Independence*, SecNav C. S. Thomas announced recently. The new carrier will be built at the U. S. Naval Shipyard, Brooklyn, N. Y. at an estimated cost of $189,311,000, about 11 million less than the *Forrestal*.

With construction scheduled to start this summer, the *Independence* has been designed to accommodate heavier and faster jet aircraft. With speed in excess of 30 knots, the CVA-62's design represents an improvement upon the combat-tested *Essex*-class carriers and later developments incorporated in the *Midway*-class.

Four previous ships of the U. S. Navy have borne the name *Independence*. The first a Continental sloop; the second, the first ship of the line to be constructed in the U. S. for the U. S. Navy; the third, a WW I transport, and the fourth, an aircraft carrier (CVL-22) whose fighter aircraft downed more than 100 enemy planes in WW II.

The USS *Independence* participated in raids on Marcus, Palau, and Formosa Islands, and the historic second battle of the Philippine Sea in Oct. 1944.

COMMANDER *of an Argentine plane, LCdr. Carballo, thanks Capt. J. H. S. Johnson, CO of NAS Atlanta for replacement of an engine after his plane was forced down near Atlanta.*

CONTENTS

● PICTURE CREDIT

Fourth panel of picture at top of p. 11 is the work of W. B. Harold, Photograph Studio, Sioux Falls, South Dakota.

● SUBSCRIPTIONS

Naval Aviation News is now available on subscription for a $2 check or money order made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C.

● THE COVER

An FJ-3 Fury taking off from the deck of the USS Coral Sea during test operations off the Virginia Capes.

● THE STAFF

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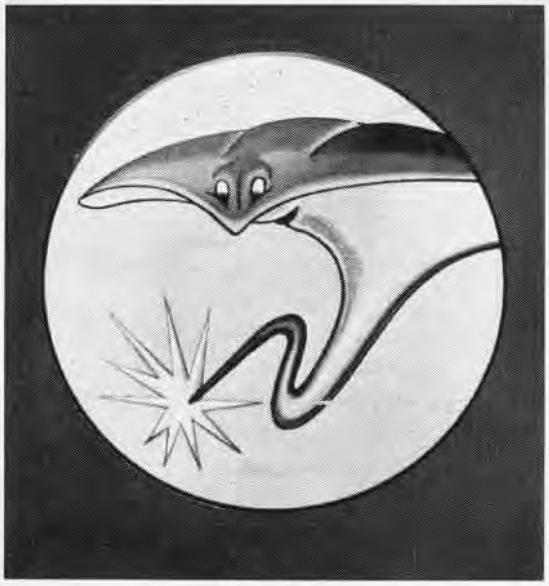
● Printing of this publication has been approved by the Director of the Bureau of the Budget, 31 March 1952.

Published monthly by Chief of Naval Operations and Bureau of Aeronautics to disseminate safety, training, maintenance, and technical data. Address communications to Naval Aviation News, Op-O5A5, Navy Department, Washington 25, D. C. Office located in room 5E573 Pentagon Building. Phones are extensions 73685 and 73515. Op-O5A5 also publishes quarterly Naval Aviation Confidential Bulletin.

SQUADRON INSIGNIA

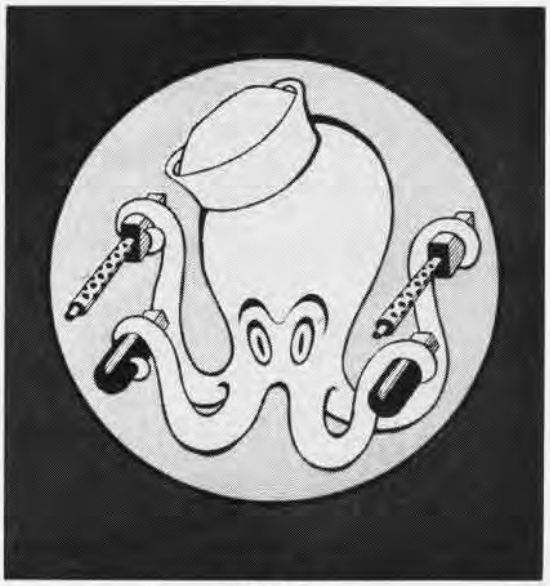
Warlike denizens of the deep in these approved insignia are led by the startling winged alligator of Reserve VMF-144, the flying 'gator hails from NARTU Jacksonville. A sting ray denotes the speed and fighting fury of VF-124, although the squadron planes have stingers on the other end. The jet-assisted killer whale of VP-49 is a powerful seabeast representing the P5M's, whose primary mission is seek out and sink enemy submarines as denoted in the insigne. Reserve patrol squadron VP-773 adopted the cocky octopus, with its weapon-laden tentacles, to symbolize powerful multi-capabilities.

VMF-144



VF-124

VP-49



VP-773

NAVY'S 600 MPH CLASSROOMS

NAVAL AVIATION NEWS

★ ★ ★

give Naval Aviation Cadets their first taste of jet powered flight. Sleek two-place Lockheed TV-2's can start your climb to the pinnacle of pilot proficiency, Naval Aviator's Wings and masters of the fastest jets. From the dungarees of the Navy and Marine Corps and the tweeds of the campus, to the hard hat and flight suit of a Navy jet pilot is an important step. Start NOW! Ask your personnel officer or the nearest Naval Air Station or Recruiter.