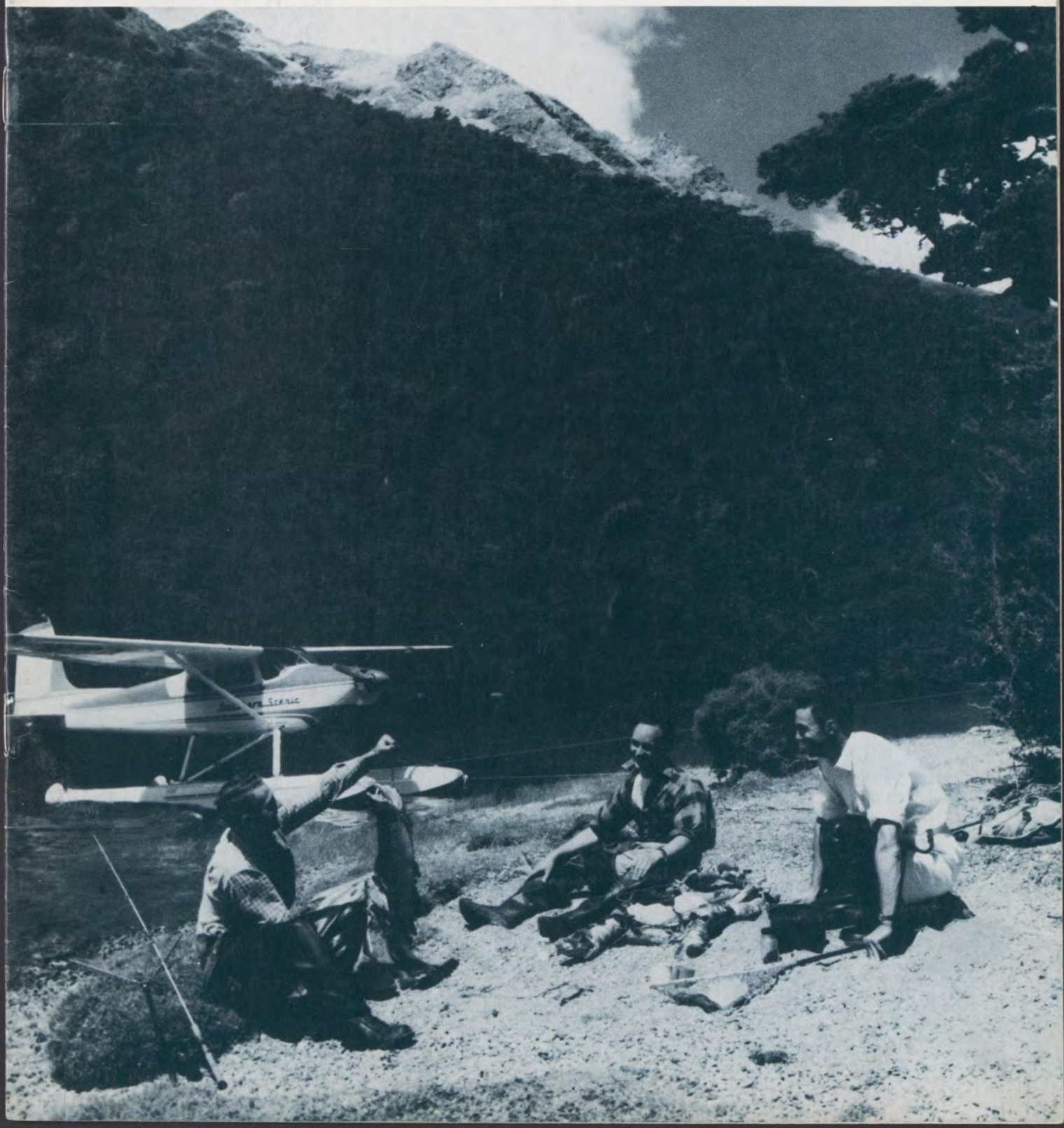
FAA AVIATION NEWS

AUGUST 1975



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Paradise Gained
—or lost?
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FAA AVIATION NEWS

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The GLORY BIRDS

The romantic appeal of ancient aircraft is stronger than ever

If you had your choice, and price were no factor, would you rather own a brand new 1975 airplane equipped with the very latest in aviation technology, or a 46-year-old open cockpit tail-dragger lacking all modern avionics, even a radio?

The new airplane, of course, most pilots would undoubtedly answer.

But not all. There is a growing number of pilots who are opting for the antique or "classic" airplane, a vintage model they can proudly own and maintain and fly. Owners of antique aircraft are an increasing breed, and currently there are over 4,000 airworthy antique airplanes being flown in the United States.

(The word "antique" is subject to different definitions, but the most common one is that an antique aircraft is any one built before World War II. Any aircraft built after the War that is 25 years old or older, is called a "classic.")

These vintage aircraft owners are a dedicated and determined group. They frequently have to expend months or even years alertly and patiently tracking down the particular airplane they want—perhaps an OX *Travelair,* or a Beech *Staggerwing.* And when they do locate the airplane they often find it sitting abandoned in a barn or a garage, or scattered over half a county; and then the long and frequently expensive process of repairing and rebuilding that old airplane must be undertaken before it can be made airworthy again. If the antique airplane is already in an airworthy condition, the prospective buyer will discover that the price of those rare airplanes, like everything else these days that is in diminishing supply, has escalated astronomically.

The continuing maintenance of antique airplanes is also time-consuming, and replacement parts for airplanes manufactured decades ago are hard to find—frequently they must be machined to order. Finally, the modern pilot who was trained on post-war airplanes will want to get some careful dual instruction in his type of ancient aeroplane so that he does not mess everything up on his first takeoff. He is likely to find his antique is much more demanding of his flying ability and attention than any modern aircraft.

These difficulties apparently do not diminish the enthusiasm of antiquers who become almost rhapsodic about what they call the thrill of "pure flying" in open cockpit airplanes. Not long ago Frank Fox, a pilot who flies 200-passenger DC-8 jetliners for a living out of Washington, D.C., took a trip on his own time to Portland, Ore., and then drove far out into the country to a ranch to see a farmer who, rumor had it, was willing to part with a 1931 *Waco,* an open cockpit biplane.

When the farmer opened his barn door for Frank, there it was, a rare sight: a *Waco* F-2 in airworthy condition. Frank bought it on the spot and flew it home himself in easy stages, a solo transcontinental flight in an airplane without a radio. (The *Waco* is capable of being equipped with a radio, but to date Frank has never added one because he wants to keep it in its original condition.) The trip from Oregon to Maryland took him three days and 25 flying hours, most of it at around 1,000 feet above ground. With its 220 hp engine, the *Waco* cruises at 110 mph; stall speed is 55 mph, and it burns about 10 gallons an hour. Unlike some antiques without brakes, it can be safely landed on paved runways.

Wherever he stopped on his cross-country flight he found that the *Waco* attracted a gathering of pilots and aviation buffs intrigued by the antique airplane. Many begged for a short hop in it, and in Idaho one pilot whipped out his check book and offered to pay Frank any sum he wanted for the airplane.

Frank Fox was sympathetic, but deaf to all offers. He had been waiting to acquire just such a *Waco* since the day he had first

flown one—nearly 40 years ago—and he was not about to give up the dream now. Like many a lad who had yearned for an airplane while growing up in the depression years of the 1930's, Fox never lost his desire to own the airplane that had excited his boyish dreams. He brought the plane back to Frederick Airport, near Washington, D.C., spruced it up, and entered it in the antique division of the Reading Air Show. He won first prize.

What does Frank Fox the airline captain get out of flying antiques? (He has a *Gypsy Moth* and a 1946 Piper J-3 *Cub* as well as the *Waco.*) Some of it is pure pleasure, he admits; the elemental feel of the wind in your face, sensitivity to controls, a relationship to a temperamental aircraft, rekindled memories of a bygone era when a man and his plane were part of a legendary fraternity, like the knights of Camelot, their lives pledged to a conquest of the Unknown.

