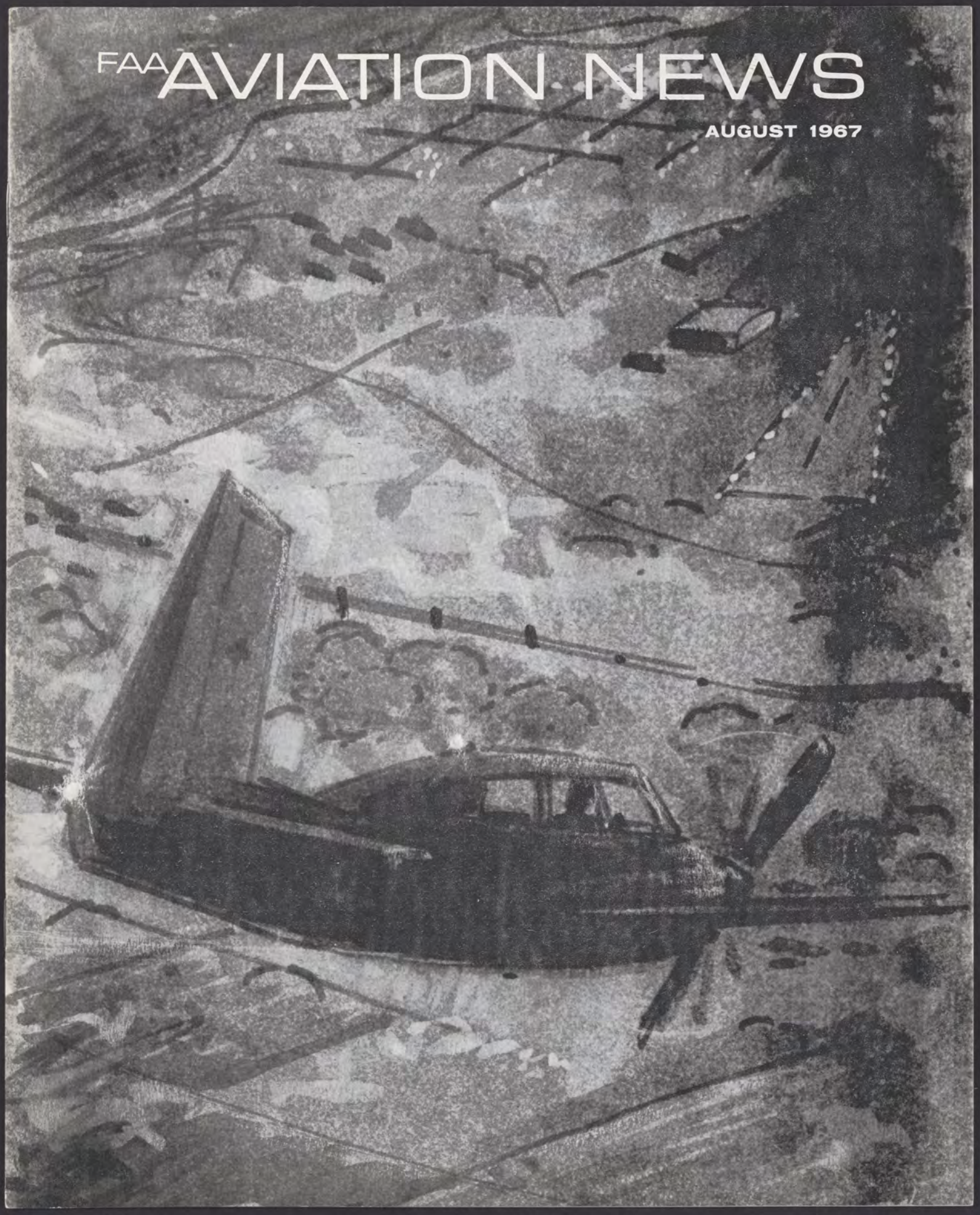
FAA AVIATION NEWS

AUGUST 1967



COVER

When a pilot needs help, he usually needs it in a hurry, especially when the tanks run dry, at night... See page 8.

FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION / **FEDERAL AVIATION ADMINISTRATION** VOL. 6 NO. 4

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William F. McKee, *Administrator, FAA*
David D. Thomas, *Deputy Administrator*

Charles G. Warnick, *Director*, Office of Information Services;
Lewis D. Gelfan, *Editor*; Abner B. Cohen, *Art Director*

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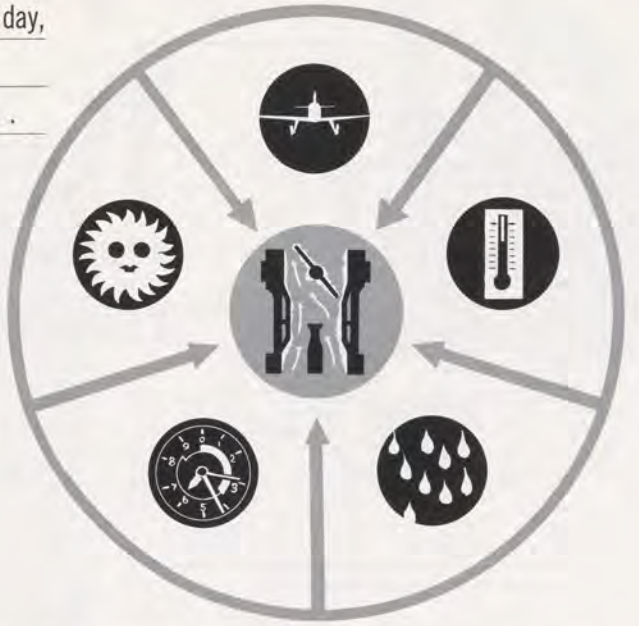
On a mild summer day, when the RPMs start to drop off . . .



LOOK OUT FOR CARBURETOR ICE

There is nothing subtle about aircraft surface icing. It happens in nippy weather when freezing can be expected, and the ice usually builds up in full view.

Less obvious, and perhaps more dangerous, is the kind of refrigeration that takes place out of sight, in the carburetor of your engine, when you least expect it. It is on the warm, humid days of summer that the Iceman cometh to aircraft engines, stealing away power and, if undetected, closing the flight plan prematurely.

Strange as it may sound, summer, rather than winter, is the dangerous period in many climates for carburetor icing. In wintry weather, with the temperature 40 degrees Fahrenheit or lower at the surface, the air will usually be too cold to contain enough moisture for carburetor ice to form. On very hot days, 85 degrees or hotter, there is too much heat for ice to appear in the engine. The warm moist days of late and early summer, when the temperature ranges from 45 to 85, are the days to watch out for.

In such weather, a decrease in manifold pressure (when the plane is equipped with a constant speed propeller) or a drop in rpm are the usual warning signs. If the engine starts to run rough, cutting out and backfiring, carburetor icing may have reached an extremely dangerous point. Apply full carburetor heat and seek a landing place. If not checked in time, icing can choke off the air supply and stop the engine.

