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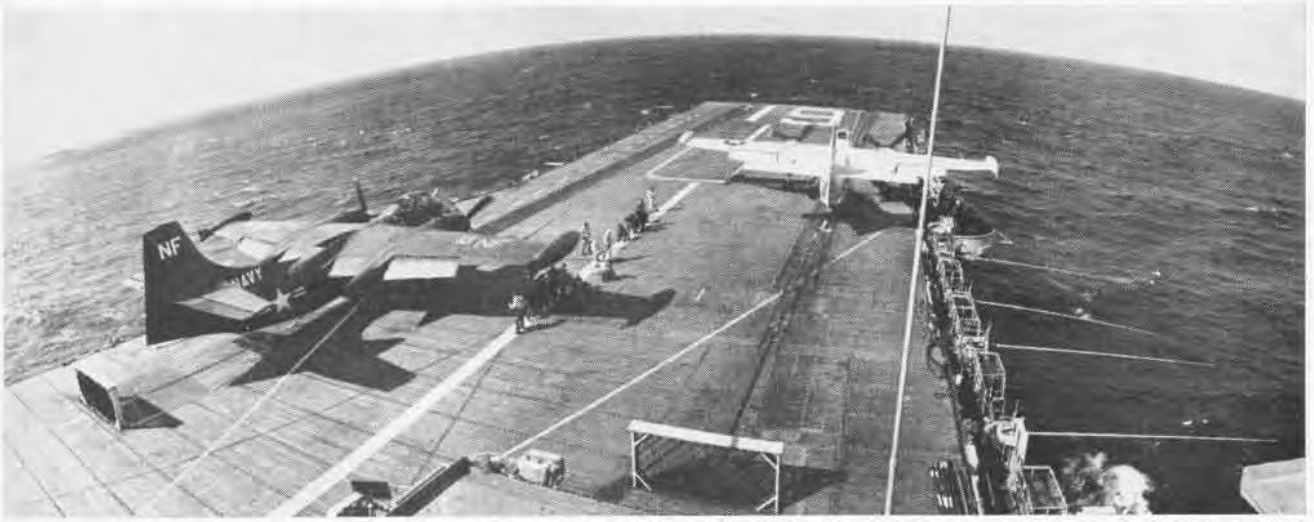
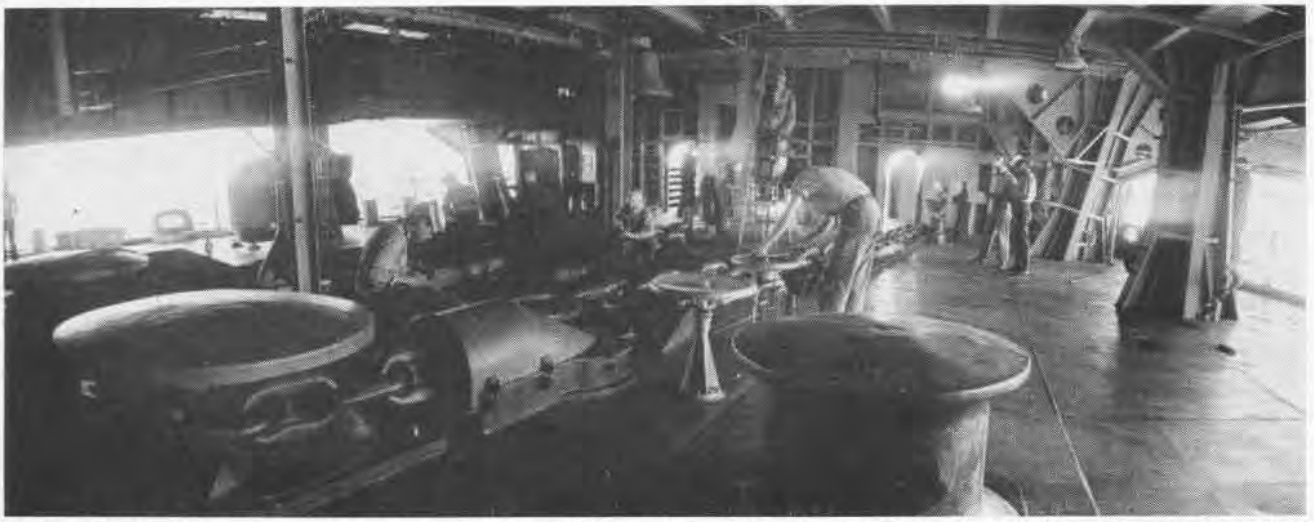
WIDE ANGLE SHOTS OF HANCOCK



IN TAIWAN WATERS, A PANON SUPER WIDE ANGLE (140°) CAMERA PUTS CURVE IN HORIZON AS A SAVAGE IS SHOWN MOVING



DOWN STARBOARD CATAPULT. ANOTHER AJ-2 STANDS BY FOR LAUNCH. HERE ON FORECASTLE, ALL HANDS WAGE CONSTANT BATTLE

AGAINST SALT CORROSION. ABOVE, THE LANDING SIGNAL OFFICER WATCHES AN F9F COUGAR COME IN FOR SAFE LANDING.

POWER PANORAMA

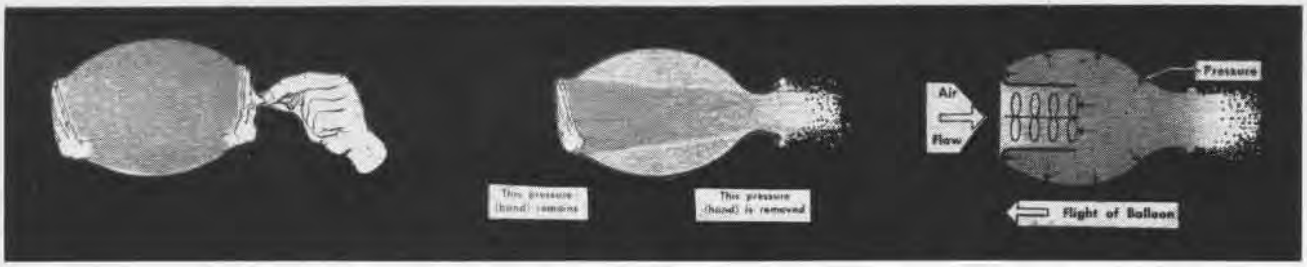
THE ENGINE is man's most valuable servant. Like any servant it flourishes with understanding, encouragement and care. Given these attentions, the propulsion engine has done wonders for aviation—witness the stunning record of progress in 52 years.

The Wrights' first engine, a piston type weighing 170 lbs. put out 12 horsepower, barely enough to launch their "Flyer" and thereby the Age of Flight. The half-century of evolution and development since December 17, 1903, has changed a world. Today, horsepowers are measured in thousands. The Wright engine was the minor part of the first successful airplane; one of the descendants of that power plant, the turbojet, has led an aeronautical revolution. Still further advanced, the rocket promises to take the lid literally off the sky for future aircraft.

Piston, turbojet, ramjet, rocket—there is no basic difference in the power these produce. They unlock heat energy to manufacture the thrust to propel the airplane. The spinning propeller accelerates a stream of gas (air) outside the engine; the jet does likewise inside. And though turbojet power can measure 1,000 times and the rocket 10,000 times, as much as the Wrights' first power plant, they are all devices to create propulsion.

The rocket appears to have the most interesting potentialities. That's because it is among the least complex, yet by far the highest powered. One of the oldest sources of power and still the least exploited, its simplicity is deceptive. This maverick of engines, difficult to control, has a fantastic appetite for fuel and a set of baffling problems inherent in design.

By Joe Stein
Aeronautic Information Specialist, NACA



THE THEORY *of jet propulsion is graphically presented in a simplified manner above. At left, air pressure is exerted at all points in the balloon. When the valve is released, pressure is removed from the rear. Forward pressure, not exhaust, moves the balloon.*

ROCKETRY's secrets have baffled scientists for ages but the quest for ever higher altitudes and ever greater speeds in recent years has turned greater emphasis on its development. We already have rockets powering many kinds and sizes of missiles. We use them to boost the take-off of heavily loaded airplanes of conventional power, and to furnish the initial thrust for speed-hungry ramjets. Our research airplanes are exploring the frontiers of space and speed on the might of rocket power. Granted some further solution of admittedly tough problems, rocket-powered flight beyond the pull of gravity appears possible.

Unlike other engines, the rocket operates literally anywhere—standing still or in motion, on the ground or at altitude, even in space beyond the earth's atmosphere. And since it carries its own oxygen, altitude has little effect on it. The other engines lose thrust as they gain altitude—above about 150,000 feet the rocket reigns alone, supreme. And because it can go to unlimited heights, theoretically its speed is unlimited.

The essentials of a rocket engine are a combustion (or blast) chamber, necessary mechanisms to supply oxidant and fuel, and an outlet nozzle of appropriate shape. That's all. Added together, these parts represent a near-ultimate in light weight.

Remember the German Messerschmidt 163 of World War II? That first rocket-powered fighter plane's engine weighed only 220 lbs., yet it generated 3800 lbs. of thrust. Since the war the Navy's experimental *Viking*, developed by the Glenn L. Martin Company, has been shot to 158 miles, an altitude record for single stage rockets. The *Viking* has 20,500 lbs. of thrust.

Thrust ratings, usually given to express the propulsive ability of rocket or jet engines, measure the *force* exerted by the jet. Horsepower, a term usually applied to propeller engines, is a rate of *doing* work. Roughly, at 325 knots, one pound of thrust equals one horsepower; at 1000 knots, one pound of thrust is worth over three hp. A simplified formula for conversion is: Thrust (in lbs.) times Velocity (in knots) divided by 325, equals horsepower. And so, at 2000 knots, that Viking power plant develops over 125,000 hp.

A revealing example of the rocket's ability is the Navy's Douglas *Skyrocket* D-558-II research plane. This was the first piloted aircraft to hit a speed of Mach No. 2, or 1150 knots. That record was set by Scott Grossfield, (WW II

NACA RESEARCH *missile is powered, in effect, by a two-stage rocket. After take-off, it is powered to 2600 mph by its main rocket engine.*

Naval Aviator) who flew the *Skyrocket* as a research pilot for the civilian National Advisory Committee for Aeronautics. Incidentally, the research aircraft program is a joint effort of the Navy, the Air Force and NACA. The program includes the X-series of flying laboratories sponsored by USAF and Navy.

A Reaction Motors, Inc., engine of 6000 lbs. thrust powered the D-558-II and the Bell-built X-1 series, which first pushed past the speed of sound in 1947. The X-1A set today's unofficial speed and altitude marks exceeding 1430 knots and 90,000 feet. These planes set the pace they did in great measure because of rocket power. Nobody now shoots for the top with anything less.

Late last year saw the maiden flights of another rocket plane, the USAF X-2. Built of Monel and stainless steel and with a windshield of highly tempered glass, this research craft is designed to investigate the so-called "thermal barrier," meaning the difficult problems of heating caused by air friction at very high speed. Its engine, built by the Curtiss-Wright Corporation, is said to develop more power than the engines in a Navy cruiser.

POWER RATINGS of rocket engines of today range from the very smallest to more than 100,000 lbs. of thrust. The engine people are building, designing or testing a wide variety of sizes and types. Small wonder that nearly every major aviation company is in the field of rocket power in some way; or that Government agencies and military services have large projects, most of them under wraps but all the subjects of big finance and much brainpower. Reaction Motors recently opened a new $4,000,000 Navy facility for development and production of rocket engines, at Denville, New Jersey.

All rocket engines fit into two broad classes, according to whether they burn liquid or solid fuel. Combustion of this fuel creates an enormous expansion of gas, which escapes rearward at great velocity. The jet blast creates forward motion by reaction—and no other engine produces as much thrust for its size and weight as the rocket type.

For simplicity the solid fuel rocket is tops. Its fuel and oxidant (dry powder) are packed inside its bomb-like shape in an arrangement to produce steady, progressive burning—literally a controlled explosion. Upon ignition by an electric charge, the resulting expansion pushes gases through the nozzle with a thrust equal to the product of their mass flow multiplied by their velocity. Mass is small, but velocity is large. And hell hath no fury like this!

The liquid fuel rocket is more complicated, since fuel injection and burner system (and sometimes an ignition system) must be included. Such power plants need a means to furnish the liquid propellants to the burner. This is done with pumps, or the pressure exerted by a tank of nitrogen or other non-flammable gas.

In some systems the fuel and oxidant burn spontaneously. In others they are set off by electrical ignition. Usually, the larger the rocket the more elaborate the system.

Some designs employ a single propellant containing oxygen. More common are those using two or more propellants. Among propellants that have been tried are liquid oxygen ("lox"), gasoline, aniline, nitric acid, hydrogen peroxide, nitromethane, cyanogen and oxygen, alcohol hydrazine, hydrogen and fluorine, and mixtures containing powdered metals. Many of these substances are hard to handle, costly and scarce. Worse, some are toxic. The lethal cyanogen, for instance, replaces the electric chair to carry out capital punishment in certain states.

The products of combustion do the same useful work with liquid fuels as with solids, but they do the work better. So the more complex liquid-fuel rockets are more efficient and more powerful than the solid-fuel burners. The solids are comparatively heavy for the energy they contain and, because of the limited volume of their combustion chambers, their duration is limited.

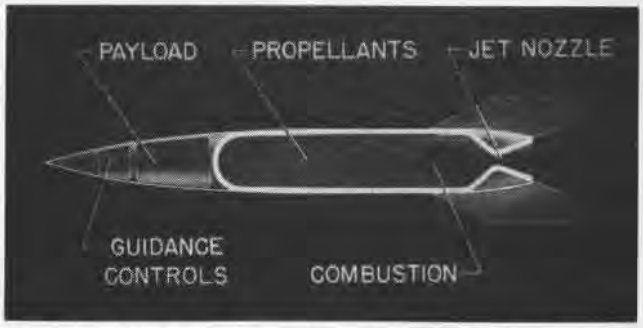
While this flying blast furnace has a promising future, it has not yet become a primary power source in practical, piloted, service aircraft. The main reason is the rocket's high fuel consumption, and it is science's task to find ways to make the most of its short running time, as is being attempted with missiles and research aircraft.

This engine boasts hefty problems of control—therein is another challenge to research science. Combustion chamber temperatures can be on the order of 6,000 degrees F. No rocket can operate without cooling of some kind. Nor can it always be built of ordinary materials in the nozzle and blast chambers.

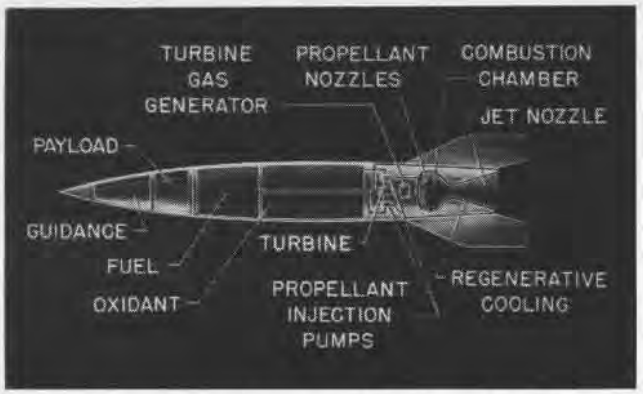
Some of the methods of easing these tortures include use of "high class" materials, thick walls to absorb heat, regenerative cooling (by circulating the fuel or oxidizer around the combustion chamber before burning), transpiration or porous skin cooling, and injecting coolant directly into the combustion chamber.

No easy cures have been found. Nevertheless, the air world rivalry is a spur to more research and discovery

AN EXAMPLE *of solid propellant rocket engine is the JATO bottle. This P2V Neptune of VP-8 carried eight bottles to assist take-off.*



WHEN THE SOLID *propellant in the rocket pictured above is ignited, it continues to burn until the fuel supply is completely exhausted.*



A LIQUID *propellant rocket engine differs from the solid in that the fuel and oxidant supply may be cut down and speeds controlled.*

in rocketry than history ever saw. Now the development of rocket propulsion seems to be a question of when.

Credit for discovery of gunpowder and rockets generally goes to the Chinese. History tells of one Chinese who attempted in the early 15th century to fly his chair by rocket. He was blown straight to eternity. Perhaps a natural consequence of this tale is the fact that the real big rocket development was held up more than 600 years. A better reason is that man had to await a practical understanding of aerodynamics. And that meant waiting for the Age of Flight itself.

Rocket development didn't stand still all those years. Rockets were used in warfare through the 18th and early 19th centuries. In the War of 1812 they inspired Francis Scott Key to write that line about "the rocket's red glare" in our National Anthem. But with development of guns capable of improved accuracy and range, progress with rockets lagged. It was not to be resumed in a large way until this century.

Many centuries ago, tradition says, a man named Hero put together the first jet propulsion device, actually a toy. Its main feature was a water-filled metal ball with short tubes bent at right angles around its girth. Hero built a fire, heated the water and the resulting steam escaped through the tubes to cause the ball to go round and round. This was true jet thrust.

THROUGH THE centuries, there were many men who contributed to the science of heat engines, some of them greatly too. But the engines of today are the result of evolution by the direct contributions of uncounted thousands of scientists, inventors and engineers.

One man always mentioned in this connection is Sir Isaac Newton, whose laws of motion are rather well advertised. Two of these physical laws apply to jet propulsion. Newton's Second Law states that the rate of change of momentum of a body measures in direction and magnitude the force acting upon it. Meaning that a force is created by a change of momentum and is equal to the time rate of change of momentum. Sir Isaac's Third Law is more familiar: action and reaction are equal and opposite.

What is known in the general press as a "jet engine" works much the same as the old reliable propeller. The jet and prop systems are related (probably half-brothers). Both produce thrust by pushing a mass of air, though the prop accelerates a larger-diameter air stream more slowly than does its relative.

Two distinct engine types are known popularly as jets because they do not derive propulsion from the familiar propeller. More correctly these engines, the ramjet and the turbojet, are thermal-air-jet engines.

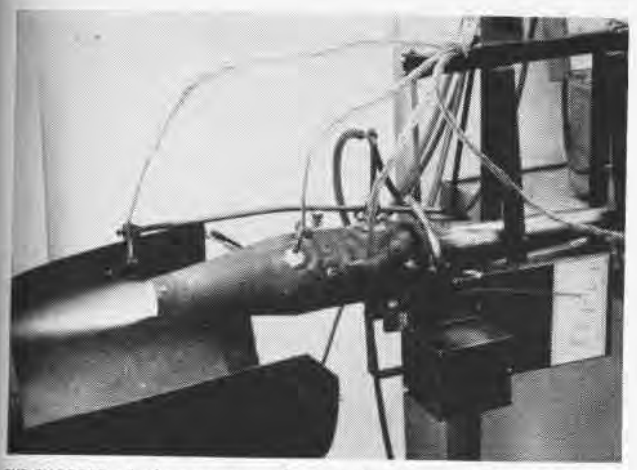
Both bear a great love for air, far more than their propeller relatives and, for that matter, pilots and mechanics and Navy people, who have lungs. The engine must do three things to the air: breathe it into a suitably shaped chamber, add energy by combustion of fuel, and expand and expel the air. Thrust is the difference in velocity between the air at the inlet and the tailpipe.

The jet type most like the rocket in weight and simplicity is the ramjet. This engine actually is little more hardware than an open pipe. No matter what is burned in it, the ramjet won't develop power while standing still, but give it a push and it goes to work. Give it speed and it responds with screaming power. The more speed which the engine attains, the more scream.

The ramjet is designed so air can pass freely through it from one end to the other. Some energy is lost through skin friction but the loss is small. More important, the

IN 1947, *a 6,000-pound thrust Reaction Motors rocket engine like this one powered the X-1 through the sonic barrier in level flight.*

ROCKETS ON ROTORS *powered these HRS-2 helicopters. Reaction Motors manufactured these liquid propellant engines for the Marine Corps.*



THE SUCCESS *of the ramjet combustion chamber in 1944 led to afterburner research. Here a ramjet is being tested in Ryan Laboratory.*

THESE RAMJET *combustion chambers are being given a final check. Resembling mammoth bazookas, they were built for Marquardt by Ryan.*

ramjet interior is widened at the inlet to reduce velocity as the air enters. It is narrowed again at the rear, to effect an increase of velocity through the tailpipe.