But is there also a practical side to flying antiques, or classics? Oddly enough, there is. Frank Fox believes that flying these simple planes makes him a better, safer DC-8 pilot. After years of "driving" the big air carrier jets with an automatic pilot—not to mention a live co-pilot and engineer—doing much of the flying work, while he sits surrounded by hundreds of instruments, switches, levers, etc., Frank wants to be sure he doesn't lose his "touch." Flying an antique, like driving a motorcycle, is such an absorbing task that you quickly lose any complacency you may have accumulated in your behavior.

These venerable aircraft have to be flown with a sensitive toe and hand and a constantly roving eye—the engines are not as reliable as those of modern aircraft and inflight failures are practically routine. The pilots must know where they are at all times, and they must have a pretty good idea where the nearest suitable landing space may be found. Sparsely instrumented, the antiques usually make little or zero use of airway facilities, so that in an emergency their pilots are responsible for their own safe landing.

Above left—Frank Fox unfolds the wings of his **Gypsy Moth** in preparation for flying. **Above**—when you have no self-starter you depend on a good neighbor to get you going. **Right**—basic is the word for the **Moth** panel with only a few essential instruments (plus the seat of the pilot's pants) to keep him straight and level and on course.

Most of the planes are tail draggers, with a predilection for ground-looping, if the pilot gets careless about crosswinds on the ground. Many antique aircraft have no brakes, and must be landed and taxied with this factor always in mind. In addition, some of the older planes have tailskids which require the cushioning effect of sod.

Flying an airplane without reliance on electronic aids, including radio, can have an invigorating effect on the pilot's technique, requiring the use of basic skills which may not have been used since his early training days.

Most pilots of antiques must get along without traffic or weather advisories from the ground, which means that they have to relearn the ability to estimate windspeed, and to anticipate storms or turbulence, by observation and the feel of the aircraft. It is also up to the pilot to keep separated from other aircraft by constant scanning and attentiveness. For some pilots who are trying it for the first time, it feels like "flying in a continual emergency."

But the net effect once you get the hang of it, antiquers assure you, is the feeling that there is no emergency you cannot deal with more or less routinely. You regain, in particular, a sense of intimacy with the airplane, as well as a high degree of self-reliance. Perhaps it is the contrast between this kind of flying and the complicated involvement of the jet airline pilot with an electronically oriented airspace system that appeals to airline pilots like Frank Fox. In his view, flying antiques is a stimulating weekend tonic that makes him a better yet pilot.

Fox's second love among antiques, his *Gypsy Moth,* has a life history that is typical of today's resurrected aircraft. This particular *Moth* was manufactured in Lowell, Mass., in 1929, one of the four American-built versions of the famous de-Havilland (British) line. The original owner took the plane out to Colorado, where it was flown and re-sold a number of times throughout the 1930's, and mothballed at the start of World War II. In the mid 1960's a retired TWA pilot with a passion for ancient aircraft heard from a friend that the plane was stored in a shed belonging to a small college (Adams State) in Alamosa, Colorado. He went to see for himself, and sure enough, there it was, an abandoned *Gypsy*, covered with dust and minus its wheels.

For $250.00 the airline pilot acquired a genuine antique airplane, and for the next four years his problem of what to do with his spare time was non-existent. Before it could be flown the *Moth* had to be almost completely rebuilt, and tracking down parts for it was a task for a master detective. Persistence paid off, however, and even the missing wheels were eventually recovered (they had been transferred to a fellow antique form of transportation—a sulky). After new fabric was installed and the airworthiness certificate renewed, the *Gypsy Moth* again fluttered its ancient wings. A few years later Frank Fox heard via the grapevine that it was for sale, and quickly bought it. The next year, 1971, after "a little retouching" he flew the *Moth* to Reading, Pa., where it won first prize as the best antique in the annual aviation show.

Like many of its vintage, the *Moth* is a demanding aircraft. The engine, for example, is not completely self-lubricating, and if you forget to hand-grease the rocker arms before taking off, you are likely to have an abbreviated flight. On the other hand, the *Moth* has folding wings which allow it to be stored in any good-sized garage, or transported overland on a truck without any difficulty.

One of the dangers of flying antiques is that some pilots tend to get carried away with nostalgic memories or recollections of old war movies in which aerobatics figured prominently. Although most vintage aircraft were stress-designed for aerobatics, it is a dangerous mistake to assume that they have retained that capability. Most antiques or classics flying today have many replacement parts, which may or may not be suitable for aerobatics. Unless you have personal knowledge of every replaced part in a vintage aircraft, you are advised to avoid aerobatics with it.

Indeed, most pilots experienced with antique planes will tell you frankly that aerobatics are an invitation to trouble. Even if the venerable airframe does not fail at a crucial point in a maneuver, the engine is simply not reliable.

Another cause for concern in flying antiques is the increasing scarcity of the low octane fuels for which their engines were designed. The highest octane most vintage aircraft can burn without causing damage to sparkplugs or valves is 80/87, which has been discontinued by several major manufacturers. Pilots should make it a habit to check ahead for availability of 80/87, and not assume that it can be supplied everywhere. If the next highest octane must be used in an emergency, the plugs and oil should be inspected for lead deposits at shorter than normal intervals. Even low-lead 100 octane has *twice* the lead content of normal lead 80/87 octane. Some pilots of antiques have used low octane automobile gas in a pinch, but this is a poor substitute. The formula for auto gas is significantly different from that for avgas, and will cause serious problems—and eventually failure—in an aircraft engine.

For antiquers, half the fun is getting together and comparing notes. **Above left**—a recent fly-in at Horn Point, Md., attracts a variety of early birds. **Above right**—interested onlookers at the meet. **Left**—Fox's prize-winning **Waco** shows gleaming evidence of spit-and-polish care.

Despite the many inconveniences of caring for a vintage aircraft, the number of pilots, owners and antique buffs is growing steadily. The Antique Aircraft Association of America, now in existence for 21 years, has over 5,000 members. AAA President Bob Taylor believes that the revived interest in owning and flying vintage aircraft is part of the nostalgia wave that has affected so many young people in recent years, and accounts for the presence of many youthful pilots at AAA functions, in addition to the older generation who lived the glamorous era of the early birds. Some 350 antique and classic aircraft were flown into their last annual meeting, which is held in the last week of August near Blakesburg, Iowa, and attracts an amazing flyable collection of bygone aircraft from all over the world—*Porterfields, Rearwins, Jungmeisters,* you name it if you can.

Another organization popular with vintage aircraft enthusiasts is the Antique and Classic Division of EAA (the Experimental Aircraft Association) of which Buck Hilbert is president. Hilbert believes that the old biplanes have a perennial appeal to the young at heart because of their responsiveness to controls, as well as their association with an heroic age. Particularly popular in this respect are the Staggerwing Beeches, and of course the Stearmans, which are probably the most numerous because of their continued use in agriculture. The EAA's annual airshow at Oshkosh, Wisc., in the last week of July attracts about 600 antique and classic aircraft, in addition to hundreds of homebuilts.

There is also a score or more of clubs and associations devoted to one particular model of aircraft, and most vintage buffs belong to several. The people who fly these planes are extremely generous with their time in helping one another find needed scarce parts, or in giving some stranger a hand in getting started in the special world of all but forgotten airplanes.

The spirit of camaraderie that once existed among airmen—when their numbers were few and their dangers abundant—appears to have been reborn among modern airmen who refuse to allow the early birds to just fade away. ■

FARs

STATUS of the FEDERAL AVIATION REGULATIONS

(As of August 1, 1975)

The Federal Aviation Regulations, formerly published only in volumes, have been re-issued as individual Parts. Infrequently amended Parts are sold as single-sale items, while frequently amended Parts are sold on subscription. Subscribers to volumes were notified of prices and ordering procedure for the new Parts by the Superintendent of Documents as their volume subscriptions expired.