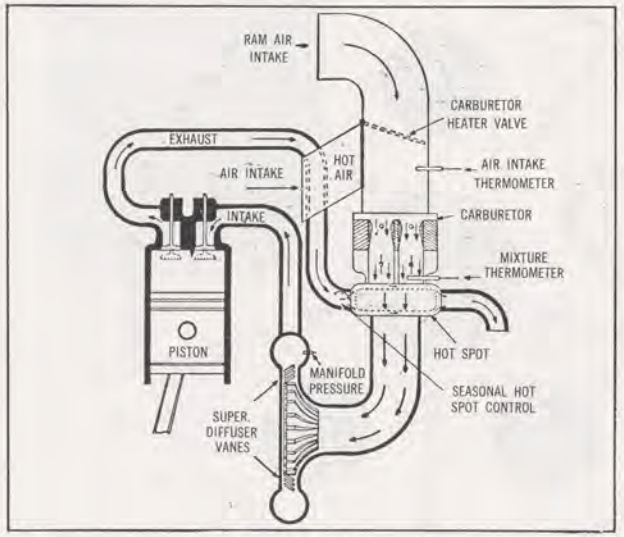
To understand this warm weather icing phenomenon, which may take place on a cloudless day, without a drop of rain or hail in sight, it is only necessary to recall the principle upon which the modern refrigerator is based—the conversion of a liquid to a gas involves the absorption of heat from the environment. The coating of freezer compartment walls with ice is clear evidence of what happens when moisture is present in the air. In the refrigerator the gas is usually contained in copper tubing, with the heat being absorbed from the surrounding air through the tubing.

In the aircraft engine, the liquid fuel is vaporized in the carburetor, thereby withdrawing heat from the air which is being drawn in to be mixed with the fuel before combustion. Fuel vaporization may cause a drop of as much as 60 degrees in the air temperature. This means that even if the ambient air temperature is as high as 85 degrees, the air temperature in the carburetor may be reduced to well below the freezing point; and that if the air contains appreciable moisture it will be precipitated as ice.

The ice buildup will usually begin as a coating along the venturi throat of the carburetor, and if unchecked will end by closing off the throttle and immobilizing it. A stuck throttle is a bad sign that carburetor icing may have reached the "terminal" stage.

The prevention of summer carburetor icing is simple: the air entering the carburetor must be adequately heated. Whenever the engine is operating at 75 percent of full power or better, enough engine heat is generated to prevent carburetor icing under

(Continued next page)



Aircraft engine air induction system.

most circumstances. Any lower power setting, as in slow flight, descent or in various practice maneuvers, engine heat may be insufficient to ward off icing in the carburetor. Carburetor heat must then be generated by a pre-heater, under manual control.

The usual preheater consists of an intake chamber through which an engine exhaust pipe passes. When the pilot pulls back on the carburetor heat knob, intake air is drawn in through this chamber (instead of directly from the environment), and is thereby heated sufficiently to forestall icing.

Some aircraft engines also employ a "hot-spot" type of heater, which involves an exhaust pipe on the outlet side of the carburetor. The hotspot does not impart as much heat to the air being mixed with fuel as the intake type, and is not normally used alone. However, since no manual control is ordinarily employed—some preheating always takes place with engines so equipped, the manufacturer's instructions regarding the use of manual carburetor heat may be less stringent than with other engines not equipped with a hotspot carburetor heater.

Gages for reporting the temperature in the carburetor are found on some aircraft. Carburetor heat control should be used to maintain the temperature between 85 and 95 degrees in the carburetor air, (intake air) and between 35 and 40 degrees in the carburetor mixture (outlet air). *As engine preheating requirements vary according to type, every pilot must check his manufacturer's instructions for use of carburetor heat.*

Under normal conditions, when carburetor heat is applied there is a drop in manifold pressure, or rpm. If icing exists, manifold pressure or rpm will gradually increase. If the ice in the carburetor has built up to the point where there is a serious loss of power, it is sometimes possible, in an emergency, to free the passageway by leaning out the mixture until the engine backfires and dislodges some ice.

Diminishing Heat

As soon as there is some response to the preheating, it is advisable to restore full power to the engine by diminishing the carburetor heat gradually, while seeking a more favorable altitude.

The most dangerous time for carburetor icing to occur is on take-off (or on climbing out from a missed approach). The use of carburetor heat while awaiting take-off clearance, and during the landing approach, is a procedure followed by careful pilots who do not wish to risk a power loss at a critical moment.

On the other hand, consistent use of carburetor heat when unnecessary is wasteful of fuel and may harm the engine. This is because the density of preheated air is less than that of air entering directly from the environment, resulting in an over-rich fuel-air-mixture, a loss of power, and possibly engine detonation.

Carburetor heat reduces power by about one per cent for each 10 degrees (F.) rise in temperature. The manufacturers recommendations on the use of carburetor heat vary according to engine design and should be noted carefully, especially in the absence of carburetor heat gages.

Closing cowl flaps, incidentally, does not prevent or cure carburetor icing.

Supercharging

Supercharging, on the other hand, is a good preventative and the supercharger, when present, should be left "on" whenever summer icing conditions are suspected.

Since turbine engines have no carburetor they are not troubled by this particular type of problem. However, the flow of jet fuel to the engine may be interrupted if ice forms at the fuel filters. This ice is formed, not from atmospheric moisture, but from water which is always present in jet fuel.

Icing in the fuel system of jet engines is usually controlled with heaters placed in the system at some point before the fuel enters the engine. The heat may be drawn from the oil system or the compressor section.

Turbine engines are also vulnerable to icing of the air inlet, vanes and compressor. Frigid outside temperatures, in the presence of rain, snow or supercooled moisture, are responsible for this type of icing.

Turboprops and propeller-driven aircraft are also susceptible to icing of the air inlet ducts by atmospheric moisture. The condition is controlled either by applying heat to the inlet ducts or by the use of alcoholic mixtures on the exposed surfaces.

Icing in the fuel system, as a cause of aircraft accidents, is hard to trace, since the ice does not remain on hand for the investigators to find, no matter how promptly they may appear on the scene. But there are many instances where an engine has failed to provide adequate power for a take-off, a missed approach climb-out, or for clearing a natural obstacle such as a canyon wall or a mountain slope—when no satisfactory explanation has been found, and when the warm, moist balmy weather *could have* led to carburetor icing, and an unnecessary crash for an unsuspecting pilot.

It is a good idea to remember that your aircraft engine, like your home refrigerator, may need defrosting more often in the summer than in the winter. ■

Mercy Flight

Editor's note: Dr. Malcolm E. Phelps, of El Reno, Oklahoma, is a flying physician who has served the Federal Aviation Administration as an Aviation Medical Examiner and a member of FAA's Medical Advisory Panel. He is now on voluntary duty in Viet Nam, contributing his medical skill to needy patients in Saigon and in the outlying provinces. Excerpts from his letters to the Federal Air Surgeon, Dr. Peter V. Siegel, narrate a medical mercy flight from Saigon to the southern provinces.

Wednesday:

". . . flat terrain laced with dozens of rivers, hundreds of streams and countless canals. The green fields were largely covered with water and along the canals, which are lined with huts, we could see the small boats traveling in both directions. On the larger rivers were barges and small ships and the ever present symbol of the Far East, the junk.

"From the air we could see innumerable water buffalo working in the paddies or grazing along the roadside. On the backs of many were small boys and girls resting while the animals grazed. Also along the road and in the paddies, women and children were fishing with poles and nets of all descriptions. In the paddies, people were working the grain in hip deep water.

"All the canals are lined with huts of grass or bamboo and children, chickens and an occasional pig playing on the little bit of ground surrounding the hut while the older girls or the mother washed the clothes in the canal, the rest of the children swam and bathed in the water.

"As we approached Long Xuyen, the flood coming down stream became evident. In many places the water was over the road hub deep. The high water did not seem to bother the inhabitants along the canals although in places it was in the huts. The people simply moved onto their boats and I saw several places where the prow of the boat was in the house, floating and the people and the children eating and sleeping on the boat.

"The hospital in Long Xuyen is one of the better ones in the delta. There are about 400 beds and an average daily census of about 600 patients. The usual thing in Vietnam is two and at times three patients to a bed. It is fortunate in this respect that the people are small. In addition to the patients it is the custom for at least one and at times more, members of the family to stay at the bedside of the patient and help care for them. With all of this, you can imagine the crowding and confusion present in the hospitals.