Up near the inlet, fuel is injected and mixed with air, then burned downstream about where the highest pressure occurs. Here, the gases of combustion and heated air expand—by about 5-to-1 ratio—and, moving on, they are converted from pressure energy to greatly increased velocity energy as they pass through the restricted tail nozzle into the free atmosphere—jet thrust.

Again, this engine produces zero thrust at rest, but real propulsion results as forward motion rams air into it. Ramjet thrust practically feeds upon itself since the more air it can gulp, the more ram pressure it can develop.

Like the rocket, the ramjet has no moving parts. Combustion is started by an electrical igniter when forward speed builds ram pressure high enough. After that, the fire burns as long as it receives fuel. Again like the rocket, it is quite a fuel hog at low speeds, but its fuel consumption is much less. The ramjet does well by speed. At about Mach 5, its efficiency can be as high as 50%.

Lower fuel consumption at low speeds is a quality of the pulsejet, which is a variety of ramjet with one added device. Up front the pulsejet has a shutter-like wall sealing off the inlet. In operation, the shutters or flapper valves close when enough air rams in and expands by combustion, then they open to admit more air as the expanded air escapes out the tailpipe. Again—jet thrust.

The valves open and close alternately in a cycle as pressures fluctuate behind them. Alternation occurs instantaneously, from about 50 to 120 cycles per second. The pulsejet runs continuously too. It operates at lower speeds than the simple ramjet because of its ability to build some pressure behind the shutter valves. On the other end of the speed scale, those shutters are a hindrance. The pulse jet is not capable of the high speeds of the simple ramjet.

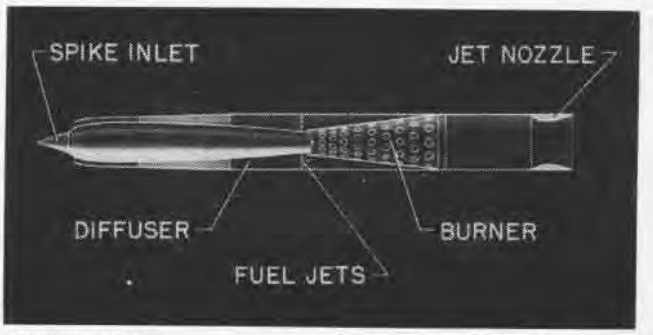
Put working parts inside the ramjet duct and you have the turbojet. This engine operates at zero speed—one of its big advantages over the ramjet. It furthermore possesses greater respect for fuels than its other jet-type brethren.

Fundamentally, the turbojet is a gas turbine, a power unit consisting of an air inlet, compressor, combustor, turbine and exhaust. The diverging shaped inlet slows and expands the air, which then passes through a compressor to the combustion chamber, where heat expands it, then the air passes through a turbine wheel into the exit nozzle. At this point, the greatly expanded mass flow of air goes through the converging nozzle, whose shape changes pressure energy into velocity. Again, jet thrust.

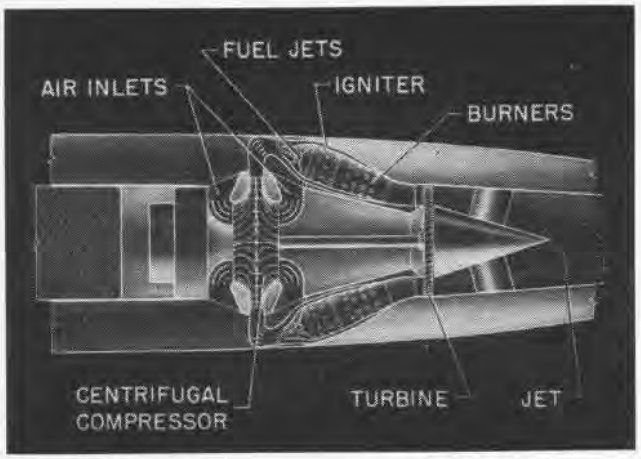
Though a certain amount of the energy of combustion goes to drive the turbine, most of it becomes high velocity in escape to the free air. The gas turbine can be made to absorb more energy in the turbine stage, in which case the power is delivered to the turbine shaft rather than into jet thrust. Thus transformed to mechanical energy, the gas turbine shaft can turn a propeller, or the rotor of a helicopter or the drive shaft of a truck.

The turbine propeller combination is commonly known as a turboprop, less popularly as a propjet. Not all of the energy is so captured by the turbine, however. About 15 per cent of it goes into the exhaust and thereby into useful direct thrust.

So long as this turbine hurricane has fuel to burn and otherwise is in working order, the engine will run spontaneously. Electric igniters provide the initial combustion



FORWARD SPEED *is necessary for ramjet engine to attain the required air compression. Thrust pressure is gained from fuel-air ignition.*



CENTRIFUGAL-FLOW *turbojet gains its name from the impeller, which compresses air by centrifugal action, before the combustion stage.*

only; after that, burning is continuous and the turbine drives the compressor.

The gas turbine will operate in still air, but its efficiency is relatively poor. With the ramming of air at high speed, the efficiency improves and the higher the speed, the more efficient.

The afterburner (NANEWS, October, 1955) is a mating of ramjet to the rear of a turbojet, so as to bring the air flow directly from the turbine into the ramjet, where burning of additional fuel expands the gases still more. This "reheating" gives a large boost in thrust—as much as 100 per cent.

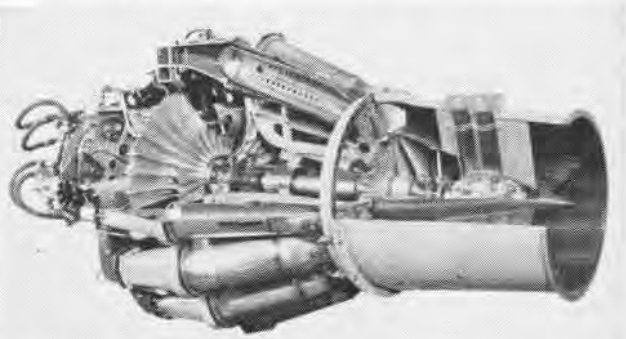
The gas turbine has still another relative (probably a cousin) in the turbo-supercharger found on certain piston engines. The two systems work much alike except that the supercharger operates on waste exhaust gases from the pistons and works at far less power and lower compression ratio.

Though Mr. Hero built his toy many centuries ago, the gas turbine we use in airplanes is comparatively "young." Nearly all of its practical development has occurred since the beginning of WW II. That conflict provided the impetus for intensive research and development. Up to that time, interest in jet propulsion was very small.

Turbojet progress has been mighty in recent years. The first engines flown by the Germans and British put out little more than 1000 lbs. of thrust, at about that much poundage in engine weight, while fuel consumption was high. A few years later, the first quantity American production engines were rated at 3000-3500 lbs. of thrust at approximately 1200 lbs. engine weight, and fuel consumption was improved. Now—and this is to the credit of research scientists—thrust has gone over 10,000 lbs., whereas fuel consumption, weight, have been improved greatly, while engine size has been held down.

And so, the gas turbine promises to take over almost entirely in military aviation. The civil turboprop transport is in action and the commercial liner is a lusty infant. Considering its capabilities, the turbojet today is a relatively simple piece of machinery able to deliver more power for airplanes in regular service than any other engine.

Most present turbojets are of the axial-flow type, as distinguished from the centrifugal flow. These names apply



IN CENTRIFUGAL-FLOW, *air is ducted from outside circumference of impeller through elbows of at least 90 degrees, and into combustors.*

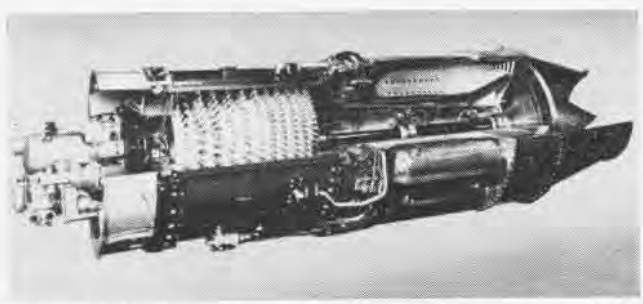
to compressors. The word centrifugal refers to an impeller not unlike the supercharger. This device compresses air by centrifugal action, then passes it to the combustion stage. In the axial flow, the air passes through rows or stages of carefully shaped blades (actually air foils like the blades of propellers) which serve to impart some added compression over the previous stage.

The axial arrangement routes the air flow straight through the engine, whereas the centrifugal must duct it from the outside circumference of the impeller through elbows of at least 90 degrees, thence into the combustors. This awkward channeling of air around "left end" saps some of the energy built by compression. Worse, it means a larger diameter is necessary in the centrifugal engine. And in this age of high speed and thin wings, the accent is on small diameter as a precious advantage. What's more, the axial flow provides a greater compression ratio.

Among its advantages, the centrifugal engine has a shorter length and lighter weight, and so it is more useful in certain applications, notably where length is limited and low power required.

Axial flow compressors can be of many stages (usually from 8 to 16), depending on the amount of compression wanted. Moving across the small airfoil blades, the air is built up to high pressure. This is limited by stall difficulties, virtually the same as those encountered on an airplane wing.

Nearly any kind of fuel in suitable form could be used in the gas turbine, including gasoline, kerosene, coal dust, Diesel and tar oils, alcohol or wood. Some say fuels have



IN THE AXIAL-FLOW *turbojet, air flow is routed straight through the engine, over rows of blades, which impart some added compression.*

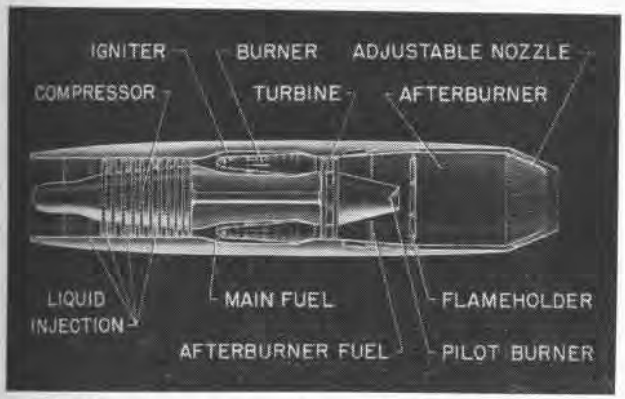
been (on occasion) martinis, address books and bits of uniform from the vicinity of the inlet. Or chunks of ice, mooring line, tools and other gear, much to the disgust of maintenance people. Such clutter can ream the blades off a compressor hub so it looks like a well-gnawed corn cob, and just as useless.

"JP" type fuels are less refined than the better known av-gas, but gas turbines have tastes all their own and they don't "just burn anything." The subjects of fuels and combustion are making scientists sit up nights in the laboratories of the Navy, the Air Force, NACA and the engine and oil companies.

The objectives of the fuel experts is that substance containing the most energy for its weight and volume, at the same time in proper form for delivery to the turbine furnace. Fuel has to be cheap, easy to produce and readily available in quantity. Added together, these are tight restrictions.

In practice, further, the gas turbine owns problems of combustion (such as how to keep the fire burning at the low pressure common to the altitudes where this engine performs best), of temperatures, of metals for structure of its Hades-like innards. Solutions to these have led to many variations in design of the gas turbine—far more variations than can be covered here.

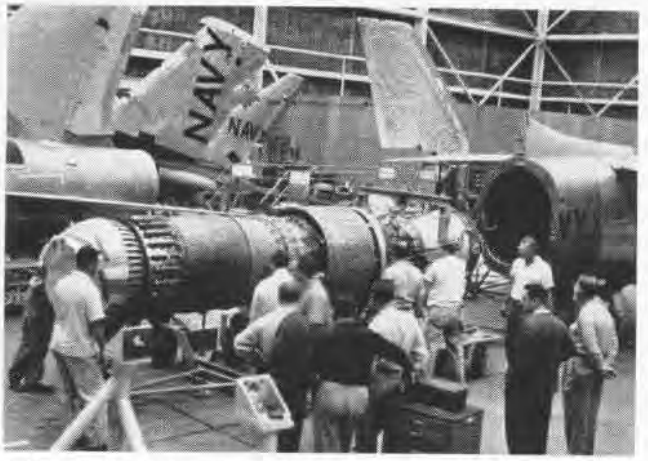
One variation bears some examination, the so-called bypass or ducted fan engine. In this design, some of the compressor air is ducted to bypass around the outside of the combustors and turbine, to rejoin the hot stream in the tailpipe. This serves to cook the tailpipe stream (and incidentally the engine skin) and increase its mass. The advantage is a large, comparatively slow-stream jet that does not waste a large amount of energy by outspeeding the airplane in flight, an inherent inefficiency of jets.



IN TURBOJET *with thrust augmentation (afterburner), fuel is added to exhaust and ignited, giving as much as 100% additional thrust.*

The bypass design makes for greater propulsive efficiency, especially at lower flight speeds. Its lower noise level is another interesting feature. But bypass engines are complicated and few have been built, so this form of silence and lower fuel consumption is something for future development.

Of the two main applications of the gas turbine, neither jet nor turboprop wins all the honors. The jet is free of the ancient, chronic propeller problems, is lightweight,



A J-57 WITH *afterburner is about to become mated with the new F8U Crusader. This Navy fighter is capable of high supersonic speeds.*

simple, nearly vibrationless and capable of high speeds and altitudes. But it affords low thrust horsepower at low speeds and altitudes, while consuming more fuel than the prop. This adds to pilots' worries on take-off and initial climb.

The turboprop gives good take-off, low-speed and low-altitude performance, and the propeller is useful for reverse thrust on landing. Therefore, it can operate from shorter runways or carrier decks. But the high operating speeds of the gas turbine—8,000 to 15,000 RPM—make for a tough gearing problem. In some cases, conversion of this furious race to the moderate RPM required for propellers results in a ponderous gear box nearly as big and heavy as the engine itself.

Speed in the higher brackets works against the propeller. At transonic speed, the propeller efficiency drops sharply while the jet continues to increase. Aviation seeks the most practical use of the best capabilities of each engine, and so the propeller's place seems to be at the moderate speeds, the jet's at the higher ones.

In sum, there are several major factors of the jet propulsive system that affect the performance of airplanes:

The amount of air that can be crammed through the engine;

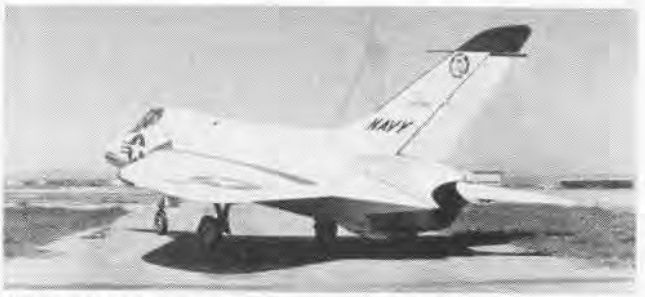
The maximum temperature that the air can be heated;

The weight of materials needed to construct the engine;

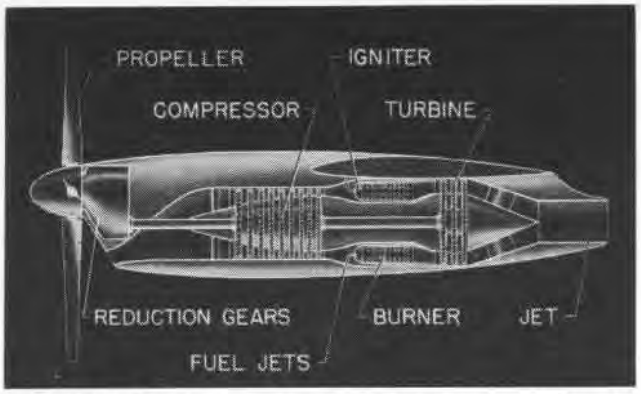
The physical shape and size of the engine;

The energy content of its fuel per weight and/or volume.

These are the main areas where further development may be



THE DOUGLAS-BUILT *F4D is also equipped with the PSW J-57 turbojet, with afterburner. This plane holds three km. world speed record*



IN TURBOJET ENGINE, *power is delivered to the turbine shaft rather than into jet thrust, and the mechanical energy turns the propeller.*

expected to improve performance and capabilities of air breathing engines.

As has been said, the turbo-supercharger is a cousin of the gas turbine. With that in mind, consider the compound engine, the grafting of a gas turbine upon the piston engine. Add to the latter the necessary ducts to carry exhaust gases from pistons, a set of exhaust gas turbines, and gears to connect the turbine to the engine crankshaft. It is possible for this engine to convert into power nearly a third of the fuel energy otherwise wasted down the drain of the exhaust stacks.

How important is this waste? A typical WW II bomber carried 5,000 lbs. of bombs and 10,000 lbs. of gasoline. With all that fuel its range was too short for some missions. Consider, as engine men must, that only 3,000 lbs. of this load of fuel was put to work flying the airplane. Fully 2,000 lbs. was dissipated in cooling, while half—5,000 lbs.— was thrown into the Wild Blue in exhaust heat.

So why not conserve some of that waste? If the energy in the exhaust trail alone could be put to work, the airplane could travel twice as far on the same fuel load. Or carry twice the payload the same distance. Several roads to this conservation have been tried, but none more fruitfully than the compounding idea.

Best range of the compound engines comes at low-to-moderate speeds and moderate-to-high altitudes. It burns less fuel than the turboprop but is heavier and much more complex.

Without the compounding turbine, this power plant is a simple piston or reciprocating engine. For a good many years this has been known as the "conventional" engine, but that application is fast going out of date. In some quarters the "conventional" engine today is pure turbojet. Nevertheless, the piston engine is still a useful servant with a solid future for certain tasks.

As with the other engines, the piston type makes use of the power of expansion of burning gases to produce thrust. But about there the comparison ends. As Ralph H. Upson said, "The fuel energy has to push a piston, which pushes a crank, which turns a shaft, which turns a propeller, which accelerates air backward, which forces the airplane ahead." This description is involved; so is the engine in action.

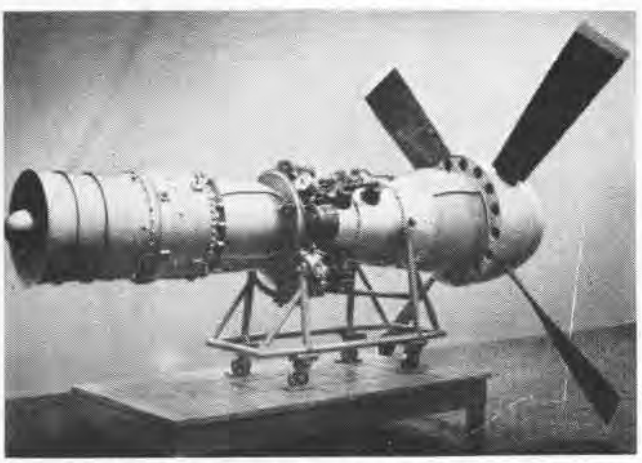
Long and intensively developed, this kind of engine has about reached its maximum useful evolution at a high of

OF 10,000-LBS. *of fuel used in WW II reciprocating engine, 3,000 carried load, 2,000 cooled engine, and 5,000 was lost in exhaust heat.*

about 4,000 horsepower. Whether this end of development is all that is possible, or is the end only because of the modern preoccupation with jet and rocket types is debatable. Anyway, there is virtually no further development under way.

As it stands, the reciprocating engine is a miracle of complexity, with enough moving parts to run the length of a hangar deck, if laid end-to-end. When all these get to working back and forth and up and down and across and around, the resulting vibration, if not controlled, could shake the rivets out of a suspension bridge. This machine is big and ponderous and it can look like something out of yesterday. Which is what it is. In fact, its complexity is curiously like some of those mechanical marvels dreamed up by Rube Goldberg, a cartoonist of yesterday.