The number in parentheses after each Part indicates the latest change, if any, to that Part. FAR's and changes to single sale Parts, may be purchased only from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

FAA SEPARATE PARTS	TITLE	PRICE
Parts sold by subscription		+ foreign mailing
Part 1	Definitions and Abbreviations (2)	$3.00 + 75c
Part 21	Certification Procedures for Products and Parts (4)	$3.75 + 95c
Part 23	Airworthiness Standards: Normal, Utility and Acrobatic Category Airplanes (2)	$3.55 + 90c
Part 25	Airworthiness Standards: Transport Category Airplanes (2)	$6.60 + $1.65
Part 33	Airworthiness Standards: Aircraft Engines (1)	$3.00 + 75c
Part 36	Noise Standards Aircraft Type and Airworthiness Certification (3)	$3.00 + 75c
Part 37	Technical Standard Order Authorizations (1)	$5.65 + $1.45
Part 43	Maintenance, Prevention Maintenance, Rebuilding and Alteration	$2.50 + 65c
Part 47	Aircraft Registration	$2.50 + 65c
Part 61	Certification: Pilots and Flight Instructors	$5.05 + $1.30
Part 63	Certification: Flight Crewmembers Other Than Pilots	$3.00 + 75c
Part 65	Certification: Airmen Other Than Flight Crewmembers	$3.00 + 75c
Part 91	General Operating and Flight Rules (5)	$11.30 + $2.85
Part 93	Special Air Traffic Rules and Airport Traffic Patterns (1)	$2.45 + 65c
Part 103	Transportation of Dangerous Articles and Magnetized Materials (4)	$2.20 + 55c
Part 105	Parachute Jumping	$2.00 + 50c
Part 121	Certification and Operation: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft (8)	$9.20 + $2.30
Part 123	Certification and Operations: Air Travel Clubs Using Large Airplanes (1)	$2.00 + 50c
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Parts sold as single copies (foreign mailing is 25% of total price)		
Part 11	General Rule-making Procedures	$0.55
	Change 1	$0.45
Part 13	Enforcement Procedures	$0.70
Part 27	Airworthiness Standards: Normal Category Rotorcraft	$1.40
	Change 1	$0.75
Part 29	Airworthiness Standards: Transport Category Rotorcraft	$1.70
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NOTICE

Prices shown are those in effect as of August 1, 1975. Prices are subject to change without notice and the prices that will be charged on your order will be those in effect as of the date your order is processed.

* Changes to individual airspace designations and airways descriptions, individual restricted areas and individual jet route descriptions are not included in the basic Parts 71, 73 and 75, respectively, because of their length and complexity. Such changes are published in the Federal Register and are included on appropriate aeronautical charts.

** Due to the complexity, length, and frequency of issuance, airworthiness directives, en route IFR altitudes and standard instrument approach procedures are published in the Federal Register and are not included in basic Parts 39, 95, and 97. In addition, en route IFR altitudes and instrument approach procedures are depicted on aeronautical charts.

Standard instrument approach procedures are published in the Federal Register by reference to FAA documents which are available for examination at the Rules Docket (AGC-24) and the National Flight Data Center, in FAA Headquarters, Washington, D.C. and at FAA regional offices and Flight Inspection District Offices.

The Family That Flies Together...

When the family takes off on a flying vacation no one wants to be left behind—including Rover

Flying with the family is fun. In summer the sky is full of small aircraft carrying families to vacation spots. The rear seats may be occupied by all types of newcomers to general aviation—uncles, aunts, cousins, as well as dogs, chimps or canaries—but especially children. As long as you have room, the more the merrier, but if you have ever pulled a car off the road to swat a couple of kids squabbling in the back seat, you can anticipate how important it is to prevent yourself from being annoyed by beast or toddler at 5,000 feet.

Flying is not ordinarily hard on children or pets, and some are soon fond of it, but the first trip may provoke all manner of acute reactions.

The family pilot should try to have a second adult along to attend to any problems that might come up. Even if your wife is a qualified pilot, you can expect her to be functioning primarily as a cabin attendant on a family flight.

The time to start preparing the family entourage for the flight is long before you ever get to the airport. To avoid arguments at takeoff time, or worse still, in the air, decide beforehand where in the plane each child is to sit. Arguments at takeoff time disrupt one's routine and may result in your forgetting to check the magnetos or set the fuel mixture correctly.

Except for infants in arms (under two years), you need a seat with a seatbelt for each child. Several youngsters confined under one restraining belt can become troublesome much more quickly than if each is allowed his own territory. For small children, an extra cushion set on top of the aircraft seat is useful. It permits the child to see out the window and at the same time relieves adults from trying to hold the squirmer on their lap—a dangerous practice, especially in the front seat where the child can obstruct the pilot's vision and interfere with movement of the controls.

Sitting still for an hour or more is a hardship to many children. Make sure the child is comfortable—that he is neither too hot nor too cold, and is wearing sunglasses to protect him from the glare. Insist that he visit the restroom before departure—whether he wants to or not. Try to prevent him from eating heavily or drinking carbonated beverages for about two hours before flight time. (Air bubbles expand at altitude and may cause discomfort.)

Boredom is a frequent cause of discontent aboard the aircraft. Encourage young passengers to take a favorite toy—a doll or picture book that will keep their interest for a long time. When interest in the toy dwindles, explain how the trip is progressing and point out towns, rivers and other interesting sights as you fly over them. (Your "cabin attendant" should be prepared to double as a tour guide.) Older children can be given the duty of looking out for other airplanes.

A frightening experience in a plane can make your child forever reluctant to fly. Make sure he understands that a plane, like a car on a bumpy road, will bounce around a little. When it happens, he won't be surprised. Obviously, this is no time to practice stalls and steep turns.

If you anticipate bad weather, all passengers may take a couple of anti-nausea tablets half an hour before the trip. Two such compounds presently available without prescription are Dramamine and Marezine.

Smoking in a confined area such as an aircraft cabin can irritate tiny nostrils and upset children's stomachs. It should be avoided.

If you have a pet of reasonable size who cannot conveniently be left behind, bring him along too, but remember, he is subject to the same problems in flight as your children—fear, excitement, airsickness, and boredom. It is a good idea to confine pet animals in some kind of cage to prevent them from becoming excited and jumping around inside the aircraft—especially if they are not accustomed to traveling. If this seems inhumane to you, and you have a large cabin, try restraining him with a harness and leash secured to the aircraft frame.

To help protect your pet from motion sickness, it is best not to feed him before the trip, but to wait until about 45 minutes after it is over, and his nerves are calm. Tranquilizers and anti-nausea drugs are available for animals but *should only be administered under the direction of a veterinarian.*

For the comfort of pets and children alike, try to break your trip into two-hour segments, allowing time to stretch, relax and move about between legs of the journey. This also prevents a frantic search for a

Letting small children fly co-pilot could spell trouble if your attention is diverted by those inquisitive little hands. Dual controls place temptation too close for safe traveling.

place to make an unscheduled restroom stop.

Sometimes even after extensive precautions are taken to prevent it, your child or pet will become airsick. Although this is an infrequent occurrence, you should be prepared for it by carrying sick bags and plenty of tissues on board. A can of aerosol deodorant spray can help make the cabin more pleasant after such an incident, at least until you can land and do a better job.

If your child is sick—especially if he has a cold or other respiratory problem—arrange to leave him home. Changes in altitude can aggravate his condition with uncomfortable ear effects lasting several weeks.

Children who have been told about the physiological changes that take place at altitude are less uneasy when they feel pressure in their ears. Explain to your child that he can relieve the discomfort of unequal pressure in his ears by holding his nostrils together, closing his mouth, and trying to force air through his nose.