"One of the main sources of entertainment of those around the hospital is to line up around the surgical suite and watch the surgery through the window. Patients themselves seem to like this, as they are the center of attention. There is a team of five doctors, three technicians and three nurses.

"We stayed in Long Xuyen only about two hours as the waters were rising and we were afraid if we stayed longer we would be stranded.

Thursday:

"We left by plane for Mytho which is northeast. When we arrived over the air strip, there was a red smoke flare, so we could not land. We circled for a while and finally got green smoke. The reason for the delay was that the heavy cargo planes landing on the strip, composed of clay and rock, had so damaged the surface that it had to be repaired.

"When we arrived at the hospital, they were just bringing in about 15 casualties, as the result of a Viet Cong terror attack. All the victims were women and children.

"We were scheduled to be picked up in the early afternoon and flown to another province but as the runway was not repaired the plane could not land and we thought we were stranded. About 3:30, an Army chopper landed and since they were going to Cantho we bummed a ride with them. I was seated by one of the gunners with nothing under us but ground and water. Since I was firmly anchored by the belt, the door was open and I had my camera and plenty of film, I think I took some very unusual pictures.

Friday:

"Today we flew almost due west to Rach Gia. This is a delightful town on the coast of the gulf of Siam. The hospital here is right on the gulf. In fact, when the tide and the waves are high, spray sprinkles the buildings. The grounds of the hospital are well kept and the lawn and flowers look very beautiful. The hospital is directed by a Vietnamese doctor who is quite competent. He is assisted by three U.S. doctors and two U.S. Navy nurses. There are several new buildings and the equipment is reasonably modern. Across the street from the hospital, overlooking the gulf, is the home for the doctors. Over the entrance is a large sign "RACH GIA HILTON".

"The air strip is in the city and one of the main streets cross the center of the runway. There is a flagman on each side to stop traffic when a plane is landing or taking off, much like the flagman at the railroad crossings in the U.S.

"The children you see here are friendly and pride themselves on the fact that they have "learned" English. Their vocabulary consist of the words: "ollo" (hello), "OK" and "numba One". When they see an American, they run toward him waving and shouting "ollo", "numba one", "OK". They want to touch or hold your hand to show their friendliness. It is no wonder that nearly all of the U.S. units and many "G.I.'s" have practically adopted one or more of these bright-eyed and eager youngsters.

"If you get the idea from what I have written that I like the work, the people, the city and country, you are absolutely right.

"I hope that I can contribute a little help and understanding for their cause."

—Malcolm Phelps

by the Numbers: FAA's Registry of U. S. Aircraft

Identification number must be at least 12 inches high, painted on both sides of fuselage or rudder.

As of April 30, 1967, there were more than 158,000 civil aircraft in the United States, including a half dozen balloons and four score blimps, as well as thousands upon thousands of assorted conventional aircraft. Nearly a third of these are currently non-airworthy, or ineligible to fly. Many of the aircraft have gone through various modifications while passing through numerous hands of ownership, and some are weighted with liens or other encumbrances. Keeping track of all American aircraft is the task of the Aircraft Registration Branch of FAA's Aeronautical Center at Oklahoma City, Okla.

In the cool, quietly busy archives of the Registration Branch, a staff of 55 handles about 5,000 registration transactions a month, including some 1,200 issuances of new ownership. There are also about 11,000 recordings of conveyances and security instruments and about 16,400 airworthiness transactions a month. The Branch must be notified whenever an aircraft is acquired, changes ownership, receives airworthiness or inspection reports, or undergoes major modification or repairs. A continuous file, known as the "N" file, is kept for each aircraft, and a permanent identification number is assigned.

The number must be painted on both sides of the (fixed-wing) aircraft, between the wing and the tail, or on both sides of the vertical stabilizer (on the two outer sides, if a multi-tailed aircraft.)

Operating an improperly identified or non-registered aircraft can invoke a penalty of up to $1,000 for each violation. FAA registers aircraft by "N" numbers. The letter "N" is the nationality marking displayed on civil aircraft registered in the United States. The "N" was previously followed by "C", "R" or "X". The "C" meant the craft had complied with the minimum specified airworthiness requirements; "R" indicated special purpose compliance; and "X" identified experimental aircraft.

All of these letter except "N" were eliminated in 1948 as being unnecessary and taking up too much space.

The letter(s) following the numbers are usually meaningless, except as an owner's preference. For example, many owners of Piper planes like the looks of a "P" (for Papa) tacked on the end of the numbers. The full number remains with the craft even after it is sold unless another registration number is requested by the new owner.

The FAA will try to accommodate requests for assignment of "pet" number-letter combinations—for a fee of $10—provided the number has not been already assigned or reserved, and no more than two suffix letters are requested. The fee must accompany the request, but it will be refunded if the transaction cannot be completed.

All fixed wing aircraft registration numbers must be at least 12 inches tall; exceptions may be granted where aircraft configuration warrants them. Color of paint used for the numbers is optional, but must contrast clearly with the background.

The 12-inch ruling was instituted as a safety measure. Numbers this large can readily be seen at low altitudes from the ground, and can be read by tower controllers using field glasses and by other airmen aloft. It also provides for easy identification on the airfield by owners, line maintenance and service personnel and regulatory authorities. Numbers, however, are not an effective safeguard against theft.

This is because the numbers, per se, are not an automatic indication of bona fide identification. Anyone can paint an arbitrarily chosen set of numbers on an aircraft and the deception could go unnoticed until the craft became involved in a violation, or a comparison was made with the aircraft certificate of registration or other aircraft papers.

However, true identity of the owner to whom the plane is currently registered can be made quite rapidly by a phone call to the FAA's Aircraft Registration Branch (Area Code 405, Telephone: MU 6-2271). If workload permits, an answer may be given on a "Hold-the-phone-while-I-look-it-up" basis.

Mailing address:
Federal Aviation Administration
Aircraft Registration Branch
P. O. Box 25082
Oklahoma City, Okla. 73125

Registering an aircraft is not difficult. The forms are simple and self-explanatory. In fact, the most frequent cause for return of an application for registration is *failure to enclose the $5 fee.* To change, reassign, or reserve numbers, a $10 fee is charged; a duplicate certificate of registration costs $2.

Three FAA forms are needed to complete each transaction: Application for Aircraft Registration, 8050-1; Aircraft Bill of Sale, 8050-2; and Certificate of Aircraft Registration, 8050-3. The latter only is filled out by the Branch and sent to the registered owner after Forms 8050-1 and 2 are processed.

Acceptable equivalents for Form 8050-2 are standard, commercially available bills of sale, conditional sales contracts or trust agreements. Bills of sale should be drafted to conform with any special provisions of the local law in effect at the place of sale.

The Application for Aircraft Registration, Form 8050-1, has three, pocket-book-sized pages with carbons in between. Explicit instructions on filling out the 8050-1 make the form as foolproof as possible. The top two sheets, the white and the green, go to the aircraft registry office. The last sheet, which is pink, is retained by the owner and carried in the aircraft.

The plane can be operated on the authority of this pink sheet for a period up to 30 days, during which time the permanent Certificate of Aircraft Registration (Form 8050-3) should have been received from the aircraft registry office.

When the two forms, 8050-1 and 8050-2 (or its equivalent) are received at the aircraft registry, they are filed for "recordation": that is, filed in time sequence to insure that priority of ownership is maintained. This is important because aircraft sometimes change ownership rapidly.

If everything is in order, the data is put into a computer and the Certificate of Aircraft Registration, 8050-3, is filled out and mailed to the new owner.

This form replaces the pink copy of Form 8050-1 and must be displayed in the aircraft as soon as possible. Don't throw away the pink sheet; put it in a safe place, as it contains valuable data about your aircraft.