But thrust is determined by the amount of power put into that sternward stream of air, the maximum of horsepower at the minimum cost in weight, materials, drag, mechanical friction and fuel consumption. And the machinery born to meet those needs yesterday was a marvel of ingenuity and light weight, while their great strength, flexibility and reliability still haven't been exceeded. As for power, one piston of some aircraft power plants gives



HIGH OPERATING *speeds of the gas turbine, 8,000 to 15,000 rpm, create a tough gearing problem, resulting in a massive gear box.*

up more useful work than the hottest of automobile engines. Further, the best aero engines have been slimmed down to a little less than one pound per horsepower while the auto engine weighs upwards of six pounds, and the Diesel, 15 pounds per horsepower.

Piston engines come in numerous varieties, depending on the cylinder arrangement, fuel used, number of cylinders, type of cooling and number of strokes per cycle. Overwhelmingly most popular in more than 20 years had been the four-stroke cycle, radial, aircooled, gasoline burner.

As has been said, the reciprocating engine does its work by expanding air through fuel combustion and causing this released energy to turn a shaft. Combustion, however, is not continuous nor spontaneous. It must be carried on by a supply of electrical ignition in the firebox or cylinder head. And the firing is intermittent, so it is developing power only part of the time it operates.

This takes place in a sequence or cycle. The four-stroke cycle principle (known as the "Otto" cycle, from the man who first worked it out) involves the four basic operations of intake, compression, combustion or power and exhaust, in sequence. By contrast, the gas turbine performs the same four tasks (in the "Brayton" cycle principle) all at once and continuously, for a steady flow of power.

The piston draws power only once each two times the crankshaft revolves. An engine that fires every time the crankshaft revolves is the two-stroke cycle type. This engine carries out two functions on each stroke. Simpler than the four-stroke type, this engine has had widespread application where small power is required, such as in motor boats, lawn mowers and auxiliaries. Its one great drawback is its inefficiency. Because of that and its relative inflexibility, it is not suitable for aircraft propulsion.

The Diesel, another piston variant, has been applied successfully to airplanes—notably by the Germans—but its relatively heavy weight has been its chief disadvantage. Still other piston engines tried or used successfully for aircraft include the V-type, inverted V, X-type, in-line, and the horizontal opposed, which last dominates in light airplanes of horsepowers less than 500. There have been water—and liquid—cooled types, and that unique type of aviation's earlier days, the rotary, which was radial but had the crankshaft fixed rigid and the cylinders rotating.

History accounts for many other attempts at airplane power, including the steam engine and the muscles of men's arms and legs—sure enough, the power limit ever has been the limit of man's imagination as manifested by the needs of the times. Engine science largely has been a matter of fitting the two together. Next in the engine line is likely to be the nuclear engine.

Though little has been released from security about the nuclear propulsion program, it appears now that the atomic engine, however it emerges in the air, will be one more type of heat engine. By some means to be determined in the laboratory, it will utilize the release of heat energy from consumption of fuel in a reactor—atomic fuel—to turn a propeller or produce a jet. Its hard question is how to shield from radiation, and that means heavy weight—heaviest, in fact, that we have ever dealt with. Furthermore, transfer of the reactor's heat to the air calls for a radiator of unbelievably large size.

But the nuclear engine's great promise is range. The potential is so great as to forecast a range at least equal to the endurance of men to fly the airplane it propels.

If the airplane powered by combustion engines has exacted a toll of human life, it has paid back more in lives saved. The helicopter, which incidentally still awaits an engine built specifically to its own needs, has grabbed the world spotlight largely because of its life-saving ability.

The engine is basic to our Way of Life. Take just one application of mechanical power, the airplane. Without the engine, the airplane goes nowhere.

Every airplane since the Wright brothers' time has been built around and up to the power source, whose every attribute was a major concern of the man who conceived the airplane in the first place. The aircraft designer has no easy go of it with aerodynamics, structures, etc., but right down the years he has been vitally interested in the means of delivering that well-known "horsepower required."

Number One on everybody's priority list . . . the most cussed-at, torn-apart-and-fixed-over, coddled and probed part of the flying machine ever has been the engine. It is at once the mechanic's concern, the pilot's greatest hazard and best friend. And when that critical right time comes, the center of everybody's attention. Because the engine, after all, is the heart and life of any airplane.

GAS TURBINE ENGINES *drive contra-rotating props which pull the R3Y. The turboprop gives good take-off, low speed and low-altitude performance, and the prop is useful for reverse thrust on landing, especially when applied to giant seaplanes such as this Navy transport.*

GRAMPAW PETTIBONE

Jet Blast Victim

Ever wonder what it might feel like to get caught in the blast of a jet? Here's a first-person account by a plane captain who was caught in the jet blast of an F2H-4 while working on a carrier deck:

"At approximately 0800 on 3 August 1955, I had completed the pre-flight inspection of AD-6, #506, and was standing by the leading edge of the right wing waiting for the pilot to start the engine. My airplane was spotted in the front row of prop-driven airplanes adjacent to the port side of the flight deck in the vicinity of the #5 arresting wire.

"The airplane was secured to the flight deck by three tie-down reels which were attached at the right wing stub, the tail wheel, and the left wing stub. An F2H-4 jet airplane was spotted about 15 feet forward of my airplane. The F2H-4 was facing forward and canted 45° to the right of the fore and aft axis of the ship. After I gave the pilot the all clear signal for turn-up, he started the engine.

"Normally the tie-down reels remain on the airplane until after the pilot conducts his power check. Then only, are the reels removed after receiving a signal from the pilot. However, in this case, the line petty officer, signaled me to remove the reels and clear the area. I believe he gave me this signal because he realized it might get dangerously hot in the area when the jet airplanes, which were parked in front of our AD aircraft, were pulled out and taxied forward. I had removed the tie-down reels from the right wing stub and the tail wheel and was in the vicinity of the left main gear when I noticed a taxi director standing in front of the F2H-4 jet airplane.

"As I had completed removing the tie-down reel from the left wing stub, I felt an excessive amount of heat and jet blast hit me. I immediately jumped behind the left wheel of my airplane.

I glanced up and realized the F2H-4 was taxiing out, and the jet blast was directed right at me. Prior to this time I did not see any signal from the taxi director nor did I see or hear the F2H-4 begin to taxi out until I felt the jet blast on my body.

"I was unable to hold onto the wheel of my airplane. I could feel my face being burned so I tried to cover my face with my hands. Immediately the blast began to blow me to the rear. As there is no catwalk or ladder in this area, I reached for the steel gutter edge of the flight deck thinking I might drop down into the gun sponson which is fifteen feet below. However, the steel edge was too hot to touch, therefore I scrambled under the tail of my airplane as I was being blown to the rear.

"Another AD-6, #505, was spotted about two feet aft directly behind my airplane. I remember rolling over an arresting wire and pushing under the right arc of the rotating propeller of #505. Then the plane captain of #505, grabbed me as I was sliding under the wing of 505. I was in extreme pain from the burns on my body. Shortly there-after I was carried to sick bay and treated.

"At the time of the accident I was wearing the following articles of clothing:

1. Goggles, over my eyes.
2. Helmet, buckled under my chin.
3. Pull-over jersey, which was too small in waist and sleeve length.
4. Dungarees.
5. Black socks.
6. Flight deck shoes.

"I believe this accident could have been avoided if I had been given a signal from the taxi director to clear the area prior to taxiing the jet aircraft out of its spot. Further, if I had seen the jet begin to taxi, I might possibly have cleared the area safely."

Dear Grampaw:

The other day I was making a simulated instrument approach in a Beechcraft in a high density area. It was a good steady instrument type approach with power and everything was just the way I liked it.

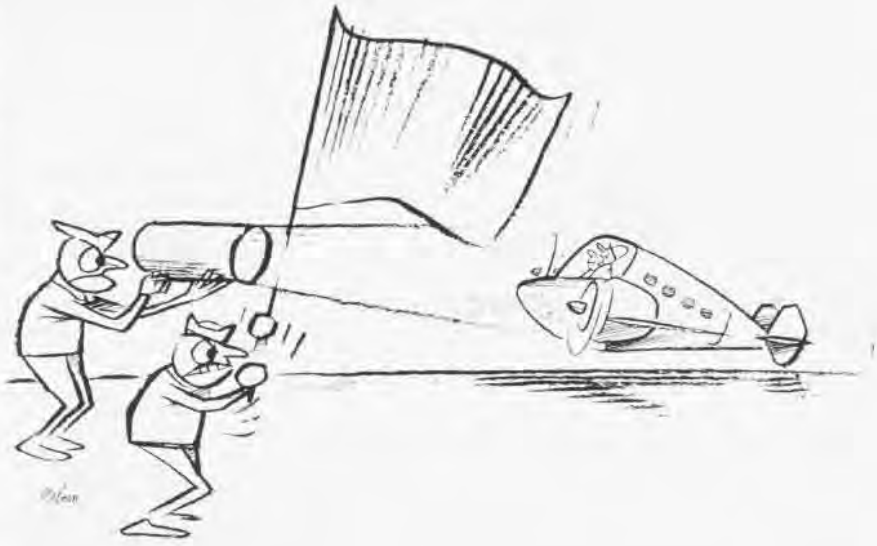
As I was about to touch down on the runway, I took off power and a landing gear warning horn was heard. Instinctively I took a wave-off! After securing from General Quarters in the cockpit, I found that my landing gear was down as I had thought, but there was still no explanation of the warning horn. To complicate matters further, the co-pilot had heard no such warning and couldn't figure why I was taking the wave-off.

After completion of the landing and securing of the aircraft, the flight was again discussed in the locker room with the co-pilot. It was here that interested listeners were able to shed some light on the mystery. The pilot of the

plane behind me said he was very happy to see me take the wave-off, because he felt himself too close and that he had heard a horn, too. The pilot of the second plane behind me said that he was reporting over the range station to the tower and lowering his landing gear while he was transmitting. *I had heard his horn and thought it was my own!*

I thought you would like to hear of this one as it might prove embarrassing to somebody in a tight situation. Maybe you could warn other pilots that it's not good procedure to have the landing gear warning horn operating while you are transmitting on a tower frequency.

Sincerely yours,
Commander, USN



Grampaw Pettibone Says:

Amen to your suggestion. Now I'll stand by for some "wheels-up artist" to say, "I heard the horn, but figured it was probably from some other plane in the pattern."

Self-Made Booby Trap

Some days you can't make a dime, and certainly this was such a day for two student aviators on a cross country syllabus training flight in an SNB-5.

All went well for the first hour or so until they began to smell smething burning. Further investigation revealed that the odor was coming from the starboard voltage regulator box which was smoking slightly. The ammeters showed an unbalanced load with the starboard generator carrying most of the load. Both generators and battery switches were secured and a decision was made to head for NAS OLATHE about 90 miles to the northeast.

The co-pilot got the portable fire extinguisher and opened the starboard voltage regulator box to ascertain the origin of the smoke. Both pilots state that the smoke increased when the cover plate was removed, but subsided shortly thereafter.

Enroute to NAS OLATHE, all radio circuit breakers were pulled except the VHF and ARN-7 inverter. Battery power was restored momentarily from time to time in order to get ADF bearings on the NAS OLATHE low frequency range and to check fuel quantity readings.

At 4000 feet over the air station, the pilot relinguished control of the aircraft to the co-pilot and lowered the landing gear by the emergency hand crank. Both pilot and co-pilot visually checked that the gear was down.

The pilot then turned the battery switch on and called the tower for landing instructions. Upon receiving these, the pilot acknowledged, stated that he was securing his electrical system and asked for a green light on the base leg if cleared to land.

At about the 30 degree position, the co-pilot reported landing check list completed and manually lowered the flaps. Turning on the final, the co-pilot saw a light which he believes was green.

The aircraft continued in the final approach with the tower broadcasting six distinct transmissions that the landing gear was not down. (These, of course, were not heard, nor did the warning horn blow, since everything was off except the ignition switches.)

Throughout the final approach, the tower flashed red lights. The "wheel watch" positioned at the approach end of the runway performed his duties to the extent that he went out on the landing portion of the runway waving a red flag four feet square. The aircraft continued in the approach with only a slight rise in the flare-out and made a very smooth wheels up landing.

Grampaw Pettibone Says:

These lads worked like beavers to booby trap themselves. If they had pulled just one more circuit breaker for the landing gear and/or put the gear handle in the *down* position before lowering the landing gear, the accident would not have occurred.

Since they had secured all electrical power prior to manually lowering the gear, they had no trouble getting it down and locked despite these omissions. However, when the pilot turned on the battery switches to ask for landing instructions, the gear promptly came up again. A few seconds later they shut off the battery switches and effectively cut off all communication with the tower and eliminated the warning horn.

The sad part of it all is that the correct sequence for emergency lowering of the landing gear was clearly printed on the back side of the check-off list. It was also in the handbook, and the pilot states that he looked over the emergency procedure on his way to NAS Olathe.

Both pilots had been given a number of simulated landing gear emergencies in "A" stage training. Oddly enough the manner in which these were given may have had something to do with this accident. The instructor would pull out the landing gear circuit breaker somewhere in the landing pattern. When the student put the gear handle down, the warning light and horn would tell him that all was not going according to Hoyle. The student would then go ahead with the procedure.

It is quite possible that the student never really learned the first two steps in the emergency lowering of the gear (circuit breaker out, gear handle down) because these steps had always been accomplished before the simulated emergency.

HOSKINS EXTENDS WELCOME TO IARROBINO

CVG-7 Arrives at Quonset

After Seven-Month Formosa Patrol

Cdr. C. A. Iarrobino, CAG-7, brought his men and planes home recently to NAS QUONSET POINT after a seven-month tour of duty aboard the USS *Hornet* in the Far East.

CVG-7 is comprised of four squadrons and one detachment. They are VF-71, skippered by Cdr. J. C. Donaldson; VF-72, commanded by Cdr. C. F. Naumann; VF-73, skippered by Cdr. J. H. Cooke; VA-75, commanded by Cdr. G. P. Stokes and a VC-12 detachment, ramrodded by LCdr. Torrence C. Lamoreaux.

Two chartered trains brought the air group's 400 ground crewmen and 19 ground officers from San Diego. Many of their parents, wives and sweethearts were on hand to greet them when the trains pulled into Quonset.

On arrival at Quonset, Iarrobino was greeted by RAdm. John M. Hoskins, ComFAirQuonset, after he set his sleek *Cougar* down under the watchful eyes of nearly 1,000 members of families and friends of the air group.

Marine Wins New Role

Stars in Cancer Society Short

LCol. D. T. Rohrabacher, now on duty with MAW-1 in the Far East, is the subject of several movie shorts filmed in December by the American Cancer Society at MCAS CHERRY POINT. The Marine officer, a veteran of 14 years service, was stricken with an organic malignancy during 1954.

The story of his fast action in consulting the Flight Surgeon of MAG-24 of which he was Commanding Officer, his operation for cancer after being flown to the Naval Hospital at Camp Lejeune, and his remarkable recovery was related in NANEWS, June 1955.

ROHRABACHER (L) IS READY FOR ACTION

The American Cancer Society plans to produce several film shorts, ranging in time from 20 to 90 seconds, featuring the colonel. The shorts will be used in theaters and television throughout the country to stress the importance of recognizing the danger signs of cancer.

Col. Rohrabacher, who has apparently made a complete recovery, maintains that had he not been aware of the danger signs of cancer, he might have delayed too late to save his life.

Col. Rohrabacher, who raised $12,000 for the American Cancer Society as its 1952 fund campaign chairman, credits the Navy Medical Department and Cancer Society for the fact he is alive and well today.

VW-2 Christens Four WV-2's

Wives Swing Champagne Bottles

Four attractive wives of squadron members of WV-2 swung champagne bottles at NAS PATUXENT RIVER recently and christened four new Early Warning *Constellations*.

The committee in charge of the event, with the skipper's OK, decided it would be appropriate for the wives of the respective crew chiefs to christen the planes. One crew chief, Chief Anthony Antonavage, was unmarried,

MRS. ELWELL CHRISTENED PLANE 'LOKI'

so his flight engineer, Wilbur Elwell, had his wife do the honors.

Cdr. J. D. McAllister, commander of the squadron, presented the four ladies with a plaque commemorating the big christening day.

XZSG-4 Envelope Accepted

Air Inflation Tests at Lakehurst

The Navy has accepted its first nonrigid airship envelope from the General Development Corp. of Elkton, Md., BUAER announced recently. The bag is destined for use in an XZSG-1 airship.

In the past, all airship envelopes made for the Navy were constructed by the Goodyear Rubber Co.

The new envelope is constructed of two-ply cotton neoprene and has a volume of 527,000 cubic feet. The bow mooring system is made of aluminum.

Air inflation tests at Lakehurst found the bag perfect is all respects.

BEECH AIRCRAFT'S *experimental Model 73, a two-place trainer, made its initial flight on 18 December near Wichita. Powered by a Continental J69-T-9 turbojet engine and weighing only 4,521 lbs., the new trainer has a speed of 253 knots at 15,000 feet. Its stalling speed is 60 knots.*

SMART IN APPEARANCE *and neat in uniform, the British counterpart of the Navy's ASW experts, VX-1, landed their Shackleton bombers and fell in for reception by the official welcoming party which included Capt. C. S. Williard, CO, and Cdr. S. N. Kirkland, XO, NAS Key West.*

RAF AIRMEN VISIT NAS KEY WEST

THE RAF Coastal Command's Squadron No. 228, based at St. Eval, Cornwall, England, landed at NAS KEY WEST recently for a three-day visit with the Navy's airborne antisubmarine specialists of VX-1.

Headed by Air Vice Marshal G. W. Tuttle, the 21 officers and 60 enlisted men arrived at the air station in four big land-based Shackleton ASW aircraft. Enroute the group made stopovers at Gibraltar, Dakar, several ports in South America and Jamaica. The long journey served a twofold purpose: that of good will and long-range navigational training on overseas routes for the squadron.

During their visit with VX-1, Squadron No. 228 attended briefings in the various phases of ASW, particularly those connected with the employment of MAD gear. Following the briefings, the British airmen were given flights in the R4D-8s and S2F type aircraft. Navy pilots demonstrated the inflight value of MAD gear as an ASW weapon.

Climax to the event was a cocktail party for the officers, a lobster broil for whitehats and buffet for the sergeants.

THE LOBSTER *broil was a highlight of the visit for British officers of the squadron. The party was held at the Aero Palms Officers Club.*

THE GRUMMAN S2F-1 *aircraft was used in demonstration flights for British airmen in show of capabilities of MAD gear as ASW weapon.*

LET'S LOOK AT THE RECORD

CNAAT Honors ATU-202

Unit Awarded Jet Safety Trophy

A jet training unit at NAAS Kingsville has set a precedence in the jet aviation safety field. The unit, ATU-202, was presented the first annual Jet Aviation Safety Trophy by RAdm. C. D. Glover, Chief, Naval Air Advanced Training, in recognition of outstanding achievement in safety.

ATU-202, skippered by Cdr. A. W. Curtis, is the first jet unit to be so honored.

In the past year, the unit has won Seven "Aces" awards for safety in formation, tactics, instrument and other flights. Since the first class started training over two years ago, ATU-202 has seen 650 cadets, student officer and foreign students complete the F9F-2 *Panther* jet course.

Vinson Logs 'Chute Jumps

Chutist Once Aided Downed Pilot

CWO Lewis T. Vinson recently logged his 500th parachute jump. This record is believed to surpass any military parachute jump score. He reached this milestone in his career with the Naval Parachute Unit at El Centro, Calif.

Free-fall chutings for Vinson have been routine, with the exception of jump No. 417 when his main canopy "streamed." When he deployed his reserve chute, it wrapped around the "streamed" chute. He was able to separate the fouled chutes a few hundred feet above the ground.

Besides the Air Medal, which was awarded for a voluntary jump into rugged terrain to render medical assistance to a downed aviator, he holds a SecNav Letter of Commendation "for his continuing contributions in successful development of improved safety equipment in the field of Naval Aviation."