If the excitement of the trip has proved too much for your child and he begins to hyperventilate, your "cabin attendant" can let him breath into a paper bag for a minute or so. Air with a higher carbon dioxide content should calm him down quickly.

The rule of never allowing passengers to alight or board until all propellers have stopped turning, applies even more vigorously to children. On the airfield, it is a good idea never to let a small child's hand out of yours. Even some adults do not realize the danger of being near a propeller blade and little people are especially difficult for a taxiing pilot to see.

Getting in and out of airplanes can be quite a chore for someone who can't reach very high. A helping hand may prevent a damaging (to child or plane) misstep.

Think you are all set? Don't count on it. Children and animals have a knack of coming up with the unexpected and both can be a real menace around machines.

Never leave your child alone in a plane—no matter how briefly. Children are great imitators. If your lad is observant, he probably already has figured out how to start the engine. Incidents have occurred where a child left unattended has managed to taxi an aircraft, and it has roared off out of control, mashing wings and tail sections of aircraft parked nearby. Other youngsters, with no prior experience in flying or landing an airplane, have actually managed to take off, with serious consequences.

The pilot who carries a small child as a lone passenger may be inviting trouble. If the little fellow occupies the rear seat of a tandem, he will be virtually out of sight of the pilot. He could easily become frightened and hysterical, if the weather is bumpy. Or he could slip out of his seat and manage to jam up the rudder controls.

Carrying a child-passenger in the front seat of a small plane can also make life difficult for the pilot. The natural instinct of the child to imitate the movements of others may lead him without the pilot's knowledge to rearrange the trim tab, fuel mixture or throttle controls. The minimum age for allowing a child to occupy a front seat is a matter of judgment; considerable surveillance must be given even to teenagers.

Once the flight is in progress, no young hands (or paws) should be allowed to touch any of the controls. It is important to stress to young children that pulling or pushing any interesting looking knobs or levers is forbidden to everyone except the pilot. Impress upon the kiddies the fact that the safety of all on board depends upon observing this rule to the letter. However, do not count on their obedience. The urge to see what happens when you pull or push some unfamiliar mechanism is so strong in children that it may override the sternest proscription. They should be kept under observation. If that is not possible, they should be seatbelted in place.

Overcoming children's fears of flying or spurring their interest in aviation by allowing them to manipulate controls is not a safe idea, as an indulgent uncle found out in a recent incident that tetered on the verge of tragedy. In this case the pilot was an experienced military flyer, just returned from a stint overseas and visiting his married sister and nephew back home. The latter was a towheaded, bright-eyed youngster of six with an irresistibly appealing smile—which he utilized to exact a promise from Uncle Bill to give him "a real flying lesson."

Above—reasons for not playing with the controls should be spelled out on the ground before take off. Below—any young child who is going to be walking around on an airport ramp needs to know that the airplane propeller is positively a "never touch" item.

Unsupervised exploration of the taxi and tiedown areas can be extremely dangerous for a small child. Youngsters darting in front of moving airplanes are not always easily seen.

Uncle Bill took his nephew—proudly wearing his pilot's cap and flying wings—and the boy's mother out to the local airport and borrowed a *Cub* from a friend. They walked around the airplane together and the pilot explained patiently how everything worked. With Mother watching from the shade of the hangar, preparations were made for a short demo flight.

The pilot considered removing the control stick from the aft tandem seat, where the boy would sit, but the little fellow begged so prettily to be allowed to have the stick there that his uncle decided it would do no harm. The two agreed solemnly that the boy would not pull on the stick until Uncle told him he could do so.

The takeoff was uneventful, and the pilot stabilized the *Cub* in a climbout that would easily clear the treeline at the south end of the airport. At an altitude of perhaps 50 feet he glanced at the eager face behind him and nodded—"Okay, you can pull back now." The pilot's right hand was firmly on the stick, so he anticipated no problem in overriding any child's effort to alter the controls.

But he was not prepared for what happened next. Without any warning the power trailed off and the airplane gave signs of approaching a stall. Years of experience brought about immediate recovery tactics—apply full power, drop the nose—and as the engine roared back into life the *Cub* staggered up over the oncoming trees with what seemed like inches to spare to the horrified Uncle Bill.

His sister, waiting for them on the ground, was also a little white-faced and had a few sharp things to say to her brother about showing off in the airplane that way, with her only child on board. Bill decided not to try to explain to her what had happened when the nephew had pulled back on the aft seat *throttle*, instead of the control stick. In retrospect the entire lesson did not seem like such a hot idea.

Even when children are kept in the back seat, some airplanes give them access to a number of controls or levers, the misuse of which could spell tragedy. Some aircraft, for example, have baggage doors which may be opened from inside the cabin. Imagine the feelings of the pilot/father who turned around to observe his two children in the back seat feeding maps and other objects out into the air stream via the opened baggage door.

Trim controls are quite accessible to inquiring young hands in some airplanes, as are fuel selector valves. Recently the pilot of a *Cherokee Six* nearly had a forced landing when his engine threatened to quit in flight and none of the usual emergency procedures had any effect.

As he was looking around for a possible landing site, he glanced at the sweet, curly-headed little girl who occupied the right rear seat—and his problem was instantly solved. The particular aircraft has (in addition to the usual wing tank fuel drains) a "fuel system quick-drain valve," which is activated by a small lever recessed at the base of the right rear seat. The little girl was happily engaged in pushing the lever down which, of course, interrupted the flow of fuel to the engine. The control was never intended to be used in flight, but the intentions of engineers are no barrier to the explorative fingers of curious young children.

In other known instances, unattended children riding in light aircraft (and not watched carefully) have turned off master switches, radios, and lights, and have opened windows and even doors. The potentially serious consequences of such acts are obvious.

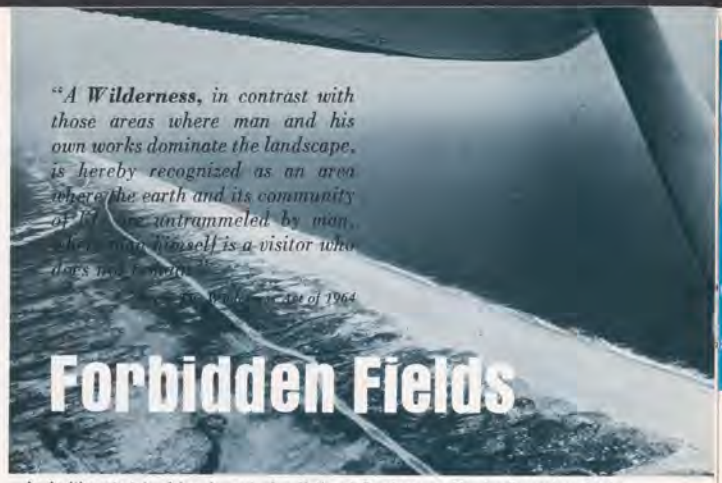
Probably the best general rule for flying with unpredictable passengers, such as children or pets, is to avoid over-extending yourself. Keep your hops short, keep out of bad weather or critical flying conditions, and land before nightfall. Then, if a grubby little fist presents you with a piece of avionic equipment wrenched from the panel and asks, "What's that?" you will not gasp and turn pale. Flying with the family can be fun, if you play it safe. ■

Letting children play pilot may seem harmless enough, but resourceful youngsters have been known to start airplanes and even manage take-offs. If children have been sitting in the front seats, be sure you make an extra thorough pre-flight inspection of everything in the cockpit.

Forbidden Fields

"A Wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain."

— Wilderness Act of 1964



An inviting stretch of beach, part of a National Seashore on Maryland's eastern banks.

You are skimming low over the ocean, on a hot summer day just off the coastline, on an aerial sightseeing flight. Your passenger pokes you and points to a wide expanse of deserted beach. "Boy, would I like to be down there cooling off in that surf!"