If a mortgage is submitted with the application, a notice is sent to the lienholder that the document has been received and recorded. But FAA assumes no responsibility for such documentation.

Lest anyone miss the direct meaning of the Certificate of Aircraft Registration, the face of the card makes it plain with the statement, "This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons."

Understandably, the "N" file puts on weight with age as the aircraft changes ownership, has maintenance and modifications performed, and encumbrances are reported to the FAA. Every piece of paper coming into the aircraft registry is microfilmed and placed in secure storage as a safety precaution in the event the original "hard copy" file is destroyed. The microfilms, as well as the "hard copy", are public documents and as such are open to any interested person.

Since the FAA takes no responsibility as to who owns an aircraft, the purchaser is well advised, before buying a used plane, to have the "N" file searched to make sure there is a continuous chain of ownership and that there are no undisclosed encumbrances. While there is nothing like looking over the file yourself, more often than not this is impractical. For 50 cents a page, FAA will provide copies of whatever is contained in the "N" file. FAA will also provide a list of commercial firms whose business it is to provide such information hurriedly, by telephone or fast mail. Representative charges are: title search, $7.50; name of *present* registered owner, $3.50; chain of title report, $10.

The FAA makes its records on airmen and aircraft readily available to the public. Each morning at eight, a print-out is published showing the cumulative transactions since January 1. Called the "document index," it reflects aircraft collateral transactions as they are received.

Appearance of an aircraft on the document index as having been cleared of an encumbrance is no guarantee that it is actually so since a new encumbrance might have been added since the time of the last report.

The FAA also makes available to interested persons magnetic tape copies of the entire registration file. Contained in three reels, each with approximately 60,000 entries, these tapes give the identity of the aircraft owner, address, type of aircraft, engine type, date of inspection, etc. FAA charges for the computer time and labor required to gather the information: a set of three tapes cost $160, and the market is brisk. Aircraft and pilot association and business firms selling everything from insurance to aircraft market analyses all are regular customers.

Registration of aircraft in the U.S. is restricted to American citizens, and loss of citizenship results in automatic revocation of the Certificate of Registration. Foreign international air carriers are not registered with the FAA since a plane can be registered in only one country at a time.

At this writing 38 states also require aircraft registration. Your state aviation commission or department should be consulted. The fee is usually nominal—about $3 is the average—but the penalty for failure to register can be stiff. In many cases the fee for aircraft registration is charged in lieu of personal property tax. State registration *does not take the place of FAA registration.*

Each state receives from FAA a quarterly listing, with monthly supplements, of all aircraft owners in the state. The information goes to tax officials as well as aeronautical authorities.

FAA also compiles, semi-annually, the massive U.S. Civil Aircraft Register (latest edition, January 1, 1967, is 1,552 pages). This complete inventory by type and "N" number, of every aircraft registered in the United States can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for $7.50. ■

Nearly 500,000 "N" files of U.S. aircraft are kept at the FAA Aeronautical Center. Below—Fast retrieval of aircraft registry information is possible with Kard-Veyer rotary drum file.

Lost aircraft's midnight call for help reached controller John Huston, who alerted supervisor Archie Fincher in the radar room.

A DEAD PROP IN THE DEAD OF NIGHT

MAYDAY!

You are alone in a single-engine aircraft, lost in a midnight fog, magnetic compass out, fuel gages read—empty . . . . there goes the engine! It's pretty late to call for help, but you're desperate now—at 6,500 feet you have about eight or nine minutes of glide time at best, and so you make your call to the EAA control tower at the airfield you've been trying to find for hours—"Richmond radio, this is November zero zero Mike Alpha—" and you hope for a miracle.

The pilot of NOOMA was a competent flyer whose original VFR flight plan from Stratford, Conn. to Richmond, Va., was perfectly in order. NOOMA got into trouble when the pilot decided to try to make it into Columbia, S.C., his ultimate destination, nonstop, instead of landing at Richmond. Making his calculations in the dark cockpit while busy flying the Mooney, he overlooked the fact that it had taken him nearly three hours to reach his halfway point, with an official fuel capacity of 5.5 hours.

With fog blowing in and a malfunctioning compass, NOOMA never got close to South Carolina. Disorientation set in, and two hours after heading south from Richmond the pilot found himself over Fredericksburg, Va., some 50 miles *north* of Richmond. This is where he made his second mistake. Instead of landing immediately, he decided to head back to Richmond, ailing compass and dwindling fuel supply notwithstanding. Moreover, the pilot was not instrument-rated, and Richmond was now closed to VFR operations—as he could have learned by using his radio.

By the time the pilot, having lost his direction again, decided to call for help, it was 12:21 a.m., and he had exactly nine minutes of fuel left. (Actually he was already on borrowed time, since according to the manual his tanks should have run dry by midnight.)

Richmond was now beyond his range. He was saved from certain disaster because of two factors were in his favor: (1) he remembered the best glide speed of his aircraft and held it all the way, and (2) FAA's air traffic controllers at Richmond Tower came instantly to his assistance, vectoring him directly to a nearby airfield five miles away.

The following is a verbal transcription of the official radio transmissions between FAA's Richmond Control Tower at Byrd Field, Va., and a Mooney M-21, between 12:21 a.m. Only the aircraft identification number has been changed.

Cast: RIC LC.....Richmond Local Controller, John T. Huston
RIC AC.....Richmond Approach Controller, Watch Supervisor Archie G. Fincher

TIME: 0521 GMT (12:21 A.M. Eastern Standard Time)

NOOMA: Richmond Radio you come in for — uh —this is zero-zero Mike Alfa will you come in please, over.

RIC LC: Aircraft calling Richmond Radio this is Richmond Tower, read you loud and clear on one nineteen point five, how do you read me?

NOOMA: Uh — this is zero-zero Mike Alfa I read you loud and clear, I'm lost, I think I'm due north of you and I'm almost out of fuel — uh, uh — how can you help me?

RIC LC: Zero-zero Mike standby.

Time: 0522 GMT

RIC LC to RIC AC: Say Arch. I've got a 00Mike, pick him up on one nineteen point five, almost out of fuel and lost, I'm not going to give him a frequency change, I'll alert Norfolk Search for you if you want to give him one twenty one five.

RIC AC: November zero-zero Mike Richmond Radar over.

NOOMA: Uh — this is zero-zero Mike Alfa.

RIC AC: November zero-zero Mike what is your heading and altitude now?

NOOMA: My altitude is sixty five hundred feet. Uh — I'm near a large city but I can't identify it.

RIC AC: Roger zero-zero Mike, what is your heading, what is your heading now?

NOOMA: I'm due north of you, over, my heading is — uh — about north let's see thirty degrees (unintelligible).

RIC AC: Understand heading of north, okay, what was your last known position?

NOOMA: I've been fooling around for some time, there's a city off to — uh —the east of me here — uh —what would that (unintelligible).

TIME: 0523 GMT

RIC AC: Roger, what is your magnetic compass heading now?

NOOMA: My magnetic compass is completely out, I have two VORs,

RIC AC: Okay, what radial of the Rich — are you tuned to the Richmond VOR?

NOOMA: I'm-uh-due north of the Richmond VOR.

RIC AC. Okay, is your gyro working?

RIC AC to RIC LC: Okay, John.

RIC AC: November zero-zero Mike, what radial of the Richmond VOR are you on now?

NOOMA: The zero zero five.

RIC AC: Zero zero five, for radar identification, turn right heading, one nine zero for thirty seconds then resume original heading.

NOOMA: Turn right — uh —ninety degrees — uh, uh — over.

TIME: 0525 GMT

RIC AC: November zero-zero Mike, the heading is turn right to one niner zero, one niner zero.