In compiling this enviable record, Vinson's jumps have been free-fall chuting with the exception of three static line jumps. One was made with the old ParaMarines, one with the 11th Airborne Division and one with the AF 6511th Test Group. Cdr. N. F. Waters is his skipper.

AD Pilots Log High Time

Record Believed Set by VA-145

Skyraider pilots from VA-145 believe they may have set a record for carrier-based attack squadrons. The record, a total of 1,051 flight hours in one month, was established in September while the squadron was flying training missions from the USS *Boxer* near Formosa and in Japan.

CAG-14, Cdr. A. W. Newhall, and VA-145's CO, Cdr. G. L. Bergey, attribute the 51 flight hours per pilot to excellent maintenance crews and good operating techniques of the *Boxer*. Capt. F. B. Miller is CO of the carrier.

The squadron compiled 728 hours in day and night flights from the ship while logging 239 carrier landings and tallied 323 hours from NAS ATSUGI.

Although the pilots hours were 1,051, VA-145 actually flew 1,094 hours, since several pilots from other units made training flights as well.

MRS. J. J. CONNELLY *greets her husband aboard the Princeton after he made the 60,000th landing. She was one of 400 service wives aboard for a one-day cruise.*

IFR-IQ?

Read the radio Class code of station whose code is BVOR-E.

Answer on Page 40

Pilot Wins NABTC Laurels

Lt. Kidd Solo-Qualifies 40 Pilots

In a little over two and one half years, Lt. Owen A. Kidd has qualified for solo flight approximately 40 naval cadets and student officers while compiling 1,635 accident-free flight hours in the SNJ *Texan* trainer. The Naval Air Basic Training Command believes this to be a record for this type training and plane. In all, Kidd has nearly 2,900 accident-free hours in the air.

Kidd entered the Navy under the Holloway plan in 1946 and attended the University of Pennsylvania two years. He went to Pensacola in 1948 and received his commission and Naval Aviator designator in 1950.

VINSON AND CDR. WATERS AT JUMP'S END

OTHER UNIT PILOTS UPPED HOURS OF AD'S

THE BACK SEAT IS KIDD'S FAVORITE SPOT

VF 123

WHEN THE Korean conflict blazed suddenly into being in June 1950, certain Reserve squadrons were at once ordered to active duty. VF-123 was one of these. But in December 1949 at NAS OAKLAND when the squadron was designated VF-871, its members — all Reservists — little dreamed how soon they would be headed for some very active duty.

On 2 August 1950 at NAS SAN DIEGO, they found a tremendous banner draped on their hangar spaces, reading, "Welcome Weekend Warriors." Appropriately "weekend" was crossed out for the duration.

The months that followed were filled with tasks done on the double to whip the squadron into a state of combat readiness. Many hundreds of hours were flown in the F4U-4's and there was no end to the work needed to get everyone up to scratch.

On 16 April, members of the squadron made their first flight in the Korean campaign from the deck of the USS *Princeton*. Combat operation on this first Korean cruise were short but effective. The squadron returned to the United States on 21 August to become part of Air Task Group Two.

Training began once again, this time to integrate new pilots into the squadron, many of them fresh from the training command. Most of the training was done at NAS NORTH ISLAND.

On 16 June 1952, VF-871 moved aboard the USS *Essex* for its second and last Korean combat cruise. On this tour a total of 1416 sorties were flown for a total of 4050 hours. One pilot was lost in combat.

What VF-871 did in the two Korean cruises may not have been spectacular, but it was important. The squadrons flew many a close support mission, the kind of flying so essential and necessary during the Korean War.

It was the destiny of VF-871 to close out the history of the unit as a Reserve and *Corsair* squadron. On 18 February 1953, VF-871 returned to the United States and NAS MIRAMAR. At that point, it became VF-123 and the squadron flew *Panthers*.

After a nine-month training cycle, VF-123 left on 1 December 1953 aboard the USS *Essex* for the squadron's first post-Korean cruise. Shortly thereafter the squadron received its second consecutive AirPac Safety Award.

Seven months later, VF-123 took its second post-Korean cruise aboard the USS *Philippine Sea*. On this cruise, each pilot averaged over 70 carrier landings. On both ORI and Admat inspections, the squadron received the rating of *Excellent*.

The end of 1955 found them back in the United States after a cruise that had included calls at Sasebo, Hong Kong, Okinawa, as well as Keelung, Formosa.

A new training cycle begins, and this time the squadron will be proudly flying its brand-new F9F-8 *Cougars*.

MAINTENANCE, ORDNANCE MEN WORK ON PLANES ABOARD SHOWBOAT

LCDR. A. E. MONAHAN, LSO, AND CDR. J. P. FOX, CO OF VF-123

TELEVISION GOES TO SEA

SILVERA TAKES PANORAMIC SCENE OF FLIGHT DECK ACTIVITIES ABOARD THE HANCOCK

THE USS HANCOCK started the new year in style. Before Christmas, her Special Services Department had installed the first closed circuit television to be used by any ship in the Far East.

Now ship's company can gather in any one of six vantage points throughout the carrier, from the Officers' Wardroom to the General Mess, and watch special events being televised from remote parts of the ship or on the flight deck. The picture is fed into standard 21-inch TV receivers which present the usual local programs when the ship's own transmitter is off the air.

The new circuit makes it possible for off-watch personnel or those not allowed on the flight deck during launchings and special events to be up to date on current ship operations.

Old "Vultures' Row," the small observation decks above the flight deck, is on the way out. Crowded and dangerous, it has been replaced by the new TV "eye." Pictures can be transmitted to distances of 2,000 feet.

FAY ADJUSTS A MONITOR TELEVISION SET

There is also a large projection TV set in the hangar bay. This set can project an eight-by-ten foot picture on the regular motion picture screen.

According to B. M. Silvera, electronics technician who maintains and operates the equipment, the possibilities of his television hook-up are unlimited. For example, the Commanding Officer may now address the ship's company in this direct, personal way. His voice would be coupled with the transmitted picture by using the ship's PA system.

The testing of new weapons and the launching of aircraft with the *Hancock's* new steam catapults will become good subjects for television.

Sceptics may ask, "Will they start putting on a 'Betty Crocker' type program from the ship's bakery?" or "How about a 'Howdy Doody' series from the mess deck's master-at-arms?"

But those who watch the Hancock's application of its own television station to morale and educational subjects are left with little doubt. Today carriers are cities within themselves. Here is an efficient way of keeping all hands informed of headline events.

'Showboat' Returns Home

Phil Sea Ends Fifth Far East Tour

The Navy's "Showboat," USS *Philippine Sea*, has completed her fifth Far Eastern tour of duty. The big carrier arrived at San Diego in late November after operating seven months with the Seventh Fleet in the Western Pacific.

In October, the ship launched 19 jets, eight propeller aircraft and landed 13 props of ATG-2 in a 17-minute operation. Forty sorties in 17 minutes is believed to be a record for Navy carriers.

The carrier spent 152 days at sea and steamed a total of 69,600 miles while the pilots of ATG-2 logged 9,181 hours flying without a single pilot injury. Twelve pilots completed over a hundred carrier landings each during the cruise.

Commanded by Capt. E. D. Farrington, the ship served as flagship for RAdm. Ira E. Hobbs, ComCarDiv-3, until her departure from the Far East. The name "Showboat" was given the *Phil Sea* during the time she served as the Navy's demonstrator to government officials preceding the opening of the Korean War.

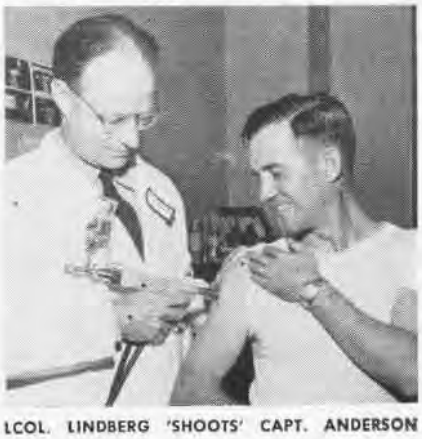
Flu Shots for NAS Norfolk

First Navy Needleless Innoculation

Capt. E. A. Anderson, senior medical officer at NAS NORFOLK, and his men rolled up their sleeves recently and administered flu innoculations to some 80,000 military dependents in the Tidewater area. In addition to the dependents, the doctor and his men innoculated air station personnel.

This big job was made easier for Norfolk's medical personnel by the use of the new needleless automatic jet injection apparatus developed by the Army.

LCol. R. B. Lindberg, chief of the Department of Bacteriology, and Dr. J. E. Smadel, head of Communicable Diseases Division at Walter Reed's Army Institute of Research, developed the special equipment for the shots.



LCOL. LINDBERG 'SHOOTS' CAPT. ANDERSON

ANNAPOLIS SEAPLANE BASE AT THE NAVAL AIR FACILITY HAS A THOROUGH PROGRAM OF MIDSHIPMEN TRAINING AND INDOCTRINATION

YELLOW BIRD SANCTUARY AT ANNAPOLIS

OLD BUT NOT OUT, the last of the N3N's are still flying from their haven on and above the waters of the Severn River. There are 48 of them—28 at Annapolis and 30 at O&R Norfolk.

When the flight schedule at Annapolis is unusually heavy, some of the Norfolk N3N's are sent to NAF ANNAPOLIS. Last summer 40 *Yellow Birds* at Annapolis maintained 32 plane flights four times a day.

The end of the N3N's, while not yet actually in sight, should not be unexpected. Production of the *Yellow Birds* stopped some 20 years ago, and many spare parts are no longer available. A few minor accidents, and a sharp reduction in the number of flyable N3N's would be inevitable.

The N3N's are used for a special mission: indoctrination in aviation for the Midshipmen of the U.S. Naval Academy. The program calls for eight N3N flights and two UF flights during the four-year course. These take place during the aviation summer of the second class year and the fall term of the first class year.

During the third class year, the Midshipmen receive cockpit escape training, and the *Dilbert Dunker* trainer is used. The Midshipmen are instructed in the fitting, wearing and use of chest and seat type parachutes, life vests, shoulder straps and seat belts. They are also drilled in the right way to enter and leave a rubber life raft in the water.

The Department of Aviation at the Naval Academy is headed by Capt. W. T. Shields. Cdr. P. K. Blesh is the commanding officer of the Naval Air Facility. Sixteen Facility pilots and 80 pilots attached to the Academy serve as flight and ground instructors.

The *Yellow Birds* are not the only aircraft used. There are also ten JRF-6 and five UF-1 amphibians and one HUP-1 helicopter at the Facility. The UF's are modified especially for the Midshipmen training program. The modification includes additional drift sights, radio receiver units, and a rearrangement of the loran unit for instruction. The amphibians are used also for proficiency flights for pilots attached to the Academy. This is a valuable use of the *Yellow Bird*.

The Naval Air Facility has a normal allowance of 20 officers and 200 men. The tower is manned and the seadrome open for flight operations only during the daylight hours as there are no night lighting facilities for the many-buoyed Severn River.

During the off seasons for the *Yellow Birds*, Air Facility pilots are busy giving check-outs, refresher hops and instrument checks to the pilots of the Severn River Naval Command.

Many senior Naval Aviators use the facility: Capt. J. C. Toth, Chief of Staff to the Commandant, Capt. Shields, and Capt. R. H. Dale, head of Electrical Engineering.

The *Yellow Birds* are serving a real purpose in aviation. Future Naval officers are going to remember the jaunty little seaplanes that have flown so long and so faithfully.

FIRST LORD OF ADMIRALTY THOMAS ABOUT TO BOARD A UF

UF-1T ALBATROSS MAKES TAKE-OFF RUN FOR TRAINING FLIGHT

Schlegel Retrieves Kill

Alaska Bay is Duck Soup for Him

When a man bites a dog, that's news. When a man substitutes for a dog, that's also news. And that's exactly what Ltjg. Philip Schlegel, O-in-C of UDT-11, did when he acted as a retriever for duck hunting Navy pilots while he was in Alaska with the submarine SS *Perch* for the War Games held around Kodiak.

There's no scarcity of ducks in Kodiak. Nor is there a shortage of dogs, but there is a scarcity of dogs that are good retrievers. And pilots of VP-2, based at Kodiak, had been losing ducks over deep waters, for lack of a good retrieving dog. Losing ducks,

'GOOD JOB, BOY' *say Lts. Overdiek and Dugal, for 'Fido' Schlegel's 4.0 duck retrieving.*

that is, until they enlisted the aid of Frogman Schlegel.

Floating silently while waiting for the hunter's guns to boom, Ltjg. Schlegel utilized all the skills of Navy frogmen stalking an enemy position. As dead and injured ducks fell onto the water, he swam swiftly to retrieve the game, dispatching injured ducks with silent knife slashes, in the same efficient manner that he would an enemy.

Rubber-suited, fin-equipped and carrying the full combat raiment of Navy frogmen, Schlegel proved the most expert retriever of fallen ducks of any in the area, canine or otherwise! Share and share alike was the way the bag was divvied up. Several times there was roast duck for dinner in the wardroom of the USS *Perch*.

Japanese Pilot Graduates

First from Japan Solo's at Whiting

Whiting Field's Basic Training Unit One South has graduated its first Japanese student. He's Ltjg. T. Shimizu, a student from the Japanese Maritime Service Defense Force. A graduate of the Japanese Naval Academy, he was an aviation student when WW II ended.

He enlisted in the JMSDF in 1954. His first solo in Pensacola was not his first solo flight. He made that flight in March 1945 in Japan. Before coming to this country, he accumulated over 100 hours flying time.

Ltjg. V. R. Hagberg was Shimizus' instructor of Whiting Field and 1st. Lt. R. A. Neunenfeldt his check pilot.

ASST. SECNAV *J. H. Smith, Jr., gives Navy wings to Clifford Inokinok (C) and Willis Walunga, Alaska National Guard scouts, for aiding 11 members of Navy patrol plane shot down over Bering Sea last June 22.*

Reenlistments in VP-47

Squadron on Deployment Overseas

Since VP-47 departed from the states over six months ago, 44% of all personnel eligible for release or discharge have continued their career in the Navy.

Newest reenlistees in the squadron are R. H. Doyon, Jr., AD1, and M. D. Hairstron, AN. Cdr. J. W. Lawyer, CO, administered oath of allegiance.

SANTA'S CHARIOT *for use in the Pensacola area was this gaily decorated HUP-2 from HTU-1. Storybook characters, green holly and red striped candy canes were part of the gay decoration. The painting of "Dopey" was so situated that his nose flashed when the recognition lights went on.*

VS-26 Has Canadian as XO

LCdr. Byrd Has Special Distinction

LCdr. H. J. G. Byrd, an RCN officer serving with VS-26 on TAD, has the unique distinction of acting as executive officer of a U.S. Navy squadron. When he first arrived at NAS NORFOLK, he was assigned as a special projects officer. Eventually he held positions as maintenance and operations officer and finally his last post as XO.

Another achievement for Byrd was that he was the first Canadian pilot to land an S2F on a U.S. Navy carrier.

VS-26 has been training Canadian Naval personnel in the operations, maintenance and upkeep of the S2F which the Canadians hope to adopt for anti-submarine warfare duties.

On his departure from VS-26, Byrd was relieved by LCdr. W. F. Rippery, a U.S. Navy man. Cdr. C. C. Chapman skippers VS-26, *the Ready Squadron.*

VADM. T. S. COMBS, *DCNO(Air), presents Miss Dixie Burks, civilian personnel director for his office, an accomplishment award of $200 for sustained superior performance of duty.*

AS A DIFFERENT *kind of flier arrives, one naturally skilled in aeronautics, W. A. Soudson, AC3, offers him standard flight form.*

CLARENCE PARKER, *BM3, and Donald Schultz, SN, hold chow call for visitor who has his quarters in Leyte Third Division Gear Locker.*

PIGEON PILOTS USE NAVAL FACILITIES

EVER SINCE the first airplane, birds have probably been wondering how airplanes and the big LTA blimps work. Just recently self-appointed members of the Feathered Friends Investigating Committee appeared on the scene, and if they ever fly away and return to their own Feathered Flying Units, they may have something interesting to report.

The first member to report aboard made a 4.0 landing aboard the big carrier USS *Leyte* (CVS-32) a few weeks ago. He did not require the services of arresting gear.

Called "Ace" by *Leyte* crewmen, this spotted red and white flier appears to be in no hurry to leave. Since he has adopted the *Leyte* as his home, it is assumed that in his ancestry was a carrier pigeon.

Ace was found perched in the Captain's gig after his successful landing by C. W. Markey, BM2, and was given a home in the Third Division gear locker. A modern red and white hangar was constructed for Ace, his chow found its way from the general mess, and the only problem remaining was how to coax the bird to "fly away." There apparently was some kind of ship regulation against his continued presence.

Daily, according to Ace's Plan of the Day, at 0800 and 1300, Flight Quarters were held for the bird. He was duly launched from the after fueling station and regularly took to the air. But a few passes, he came back aboard.

Once he was blindfolded, taken up number three elevator, and released for a full deck launch. His aerial navigation was far too good, however, and he "homed right in" on the after fueling station and was shortly back in the comforts of his red-and-white hangar.

When the ship was last in port, a few members of the nearby Fourth Division took pity on Ace, and, owing to the fact that he didn't seem to have anywhere to go on the weekend, found a young wren and brought her into the hangar to keep him company. Ace promptly kicked her out.

This has given rise to the rumor that maybe he's breaking another shipboard regulation by taking up residence in the Third Division gear locker. Maybe he's a she!

WILLIAM LANG, *SN, and C. A. Parker, BM3, urge Ace to fly. He does, but comes back.*

STILL ANOTHER facility is being given an opportunity to welcome another flier—NAS Lakehurst. The friendly pigeon with flight plans of his own, recently checked in at the Clarence Desk of Operations for a look-see at the big LTA center. Duty personnel gave his time of arrival at 2200 with ETD 2215. He was offered a DD-175 (Standard Flight Form).

Lighter-than-air men have found the incident reminiscent of war years when airships used homing pigeons to carry messages back to the base during periods of radio silence. Lakehurst was also the center for the breeding and training of such pigeons until after WW II.

It has not been determined whether the two pigeons which came in had acquired their early training as Naval Aviation Cadets at Pensacola, but it is assumed that they considered themselves fully qualified as Naval Aviators and ready for a duty assignment.

EIGHTEEN MILES ABOVE THE EARTH, THE PILOT OF THE DOUGLAS D-558-2 SKYROCKET IS PROTECTED BY A PRESSURIZED COCKPIT

BREATH OF LIFE IN THE TROPOSPHERE

IN THE LEE of the firetruck parked at the runway intersection, a crash crewman snorted disgustedly. "Oh, brother," he nudged his buddy, "look at that vapor trail! Pilot's got his feet crossed on the controls."

The other crewman squinted judiciously at the thin line of the contrail high overhead. The white thread of vapor, which stretched arrow-straight for miles, had veered in erratic twists that contrasted sharply with the former straight line.

"Yeah, that character's fouled up for sure," he commented. "Wonder what's going on up there."

Up there, some 34,000 feet, a number of things were going on, but the character in the cockpit exhibited little or no interest in the proceedings. His helmeted head lolled occasionally and his oxygen mask covered a recurrent, foolish grin.

Once the pilot's eyes cleared somewhat, and he frowned slightly at some half-recalled thought, but he lapsed into a state which the crash crewmen would promptly have labeled the result of straight rye shots with beer chasers.

But our foolish-looking friend had not been near a bar in days. As a matter of fact, he didn't drink. But for practical purposes he was literally higher than a kite. He was in an advance stage of hypoxia, or "oxygen-

AMEL TECHNICIAN IN FULL-PRESSURE SUIT

want," and only a generous measure of good fortune could prevent his experiencing a terribly let-down feeling, plus a possible permanent hangover. The crash crewman might well ask, "How'd he get into that fix?" And for the benefit of pilots and other personnel, the problem is reviewed here.