The idea is intriguing. You survey the sand with a professional eye: it seems solid enough for an impromptu landing. In fact, far down the beach you can see a maintenance jeep, hardly even making ruts. Rolling even into a steep turn to have another look, think, "Why not?"

Better think again, before you decide to drop impulsively out of the sky for an off-airport landing on an inviting beach or field (or lake, if you are equipped with floats). As a matter of fact, you should have second thoughts before flying low over such areas, even though they appear deserted enough to qualify as the "sparsely populated areas" over which the Federal Aviation Regulations allow you to fly below 500 feet. Because, unless you have checked in advance, there is a good chance that what you are looking at is a protected area, such as a National Park or Seashore or Wildlife Refuge. In these areas, landing is generally forbidden by regulations of these agencies which can be enforceable by criminal proceedings involving fines, imprisonment, denial of future privileges in the area, and in some cases seizure of the aircraft.

Millions of acres across the country have been designated by Congress, through various acts and laws, as protected areas under three separate Federal agencies. The National Park Service supervises 287 parks, monuments, seashores, lakeshores, recreation areas, historical areas, and scenic riverways, totaling 30.9 million acres. United States Fish and Wildlife Service areas cover 33.1 million acres, divided into 367 Wildlife Refuges, Big Game Refuges, Game Ranges, and Wildlife Ranges. The Forest Service manages 11.6 million acres in 85 Wilderness Areas. The National Park Service and The Fish and Wildlife Service are under the Department of the Interior; the Forest Service is part of the Department of Agriculture. Some of these areas are indicated on aeronautical charts; some are not. In either case, it is up to the pilot to know and observe all pertinent regulations, Federal and local.

Although they are administered by separate agencies, the rules for all protected areas are roughly the same: unauthorized landing of aircraft is *prohibited* on land or water except at officially designated landing sites, or in emergency. Airdrops of people or cargo are also prohibited in such areas, and all rules pertain to helicopters and floatplanes as well as fixed-wing land planes.

In addition, pilots are *requested* to maintain a 2,000-foot minimum altitude above such areas. FAA supports the altitude recommendation in Advisory Circular 91-36A (VFR Flight Near Noise Sensitive Areas). The circular asks the *cooperation* of pilots, as preferable to using the regulatory process, but adds that the voluntary program will be monitored and if it does not prove satisfactory in solving complaints of low flying over noise sensitive areas, then supplemental action will be required.

Aside from the environmental factors, there is another very important reason to observe the 2,000-foot above-ground altitude: *flight safety*. There are often unusual conditions surrounding flight over a Park or Wildlife Refuge that could narrow your margin of safety at lower altitudes. When scenic wonders abound beneath you, it is easy to become distracted and forget to pay proper attention to flying the airplane. Combine such scenic fascination with unexpected turbulence over rugged or irregular terrain, and you have the stuff of which airplane accidents are made. In 1972 and 1973, one of every 40 general aviation accidents was due to "unwarranted low flying." During these two years, there were 198 such accidents, of which more than half were fatal.

Every year reports come in of airplanes running into wires or poles or trees while the pilot was observing the progress of sailboats or waterskiers beyond the shore. Circling tightly over an unusual rock formation or trying to point out a landmark on the ground can lead to a low-altitude stall, with serious consequences when there is not enough time to recover. Even if the aircraft occupants survive the crash, they may be stranded miles from assistance, to say nothing of mechanical aid for the airplane.

Many wildlife areas are refuges for migratory birds which can be frightened quite easily by a low-flying aircraft. In fact, some of the more nervous species have been known to "scramble" because of an aircraft flying 2,000 or 3,000 feet above them. A flock of geese, (which fall into this "nervous" category) scattering around your aircraft can pose a real potential for an aircraft/bird collision, in which everyone involved is apt to end up a loser. The danger to jets from bird ingestion is even more serious.

Aside from the legal aspect, the dangers of landing on an unexplored meadow or lake are many. There may be all kinds of hidden obstacles not discernible from the air. Tall grass flattened in a gentle breeze may appear deceptively smooth but conceal soggy marshland, ruts, rocks, and gopher holes. A glassy lake surface can hide stumps and other obstacles just under the water.

On the environmental side there are convincing arguments for keeping a safe distance above the terrain, starting with the preservation of natural tranquility. The extent of the restrictions depend on the type of area. Wilderness Areas, by Act of Congress, have been set aside to be enjoyed *in their natural state* by the American people now, and in the future. Motorized vehicles are generally banned from these areas, except as permitted by the administering agency, since their presence invariably disturbs the balance of nature. Aircraft flying low or landing could cause a major upset in wildlife survival patterns. Forest Service regulations prohibit landing, airdrops, or low flying over Wilderness Areas. Violations are punishable by fines up to $500, imprisonment up to six months, or both.

The authority of the various Federal agencies to enforce regulations banning aircraft landings in protected areas has generally been upheld in the Courts. A significant action took place in the State of Washington in 1968, when a United States District Court denied an appeal (United States of America, Plaintiff, vs. Vean R. Gregg, Defendant) from a United States Commissioner's ruling. The commission had imposed a fine upon Mr. Gregg, who landed his aircraft in Glacier Peak Wilderness Area, in Northern Washington State (Mt. Baker National Forest). The pilot was charged after he had landed his *Super Cub* floatplane on mile-high Upper Jordan Lake, known as a sport fisherman's paradise. In his defense, the pilot's attorneys sought to establish that the Wilderness Act of 1964 should be interpreted to permit the continuation of landing rights at "primitive areas" (as such areas were known before passage of the Act) in accordance with past usage. The defense also argued that:

- The Wilderness Act permits landings except where the Secretary of Agriculture has expressly imposed restrictions;
- The Secretary is empowered to impose restrictions upon landings in Wilderness Areas, but is not empowered to prohibit such landings entirely; and
- The regulations carry no criminal or penalty provisions.

However, Chief Judge Lindborg found that the Act gives the Secretary of Agriculture authority to permit landings to continue where the practice has existed in the past, without *requiring* him to give that permission; that at his sole discretion he may or may not allow landings in Wilderness Areas; and that the law clearly provides for the imposition of criminal penalties for violations.

The National Park Service like the Forest Service is charged with preserving the natural state of its areas for the enjoyment of people and the well-being of the wildlife, plants, and natural formations. The National Park Service regulations and penalties are similar to those for the Wilderness Areas.

Penalties escalate sharply, however, under the United States Fish and Wildlife rules that are concerned with protecting vulnerable wildlife, a classification that covers certain fish, birds, animals, and also plants. A pilot with the best of intentions can unwittingly allow his aircraft to threaten the survival of some types of wildlife if he flies too close to nesting or breeding grounds. In some instances float planes have interfered with breeding activities of highly desirable fish. Landing aircraft on an improvised meadow runway can destroy rare wildflowers and plants. And of course a crashed aircraft that burns can set fire to thousands of acres of unique trees and plants, and drive wildlife into unfavorable habitats where they may not survive.

Because it is impossible to determine from the air just which refuge may be harboring "endangered" plants or animals, the cautious pilot will want to be very sure of the spot he chooses for a landing or low flying.

In a case now pending a pilot is awaiting trial on charges from the Department of the Interior arising from flying a floatplane low over a lake in a Wildlife Refuge. The pilot is charged specifically with "using an aircraft to harass birds" under the Airborne Hunting Act—a federal, criminal offense (although the lake was not shown on navigational charts, the pilot maintained he did not know he was over a refuge when he made several low passes over the lake. However, *navigation charts* (or any other FAA publications) are not intended as exhaustive guides to the lawful uses of aircraft beyond matters covered in the FAR's.