NOOMA: Roger.

RIC AC: November zero-zero Mike, what is the type of aircraft and amount of fuel remaining?

NOOMA: Mooney Mark twenty one.

RIC AC: Mooney Mark twenty one, how much fuel remaining?

NOOMA: Uh — the gauges are, uh, down against the bottom.

RIC AC: Okay, how many persons on board?

NOOMA: One.

RIC AC: I understand.

RIC AC: November zero-zero Mike rolling out on heading of one nine zero now?

NOOMA: Negative, I've got a little farther to go.

RIC AC: Okay, what is your heading?

NOOMA: Uh, I would estimate it, I can see the north star so I would estimate that it's about one six zero.

TIME: 0526 GMT

RIC AC: Okay, stop your turn now and start in to a left turn, start into a left turn to a heading of zero niner zero, over.

NOOMA: Roger, zero nine zero.

RIC AC to RIC LC: John call Northfield and see if you've get any lights over there, he's — his fuel gauge is on the peg.

NOOMA: (unintelligible) I see a plane off at about eleven o'clock.

RIC AC: Do you have an airplane now at about your ten or eleven o'clock position, headed northeast bound?

NOOMA: That's correct.

RIC AC: All right, you're radar contact twenty one miles north of Richmond, Byrd Field, roll out on heading of one eight zero, one eight zero.

NOOMA: Roger, I'll try one eight zero, I'm using the stars for the moment.

RIC AC: Okay, we'll continue this with a no gyro, just stop your turn now and fly straight and level.

TIME: 0529 GMT

NOOMA: Fly straight and level?

RIC AC: Affirmative, just stop your turn, fly straight and level, we'll give you no gyro vectors to the airport.

RIC AC to RIC LC: If you can get Northfield John see if they've got any lights. He says his fuel gauges are on the peg.

RIC AC to RIC LC: Okay.

RIC AC to RIC LC: Get the runway lights all the way up on two zero and I'll try an ASR, (approach surveillance radar) we've still got — what — three hundred and five.

RIC AC to RIC LC: All right, we'll try straight-in ASR to two zero.

RIC AC to RIC LC: Okay.

RIC AC: Correction — November zero-zero Mike, Richmond Approach, do you read?

NOOMA: What was that again, zero-zero Mike Alfa?

RIC AC: Do you see that airplane off your left wing now northeast bound?

NOOMA: Uh, yea, uh, he's, uh, abeam of my left wing.

RIC AC: That is correct, that is an American Flyer Constellation, he's northeast bound and you're seventeen miles north of the airport now.

NOOMA: Shall I continue on my present course?

TIME: 529 GMT

RIC AC: Affirmative and this will be a surveillance ASR approach to runway two zero, the Richmond weather is measured ceiling three hundred overcast, visibility five miles, fog, altimeter three zero three nine, wind two zero zero degrees seven knots, are you instrument qualified and equipped?

NOOMA: I have two VORs and — uh — I have about — uh — fifteen hours on — uh — instruments

RIC AC: Roger, do you request to make a surveillance approach at Richmond?

NOOMA: Uh, affirmative — uh, uh — vector in to — uh — visibility.

RIC AC: Okay, you understand now, we have a measured ceiling three hundred overcast, visibility five miles, fog.

NOOMA: That's okay, I can handle that.

RIC AC: Okay.

Time: 0530 GMT

NOOMA: (Unintelligible) I see a city, uh, on my — just off my uh, left bow at about eleven o'clock — there goes my engine.

RIC AC: Understand your engine is quitting?

NOOMA: That's correct, I've put on the fuel pump, I'll go to the best glide angle.

RIC AC: Okay there's an airport, Northfield, straight ahead, twelve o'clock five miles, see if you can pick that up.

(Continued next page)

Mayday! ... Emergency Field Located

NOOMA: (Unintelligible) lights — is that it?

RIC AC: Say again.

RIC AC: That airport now is twelve o'clock straight ahead, five miles, see if you can pick it up.

TIME: 0531 GMT

RIC AC: November zero-zero Mike do you still read?

NOOMA: I still read, uh, but I don't — uh, uh — see the, uh, airport, I see, uh, two no, uh, three obstruction lights, uh, almost dead ahead, uh, and the city off to my left, uh, would, uh, that be it?

TIME: 0532 GMT

RIC AC: Okay, the airport is still at twelve o'clock four and a half miles, is your engine running?

NOOMA: Negative.

RIC AC: Okay the airport is four and a half miles, correction, four an quarter miles now straight ahead, I'll — maintain your present heading.

RIC AC to RIC LC: How about getting State Police, John, to start out that way, it'll be off 301, north of Northfield Airport?

RIC AC to RIC LC: Okay.

RIC AC to RIC LC: If you have time, ring Northfield again see if we can get him some lights.

RIC AC: November zero-zero Mike what's your altitude?

NOOMA: My altitude is forty five hundred feet.

RIC AC: Okay, it's now three and one half miles from that airport, hold your present heading.

RIC AC to RIC LC: Three and a half miles.

RIC AC: November zero-zero Mike I do not know weather conditions or runway conditions at Northfield Airport. (Ed. note. An unattended airport at night.)

NOOMA: How does this runway align with my heading?

TIME: 0533 GMT

RIC AC: The runway heading, the paved runway is runway six-two four, you'll be almost in line with runway two four.

RIC AC: If you can bear — turn left now, turn left, will advise when to stop your turn.

NOOMA: Making standard turn left.

RIC AC: Roger.

RIC AC: November zero-zero Mike, stop turn, stop turn.

RIC AC: November zero-zero Mike, Northfield Airport is twelve o'clock two and one half miles, advise if you pick it up.

TIME: 0534 GMT

NOOMA: Uh, I see no lights, of, uh, an airfield, uh, there is an open, uh, dark space.

RIC AC: Roger, I do not know if the runway lights are on. I do not know if the runway lights are on.

NOOMA: Roger.

NOOMA: Is there any way you can telephone them and find out and alert them?

RIC AC: We have been on the telephone, there is no answer at the airport.

RIC AC: Northfield Airport is now twelve o'clock one and one half miles right off your nose one and one half miles.

RIC AC: I suggest you maintain your altitude as long as possible—and turn left, standard rate turn left.

TIME: 0535 GMT

NOOMA: Making standard left, uh, turn.

RIC AC: November zero-zero Mike stop turn.

NOOMA: Roger, I see a string of lights off to my left that could be runway lights, could that be correct?

RIC AC: Well, that airport is now at eleven o'clock, one mile, eleven o'clock, one mile.

NOOMA: All right, I'll make a left turn toward what appears to be the, uh, runway.

RIC AC: Roger.

NOOMA: Would I, uh, make a landing toward, uh, Richmond or away from it?

RIC AC: Your choice, surface winds Richmond Byrd Field two zero zero degrees, five knots, altimeter three zero zero three niner.

TIME: 0536 GMT

RIC AC: What's the altitude now?

NOOMA: Altitude is, uh, sixteen hundred.

RIC AC: Okay, the airport is half a mile away now, got it made?

NOOMA: I think so, I think I'm from the wrong end of it, what is the visibi— what is the strength of the wind?

RIC AC: Wind zero zero degrees, five knots.

NOOMA: Roger.

RIC AC to RIC LC: Understand the lights are on: Good show.

RIC AC: November zero-zero Mike just advised the lights are on, the lights are on, you're right on the northeast edge of the airport now and take over and land any runway, your discretion.

NOOMA: (Unintelligible) lighted I'm approaching it, uh, I'm approaching Richmond and will land — uh, uh — outbound.