THE BODY requires certain supplies: food, oxygen, and water. Life may be sustained for several days without food or water, but it cannot function normally for more than seconds nor exist for more than a few minutes without oxygen.

Reduced to the simplest terms, oxygen reaches the lungs by virtue of our breathing atmospheric air at a pressure of 760 mm. of mercury (14.7 lbs. per square inch). This pressure may be thought of as the weight of air which presses down on us from above—the sum of all the molecules of oxygen, nitrogen and gases in the atmosphere.

FREE MOVEMENT FEATURE OF PRESSURE SUIT

Within the lungs this amount of pressure is required to effect a simple mechanical transfer—oxygen passes from the millions of air sacs which make up the lungs into the blood stream. At the same time, the waste product carbon dioxide passes from the blood stream into the air sacs to be exhaled as we breathe out.

Let us consider our pilot flying at 34,000 feet. At that altitude the atmospheric pressure is reduced to 187 mm of mercury—roughly one-fourth of the pressure at sea level. Now about 21% of this atmospheric pressure is caused by oxygen and 79% is due to nitrogen. These percentages remain the same whether we are at sea level or at 34,000 or 50,000 feet. But remember that the total pressure of both of these gases has been reduced by ¼—at 34,000 feet there are fewer gaseous molecules pressing down from above. Therefore, the available oxygen pressure is reduced by ¼.

This is not enough pressure to effect the transfer of oxygen from lungs into

PILOT PROTECTION AIM OF DESIGNERS

the blood stream. Only by breathing 100% oxygen at this altitude can our pilot survive.

What we have done by supplying him with 100% oxygen is to eliminate the nitrogen from his breathing mixture. We may think of these two gases as being in deadly competition within the lungs. Give all the available pressure or "push" to the oxygen at 34,000 feet and we have it made.

Looking at erratic twists of the contrail high overhead, we must conclude that in some way the supply of 100% oxygen has been interfered with. Provided his equipment is functioning properly, the percentage of oxygen in the air breathed by the pilot has been gradually increased by his diluter—demand regulator as he ascends. Remember, the life-line at 34,000 feet extends directly all along this line: Oxygen supply, regulator, hose connections, and a clean, well fitted mask.

A break somewhere along this line has fouled the contrail and given some accident investigating team the rough job of finding out what went wrong.

What happens above 34,000 feet? That should be easy if you have been reading carefully. The atmospheric

OXYGEN MASKS MUST FIT EACH INDIVIDUAL

pressure continues to fall off. Reason? Fewer and fewer molecules pressing down above us. At 50,000 feet the total pressure is only 87 mm of mercury—roughly one-ninth the pressure at sea level. Even if we breathe 100% oxygen at this altitude there is not enough pressure to "push" the oxygen where it's needed.

If you want a play-by-play description of the game going on in the lungs at 50,000 feet, corner your nearest flight surgeon and ask him for a quick diagram. The situation up here becomes a bit more complicated by virtue of the carbon dioxide pressure in your lungs and the presence of water vapor. These are also in competition with oxygen. As a matter of fact, at 50,000 feet, these two imposters effectively block the total atmospheric pressure.

But even without a degree in physiological chemistry, you know the answer: a pressurized cabin or oxygen supplied under pressure by the regulator. If the molecules of oxygen haven't got the required "push", we have to give it to them. And this adds another vital strand to the breath-of-life-line at high altitude.

Interrupt this life-line at any point, and you're in trouble. Call the condition what you will: strictly speaking, if you are "anoxic," you are "without oxygen;" If you prefer the term "hypoxic," you still need oxygen. What does it add up to? The maintenance men who service and the pilots who use the oxygen equipment should care for it and recognize it for what it gives—the breath of life in the troposphere.

Weekend Warrior NEWS

ASSTSECNAV SMITH *led inspection party and walked down the line of neatly attired men.*

NARTU Honors AsstSecNav Smith

Assistant Secretary of the Navy for Air, the Honorable James H. Smith, was the principal speaker at the recent Annual Military Inspection of NARTU NORFOLK. The unit celebrated the year's big event with Mr. Smith and RAdm. D. V. Gallery, CNAResTra, heading the inspection party, as over 700 guests looked on.

Upon arrival at NAS NORFOLK, Adm. Gallery was met by his son, D. V. Gallery III, seaman apprentice, serving with VR-22 at the air station.

Sec. Smith spoke on the work being done by the unit and stressed the importance of all Weekend Warriors.

After the inspection, Adm. Gallery and Sec. Smith were honored with a reception at the officer's club. The enlisted men and their families and friends celebrated at NARTU's hangar.

CNATRA Trophy Winners Reviewed

After the hustle and bustle of preparing for the awarding of the CNATRA Trophy, NARTU SANTA ANA is once again back to normal as officers and men settle down to the serious task of carrying out assigned duties.

Although the unit remains the smallest of the 28 stations and units in the Reserve Command, NARTU SANTA ANA has grown, as more airships and training facilities become available, from its initial commissioning crew of four officers and 20 enlisted men to its present strength of 10 officers and 68 enlisted men.

Commanded by Cdr. A. L. McCubbin, the unit provides administrative, maintenance and operational facilities for about 350 Weekenders who make up the local airship squadrons.

The unit copped the CNATRA award for showing the most improvement during the calendar year in a heated race among 28 Air Reserve units and Naval Air Stations.

Japanese Naval Chief Visits NAS

VAdm. Kou Nagasawa, Chief, Japanese Maritime Self-Defense Force,

ON HIS ARRIVAL *from NAS Memphis, RAdm. Nagasawa was welcomed by Adm. Gallery.*

and part of his staff visited Naval facilities in the Great Lakes area recently as guests of Adm. A. A. Burke, Chief of Naval Operations.

The Japanese were met on arrival at NAS GLENVIEW by RAdm. D. V. Gallery, CNAResTra. After a briefing on the function of the Naval Air Reserve Training Command, the Japanese motored to USNTC Great Lakes for a one-day visit.

The Japanese were visiting the U.S. for orientation in the organizational set-up of the Naval establishment. Visits were also made to other Naval activities where students from Japan were training.

OFFICERS, CPO'S, *enlisted men, and the sole Wave member of NARTU Santa Ana complement pose for an informal portrait at MCAF Santa Ana. These skilled technicians play an important role in training the Reserves to execute ASW missions in the Fleet-type airships they fly.*

LCDR. J. B. *Schmidt, CO of VS-893, goes over a check-off list with C. E. Peters, ADE3, before climbing into cockpit of AF2 for a flight.*

ALL IMPORTANT *pre-flight briefings are given pilots by Ens. J. E. Richardson (r). Hardhats are compulsory for single engine pilots.*

WEEKEND WARRIOR training cruises are a specialty of NAS SEATTLE. This past season Seattle provided training on the double with barely a pause between the annual cruises of two big reserve outfits, VS-893 and VP-893. The first had hardly packed up and returned to civilian routine when the second squadron checked in.

VS-893 flew their AF-2 *Guardians* while VP-893 trained in the reliable old PB4Y-2's. Thorough instruction in anti-submarine warfare as well as regularly scheduled long range patrols trained the two squadrons in every aspect of their assigned duties.

During pilot briefings, aircraft were rolled out on the lines and given thorough preflight checks. Maintenance personnel from NAS SEATTLE and squadron crews made certain that each airplane was in top-notch condition.

Administrative personnel at Seattle cooperated steadily for the success of the cruises. They did an efficient job of checking men aboard. The basis of each cruise is accurate, thorough preparation for training, and this means thousands of details well worked out and very efficiently executed.

REPRESENTATIVE *of VP-893's cruise is this photo showing six-man crew disembarking after long patrol flight in a squadron PB4Y-2.*

A SONAR *buoy dispenser is loaded in preparation for take-off by VS-893 ground crewmen.*

THE AF'S *searchlight is main topic of interest for VS-893 men—Peters, Smith and Hoyt.*

PILOT LTJG. *S. L. Smith is given thumbs up sign by plane captain Lowe to start AF's engine.*

THIS FIRE-FIGHTING *crew sped 25 miles west of the air station to lend aid to local companies in combating stubborn gasoline fire.*

MEDGIE'S FORMER CO, *Capt. W. E. Fowler, honored the retiring chief by permitting him to lead an inspection party at the NARTU hangar.*

Birmingham Firemen Win Praise

A five-man duty section fire fighting crew from NAS BIRMINGHAM received praises from the Birmingham Fire Department after quenching a gasoline fire that threatened to destroy the Birmingport gasoline refineries.

The assistant fire chief, Mr. Rosenfeld (wearing white hat in photo), revealed there was no gasoline fire-fighting equipment available in his company and lauded the air station crew for their punctuality. Raymond Nelson, AD1, (extreme right in photo) was in charge of the group.

NARTU Plank-owner Retires

Michael Medgie, ADC, has been a familiar figure around NARTU NORFOLK for some time, but in the future, the old Chief will be just a visitor. Medgie, a NARTU NORFOLK plank-owner, recently became the first enlisted man to retire from that unit after 20 years of Naval service.

Medgie began his military career in 1918 when he joined the infantry. After service in France and Germany, he joined the Navy in 1920. His early Navy days saw him serving aboard battleships, cruisers, destroyer tenders and a receiving ship.

During WW II, he served aboard carriers in the Pacific Ocean area.

NAS Honors TV Producer

Ray Forrest, an NBC-TV Producer-Director has been honored by the Naval Air Reserve Training Command at NAS FLOYD BENNETT. Mr. Forrest was presented a CNAResTra Certificate of Merit by the air station CO, Capt. W. M. Ryon.

The award was given in recognition of Forrest's work in the production and telecasting of several films on TV to promote the NavCad and Naval Air Reserve Programs around New York.

NAS WAVE Wins Contest

Pretty Etta Kaye Watterson, YNSN, attached to CNAResTra, has been selected as the "Goddess of Liberty." She will reign as Queen of Chicago's celebration of the 69th anniversary of that famous sculpture. A round trip flight to Paris, a wardrobe and a screen test were also included as part of the prizes she won.

NARTU *Norfolk's newest CPO, R. G. Hutchinson, is dunked in pool at initiation ceremonies.*

ETTA KAYE *will represent Chicago in campaign to build the American Museum of Immigration.*

FORREST, *producer of the Children's Theatre, is given award by air station CO, Capt. Ryon.*

DO'S AND DON'T'S OF NIGHT FLYING

NIGHT flying is here to stay. It's here to stay a long time, and with lots of people. In fact, it's so important that it can no longer be reserved for a few 'after-dark specialists.' Sooner or later, practically everybody who flies a Navy airplane is going to have to get into the owl routine, so avers *Night Flying Sense*, the latest Sense Pamphlet issued by Aviation Training Division of CNO.

Bitter lessons in Korea testified to the necessity for night missions. In their typically unsportsman-like way, the opposition, pretty well pinned down by our daylight patrols, turned to after-dark supplying and reinforcing. Naturally, we had to stop this, and did.

But night flying doesn't take a set of specialized skills. *All* flying is a blend of skill and attitude. You've got to know what you're about, and also have a belief in your ability to do the job. For night flying, it's just more of the same. You have to acquire a touch more skill and develop a touch more belief in yourself.

Now the question comes—how to prepare for night flying. Well, to begin with, *all* flying prepares for operating after dark. Everything you have learned from the very beginning about cockpit familiarization helps make you ready for those flights in the dark. That's when your hands must perform by themselves. A real pilot knows so much about his plane that his actions are translated into reflexes.

A good rule of thumb is to put your trust in your instruments rather than in your eyes, or in the seat of your pants. Your instruments are not going to be confused by the vast number of stars that seem to whirl around on a high-atitude flight. Your eyes may play tricks on you—they sometimes make lights appear to split and dip, but these fake sensations do not register on the instruments. Nor can vertigo affect the instruments, though it can hit even the most experienced pilot. If there are contradictions between what you feel in the seat of your pants, and what the instruments say, forget about the seat of said pants as a flight instrument.

If you're going to see anything when you get over your target, you need

OF COURSE, *Dilbert doesn't have the word. He still thinks it's a flight instrument.*

your owl-eyes. Rules for night-vision saving must be meticulously observed, and devices carefully used at all times. Give your rods, night-seeing nerves, a chance, and they'll help you see things at night you never saw before. These rods, by the way, are quickly affected by even the smallest lessening of the normal oxygen supply. Smart night flyers get on oxygen from the deck up!

Some air stations have a big sign WHEELS near the ends of the runways. These visual reminders have prevented many wheels-up landings. Before every night flight, there should be a mental signboard FUEL before the eyes of every pilot. If there's a more important time than a night flight to watch fuel consumption, we haven't heard of it yet. The best part of taking a trip is coming back home. But if when you get home to your carrier there's a fouled deck or some other unexpected situation on the carrier, it's a great help to have enough fuel aboard to keep circling for a while, or to make it to an alternate. Planning ahead is what gets you home, or to a home away from home!

And while we're talking of planning in advance, *Night Flying Sense* reminds us that in any kind of flying, the pilot most likely to survive is the one with a plan. In night flying, the best deal is to have an emergency routine all worked out in advance to cover practically any situation. Work your plan out, and stay with it; don't make up one as you go along.

Nobody denies that night flying is more difficult than daylight piloting. That's exactly why you'll want to keep a fine balance in your own mind between proper watchfulness and overcaution. Exaggerate the difficulties and you'll tighten up every time, and then you head for trouble. But if you've had training background to give you confidence, you can face up to anything the night can offer, weather, or otherwise. Though some are rough and some are easy, all night flights are basically like that first one! The fundamentals are the same: Skill and a good frame of mind. No touch of genius is required.

Night Flying Sense added it all up for the Dilberts and non-Dilberts of Naval Aviation. "A sound, workmanlike attitude will make any good pilot into a capable night flyer. You begin the process by learning everything there is to know about your aircraft. You keep your windscreen spotless. There may be a few things you can see less through than a film of dirt and oil, but not many. You know where things are in the cockpit.

"And you really get to the state where flying instruments is no strain or pain. Picture yourself being catapulted into a dark and muggy sky, miles at sea, and you won't have any trouble convincing yourself how important it is to know and trust the dials and pointers in front of you. The point is, they can be trusted and will take you fast and far after dark.

Another item in the lists of 'musts' is to know all the vision tricks. Don't make a Big Painful Deal out of dark adaptation, but never be guilty of skimping it either. And don't allow the people around you to get careless with *your* ability to see. Just that one brief period of night blindness can mean grief to you and your crew.

This latest of the Sense pamphlets concludes with this very sage observation and bit of advice: "Night flying is a professional fact for professional flyers. It's with us, here and now. Learn the skill and attitude it requires. From now on, it's every pilot a Pro."

SOUNDPROOFED WITH TWO WALLS, 16-TON TRAILER IS FILLED WITH SENSITIVE ELECTRONIC GEAR FOR TESTING NOISE LEVELS

PROBLEM: TO SOFT PEDAL JETS

THERE is no primrose path to progress. The road up is not a smooth, easy one. Advancement in any field is hindered by problems, by difficulties, all of which must be faced, and overcome as soon as possible.

Advancement in aviation has been no exception to this rule. Each new development in plane design and performance has brought its own problems. And each time a solution has been found: problems posed by flying at high altitudes were met with oxygen bottles and pressurization; to counteract the devastating effects of high G forces, the G suits were developed; for maximum performance in night flying, man's relatively poor night vision had to be improved.

In recent years, a situation peculiar to carriers has arisen—noise aboard carriers has increased so greatly that it has created serious problems. The simple fact being faced now is that noise level intensities produced by jet engines are rapidly approaching the utmost limit of human endurance. When this point is reached—and engines capable of such levels are now under test—there will be imminent a disruption of human activity in the immediate vicinity of aircraft using such engines.

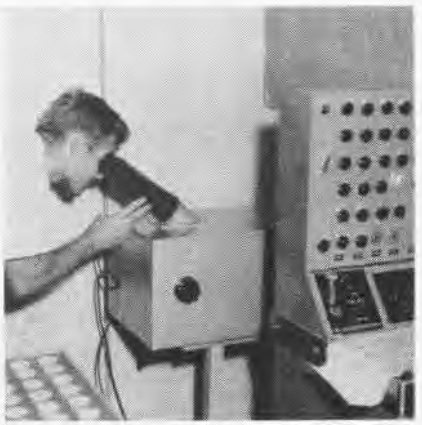
SCIENTISTS OPERATES AUDIOMETRIC TESTER

Primary source of noise aboard carriers is, of course, the jet engine and the very high intensity sound which it produces. Secondary sources are lesser, but none the less contributory. In general, carriers have to move at higher speeds for launching and landing jet aircraft, so there is a great increase of the noises and vibrations owing to the higher speed of operating machinery, and to the shaft and propeller-caused vibrations against the hull. There are additional noise factors such as general communication circuits which have to be turned up to greater volume in an effort to compete with the engine noises.

Here are some figures to remember: noise levels in excess of 120 decibels (decibel: a unit of measurement of sound) produce pain in the human ear; the average person finds noise above 140 intolerable; and noise levels of 160-170 decibels are greater than human beings can stand.

Severe physiological and psychological effects result from continued exposure to noise levels above 120 decibels.

As long as three years ago, a noise



FLICKER FUSION EQUIPMENT TESTS VISION

study conducted aboard carriers revealed sound levels of 135 to 140 decibels in the catapult areas of jets on one type. During full power turnup, the sound of this plane was 130 decibels, at a spot 100 feet away, and aft. With another aircraft turning up at full power with afterburner operating, levels of 144 to 148 decibels were encountered at distances of 50 feet aft from the tail pipe of the plane and toward the center of the flight deck.

Tests the next year, with newer plane types, revealed that personnel in certain areas on the flight deck may expect sound levels of over 140 decibels without afterburners operating, and over 150 to 155 decibels with afterburners.

Defense measures against this noise have been use of cotton, of ear plugs, and hands-over-ears, of using ear muff type ear protectors, which were de-

veloped by BuAer, or wearing special helmets, and by putting all possible distance between flight deck personnel and the jet engines during launches.

In progress now is research by a small group of scientists at the Pensacola School of Aviation Medicine, seeking solutions to some of the medical problems caused by the jet aircraft noises. In brief, the research consists of measuring noise levels on carrier flight deck, and of testing all flight deck personnel for effects of this noise, temporary or permanent.

Modus operandi of this testing is a 33,000-pound mobile acoustical trailer. Actually, it is two trailers, one built inside the other, the inner one containing sensitive electronic equipment. Between the two shells are two layers of fibre glass and a dead air space, making the mobile acoustical trailer the nearest thing possible to being sound proof. This trailer, manned by scientists and Navy medical officers, is hoisted aboard an aircraft carrier for the testing.

During a six months' experiment now underway, all flight deck personnel will be given three tests—at the beginning and end of the project, and some time during the six months' time. This experiment may result in some definite knowledge as to whether the noises of modern jet aircraft have any permanent undesirable effects on hearing organs, or other tissues of the bodies of the personnel being tested.

With the record that has been made of finding the solution to the difficulties that impede progress in aircraft development and performance, there is no reason to consider this noise problem as anything more than one more obstacle that must, and surely will be hurdled in the foreseeable future.

A MODIFIED *version of an old PBM Martin flying boat begins a landing on Chesapeake Bay using a hydro-ski that is being tested by the Navy and Martin Aircraft. The hydro-ski acts as a better shock absorber than the conventional vee-bottom hull. Tests are under the auspices of BuAer to determine the practicability of using them on future production seaplane aircraft.*

New Insignia Instruction

All Naval Air Units Take Notice

Positive assistance in designing insignia for all Naval Aeronautical units is available in OpNav Instruction 5030.4A, issued in December 1955. It contains concise, clear descriptions for designs of insignia for organizations from the size of a unit to groups and major commands.

Activities at or below the squadron level, not now having an insigne or wishing to change the present one, are instructed to develop one contained entirely within a circle of five and one-half inches, with the circle a part of the design. The wisdom of this ruling can be readily seen when comparative reproduction costs are obtained. Mottos, nicknames and designations should not be included in the circular design. Something new can be added however; squadron or unit designations immediately below the circle within a scroll such as is reproduced in the instruction.