The United States Fish and Wildlife Service enforces the Airborne Hunting Act, which authorizes fines up to $5,000 and/or a year in prison, plus *seizure of the aircraft*, for shooting birds, fish, or wildlife from an aircraft, or for using an aircraft to harm such living creatures.

The most serious penalties are those governing actions considered illegal under the Endangered Species Act. This Act declared that certain species of fish, wildlife, and plants have been so depleted in numbers that they are in danger of or threatened with extinction. The names of these species are published periodically in the Federal Register and, with few exceptions, it is forbidden to "take" them anywhere within the United States (or to import or export them). The word "take" in this context means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Low flying of aircraft, or landing in the proximity of endangered species, has been interpreted as harassment by Federal officials. Willful violation of the Act carries a maximum penalty of $20,000 fine or one year imprisonment or both, and any vehicle or aircraft involved is subject to forfeiture.

(The concluding half of this article, which discusses means of avoiding aircraft violations of protected areas, will appear in the September issue. Material prepared by R. T. Benedict, M. Kriz, and E. Rose.)

Endangered bird species include (left to right) the bald eagle, shown in Alaska; the whooping crane, seen in Texas; and the condor, photographed in California.

Before landing on a secluded lake the cautious floatplane pilot will check to be sure it is not a Refuge, Park or Wilderness Area. Note: Another airplane tied up at the shore does not necessarily mean come on down. He could be official—or illegal.

Famous
Flights

Sir Robert Watson-Watt

The Battle of Britain, 1940.

The BIG EYE

If one single invention could be credited with making flight a safe, efficient, all-weather form of transportation, that invention would have to be the use of radio waves for tracking aircraft, or *radar* (Radio Detection and Ranging). And if a single individual had to be credited with developing modern radar for aviation, that man would be an inscrutable Scot who never had any interest in flying, and who described himself as "a sixth-rate mathematician, a second-rate physicist, a second-rate engineer, a bit of a meteorologist, a plausible salesman of ideas. . . ."

Robert Watson-Watt was born in Brechin, Angusshire, Scotland in 1892, the son of a carpenter and the descendant of a long line of ingenious innovators (James Watt, who perfected the steam engine, was a collateral relative). Robert was the youngest of five sons, in his own words, "a Benjamin with a six-year gap . . . relatively sheltered and spoiled. . . ." He grew up to be a fresh-faced, chubby (180 lbs. at 5'6") lad who excelled in electrical engineering at the University in Dundee and then, like many an ambitious Scotsman before him, followed the road south to London town.

His arrival coincided with the outbreak of World War I and eventually young Watt was placed in charge of a radio research station of the Office of Meteorology. His original task was locating thunderstorms by means of radio waves, or static. Several years of intense research enabled Watt to perfect and patent a cathode ray direction finder which was highly useful to aviation and naval vessels in the avoidance of adverse weather.

After nearly two decades of experimental work in radio direction finding, Watt was asked early in 1935 by the Director of Scientific Research for the Air Ministry, about the possibilities of developing a radio "death ray" to destroy enemy pilots at long range. It was a serious request. A special Air Defense Committee had been formed by the British Government to cope with the as yet potential problem of defending Britain from an aerial attack by the burgeoning Nazi Luftwaffe. The committee chairman, Sir Henry Tizard, realizing that development of air power had negated England's traditional island invulnerability to attack, understood correctly that the Royal Air Force could never hope to keep enough defenders in the air at all times to prevent enemy bombers from devastating the land.

In his reply, while explaining the difficulties of transmitting at long range sufficient amounts of electromagnetic energy to "make a pilot's blood boil," Watt took the opportunity to put in a word for the advancement of radio detection systems. He pointed out that in order to aim any hypothetical death ray, it was first necessary to detect and locate the enemy aircraft. He noted briefly that, "Numerical considerations on the method of detection by reflected radio waves" were available, if the Air Ministry was interested.

The Air Ministry definitely was, and on February 12, 1935, Watt forwarded a memorandum which he, and many of his colleagues, were to regard as the birth certificate of radar.

Specifically, Watt proposed in his memorandum to set up an "invisible curtain" of radio-frequency short waves through which all enemy aircraft would pass and, in so doing, reflect back toward the ground station an "echo" of the radiated energy. By picking up even a minute fraction of this reflected energy, receivers could learn a great deal about the invader, including distance from station, bearing, altitude, airspeed, and some indication of the aircraft's size (wingspan). Watt described how the pulse-transmitting method would permit sending and receiving at the same source, how friend or foe identification could be made with a transponder device, and how radar could be designed to "lock on" to a target and track it automatically.

The basic idea of radar was certainly not original with Watson-Watt. That radio echoes could be used to determine the location, speed and direction of a moving object was suggested as early as 1900 by the Yugoslav-born physicist Nikola Tesla. In 1903 Christian Huelsmeyer offered the German navy a patented device for using radio echoes as a navigation aid, but it was disregarded as impractical. Nineteen years later two American scientists at the U.S. Naval Research Laboratory in Washington, D.C., Leo Young and A. Hoyt Taylor, learned that shipping in the Potomac River interfered with radio transmissions in a predictable manner.

In 1930 Young and Taylor conducted successful experiments with aircraft detection at a range of up to 40 miles, but only the presence could be determined—not distance, bearing, etc. These problems were still unsolved.

On April 13, 1935, the British Treasury provided Watson-Watt with $60,000 to proceed in accordance with his celebrated radar memorandum. A month later Watt, with a team of three professionals and three assistants, set up their laboratory at Orfordness, England's nearest point of land to Germany. Their mandate: the detection, location (with interception accuracy) of all invading aircraft at up to 100 miles, and eventually the targetting of anti-aircraft gunnery.

Within six months Watson-Watt's team had developed a range-finding accuracy of one-quarter mile, direction finding within two degrees, and an altitude-finding accuracy of less than 15 percent. Construction was started immediately on a chain of 20 radar stations along the east and south coasts of Britain. By the time of the crucial Battle of Britain, England had 57 radar stations in service. Watson-Watt was able to comb England's universities for the best young brains available to expand his original team and work out the numerous highly technical problems in the perfection of the sky-watch system on which England's survival was to depend.

When the German aerial invasion came, in the summer of 1940, the Nazi fleet consisted of some 3,240 combat-ready aircraft, against which Britain had a meager 700 fighter aircraft—not nearly enough for a continuous patrol. Nevertheless England prevailed—shattered the bomber squadrons, frustrated the invasion force and survived, with the eventual help of the United States, to defeat Hitler.

World War II "Wrens" watch scopes for enemy planes in an early British radar room.

The heroism of the RAF in beating back the repeated assaults of the Luftwaffe is well known, and never to be denied; the role of "Wattie's radar" was a lesser known but critically important factor. Radar enabled the British not only to spot enemy aircraft forming up on the far side of the English Channel, and to determine their number and type, but it also showed them the positions of their own airborne squadrons, while maintaining radio silence. The numerical advantage of the Germans was offset by a technical superiority which was never overcome.

After the battle of Britain, Watt's chief associate, Dr. E. G. Bowen, headed a mission to Washington, D.C., where he displayed the achievements of British radar. From that point on, British technical advances were bolstered by American research and productivity, so that by the close of the war the potential of radar was not only fully exploited for military purposes but the state of the art also provided a base for a modern civilian air traffic control system that transformed air travel almost overnight from an uncertain adventure to a safe and efficient form of transportation.

The next step was airborne radar, developed in England by Dr. Bowen. Where ground-based radar made known the location of enemy aircraft, airborne radar enabled RAF pilots to close in for the kill, despite the cover of darkness. Airborne radar also helped the RAF to break the Nazi U-boat stranglehold on Atlantic shipping by greatly simplifying the task of spotting submarines from the air.