TIME: 0537 GMT

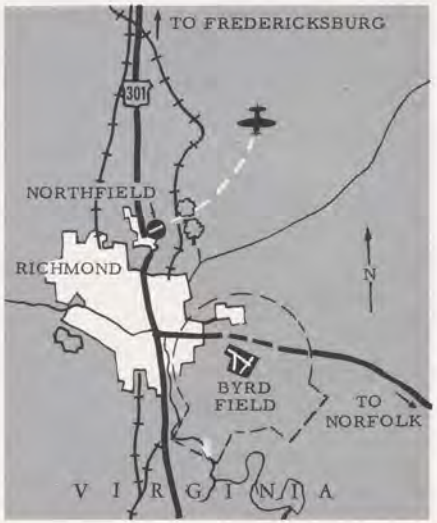
RIC AC: Roger, land any runway your discretion.

NOOMA: Yes, I can see the green entry lights now.

RIC AC: Okay, good show, and if you can get to a telephone call me as soon as you get on the ground.

RIC AC to RIC LC: He sees the lights, John. I believe he's got it made.

RIC AC to RIC LC: He sure has.



Editor's note: Carrying his gear up, in order to stretch the last inch out of his glide, the pilot made a wheels-up landing at Northfield Airport. The aircraft received light damage, but the pilot walked away unhurt. The entire drama took place in less than 20 minutes. Controllers Fincher and Houston were commended with a plaque presented by FAA area manager Stanley Henceroth. ■

The autogiro, perfected by a Spanish gentleman inventor in 1923, raised hopes for a popular flivver plane.

The Spanish Windmill

Forerunner of Vertical Flight

The first and undoubtedly the most successful rotorcraft was designed, flight-tested and operated by Nature. The maple leaf seedlet, a perfect rotor blade, is released from the tree by the wind and flies by autorotation to a soft landing on the ground.

Perhaps because of the tantalizing maple seedlet, the concept of an "airscrew" for manned flight has intrigued the human race for nearly a thousand years. In the 13th Century, the English natural philosopher, Roger Bacon, theorized about mechanical flight with a rotating wing. Two hundred years later, the Italian Renaissance artist and inventor, Leonardo Da Vinci, drew extensive sketches of experimental air screws. And in the early days of modern flight, experiments with flying by rotor blades preceded by many years the work of the Wright brothers.

The development of heavier-than-air flight proceeded from two basic concepts: the fixed wing aircraft, and the rotating wing, or rotorcraft. During the first two decades of the 20th century, progress with fixed-wing aircraft moved rapidly ahead. From the Wright brothers' early successes through World War I, monoplanes, biplanes and triplanes vied with each other for a place in the rising sun of aviation. All over the Mediterranean, as well as in England, France and in the United States, experimenters were finding the problems of rotorcraft flight beyond their engineering capacities.

It was possible to create vertical movement with rotors, but controlled forward flight was a baffling frustration. It remained for the young Spanish aristocrat Juan de la Cierva, to solve the problem for the first time by "crossing" the two basic concepts.

A Wing with a Motion

In 1919 a three-engined bombing plane designed by de la Cierva for the Spanish Army stalled and crashed while flying "low and slow," on orders from a ground officer. The loss set Cierva to thinking about an aircraft designed especially for low, slow flight—"a wing with a motion of its own." He rejected unsuccessful helicopter, with its power-driven rotor, as being hopelessly complicated. Instead he simply planted a free-spinning four-blade rotor on top of a conventional open cockpit monoplane, and called it an "autogiro", or self-spinner.

The autogiro trundled happily down the runway and with the rotors set in motion by the forward speed took off after a very short run—and turned over. For four years the patient Spaniard tried again and again, with the same result. What made the problem doubly irritating was that a model of the autogiro—of toy size, but built exactly to scale—flew perfectly well. What gave the manned autogiro unequal lift?

During an evening of relaxation at the opera in Madrid, Cierva suddenly perceived the answer to the mystery. The autogiro capsized because the airspeed of the rotor blade was greater on the upwind side of the aircraft (causing greater lift) than on the downwind side!

The model plane flew properly, Cierva realized, because its rotor blades, made of flexible ratan, were able to adjust their pitch according to the airspeed, and consequently maintained a constant lift! This brilliant insight formed the keystone of future successful rotorcraft flight.

Blades with Flexible Hinges

Cierva soon had a new autogiro with the blades hinged so that, in his words, "they were free to move in a sort of flapping motion wherever they wished, according to the effects of the air on them." On January 9, 1923, at the Getafe Airdrome near Madrid, the excited young inventor saw his flexible wing autogiro tested at its first flight—". . . the machine lifted at last from the ground, flew steadily across the field and landed safely." Success!

Over the next decade Cierva traveled throughout Europe and America, demonstrating the new "windmill airplane," as it was often dubbed. But Cierva carefully pointed out that where the windmill's vanes moved with—and by—the wind, his rotor blades, because of their incidence, moved *against* the wind. When the engine-driven forward propeller failed or was turned off, and the autogiro began to nose down, the upward rush of air increased the lift effect on the rotor blades and the aircraft settled gently to the ground—like the maple seedlet. Thus autorotation was born.

The idea of an aircraft that could fly "low and slow", take off and land with a short run, and descend safely without power, caught the imagination of the public, and for a time many persons believed that the autogrio would take its place alongside the flivver in everyman's garage.

But Cierva was killed in an airliner crash near London in 1936, and his invention did not long survive him. The distant thunderclaps of approaching World War II brought a demand for fast, highly maneuverable aircraft. Early in the 30s the U.S. Navy had tested its XOP-1 autogiro against a Vought biplane under battle conditions in Nicaragua: the range, useful load and airspeed (70 mph) of the autogiro compared unfavorably with the biplane. Within a few years, the autogiro disappeared from sight, and the word almost dropped out of the vocabulary.

It required the emergence of new inventors and new wars to develop rotorcraft to the present stage of usefulness and versatility. In the dawning heyday of the helicopter there is a danger of forgetting Juan de la Cierva, the Spanish nobleman who correctly distinguished the "flying wing" from the windmill, and did not break his lance in vain.

—Richard Shea

Giants of the Industry

fourth of a series

Al Mooney

The Man Behind the Mighty Mite

Albert W. Mooney. Right — the "Mite", the midget wonder plane.

Today, the name of Albert W. Mooney evokes the image of a major aircraft manufacturer and a respected aeronautical engineer. But for a half-dozen years following World War II, Al Mooney had a different reputation—patron saint of ex-military pilots and builder of the mighty *Mite*, the poor man's dream plane.

Low-winged, streamlined and incredibly small, (wingspan 27 feet, overall length 18 feet) the *Mite* looked like a runty offspring of an advanced fighter plane. The cockpit was so sparing of space that the pilot felt virtually welded to the aircraft. Indeed, probably no aircraft ever built gave the pilot such a complete sense of identification with his plane. And for a paltry $5 an hour rental he could chase imaginary Red Barons all over the countryside and re-live breathless thrills of the past. It was better than television.

The path of history that led to Mooney's wonderful *Mite* began some 20 years earlier, in his home town, Denver, Colo. In 1925 Albert W. Mooney was a lanky, red-haired, energy-charged 19-year-old who signed on as a draftsman in the newly formed Alexander Aircraft Co. of Denver. A serious student of aircraft from the age of 12, Mooney quickly established a reputation as an aeronautical "engineer."

Within a year he was named chief engineer and had already designed his first plane, the Alexander *Eaglerock*, a handsome three-place open cockpit biplane.

In 1928 his fertile brain and facile design pencil put Alexander into the monoplane business with the *Bullet*, a sleek, closed cabin, low-wing monoplane which came in two and four-place configurations. Among its innovations were retractable landing gear (Mooney holds one of the four basic patents on retractable gear) and shatterproof glass.