Commands, units, groups and activities above the squadron echelon can have an insigne contained entirely within a triangle six inches on a side. The triangle need not be a part of the design. It should be composed of a crest or shield, and mottos may be used.

The instruction further reads that identifiable naval vessels and aircraft shall not be used, neither shall badges of qualification, decorations, medals, campaign ribbons, national or state insignia, cap devices, or other military devices. Naval Aviator's wings are a badge of qualification, but may be used, unaltered, as a symbol of naval aviation as a whole, by Naval Air Stations, Fleet Air Commands and other activities above the squadron level of command.

The design should be simple, as opposed to cluttered, and emphasis should be placed on good color contrast. Cartoon portrayals are not acceptable, but original heraldic designs symbolizing the mission performed by the unit are considered appropriate for squadrons.

Designs may portray beasts, fowl, fish, instruments, or weapons typical of the sea or the area of operation of the command. The Chief of Naval Operations will pass on all insignia.

NAVY FILMS

Navy No.	Title
MN-9395	Aerial Anti-Submarine Warfare —Weapons Selection and Methods of Attack
MV-8379	"G" Facts
MN-6539E	Mine Warfare Instructions — Mine Laying
MN-7440C	Instruction Training in Naval Aviation — Instruction Techniques in Technical Training
MN-7852C	Mark 7 Mod 1 Barrier and Barricade Equipment
MN-7980	Hunter-Killer Operations
MN-7981	Combat Information Center in A/S Operations
MG-8241	The ABC of Jet Propulsion
MN-9302D	Rules of the Road International —Special Daytime Situations
MN-9362A,B	Jet Fighter Gunnery (Air to Air) A. Gunnery Patterns B. Firing Problems
MN-7983A,B	Aircraft Fire Control System Mark 16
MN-8090	Lead Computing Gunsight Gyro, Theory of Operation
MN-8103	Origins of Motion Pictures
MN-9233B	Aerial Reconnaisance Camera—The T-11 Aerial Mapping Camera
MH-8128B,C	Skynight

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

AND THERE I WAS ...

Navy Tanker Kids Carrier

THE SIGNALMEN aboard the carrier USS *Hornet* are still trying to find and identify a flag that was flown by the Navy tanker USS *Mispillion* recently while the two ships were involved in re-fueling operations.

In the center of the flag was an octopus in blazing colors with its tentacles around an aircraft carrier. Surrounding the octopus were the words, "If we got it, you can have it." The symbol is appropriate, for the *Mispillion's* refueling lines extended in a tentacle-like fashion to the carrier as the tanker pumped avgas and oil to the flattop.

In the past, pirate ships have flown the Jolly Roger when taking something from a vessel, but this may be the first time any ship has displayed a special flag while giving something away on the high seas.

Echoes From The Past

THE FOLLOWING letter was received by SecNav Ingalls in April 1931:

"Dear Mr. Ingalls: I notice a good many planes going over. Now you tell those people if they have any trouble of any kind and it might be unsafe to go on with only woodland from my place to land in, to land anywhere on me regardless of crops—you know with any rain at all you can grow a crop in three months but it takes twenty-one years to grow a man. Still some are not worth a darn after grown. I have plenty level land to make a safe landing in case of accident. Yours truly—*Name withheld.*"

This Year's Understatement

AN AIR FORCE F-94 *Starfire* collided in mid-air with a Navy P4Y-2 recently. Fortunately the P4Y-2 pilot was able to land his damaged plane in a wheat field, and no lives were lost. In describing the encounter in their Weekly Summary of Major Aircraft Accidents, the Aviation Safety Activity at Norfolk wrote—

"Mid-air collision, F-94 severed 14 feet off starboard wing of P4Y-2, *pilot encountered extreme difficulty* but managed to make emergency landing in a wheat field."

Twice Is Enough

ON A FLIGHT from Lajes to Port Lyautey recently, about 200 miles west of Casablanca at an altitude of 7500 feet, heavy snow and freezing rain were being encountered. I was looking out the starboard side watching the ice build up on the leading edge, when crash! there was a loud explosion and at the same time a band of white light seemed to encircle the aircraft. It seemed we were the victim of a static discharge. Needless to say everyone was temporarily shaken up, the radioman thinking one of his dynamotors had exploded, was busily engaged in pulling out radio gear.

Everyone was getting settled after the static discharge when BOING!—the same thing happened again. There was no apparent damage to the aircraft. The flight continued on to Port Lyautey with everyone anticipating the next explosion, which never came.

The aircraft was inspected at Port Lyautey with no visual damage noted. However upon arrival back in Lajes, the starboard elevator had a small piece of fabric peeled back from the tracking edge. Upon close inspection it was found that three of the ribs in the elevator had been melted.

Lightning never strikes twice—or does it?

—Cdr. F. C. Moyers, VR-22

Now Look Here, Fellows

NAVAL aviation policy and protocol directs that skippers of aircraft squadrons fly plane #1 in the squadron. However, it is not at all unusual for other pilots to fly the plane. Such was the case aboard a carrier operating recently with the Sixth Fleet.

A junior officer was flying plane #1 and on his approach, dove the plane into the flight deck, damaging the aircraft slightly. Earlier, another junior officer had been flying the same plane and had made five very creditable "railroad passes."

The carrier division commander, a rear admiral, had observed all six approaches and after the accident, was overheard to say, "Too bad! Cdr. _____ had made such fine landings up until the last one."

The CO wasted no time in getting this word out to his squadron, "Fly it right or take my name off it!"

One for the Books

CDR. PHIL ODDO, a VR-24 TBM pilot, made a trip to Barcelona recently and is still slightly bewildered over what happened.

He boarded a Spanish Aviaco Airlines *Bristol* at Zaragoda, Spain, bound for Barcelona. Just before take-off, he was politely ushered into the big plane's cockpit and placed in the co-pilot's seat.

The pilot, a Spaniard, smiled and nodded politely and taxied the big ship for the take-off. Neither spoke a word but used sign language to communicate. When the plane was airborne, the pilot turned to Oddo and nodded and pointed to the controls, motioning him to take over and fly the plane.

Oddo flew the plane to Barcelona, never once speaking to his pilot, nor his pilot speaking to him. Neither spoke the other's language. When they arrived over Barcelona, the Spaniard took over from Oddo for the final approach and landing.

The two bade each other farewell (in sign talk), leaving Oddo as bewildered as we were when we heard this story. Did he get a refund?

RIME ICE

Into the stratus I did go!
Centigrade reading: ten below.
Rime ice piled on the leading edge;
I won't get another chance to hedge.

Cool Head Saves Trainer

Shepherd Lauded by ATU-205 CO

Ltjg. D. C. Shepherd, an ATU-205 instructor, was faced with a very difficult problem recently but came up with a solution—a cool head and steady nerves—that probably saved his life, his student's and his trainer.

Shepherd and his student, Marine 2nd Lt. J. W. Roberts, were on an instrument hop out of NAS MEMPHIS, with Roberts under the hood, when the TV-2 flamed-out. Weather conditions were anything but ideal—closed in with a solid overcast from 4000 down to 2000 feet.

After the first unsuccessful re-start was attempted at about 18,000 feet, Shepherd contacted Memphis Air Surveillance Radar for assistance in penetrating the overcast.

Air Surveillance couldn't spot him on the scope, so Shepherd tried to relight the engine again. Failing, he ordered Roberts to prepare to eject as he turned the plane away from the congested residential area of Memphis proper.

He had planned on leaving the trainer at 5,000 feet himself, but at 6,500 feet, heading south, and with pre-ejection checkoff list gone over in both cockpits, Memphis ASR suddenly came up with the comforting word that they had the plane on their scope.

With excellent ASR controlling—and some pretty smooth flying combined with a great deal of sharp thinking—Shepherd broke out of the overcast at 2000 feet at just about the perfect 180° position on runway 21, which just happened—and very fortunately indeed—to be the duty runway.

After an uneventful and perfect landing—about 15 minutes after the flame-out—an inspection of the trainer revealed that a vital part of the fuel pump was inoperative, making re-start impossible. Shepherd was lauded by his CO, Cdr. C. C. Sanders for his exhibition of flying skill.

Aid for Another Flood Area

Men from Whidbey Man Dikes

When the Skagit River, on the coast of the Washington mainland, threatened to break through levees, Station and Fleet units at NAS WHIDBEY ISLAND, hurried personnel and equipment to the scene.

Shoulder to shoulder with farmers, lumbermen, high school boys and college youths, 250 Navy men fought throughout the critical day to reinforce the dikes. Naval activities also sent flood lights, an ambulance, field kitchens, trucks and communication units to critical points.

At 0200 the following day with the immediate threat of a flood apparently averted, the number of Navy men at the river side was reduced to 100. Saturday was made a regular working day in order to have a reserve of manpower available. The dikes were manned until noon when a lowering water level indicated the immediate danger of a flood was past.

Letters of appreciation for Navy assistance have been coming in from various organizations in the country.

ICING

Avoid ice hazards when you fly
By going over the clouds in the sky,
It's under the cloud where the damage is done.
You get more than a sprain, and it isn't fun!

CLEAR ICE

"Clear ice adheres, is solid and dense.
Its danger potential is immense
It usually lurks in clouds unstable,"
So states my ghost at the long green table.

De-icing Fluid Perfected

Developed for BuAer by NY Firm

A nonflammable, non-toxic, anti-icing and de-icing fluid, with a lithium chloride base has been developed by Snell Laboratories of New York for BUAER. Main feature of the new de-icer is its ability to prevent the accumulation of ice, snow, etc. on parked aircraft.

The fluid, compounded to prevent corrosive attack on aircraft metals, will not affect aircraft finishes, according to BUAER.

Serviceable in the 32° to 15° range, the fluid may be applied by brush or spray and, depending on the amount of precipitation encountered, will protect surfaces from 12 to 24 hours.

'Copters Airlift Marines

MAG-26 in Amphibious Exercise

Marine helicopters from MAG-26 played an important role in the recent amphibious exercise at Onslow Beach, N. C. Flying from the USS *Siboney*, the helicopters airlifted 300 combat-clad Marines into the rear areas of "enemy" territory to disrupt communication lines and prevent reinforcements from joining the besieged beaches.

During an airborne assault on Peterfield Point Marine Air Field by the helicopter transported Marines, additional power was provided for the capture of the airfield by Martin seaplanes. As soon as Peterfield fell to friendly forces, a regimental landing team was flown in by MAG-35 R4Q *Flying Boxcars* from other land installations.

Eighty ships, 340 aircraft and 42,000 men were involved in the five-day exercise in the Camp Lejeune area.

NAVY'S HIGH-MACH MEDICS

LCDR. FRANK *H. Austin, Naval Aviation and Squadron Flight Surgeon in Cutlass, flies regular squadron missions with other pilots in VX-3.*

FLIGHT SURGEON *Austin with HM-3 Kenneth Anthony and family. The arrival of the twins, Denise and Debra Lee, interrupted his flight.*

THE FLIGHT plan was filed. Atlantic City to Columbus, Ohio. ETE zero plus 49. The starter cart was standing by, engine idling. The pilot had just completed the inspection of his jet fighter and was ready to climb into the cockpit. His mental review of the enroute weather was interrupted by the squeal of rubber on concrete as the station ambulance slid to an arrested landing off the port wing of the jet.

"Lieutenant!" came the hail from the ambulance, "You're needed right away. It's an emergency!"

Minutes later, in a home outside the gates of the Naval Air Station the pilot had swapped his hard hat, oxygen mask, flight gloves and "G" suit for the sterile cap, face mask, rubber gloves and gown of a surgeon. Less than an hour later twin baby girls squalled their rebellion at making their debut into the cold, cold world.

With mother and infants doing nicely, concentration on obstetrical procedures gave way to hasty calculations of the possibility of making Columbus before 1500 as scheduled. Given a little help from the wind at 40,000, he could make it.

Comprehensive as the training of a Navy pilot is, it does not, as you might be led to believe, include obstetrics. The pilot in the story is a member of a very small and very unusual group of Naval Aviators—flight surgeons who are fully qualified to fly the Navy's operational aircraft; and of an even smaller and more select group—high-mach medics—flight surgeons qualified in jets.

From the time man first broke the shackles that bound him to his terrestial home, it was apparent that certain physiological changes occurred that stirred the interest of members of the medical profession. With the advent of powered flight, speed and acceleration forces (G's) were added to the strange sensations to which the pilot's body was subjected. The problems promised to be so complex as to require specially trained medical men.

The first Navy Flight surgeons received their training at the Army School of Aviation Medicine at Min-

NAS PENSACOLA *flight surgeon LCdr. Frank F. Kalchnek helps men new to flight training.*

CAPT. SIDNEY *I. Brody, one of five jet qualified flight surgeons, prepares for jet hop.*

LT. MCKINLEY *(L) with Cdr. S. Thorpe, CO ATU-205, flies props, helicopters, jet aircraft.*

eola, Long Island, starting in 1922. (NANEWS, January 1954.) Four years later the Navy began training its own flight surgeons at the Navy Medical School in Washington, D. C. In 1934, the Army took over the primary phase of training for Navy medics and their course was completed at Pensacola. In 1939, the School of Aviation Medicine was organized at NAS PENSACOLA where it remains today. Since 1939, approximately 2,000 flight surgeons have been trained.

Curriculum for the aviation doctors includes academic and laboratory work in a wide variety of medical subjects. To give the flight surgeons a better idea of the pilot-problems with which he will have to cope in an operational unit, each was given flight training up to the solo stage. A few of the physicians, after their graduation from the flight surgeon course, were selected to take the entire Navy pilot training course. They went through the syllabus with other officers and NAVCADS and were designated Naval Aviators. These men, full fledged Naval Aviators, have a deep understanding of the physiological and psychological problems of the men who pilot naval aircraft.

When the Navy's fleet squadrons started measuring air speed in Mach numbers instead of knots, and the piston engines started giving way to jets, Navy aviation medicine had to make adjustments to stay abreast of the modernization. The Aviation Medical Division of the Bureau of Medicine and Surgery, under Captain Langdon C. Newman, MC, decided that a few volunteers from among the 17 flight surgeon-naval aviators would be trained as jet pilots.

Today there are five such medical officers in the Navy: Capt. William M. Snowden and Capt. Sidney I. Brody are assigned to BUMED; LCdr. Frank F. Kalchuck is working with aviators and students at NAS PENSACOLA and on the staff of CNABATRA; LCdr. Frank H. Austin is flying with VX-3 at Atlantic City and Ltjg. Thomas R. McKinley is with CAG-21. These are the men who fully understand the physical and mental demands that are made on the jet pilot because each is one himself. He has been fully qualified as a Naval Aviator with the additional training that makes him eligible to fly the Navy's operational jet aircraft.

The reasons why at least some of the Navy's flight surgeons must be also Naval Aviators are easy to appreciate when it is realized how many of the factors involved in flying and fighting an airplane are dependent upon the physical and mental capabilities of a normal human being exposed to an environment unnatural to him. In his dual capacity of medical man and pilot, the flight surgeon can more quickly recognize the problem areas and assist in working out satisfactory solution by actual experience.

The high-mach medic has exposed himself to the hazards of high speed, high altitude flight. He has personally experienced such physiological stresses as disorientation, vertigo, temperature extremes, high "G" forces, anoxia, gas expansion, noxious gasses and contaminants, the peculiar gyrations of some aircraft at or near the speed of sound, human reaction time vs. speed.

He understands the underlying causes of fear and anxiety; he knows the strain imposed by trying to do many important tasks simultaneously, of working in a poorly lighted or poorly laid-out cockpit. Moreover, he is far better able to discuss the pilot's problems in the pilot's own language.

Captain J. C. Early, commanding officer of the School of Aviation Medicine at Pensacola, in speaking of the contributions of the flight surgeons to aero medical research, says, "Perhaps the most useful of the contributions of these men is the bringing of an integrated viewpoint to aviation medical research. Knowing both aviation medicine and the flying angle they are able to arrive at solutions compatible with operations."

Capt. L. C. Newman, Director of BUMED's Aviation Medicine Division, points out that "all flight surgeons trained as Navy pilots will be qualified in both propeller and jet type planes. In addition, some will receive training in helicopters and multi-engines."

It is safe to assume that when Earth Satellites manned by humans become a reality, some flight surgeons will certainly volunteer to qualify in them.

DR. MCKINLEY *(R) checked out in helicopters while he was flight surgeon at Ellyson Field.*

FLIGHT SURGEON, *jet pilot Snowden is equally at home in the operating room or the cockpit.*

CAPT. SNOWDEN, *formerly Princeton Flight Surgeon, is now in Aviation Medicine at BuMed.*

ENLISTED MEN FLY R4D TO JAPAN

TEST FLIGHTS *completed and found satisfactory, the new R4D-8 is accepted for delivery to MAW-1 in Japan by Julian and Sofers.*

CREW CHECKED *inventory during loading of all loose gear, such as life rafts, emergency rations, water breakers and navigation gear.*

FLYING FROM *the Hawaiian Islands to Wake Island at 11,000 feet altitude, Todhunter and Murtagh take time out to cook a steak.*

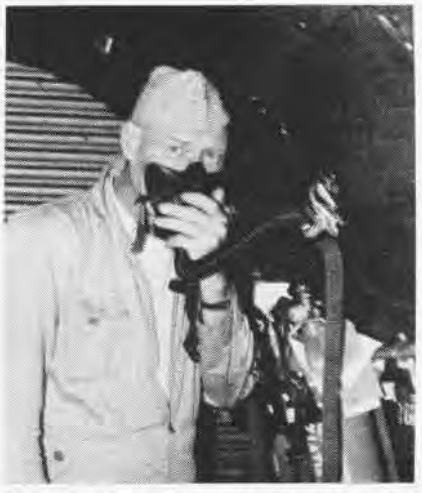
TWO ENGINES purred in unison as an R4D-8 stood parked in front of the Operations Tower at NAS NORTH ISLAND, San Diego. This aircraft was marked for delivery to the First Marine Aircraft Wing in the Far East.

MCAS EL TORO came up with a special all-enlisted crew to deliver the plane to Japan. Master Sergeants John H. Julian, Edward M. Sofers, and John J. Murtagh were plane commander, co-pilot and navigator respectively. Staff Sergeant Raymond Resendez was radioman, and SSgt. John M. Todhunter, Jr., kept an accurate log of fuel consumption. MSgt. Charles D. Prindle went along as air observer and correspondent.

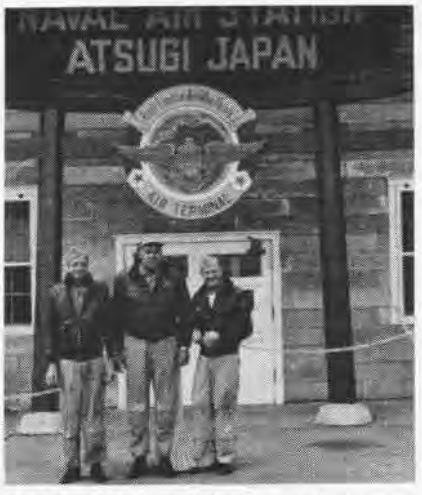
Typhoons caused a three-day stopover at Wake to wait for typhoon winds to subside. Arriving in Atsugi, the crew did some sightseeing and shopping while an old R4D-8 was made ready for the flight back to the West Coast.

The crews entire mission took 106.7 hours of flight time and covered a total distance of some 18,045 miles.

MURTAGH, *navigator for crew, establishes a three-star fix during one leg of flight.*



PRINDLE *takes a few wiffs of oxygen after ending four-hour watch at co-pilot controls.*



JULIAN, SOFERS *and Prindle are happy over their successful delivery of R4D at Atsugi.*

MODERN BRIDGE EQUIPMENT AMAZED KLIMPEL

Old Hand Visits New Ship

Ex-Marine Goes Aboard Yorktown

A. L. Klimpel, an NAS ALAMEDA O & R employee, dug his Marine blues out of mothballs recently and put a spit shine on his shoes. Then he marched down to the USS *Yorktown* moored to a berth at Alameda.