"Wattie" became Sir Robert Watson-Watt in 1942, and was rewarded for his war efforts with a $200,000 honorarium. But he never tasted the public acclaim that favored so many wartime heroes, especially airmen. Sensitively aware of his less-than-imposing appearance and somewhat comical figure, he stayed aloof from associates behind a "Chinese Emperor's smile," and irritated colleagues by seeking even greater recognition as an inventor than the facts would bear out. The victorious peace left him without any new challenges or opportunities in government and his postwar ventures in private enterprise were largely unsuccessful. He was a widower at the time of his death, on December 5, 1973 and childless.

His passing attracted little attention, even in England where so many owed so much to a bold flight of the imagination that had helped to turn the tide of history, at a crucial point, nearly 40 years ago. ■

Pilot
BRIEFS

ARE PROPELLER INJURIES A THING OF THE PAST? Not at all, cautions a new FAA advisory circular on the subject. During the past three years there were 62 serious accidents where persons were struck by propellers, 31 of them fatal. That makes the frequency about the same as pre-World War II days. In 1939-40 there was an average of one prop accident every 18 days; in 1972-73-74 the average was one every 17.6 days. Although constituting only a small fraction of the total general aviation accidents, these mishaps are particularly tragic because they are almost totally preventable with proper vigilance, and because many of the victims are bystanders and passengers, many of them children. Free copies of AC 91-42, "Hazards of Rotating Propellers," are available from DOT/FAA Distribution Unit, TAD 443.1, Washington, D.C., 20590.

■ **PLEASE CLOSE YOUR FLIGHT PLAN.** Failure to close VFR flight plans is an expensive habit, pilots are reminded once again in an updated FAA advisory circular. Thousands of dollars in needless expenses are borne by the Federal government each year because forgetful or careless pilots neglect to perform this simple function. Additionally, hundreds of planes and pilots are endangered during unnecessary search and rescue missions. Remember that when a VFR flight plan has been filed and activated it is the responsibility of the pilot to close the flight plan by notifying the nearest FAA Flight Service Station or other air traffic control facility. Control towers do not automatically close VFR flight plans. AC 91.83-1A, "Cancelling or Closing Flight Plans," discusses pilot responsibilities and agency procedures. It is available free from DOT/FAA Distribution Unit, TAD 443.1, Washington, D.C., 20590.

LIFE EXPECTANCY OF FLEXIBLE FUEL HOSES is not unlimited, espcially if they run through the engine compartment. Some of the wire-braided type are fabricated from synthetic rubber; how long they last depends on such factors as temperature, environmental conditions, shelf life, etc. These lines should be inspected regularly and if leakage, discoloration or stiffness is found, the hose should be replaced. Otherwise the hose should be replaced routinely at engine overhaul or every five years, whichever comes first. When re-installing, be sure the hose is not twisted; use as large a bend as possible (never use a bend radius less than specified by the manufacturer); do not attempt to straighten a hose having a bend in it—this could damage a hose if it has taken a permanent set.

CLEARED TO TAXI. A new FAA rule makes it mandatory for pilots to get ATC clearance before taxiing on a taxiway at an airport with an operating control tower. The rule clarifies a practice that has long been followed routinely by most pilots, although the FAR (91.78) did not make specific reference to taxiing on taxiways.

FLIGHT INSTRUCTOR REFRESHER COURSES

Date: (1975)	Location:	Sponsor:
9/9-10-11	Colorado Springs, Colo.	AOPA & Colo. Flight Instructors Assn.
9/9-10-11	Ft. Worth, Tex.	Texas Aero. Comm.
9/13-14-15	Grand Forks, N. D.	State of North Dakota
9/16-17-18	Reno, Nev.	AOPA & Nevada Safety Council
9/20-21-22	Santa Monica, Calif.	Los Angeles Chapter 99's
9/27-28-29	Pittsburgh, Pa.	AOPA / Comm. College of Beaver Cty.
9/30, 10/1-2	Phoenix, Ariz.	Ariz. Dept. of Aeronautics
9/30, 10/1-2	Blacksburg, Va.	Va. Div. of Aeronautics
10/4-5-6	Raleigh, N. C.	State of N. C.
10/14-15-16	Ames, Iowa	Iowa State U.
10/21-22-23	Columbia, S. C.	AOPA & S.C. Aero. Comm.
10/21-22-23	Tulsa, Okla.	Okla. State Aero. Comm.
10/25-26-27	Mass. (City to be announced)	Mass. Aero. Comm.
10/28-29-30	Albuquerque, N. Mex.	N. Mex. DOT
11/1-2-3	San Diego, Calif.	AOPA & San Diego 99's
11/11-12-13	Oshkosh, Wis.	Wis. DOT
11/11-12-13	Baltimore, Md.	AOPA & Md. Aviation Comm.
11/18-19-20	San Angelo, Tex.	Texas Aero. Comm.
11/22-23-24	Atlanta, Ga.	AOPA & Ga. Dept. of Avn.
12/2-3-4	Fresno, Calif.	AOPA & Fresno 99's
12/9-10-11	Anchorage, Alaska	Alaska Trans. Comm.
12/9-10-11	Chicago, Ill.	Ill. Dept. of Avn.
12/13-14-15	Lincoln, Neb.	AOPA & Neb. Dept. of Aero.
12/16-17-18	Honolulu, Hawaii	Hawaii Dept. of Trans.
12/16-17-18	Daytona Beach, Fla.	AOPA & Embry Riddle Aero. U.

Rule on Altitude Encoders for TCA's Eased

FAA has revoked the FAR provision that required a four-hour notice before an aircraft could operate without an altitude encoder in a Group I terminal control area or in controlled airspace above 12,500 feet. Under the new rule, if traffic and other conditions permit, controllers can issue immediate authorization for aircraft without encoders to enter such airspace, either in response to a request from the pilot or, if it enhances safety or expedites air traffic, on their own initiative.

The rule change follows a determination by FAA that in many instances it will be possible to save both time and fuel by routing an aircraft through, rather than around, a TCA, with no degradation in safety.

The four-hour notice is still needed to enter a TCA without transponder.

Census Bureau Gathering Statistics on General Aviation

In an effort to compile accurate figures to be used by FAA as a data base for forecasting general aviation growth and trends, the Census Bureau is interviewing at random some 10,000 aircraft owners.

Questions for the most part seek details about the aircraft: model, year, equipment, why it was chosen, where it is based, how many hours flown annually, whether mostly on business or pleasure, IFR vs. VFR. A few facts are included about the owner himself, such as his occupation and income.

Letters are going out from the Census Bureau to the selected owners, who will be contacted by telephone by a census taker. Only statistical and summary data will be used by FAA (without identification of individuals). Participation in the survey is voluntary for the owner.

In a separate study of general aviation flight activity, FAA has enlisted the cooperation of the Civil Air Patrol for a two-day survey, mainly at uncontrolled airports, to update figures from a similar study made in 1972. About 2,000 CAP cadets will record aircraft N-numbers and traffic count at 400 airports and will ask pilots, on landing, to fill out brief questionnaires. About 15,000 of the nation's 750,000 general aviation pilots are expected to be covered by the CAP count.

Ground Instructor Test Guide Issued

The written test guide for ground instructor (basic and advanced) has been updated by FAA. The guide outlines the scope of the basic aeronautical knowledge requirements for a ground instructor; acquaints the applicant with source material that may be used; and presents sample test items, with answers, explanations, and illustrations representative of those used in the current Ground Instructor Written Test.

The book, AC 143-1D, "Ground Instructor Written Test Guide, Basic-Advanced" is available from the Superintendent of Documents, Washington, D.C., 20402 for $2.25.

Lithium Battery Warning Published

An FAA Advisory Circular has been issued warning pilots that lithium batteries used in some emergency locator transmitters (ELTs) could, under certain circumstances, suddenly release sulfur-dioxide, an irritating gas, into the aircraft. (Some though not all manufacturers of ELTs have developed systems to control the release of SO_2 in the event of battery venting.)