With the country riding the crest of an unprecedented economic boom, the redhead from Denver left Alexander in 1929 to form Mooney Aircraft Corp., in Wichita, now the Detroit of the aircraft industry. With him came his brother, Arthur B. Mooney, master mechanic and Al's indispensible right hand man from the earliest days at Alexander down to the present.

At Wichita they started production of the first plane to carry the Mooney name, the Mooney A-1, a four-place, low-wing monoplane of wood and fabric—with a fully cantilevered wing, a rarity in light planes at the time. Only a few A-1s were built before the company was closed down by the Depression in 1931.

Bellanca Aircraft Corp., New Castle, Del., then hired Al Mooney as chief engineer in charge of all commercial aircraft production, notably the several variations of the *Skybus*, including its military version, the C-27.

In 1935, Mooney tried his hand as a consulting engineer in Washington, D.C., but succumbed, after only five months, to the lure of a vice presidency as chief engineer with the Monocoupe Aircraft Corp., St. Louis, Mo. There he developed the *Dart* and the twin-engine *Monocoach*.

In 1938 Culver Aircraft Co., of Columbus, O., bought the design of the *Dart* and Mooney joined Culver to design the very popular *Cadet*, a fully aerobatic, single-place, low-wing plane. As World War II grew in scope and intensity, the *Cadet* was redesigned into one of the first radio controlled target drones and given the name PQ-8. A later version, the PQ-14 flew fast—180 mph. and high, 17,000 feet—and made a perfect training device for fighter pilots and gunners.

When *kamikaze* pilots threatened the U.S. Pacific fleet, a quantity of PQ-14s were rushed to Okinawa, where naval gunners sharpened their skills shooting at the swift drones. In all, 3,000 units of the PQ-8, and its successor, the PQ-14, were built by Mooney and Culver.

In 1946, when Al Mooney was 40, he and Charles G. Yankey formed Mooney Aircraft, Inc., in Wichita, to get in on the expected post-war aviation boom. It was then that Mooney designed the M-18 *Mite*, introducing the now famous "on backward" Mooney tail. It was a single-place, low-wing craft with a retractable landing gear and priced at an attractive $1,995. The cheapest, smallest aircraft ever built in quantity. Operators could make money renting the plane for as little as $5 an hour.

The first production *Mite* was delivered to a Santa Monica, Calif., distributor, W. S. Grant, who estimated his operating cost for the 1,200-mile flight home from Wichita to be *"between $6 and $7!"* On eight gallons of usable fuel (its capacity) the *Mite* claimed a range of 400 miles, or better than 50 miles per gallon. Mooney Aircraft announced that it had achieved "the lowest cost transportation of all means now known," and predicted that the *Mite* offered the business world the first practical airplane.

The stout little 25-hp Crosley "Cobra" engine cruised the *Mite* at 85 mph. With a climb rate of 450 feet per minute, a flaps down stall speed of 40 mph, and a ceiling of 12,000 feet, Mooney's *Mite* was the "instant" pilot's dream. Mooney's patented "simpli-fly" control system, which automatically coordinated the tail-trim with the wing flap setting, was an added attraction.

Culver line of highspeed light planes evolved from Mooney's 1939 "Cadet" (far right).

Over the next six years Mooney Aircraft produced 200 *Mites*. But rising labor and production costs pushed the price up to $3,900, and the little *Mite's* major selling point was gone. Stepping up the horsepower (the M-18 C had a 65-hp Continental engine) did not help.

To prevent other Wichita aircraft builders from raiding his work force, Mooney moved the plant to Kerrville, Tex., in 1953, where it is located today. Fifty more *Mites* were built, but the firm began to lose money on them, and by this time they had been priced out of the market. The cramped, single-place cockpit, with its absence of dual training capacity, and the rising demand for a more comfortable airplane with greater utility capacity came to outweigh the advantages of economy and excitement which had made the *Mite* the darling of ex-Service flyers.

Two years later Mooney bounded back into competition with the Mark-20, a four-place, 150-hp, 165-mph grown-up version of the *Mite*. Retaining some of the most advanced features of its little brother, the Mark-20 won Mooney a foremost place in the ranks of aircraft designers.

Soon afterwards, he disposed of his holdings in Mooney Aircraft, Inc. and accepted a top design post with Lockheed Aircraft Corp. at Marietta, Ga., where he is still hard at work today. His current interest is the Lockheed "Hummingbird," a development program for a high performance VTOL.

The aircraft company that bears his name has flourished. Mooney Aircraft, Inc. is the fourth largest light plane producer in the country. Annual gross sales are over $15 million. There are six models, including the new Japanese-designed MU-2 twin-engine turboprop executive plane.

But for sheer fun and excitement, no new model is ever likely to match Al Mooney's mighty *Mite*. Ask the man who flew one.

—Frank J. Clifford

news

BRIEFS

• A TWO-PART GUIDE FOR AIRPORT and community planners on land uses compatible with airports has been issued by FAA. The report includes surveys of 70 different types of land use on and around 120 U.S. and Canadian airports. Emphasis is placed on land uses that adversely affect the safety of flight operations and highlight the problem of aircraft noise. "Compatible Land Use Planning On and Around Airports" and "Aids Available for Compatible Land Use Planning Around Airports"—are sold for $3.00 each by the Clearinghouse for Federal Scientific and Technical Information, U.S. Department of Commerce, Springfield, Va. 22151.

• AN FAA/INDUSTRY WORKING GROUP has been meeting over the past few months to assist FAA in planning the flight service station program over the next five years. Industry participants included representatives from AOPA, International Flying Farmers, NATA, and National Business Aircraft Association. The group has recommended a five-year expansion plan in accordance with the projected increase in general aviation.

• AIRPLANE ALTIMETERS AND STATIC PRESSURE SYSTEMS will be required to meet more rigid standards. Effective August 1, 1967, altimeters and static pressure systems in general aviation aircraft, including air taxi planes, will have to pass accuracy and performance inspections at least once every two years in order to be approved for IFR flight in controlled airspace. Only FAA authorized facilities may perform the required tests and inspections of the static pressure and altimeter systems. The new rules will become amendments to Parts 23, 25, 43, and 91 of the Federal Aviation Regulations.

• NEW TECHNIQUES FOR PREVENTATIVE MAINTENANCE without tearing down engines or airframes were described at the annual meeting of the Society for Nondestructive Testing in Washington, D.C. The use of eddy currents, magnetic particles, dye penetrants, ultrasonic devices and X-ray and isotope equipment for locating small cracks was demonstrated. Other diagnostic techniques discussed were the use of special heat responsive paints, which indicated heat ranges for color alteration, and air to ground telemetry for monitoring metal fatigue.

• NATIONAL HEADQUARTERS, CIVIL AIR PATROL, has transferred from Ellington AFB, Tex., to Maxwell AFB, Ala.

• MODERNIZATION OF THE AIR TRAFFIC CONTROL SYSTEM and improvements to air safety highlight FAA's Eighth Annual Report, FY 1966. The report is sold for 50 cents by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

SKY HARBOR WINS FIRST AIRPORT BEAUTY PRIZE

Multicolor murals, depicting Earth, Water and Fire, and Air dominate passenger lounge.

The first FAA airport beautification award went to Phoenix Mayor Milton Graham in recognition of his city's imaginative modernization of 40-year-old Sky Harbor Municipal Airport.

In presenting FAA's Certificate of Commendation, Mrs. Lyndon B. Johnson said: "What an appropriate place the airport is for communities to emphasize their beautification programs since it inevitably makes a first and vivid impression upon arriving guests."

Sky Harbor, ranked as 12th busiest airport in the nation, has an executive aircraft terminal and facilities for ten general aviation service and sales organizations.