Giving the *Yorktown* OOD a snappy salute, he requested permission to come aboard. Klimpel's visit was to determine how the new *Yorktown* stacked up against his old ship, the USS *Yorktown*, number one. The 59-year old ex-Marine served on board the first *Yorktown*, a 1710-ton coal burner, from 1915 to 1917.

During the time he served with the old *Yorktown's* Marine detachment, the ship's gun crew, of which he was a member, established a new world's record for six-pounders—eight hits with eight shots in 20 seconds.

Capt. Emmet O'Beirne, *Yorktown* CO, acted as host during Klimpel's visit and while he was inspecting the bridge, Klimpel remarked to the skipper "Your big new *Yorktown* almost makes a launch out of my old ship."

KDU Outfit Wins Navy 'E'

Award Made Aboard USS Columbus

Target Drone Unit Five of VU-6 has won the coveted Navy "E." This is believed to be the first time that such a unit has received the award.

Aboard the heavy cruiser USS *Columbus*, Capt. J. D. L. Grant, CO of the cruiser, presented the award to Lt. C. I. Bridger, O-in-C of Unit Five.

The outfit launched nine of the radio-controlled target aircraft and, with the exception of one which was actually knocked out of the sky by shipboard gunners, brought them all back to the *Columbus*.

The drone unit was attached to the cruiser for the 1955 Middy cruise.

ATU-101 Wins Safety Award

Leads Single-Engine, Prop Division

RAdm. C. D. Glover, Chief of Naval Air Advanced Training, recently presented Cdr. Ralph E. Cheney, Officer-in-Charge of ATU-101, the annual award for top safety in the single-engine, propeller-driven aircraft division.

ATU-101, operating an average of

RADM. GLOVER, CDR. CHENEY AND TROPHY

70-T-28B single-engine instrument trainers and 29 SNB twin-engine trainers (the latter for the first seven months of fiscal 1955 only) flew a total of 71,015 hours during the year and registered damage to only six aircraft with no fatalities. The accident rate for this period was .84 accidents per 10,000 hours of flying time.

Since the first flight of the T-28B on 9 February 1954, which was made by Cdr. Cheney, up to 1 October 1955, ATU-101 has flown a total of 98,683 hours. There have been only nine accidents for a ratio of .91 accidents per 10,000 hours. Seven were attributed to pilot error; two, to material failure.

In this time, 1230 students completed advanced instrument training.

VF-91'S SKIPPER, *B. N. Gockel (1), is all smiles as he accepts NAAS Fallon's gunnery award plaque from air station CO, Capt. W. H. Newton. VF-91 won the award with a 27.8%.*

TEST PLANE ON RAMP AT CORPUS CHRISTI

New Paint for Old Planes

ATU-501's PBM-5's Get White Top

A suggestion made by ATU-501 some time ago has created a new fashion for their planes, the PBM-5. The unit suggested that white paint applied across the top would serve a two-fold purpose. It would reduce temperatures inside the plane and make the plane easier to see during training hops. The idea channeled through the proper departments and approval was granted to give it a test.

Thermometers were put inside the test plane and temperatures at low altitudes were reduced by an average of 12°. At higher levels, temperatures were reduced by about 6° and on the ramp, reduction ran as high as 19°.

Versions of this plane have been in service for 10 years and the unit uses them in the training of multi-engine pilots at NAS CORPUS CHRISTI.

Navy R3Y Spans Continent

Convair Test Crew Makes Flight

The Navy's R3Y-2, a bowloader version of the *Tradewind*, now has a runing made at NATC Patuxent River. The R3Y-1 *Tradewind* arrived at the test center after a near record-breaking non-stop transcontinental flight in early November for a contractor's demonstration.

Piloted by Convair's chief test pilot, Don Germeraad, the big four-engined plane made the flight in six hours 54 minutes at an average speed of almost 345 mph. The R3Y-1 is powered by four T-40-A-10 turboprop engines which develop 5,500 hp each.

Two Navy men, Cdrs. Ernest Howrell and Victor Upgoff, accompanied the company crew of the cross-country flight. An R3Y "Flying LST" version is being tested at Patuxent.

AFTER OBSERVING *operations on board the Princeton, Boy Scout Explorer Post 2230, La Junta, Co., made CO, Capt. H. G. Sanchez honorary chief of Koshart Indian tribe, the world's foremost interpretive Indian dancers.*

CAPT. *R. L. Johnson (C) stands by TV-2 he soloed to complete his jet check-out at Olathe Jet Transitional Training Unit. Marine Capt. B. H. Pryor (L) was his instructor. Cdr. J. B. Cain (R) is unit officer in charge.*

PREPARING *for the job as CO of a Canadian Navy Fighter Squadron, LCdr. R. H. Fall (r), RCN, thanks LCdr. W. H. Livingston, CO of VF-41, for a familiarization hop in the F2H-3. The RCN is getting the jet for carrier use.*

CDR. R. A. BEVERIDGE, *O-in-C of ATU-206, flips a lucky silver dollar to newly appointed Naval Aviator, Ens. J. H. Mulligan. He was 25th student to end new jet course at Sherman.*

CONTROL *tower personnel at NAS Patuxent River receive candy and cigars from the Carrier Suitability Branch for fine job they do. LCdr. Tobin made presentation.*

ENS. G. P. VASLOS *(l) has reason to smile. He completed basic training at Pensacola under the tutelage of Ltjg. A. H. "Dewey" York and had him as instructor in advanced training.*

Paddle-Waver Logs a High
CAG-17 LSO Waves 13,000 Aboard

Lt. "Big Jim" Shannon will no longer be a familiar sight to pilots of CAG-17 based aboard the USS *Coral Sea*. A pilot couldn't land without seeing him, for he was the air group's LSO. In four years of "flag waving," Shannon has directed a total of more than 13,000 day and night landings without an accident.

Shannon, a 6'3" Texan, has established his professional competency as an LSO on numerous occasions during three Mediterranean cruises and one trip to the Far East. During night operations he once waved aboard several *Banshee* jets that were without external lights. On another occasion, when an AD *Skyraider* pilot, who had neither external nor cockpit lights, was forced to hold a flashlight in his teeth to see the panel instruments during his approach, Shannon brought him aboard safely.

While serving as senior LSO with CVG-17, he qualified to wave aboard the majority of the Navy's operational aircraft and frequently served as an instructor to LSO's in squadrons equipped with the *Savages* and *Furies*.

NAS Establishes Program
For Suggestions by 'All Hands'

Capt. William S. Harris, CO, NAS JACKSONVILLE, has initiated a program within his command that permits all military personnel to assist in the management of the air station.

Suggestions are sought from all hands to change or alter procedures to improve conditions aboard the station. Suggestions are reviewed by a special board which will recommend constructive changes after a thorough study and recommends them to the commanding officer.

Capt. Harris invited suggestions covering all phases of station activities such as working conditions, liberty hours, uniforms, pay days, mess hall procedures and menu, barracks life, athletics and recreations and any subject allied to Navy life.

NSC Perfects Platform
Device Telescopes to High Places

The Naval Supply Center at Oakland has developed an aerial telescoping work platform that rises vertically 70 feet. The new device will make expensive scaffolding in aircraft hangars a thing of the past.

Originally designed for use at MCAS KANEOHE BAY, the work platform is telescoped by hydraulic pressure. Power is supplied by an electric motor which can be plugged into any standard 220-volt power line or generator.

The apparatus works on a principle similar to an automobile service station hydraulic lift. A four-by-eight-foot platform atop the lift will afford workmen access to high places inside hangars for painting ceilings, changing light bulbs and servicing fire fighting sprinklers.

In the event of power failure, the lift can be operated manually. It was built to accommodate four workmen and raise a load of 1,500 lbs.

Power Package Ready

Marquardt Makes Unit for XF8U-1

The Chance Vought XF8U-1 *Crusader* is equipped with a Marquardt ram-air emergency power package designed to bring the airplane home if all other power supplies should fail. Faced with an emergency, the pilot can initiate aerial restarts, restore power to the radio, instruments, flight control surfaces and landing gear within a matter of seconds.

The emergency power unit was developed and produced by Marquardt Aircraft Company, in close cooperation with Chance Vought. It supplies both electrical (alternating and direct current) and hydraulic power, sufficient to maintain flight control and communication through all speeds from supersonic down to safe landing to a stop.

This power package was developed to operate as a "drop-out" type in which a trigger pushes the machine out into the air stream and the air turbine starts rotating immediately to drive the hydraulic pump and electrical generator.

Speed of the Marquardt unit (6000 rpm) is closely controlled by a set of governor vanes mounted behind the turbine wheel. This speed control has proven to be capable of maintaining alternator frequencies within required tolerances. The complete power package weighs less than 50 pounds installed in the Vought F8U *Crusader*.

RANDALL (R) GIVES MUSICK HIS BADGE

MATS Gives a New Award

Special Badge for Transport Pilots

Recently Capt. Kenneth F. Musick, Commander of MATS' VR-8, received his aircraft commander's badge from Capt. Samuel S. Randall, Deputy Chief of Staff for Operations, Pacific Division, MATS.

The badges were issued to the Division's aircraft commanders all of whom have the minimum 2,000 hours flying time in heavy transport type aircraft, 100 hours each of night time and instrument time in the same model aircraft, and 200 hours scheduled in MATS aircraft over MATS routes.

Capt. Musick was skipper of the second Torpedo Squadron Eight. He came to VR-8 in July 1954 from the Naval War College, Newport, R. I.

VC-62 Wins 'Inner Tube'

FASRon-9 Presents Squadron Award

VC-62, based at NAS JACKSONVILLE, has emerged as winner of FASRon-9's "New Order of the Old Inner Tube." The award representing the highest flight time average for an entire squadron, was established by FASRon-9, based at NAS CECIL FIELD.

Seven pilots from the service squadron had an average of 2,530.7 hours each while VC-62 based their claim to the award on an average flight time of 2,529.8 hours for 42 pilots.

Ten pilots from VC-62 have logged

CDR. DIETZ WITH SQUADRON'S AWARD

an impressive 3,000 hours each with the skipper, Cdr. Don Dietz, leading the pack with over 5,600 hours. The total flight time for the squadron is 106,251 hours.

The originator of the award, Cdr. E. F. Verdery, FASRon-9 CO, approved a VC-62 idea of expanding the award to include any Navy VF, VA, VC, VJ, VS or FASRon in the competition. Squadrons who want to compete should submit averages for any month directly to VC-62 NAS JACKSONVILLE, Florida.

These averages will be checked against the present record for the month, and if averages for the new entrant are higher, a new patch will be added to the inner tube and the award made. Next closing date for entry is March 30, 1956.

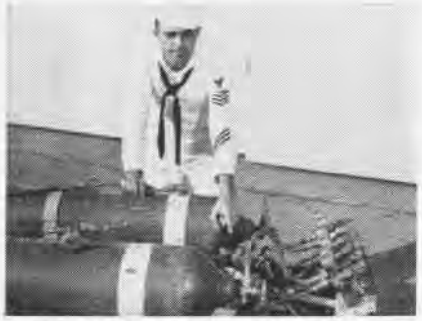
Pt. Cruz Lands 4,000th

Carrier in Specialized Operations

The jeep carrier, USS *Point Cruz*, logged a couple of milestones recently during operations off Okinawa. Ltjg. J. J. Ortega of VS-25 landed an S2F-1 aboard to chalk up the carrier's 4,000th arrested landing, and LCdr. Joseph Bigger of HS-4's Detachment R made the 1,500th helicopter landing.

The USS *Point Cruz* is commanded by Capt. A. R. Matter and has been assigned almost exclusively the primary mission of anti-submarine warfare since her commissioning in 1951.

FLIGHT TESTS *of the USAF's XH-17, the world's largest helicopter, have been completed by the Hughes Tool Company, designers and builders. Hughes officials claim the flight tests prove the feasibility of pressure-jet, single-rotor helicopters for heavy cargo carrying. In its display of strength, the XH-17 picked up a trailer van, heaviest object ever lifted by helicopter.*



BAZINET SIMPLIFIED THIS OXYGEN SYSTEM

Oxygen Recharger Altered

VC-62 Man Simplifies Tough Task

A VC-62 parachute rigger has come up with an idea for recharging aircraft oxygen systems faster and with more safety. He's Loren F. Bazinet, and BuAer has approved his new system for use by other units.

It was while working with the Henry Spen Oxygen Recharge Trailer that Bazinet first became concerned about time and safety elements. He noted that after servicing high-pressure systems of the *Banshees* and *Cougars*, he had to change adapters before the TV-2's low-pressure system could be serviced.

During these changes of adapters much time was consumed, and dirt, a real demon in oxygen usage, could get into the adapter not in use. Bazinet's answer to the problem was a five-way manifold which allows the servicing of 1800-psi high pressure systems and 400-psi low pressure systems alternately with no changes except turning a knob.

Ingenuity is not a new thing with the versatile Bazinet for he was instrumental in the modification of NAS Jacksonville's "Dilbert Dunker" by dunking pilots with the actual oxygen systems they use while flying. While at NADMC Johnsville, he developed a way to pack a 28-foot chute, usually a two or three man job, alone.

Recently he was awarded a meritorious mast by his CO, Cdr. W. D. Dietz, for initiative and ingenuity.

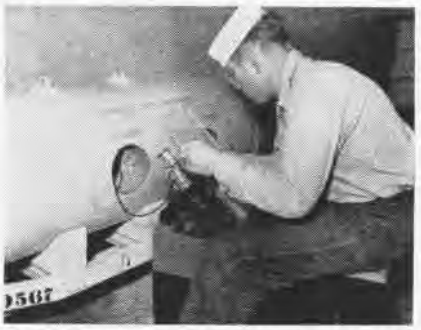
Ingenuity Solves Problem

Marine Corporal Uses His Head

Cpl. Bobbie L. Allen of VMF-122 based at MCAS Cherry Point, used his noodle recently and solved a ridiculously simple problem. The unit was having trouble connecting the air line to a standard turn and bank indicator. The indicator has two threaded couplings, one an intake and the other a vent.

If by chance the wrong tube is connected to the vent, pressure builds up inside the instrument, costing $227, and shatters the glass face of the indicator. It also causes other damage to the instrument.

Allen's approach was simple—file the threads off the vent connector, then the intake tube would have to be connected to the intake vent.



EXTENDER WITH DETONATOR IS INSTALLED

Detonator Shield Made

FASRon-110 Designs Safety Device

A detonator installation stand has been designed and fabricated by Mine Detail Augmenting Unit 0305, attached to FASRon-110. The stand provides protection of personnel from fragments of prematurely exploding detonators during assembly into a mine extender mechanism or during assembly of the extender in a mine.

The Plexiglas shield, one-half inch thick, is mounted on a foam rubber cushion which is secured to an extender mounting bracket by three bolts, two of which are spring-tensioned. Mounting in this manner provides the flexibility needed to absorb the shock of an exploding detonator.

BuOrd emphasizes that use of such a stand in no way relieves personnel of the responsibility of strictly adhering to safety precautions set forth in the applicable pamphlets.

Life Vests Laundered

Cabaniss Field Uses Soap and Water

Two men in the Cabaniss Field parachute loft have worked out a new method of cleaning the MK II life vests, a mainstay of pilots forced down at sea. They are J. F. Cavin, PRC, and J. W. Page, PH1.

The vests are stripped and dropped

NOTHING BETTER THAN SOAP AND WATER

eight at a time into an ordinary washing machine filled with soap flakes. A 20-minute washing does the trick.

Soap-washed vests are found to be cleaner than others. They can be maintained longer on the station before going to the O&R department. Thorough cleansing of grease and grime prevents much deterioration of the nylon and rubber construction and prolongs the life of the 20-dollar item.

Of particular interest to pilots is the fact that clean bright yellow vests can be seen much farther on the open sea by search aircraft.

Marlin Repaired at Sea

Then Crew Completes Patrol Hop

A P5M-2 crew, assigned to VP-47, completed a patrol mission recently but only through the dogged efforts of the plane commander and his crew. Over 500 miles from NAS Iwakuni, the seaplane was forced down in the Yellow Sea by an oil leak.

The plane commander, Lt. Edwin Geeszel, put the plane down in the open sea, 150 miles from land. To add to his headache, on the landing roll out, the port prop was reversed and stuck in that position.

The oil leak was repaired in record time, but the reversed prop presented still a more difficult problem. Geeszel received instructions from the squadron maintenance officer, LCdr. E. W. Myers and a Martin technical assistant, C. W. Thompson, by radio from Iwakuni. He was still unable to put the prop back in working order.

He turned the big plane around and started taxiing towards land. As a final try, the engine was started and the decrease RPM propeller switch actuated.

The prop returned to normal pitch, a take-off was made, and the Martin *Marlin* completed its assigned mission.

STANDARD MAINTENANCE FORMS PLANNED

LT. GRIFFITH *looks over a schematic for C. L. Freeman, electronics specialist (left), L. E. Davis, Chief Aviation Electronics Technician.*

J. T. GREEN, *AD3, is signing off the daily inspection form which is part of the first handbook IRB produced, that of the F3H-2N Demon.*

IN THE PAST, the variety of the maintenance check-off lists has probably been limited only by the number of shops servicing Naval aircraft. Now reform is in sight, and standard aircraft inspection forms are being designed at NATC PTUXENT.

The increasing complexity of aircraft have made standardization essential. The program was initiated by members of the Integrated Aeronautics Program who, late in 1954, directed the Bureau of Aeronautics to "establish standard check-sheet forms and procedures for inspection of aircraft and major components."

On the basis of this directive, BUAER Maintenance Division called a conference of representatives from ComAirPac, ComAirLant and CNATRA. And later established the Inspection Requirements Branch at Patuxent River.

The branch is headed by Lt. T. R. Griffith, formerly of HS-4, assisted by R. B. Gleue, a Reserve lieutenant commander. Their first task was to cooperate with the Naval Air Publications Facility at Philadelphia in letting contracts to aircraft manufacturers for preparation of General Instructions on the new system of inspection. At present, IRB is requesting handbooks for only 30 planes under contract.

After IRB receives a handbook, well-trained, experienced personnel, military and civilian, make necessary changes. All of the staff have outstanding records in maintenance.

Once the Branch has developed the ideal check-off form, they return the marked-up copies to the manufacturer and he incorporates the changes in another handbook.

When the time comes for delivering the planes to the Navy, the BAR at the aircraft factory places in each aircraft one copy of the handbook 100 copies of the daily and preflight check sheets, and 10 copies of the intermediate and major sheets.

Additional copies of the handbooks must be ordered on NavAer Form 140, Publications Request Form. The Naval Air Publication facility does not automatically replenish the supply of check sheets.

After the handbooks begin reaching operating units, IRB wants to have recommendations from the maintenance men. "It is impossible to anticipate the best maintenance procedure in every case," Lt. Griffith emphasizes.

For this reason, IRB urges field activities to send in suggestions. These will be studied, together with recommendations from field studies, contractors and BUAER, and form the basis for an "interim revision."

A special feature of the new handbook is that check sheets are arranged by "systems." From now on, check crews will inspect every component of a system whether that component is stuctural, electrical or mechanical. For example, one check crew will inspect the entire power plant system, including starter, propeller and cowling. This method of inspection is designed to eliminate many oversights which result when as many as four different crews inspect the same system, passing over discrepancies which "do not concern them."

As the "system" arrangement of check sheets is designed to improve the quality of maintenance, so is the distinct and simple wording. IRB personnel go over the handbooks word by word, cutting out unnecessary details in order to make the instruction easily understood.

The work on the handbooks is done carefully and meticulously. Before the "finished product" passes Lt. Griffith's desk, he makes certain that the inspection sheets have been written on the assumption that every man in a Navy check crew knows how to prepare for an inspection and how to handle a discrepancy when he finds one. Therefore useless instructions on these two subjects are excluded.