Lithium batteries have a number of highly desirable characteristics for use in ELTs, such as energy density, low temperature performance and long storage life capabilities. However, these batteries incorporate a safety release (to prevent battery case rupturing in the event of overheating from internal or external sources) that can allow sulfur dioxide to escape into the aircraft cabin.

Sulfur dioxide is a heavy and colorless gas, with an odor similar to burning sulfur or rotten eggs, which can irritate the eyes and in high concentrations result in incapacitation. If such venting occurs, land as soon as practical so that occupants can leave the aircraft. Meantime the cabin area should be ventilated to the extent possible. Breathing 100 percent oxygen and using smoke goggles are helpful if available.

Copies of AC 20-91, "Lithium Batteries Used in Emergency Locator Transmitters" are free from DOT/FAA Distribution Unit, TAD 443.1, Washington, D.C. 20590.

WHAT HAS FOUR LONG LEGS AND MANY EYES? FAA's new generation of modular control towers with built-in flexibility to meet varying needs and to incorporate future developments in air traffic control equipment. The four service cores are crowned by two equipment levels and a closed-in cab which can have five, eight or eleven sides. Second of the new towers (with an eight-sided cab 200 feet above the ground) is under construction at Atlanta's Hartsfield Airport; prototype (above) with an eleven-sided cab, is at Dallas-Fort Worth.

• Left Turn OK?

My question is very basic—to wit, where do I find the authorization to depart a controlled airport without specifically requesting a direction of flight? Everyone in my local area—including the FAA—assumes that a 45 degree left turn out is standard, and no request for it need be made. That's fine, if it is universally accepted—but it isn't written down anywhere that I can find. Pilots say they make left turnouts automatically and always have. They seem to assume it is somewhere in an Air Traffic Controllers Directive. I for one won't "assume" anything where Air Traffic Control is concerned.

This is probably a nit-picking point, but if you can't tell me why it is standard to depart to the left without a request at a controlled field, why can't I make a right turn out and not request it either?

Walter S. Kyle
Fayetteville, Ark.

This point is covered by FAR 91.87(f)(1) which states that pilots taking off from an airport with an operating control tower "shall comply with any departure procedures established for that airport by the FAA." There are no "standard" departure procedures common to all controlled airports. Such procedures are established locally, taking into consideration such conditions as available runways, terrain, traffic, other airports nearby, etc., as well as the overriding concerns of air traffic control: safety and expediency. Tower personnel would be able to tell you of procedures for your airport.

Obviously, in the interest of reducing radio congestion unnecessary transmissions should be eliminated. However, one unfailing rule for pilots at tower controlled airports—or anywhere under air traffic control—is: When in doubt, ask.

• Leaning a Lycoming

Your April article on leaning is in conflict with what I've been taught. Your article suggested: lean 'til rough (with carburetor and fixed pitch prop) then enrichen slightly. But then you further stated that the "point of roughness" is when a slight increase in RPM's is noted.

There seem to be varying opinions about this point of roughness. Several mechanics I've talked to suggest leaning well past the point of increased RPM's . . . to the point where the engine actually begins to die out, then enrichen slightly. Others, like your article, suggest leaning to where the RPM's increase slightly, then enrichen. Who's right?

I've been leaning the Lycoming in my American *Yankee* to the point where the engine almost dies out, then enrichening slightly. Is this wrong?

Robert Harrison
Las Vegas, Nev.

On matters like this the manufacturer is always right, as far as we're concerned. Here is what Lycoming says in their latest bulletin on the subject: for engine with float type carburetor and fixed pitch propeller at cruise power, lean to a maximum increase in RPM and airspeed—or, just before engine roughness. The bulletin further adds that engine roughness is not detonation at cruise power, but is caused by the leanest cylinder not firing due to a very lean fuel-air mixture, which will not support combustion in that cylinder.

• The Changing of the FARs

In your articles on the Status of the FAR's, why don't you include the latest change date of the FAR? This change date could be used by readers to check their FAR's for currency.

Roy D. Hill
Agana, Guam

In the interest of saving space on what is already a crowded page we list only the numbers of the most recent "change." The effective date is shown on the change directly opposite the change number.

• East is East . . .?

In your answer to the question by reader Giovanelli about the disappearance of Amelia Earhart (June issue, page 15) I am afraid that you have confused the gentleman even more. Amelia Earhart started on her world flight by going *east to west* on the first leg, from San Francisco to Hawaii, not *west to east*. On the second attempt she was going around the world from *west to east* when she and Noonan were lost.

D. R. Brandon
Rupert, Idaho

• Wanted: Data on Medical Artifacts

Does anyone have information on a "Ruggles Orientator," the aerobatics simulator of World War I, or a Henderson-Pierce rebreather used by pioneer flight surgeons? How about the rocket sleds John Paul Stapp rode in his spectacular deceleration experiments? The Aerospace Medical Association is seeking information on medical artifacts related to aviation for a directory now being compiled. I know about some significant medical items that are on display at the National Air and Space Museum, like the thermometer and barometer used in London in 1784 by Dr. John Jeffries of Boston, the first physician to make a balloon ascent; also the first aviator's pressure suit that was designed and tested by Wiley Post in 1934. I am sure there are many other important medical artifacts "lost" in obscure exhibits and private collections and I'd like to know their whereabouts so we can list them in this directory. Information should be sent to:

Robert J. Benford, M.D.
Chairman, History and Archives Committee
Aerospace Medical Association
Washington National Airport
Washington, D.C. 20001

We are also interested in such memorabilia as notebooks, diaries and photographs.

Fred Stoffel
Washington, D.C.

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Flier vs. Flyer

With the hope of making a good aviation periodical better, may I humbly suggest elimination of the word "flyer" indicating "pilot." Some dictionaries define "flyer" as a "handbill, or circular." The Associated Press Style Book says "Flier is an aviator, flyer is a train." Thanks.

I enjoy FAA AVIATION NEWS and look forward to it.

Walter F. Harmon
Springfield, Mass.

Our dictionary shows "flier" and flyer" to be interchangeable and lists the following as definitions: 1. One that flies; specif: AIRMAN. 2. A reckless or speculative venture. 3. An advertising circular for mass distribution. But we're willing to go along with the people's choice. Let's hear it from you airman stylists.

THE INSTRUMENT CORNER

• IFR En Route Altitudes

I'm concerned about wrong information on IFR cruising altitudes in controlled airspace. Several times I've filed for an even altitude going east—or odd going west—and been told that I couldn't do that. One person let on as if he wouldn't take my plan unless I changed it. I'll bet there are quite a few pilots who don't understand that the even-odd rules apply only to VFR, VFR-over-the-top, or IFR in *uncontrolled* airspace. According to Part 91.121 (a) the cruising altitude for IFR in controlled airspace is "as assigned by ATC" and the even-odd rule should have nothing to do with it; the pilot can not only file for even or odd in any direction, but anything in between (like 16,200 from Gunnison to Lake George on V-95).

ATC usually gives me the altitude I request if traffic permits, especially if there is a good reason for my request. This may seem like a too-fine point, but it can be important in some situations, such as when flying west when the only altitude between the freezing level and the MEA is 7,000 feet, or to avoid going higher than necessary when crossing mountains that are not far below your service ceiling.

Warren V. DeHaan, D.O.
Boulder, Colo.

The En Route Air Traffic Control Procedures Handbook specifies that controllers should clear aircraft at any altitude regardless of magnetic course when operating between the minimum en route altitude and 3,000 feet above the surface. However, above 3,000 feet (and below 29,000) aircraft should be cleared at odd altitudes for an easterly course (0-179°) and at even altitudes for a westerly course (180-359°).

It is true that when traffic, weather or aircraft limitations prevent these assignments, other altitudes may be assigned without regard to direction of flight.

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Suggested by Lou Lombard,
Rocky Mountain Regional Office