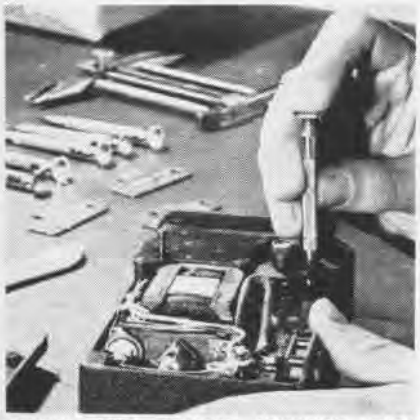
The work of the Inspections Review Branch will have a profound influence. It aims to improve inspection and insure efficient maintenance service.

Guided Missile Camera

Makes True Photographic Record

A camera that will keep an eye on guided missiles in flight and be carried aloft either in a missile or aboard a chase plane has been developed by Gordon Enterprises, a Navy contractor for photographic equipment.

Tagged the 55 GE, the new camera device is little larger than a man's hand, and can attain operational rates



CAMERA WILL COLLECT SCIENTIFIC DATA

as high as 200 pictures per second, according to the designers. That film speed contrasts with conventional movie camera speeds of 24 pictures per second.

Purpose of the equipment is to obtain a perfect photographic record of the flight path and performance of a missile in the air, recording missile instrumentation as well as terrain and sky or horizon, all in the same strip of film. By studying the film strips, engineers can obtain vast amounts of performance data.

Correlation timing devices are being installed in some units to provide an accurate time base for precise data. This will indicate what incident in flight occurred at just what time during the flight.

Special lens afford wide angle coverage of the field. Cameras are equipped with a sub-miniature series wound motor, and each tiny unit holds 50 feet of 16 millimeter film.

Cleaning Machine Shown

Ultrasonic Power Used in Device

The use of ultrasonic power to cause cavitation, or the expansion and contraction of air pockets in liquid detergents, enables a new cleaning machine to cleanse precision instruments,

ULTRASONIC CLEANING MACHINE AT O&R

parts and intricate mechanisms without completely disassembling them.

The machine to utilize this unusual power source was recently demonstrated by representatives of the Bendix Corporation before BuAer and O&R representatives, at NAS Pensacola to familiarize Navy personnel with the system.

The ultrasonic cleaner has two major parts. An electronic generator supplies high frequency power to a transducer unit in the cleaner. The transducer unit converts the electrical energy into 'sound power', which is distributed throughout the contained cleaning fluid.

Ultrasonic energy so introduced causes the cavitation, which separates contamination from any part area touched by the activated cleaning fluid.

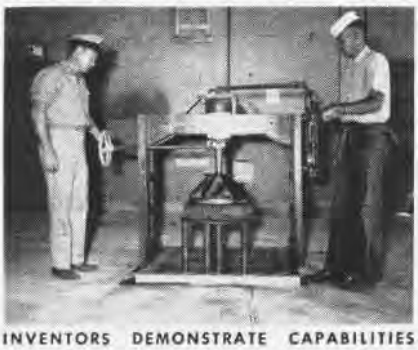
The first two of these units to be used by the military services has been in use for approximately six months in the O&R Department at Pensacola. The first unit was used for cleaning assembly bearings, and the second for cleaning instruments.

It is estimated that the use of a single unit provides an estimated saving of from $15,000 to $20,000 a year.

Sailors Build a Gimmick

Plane Tire Changing Made Easier

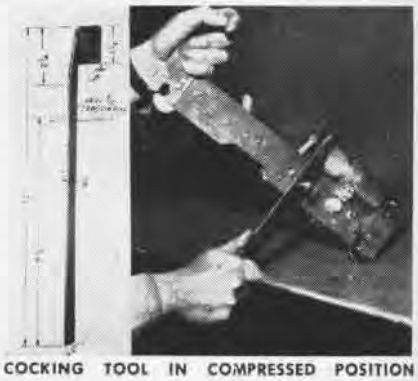
Robert G. Epps, ADC of VF-91, and R. A. Thodes, AD1 of FASRon-6, are



INVENTORS DEMONSTRATE CAPABILITIES

the pride of their squadrons. The two have come up with an invention for mounting and dismounting aircraft tires of various sizes. They claim that their new gimmick can handle a variety of tire sizes, including those of jet and RAD-type aircraft tires.

The new equipment, referred to as a "push-pull click-click" device, will mean that mechanics will spend less time on a once time-consuming task.



COCKING TOOL IN COMPRESSED POSITION

VP-44 Device Saves Time

Invented by Two Ordnancemen

Two Aviation Ordnancemen of VP-44, based at NAS Norfolk, have devised a special tool that simplifies the manual cocking operation of the Aero 1B bomb release unit. J. D. Tripp, AO1, and P. W. Grund, AO2, designed the tool.

Three of these tools were made and used successfully by the squadron on a recent operation. The tool was made from scrap iron 1" x 1/8".

Operation of the tool is simple. The cocking lip is inserted against the striking face of the bomb release unit. A 9/32" hole, which is on the lever, is aligned with the safety pin hole in the Mk 8 Mod 4 bomb shackle. A number 5 tapered pin is inserted through both the cocking lever and bomb shackle, to act as a leverage point. The handle of the cocking lever is then pulled forward, cocking the release unit. The lever is removed by pulling the number 5 tapered pin.

New Yearly Exercise Begun

Special Training Done at Key West

VF-82, NAS Oceana, completed the competitive exercise for All-Weather Intercept at FAWTULant, Key West. VF-82 was first to complete the new exercise. One pilot was rated "Outstanding," six scored "Excellent," the other 17 "Satisfactory."

CVG-4 Cruise Achievements

Air Group Comes Home on Intrepid

Cdr. J. B. Howland, CAG-4, has brought his men and planes home after a six-month cruise in the Med aboard the USS *Intrepid*. Delayed on arrival by bad weather, the air group chalked up a number of achievements during the deployment.

High flying VF-22 was awarded AirLant's coveted Battle Efficiency "E" as pilots logged 1500 flight hours in over 1300 sorties. Individual "E's" were awarded to pilots, and Lt. A. D. Fowler, Jr., of VF-22, logged the 1000th landing for the cruise.

VF-44 pilots averaged more than 25 hours per pilot each month and boosted their cruise total hours to 2,300. Nine VF-44 pilots made over 100 landings each since boarding the carrier: LCdr. W. J. McGarry, Lt. R. J. McAndrews, Lt. D. M. Broome, Ltjgs. T. W. Trout, J. A. Burnett, R. A. Hoefer, W. B. Macke, P. P. Marsha and Ltjg. J. J. Huber.

VA-45, the *Blackbird* squadron, tallied over 2,500 day and 200 night hours during the cruise. The longest hop of the cruise was made by VA-45 pilots, LCdr. William Shroyer and Ltjg. H. B. Larew, when the duo covered about 1,600 miles of territory over Turkey on a 10-hour jaunt.

The Air Group took part in NATO Exercises *Carte Blanche*, *Red Trident II*, *Blue Trident II*, *Foxpaw* and *Blue Major*. Capt. P. P. Blackburn is CO of the USS *Intrepid*.

Maltese Orphans Get Dads

VP-24 Men Play Ambassador Role

It will be many, many moons before the children of an orphanage in Zitjun, Malta, forget the men of VP-24. Described as 140 of the most forgotten kids in the world, the orphans were treated to a gigantic all day party by the squadron during deployment to Malta.

VP-24's recreation committee scoured the rocky island to find the poorest, most destitute kids and finally found them in the little town of Zitjun. The orphanage is so poor that it relies on the local townspeople for food contribution and subsistence. When its food supply runs out, the nuns signal the town by means of a large bell.

To raise money for the party, the squadron threw an all hands dance at the most prominent hotel on the island. Contributions were accepted at the door via a large, gaily decorated bucket held by two sailors who each tipped the scales at over 200 lbs.

After a tour of the Royal Navy Air Station at Malta, the kids were treated to ice cream, candy and cake, a flying gas model demonstration, and cartoon movies. Each child was also given a toy as part of the celebration.

To top off the occasion, the men of VP-24 autographed a picture of a P2V-6B *Neptune* and gave it to the sisters. It still hangs in a prominent place at the Zitjun orphanage.

VF-152 Wins Safety Award

Accident-Free Record Recognized

VF-152 has been presented with ComAirPac's Quarterly Aviation Safety Award. The squadron logged 798 accident-free flight hours for the second quarter of 1955.

Commanded by Cdr. R. G. Nester and based at NAS MOFFETT FIELD, the *Fighting Aces* amassed a total of 3044 accident-free hours over an 8-month period ending 1 September 1955.

MRS. J. P. MONROE, *wife of Capt. Monroe, Chief of Naval Air Basic Training, cuts ribbon which releases the T-34B Mentor for duty in primary flight training at NAAS Whiting Field.*

BRITAIN'S *First Sea Lord, Adm. Louis Mountbatten, inspects the huge anchor chains of the USS Forrestal during a ship tour conducted by Capt. L. R. Johnson, Forrestal CO.*

CAPT. W. E. GENTNER, *as his first official act on the Coral Sea, swears in 12 sailors reenlisting for a total of 68 years. They have 122 years of military service behind them.*

THE USS PHILIPPINE SEA'S *HUP-2 helicopter forms a backdrop for an informal picture of the ship's 27 new fathers. When a man aboard is notified of the blessed event, his name is added to the Stork Club roster, and the skipper, Capt. E. L. Farrington, officially presents him a box of cigars.*

LCDR. CLYDE *Gilmore a VF-22 pilot, smiles as he emerges from cockpit of his Banshee after logging 9,000th landing on USS Intrepid.*

LETTERS

SIRS:

Please refer to the "Famous Ship" article in NANEWS for October, 1955, on page 11. Boss, y'all sho' must have not been at Ulithi Atoll in March, 1945!!! A few technical details in this article would seem to indicate such, anyway.

The article says: "Lights gleamed from the the shore depots working overtime." Only shore depots on Ulithi then were coconut palms from which you could draw fresh coconuts without a stub requisition. We got all our supplies from ships of Sevron Seven or other cargo vessels.

Another quote from the article says: "It was almost like any harbor back in peacetime." Don't believe most peacetime harbors have no piers or other docking facilities, and also doubt that a submarine occasionallly slips a fish into a "peacetime" harbor, as they did at Ulithi 'long 'bout March, '45.

On the minor-detail side, your article says the crew was sweating through the second reel of a mystery thriller. Fact is, the first show had just been finished when John Q. Kamikaze landed without benefit of arresting gear, and it warn't no mystery thriller: it was *A Song to Remember* that was showing. Actually, many of the casualties we suffered were a direct result of the fact about 100 men were walking aft on the hangar deck after the movie, and met a blast of scrap iron head on.

Also you-all might call it a seaplane that landed in our pyrotechnics and ready 40mm ammunition aft, but the next day we picked up the varmint's propeller, which had "P1Y1" dye-cut into it, indicating that there airyplane was a *Frances*, or Japanese landplane, carrying not one, but two Japs. (I still have a good hunk of his parachute and a piece of his fuselage in my possession, and various prime cuts of his prop. adorn the desks and cabinets of several senior ex-*Randolph* officers).

Any of the above information can be verified by Capt. T. B. Neblett, C.O. of NAS PATUXENT RIVER or Capt. L. C. Simpler, C.O.S. of CNARESTRA, former X.O. and Air Officer of *Randolph*, respectively, and, like myself, plank owners of CVA-15.

A. ATKINSON,
Ex-CY, USNR

NAS GLYNCO

The specific portion of the account with which your comments are concerned was taken from the Okinawa chapter of *The Navy's Air War* published in 1947 by Harpers and prepared in the DCNO (Air) Aviation History Unit. The particular chapter was the work of a Navy lieutenant who was present at Ulithi Atoll, although not on the *Randolph*, at the time the described event occurred. (Perhaps there is a lesson here for magazine writers who crib.) Since publication eight years ago, yours is the first challenge of which we know.

Historians are entirely dependent upon eye witness accounts for the events of history. What they write can be no more accurate than their sources of information. You have contributed hitherto unknown, or at least unrecorded, details of this event for which we and the Aviation Historian give you many thanks.

SIRS:

In reference to the letter of LCdr. R. F. Smith on the subject of "deferred emergencies" printed in your issue of November 1955, it appears that LCdr. Smith . . . could spend a profitable five or ten minutes studying paragraph 1564 of ATP-1.

R. C. STARKEY, CDR.

SIRS:

Regarding your article "ORI Includes Survival Test" in the December 1955 issue of NANews, Ltjg. Frank "Robinson Crusoe" Weidman and his crew were happy to see their efforts recognized in print, but were rather perturbed to be associated with VP-40, rather than their parent squadron, VP-10—no reflection on PatRon 40. Since this is a "first" for VP-10 and FAW-3, it would be greatly appreciated if a correction could be published.

G. A. WENTZ, CDR.

THE HONORABLE *R. H. Folger, AsstSecNav for Material and his aide, Capt. R. E. M. Ward, step down from an AD Skyraider to the deck of the USS Intrepid on first leg of an inspection tour of ships of the powerful 6th Fleet.*

IFR-IQ?

According to OpNav Air Traffic Control Procedures Section, the answer is:

B—Scheduled Weather Broadcast
VOR—Visual Omni Range
E—With Distance Measuring Equipment (DME)
Ref: Radio Facilities Charts, page 4.

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● THE COVER

A technician readies a turbojet engine for a test run in one of two altitude test chambers at the new Naval Air Turbine Test Center, Trenton, N. J.

● PICTURE

Pictures of full pressure suit in high altitude oxygen story are LIFE photos by Ralph Morse, printed with permission of Time-Life, Inc.

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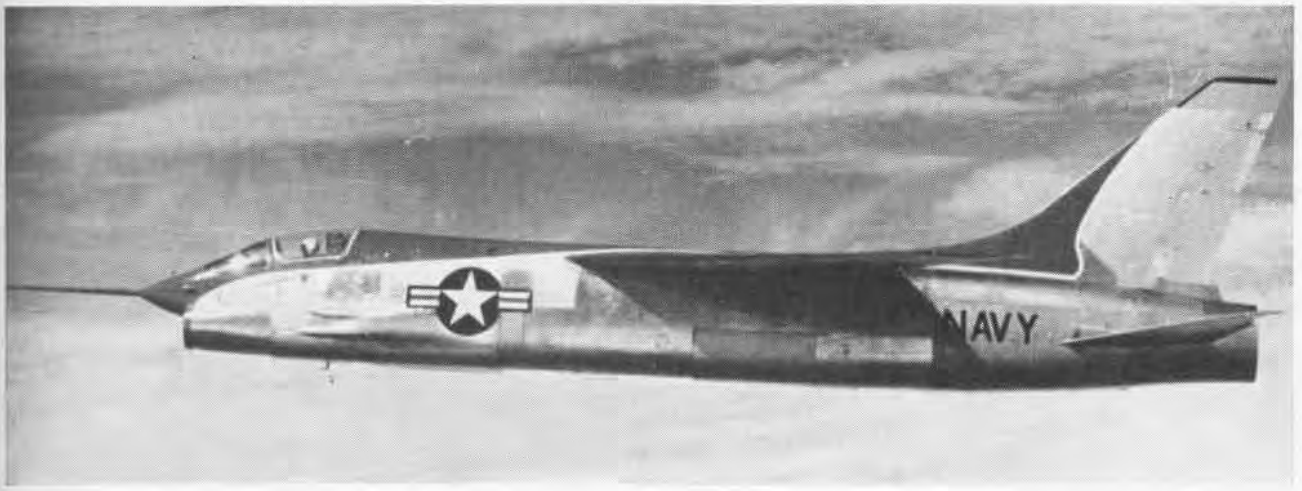
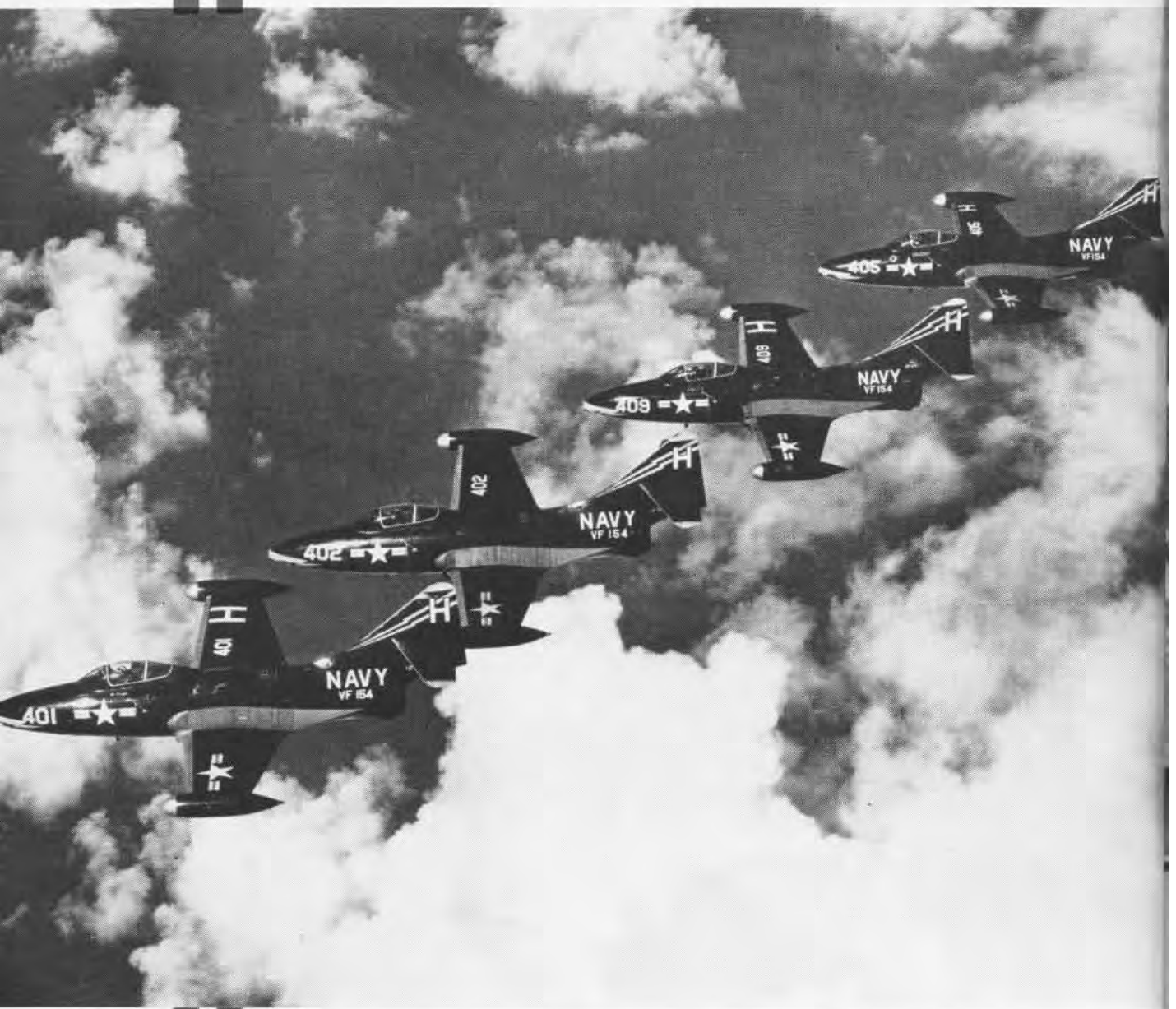


A BRAND NEW VIEW OF THE F8U

The sleek, clean lines of the Navy's new F8U-1 Crusader are apparent in these recently released pictures. It was designed to operate from carriers at high supersonic speeds, with an exceptional combat ceiling. The Crusader is now in production at Chance Vought, and a plane is being tested at Pax River.



NAVAL AVIATION NEWS

Technical advances and the nuclear age not withstanding, it is men who will remain the one essential ingredient to successful maritime operations. It is men who must issue orders and take action. It is men who will win our battles by working together with skill and enthusiasm.—Adm Arleigh A. Burke, CNO

★ ★ ★ ★