In the beautification program, planned more than a year ago, Airport Manager William J. Ralston launched a clean-up, fix-up, paint-up program that soon caught the imagination of the Phoenix community.

Citizen contributed statues, paintings and other artworks were used to decorate the terminal building. Money was earmarked for paving roads, building a new terminal driveway, and even dancing fountains.

A new general aviation center was built in adobe-type architecture to blend in with the Southwest motif.

Land was set aside for an air museum which will display antique and unusual types of aircraft, plus aviation displays and model planes.

Any American airport is eligible to participate in the FAA's airport beautification award program. Nominations must be accompanied by name of the airport; age; location; type (commercial/general aviation); name and address of owner; and a detailed description of accomplishments.

Either black and white or color photographs must accompany all nominations. It is desirable that photographs represent "before" and "after" situations.

All nominations should be sent to the Director of Information Services, Federal Aviation Administration, 800 Independence Ave., S.W. 20590.

New Light Piper Offers Special Safety Features

Engine, prop controls are grouped for safety.

Piper's *Arrow*, newest addition to its popular line of *Cherokee* airplanes, has a built-in "memory" for pilots who forget to lower the landing gear on the landing approach.

One of several safety features, the *Arrow's* landing gear has an automatic extension system which lowers the gear if power is reduced and the airspeed drops below 110 mph. However, this feature is a safety factor and is not intended to be the primary gear extension system.

Even though the gear is down, the warning horn will continue to blow until the gear-activating handle is placed in the down position.

For added safety on the ground with the master switch on, the *Arrow's* warning horn will sound off if the gear switch is accidentally moved into "UP". A safety "squat switch" will keep the gear down, but the horn will continue to blare until the switch is moved "Down".

Additional safety is provided by three, instead of two, side windows to give greater visibility, especially valuable at airports with high volumes of traffic.

Lowering Positive Control Area From 18,000 Feet Is Proposed

More general aviation pilots may be able to enjoy the added margin of safety provided by being "accounted for" in flight under a recent FAA proposal to lower the floor of "area positive control" (APC) from 24,000 to 18,000 feet in the northeastern and north central states.

The proposal, although of immediate value to thousands of pilots of high-speed aircraft, is aimed at the future. While the number of high-speed planes using the airspace between 18,000 and 24,000 feet is now approximately the same number which were operating above 24,000 feet in 1962, the FAA estimates that by 1970 there will be a 61 per cent increase in the number of air carriers flying at or above 18,000 feet.

During the same period, the FAA anticipates a *504 per cent increase* in general aviation flying above 18,000 feet.

An accompanying proposal would allow non-instrument rated pilots to fly the new APC area when weather conditions permit visual flight rule (VFR) flights. These flights would come under a new category, "controlled visual flight" (CVF), and would require full IFR instrumentation.

CVF operations would be limited to pilots who either are not IFR-rated or who are rated but not current in their proficiency.

Aircraft now operating in APC must be flown under IFR by a pilot with an FAA-certified instrument rating; be flown in accordance with an air traffic control clearance at an assigned altitude; have precise navigating equipment required for IFR; have voice radio communicating equipment for direct pilot-controller contact on specified frequencies; and be equipped with a radar beacon transponder.

Under CVF, VFR pilots would meet all APC requirements except for the IFR rating. With a CVF clearance, a VFR pilot with a private or commercial license (or military equivalent) would be able to fly at APC altitudes from 18,000 to 24,000 feet, in clear weather. He would not be permitted above 24,000 feet.

VFR flight in the new APC area requires the pilot to remain at least 1,000 feet separation vertically and one mile horizontally from clouds and to maintain flight visibility of at least five miles.

FORUM

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.

• Angle of Attack Indicators

I read in a fairly recent flying magazine that the FAA is evaluating three different angle-of-attack indicators now on the market.

Can you tell me how to get a copy of the report showing results of this evaluation?

A. C. Mohr
Scotts Mills, Oregon

An evaluation study was started in July, 1967. FAA wants to know whether the instrument will speed up pilot training. Two groups of pilot trainees will be observed, one using angle-of-attack indicators and one not using them. The final report should be available from FAA's office of flight standards in about six months.

• Light Plane Accident Data Sought

Newspaper accounts of light plane accidents frequently omit pertinent details and leave pilots speculating what the accident investigation will reveal. How can one obtain texts of these reports or summaries of the findings.

Urbana, Ill.

Write to the National Safety Transportation Board, 1825 Connecticut Ave., N.W., Washington, D.C. 20591 and request to be put on the mailing list for "Summary Reports of Accidents—U.S. Civil Aviation."

• Confusing But Not Amusing

Could you clear up the confusing and seemingly inconsistent FAA 65.93 which deals with renewal of inspection authorization? The FAR seems to provide two methods of meeting the experience requirements for renewal of an authorized aviation inspector.

One method requires four annual inspections *and* eight 337 forms. The other requires one progressive inspection.

Since the annual and the progressive are similar in scope, why this big difference in necessary work to be performed in order to earn renewal?

Minnesota

Supervising or conducting a progressive inspection over a period of a year assures FAA that an authorized inspector has maintained the recency of his experience on a continuing basis. On the other hand, authorized inspectors who perform only annual inspections maintain their recency of experience by performing one such inspection each 90 days. This explains why there is such a difference in two of the methods for renewing an inspection authorization.

• Phlight Saphtee

I had no trouble, and not a little pleasure, decoding your safety hint in "Flight Forum" (June 1967 *Aviation News*) which you printed in Morse code. But it seems your printer was lavish with his dots and dashes and your proof-reader nodding.

As printed, the message reads "Safety in flight begins (wind) with a good preflight."

Seriously, we enjoy your magazine and your selection of articles.

Madison, Ohio

Right you are. "Wind" was extraneous and "s" was coded for "h." And right some of our other readers were, to guess that a garbled message would attract more response than a correct one.

• Missing Aircraft Corp.

I need information about the White Aircraft Corp., last to hold the aircraft type certificate to manufacture the New Standard D-25. I need to know if White actually did make any aircraft, the number built, plant location, any other details.

The data is needed for a history of the New Standard Corp., which built several D-25s in their Paterson, N.J., plant from 1929 through 1932. I'd appreciate hearing from any one who can help me.

David B. Stevenson
P.O. Box 802
Kingston, Tenn. 37763

Available records here do not reveal a White Aircraft Corp. Perhaps our readers can help out.

• Tragedy

Your article on power lines in the May *FAA Aviation News* was of special interest to me as one of my closest friends recently lost his life when he flew into a wire.

Would you please advise me where I can purchase these markers.

Wallbridge, Ohio

Markers of the kind you are interested in are made by: Mutto Mfg., Co., 1800 20th St., N.W., Canton, Ohio 44714; Forrest Industries, Inc., P.O. Box 178, Dillard, Ore., 97432; and Idaho Chemical Industries, Inc., P.O. Box 698, Boise, Idaho 83701.

• Thereby Hangs A Tail

I have seen Convair 880's parked at airport terminals that looked as though the incidence of the left side of the horizontal stabilizer was substantially different from that of the right side. Is this an optical illusion? Is the horizontal tail on the 880 independently moveable? Do any other commercial jet transports have a "non-connected" tail?

South Ogden, Utah

Your observance of the 880s was not necessarily an optical illusion. Varying wind conditions acting on the elevator surfaces of the 880 could produce this phenomenon. The left and right elevators are hinged independently. Elevators are positioned aerodynamically.

Some other commercial jet transports with "non-connected" tails include both the Convair 880M and 990; Boeing 707 and 720 and Douglas DC-9.

• Denalt Performance Computers

Lately, I've heard considerable talk among my pilot friends about a "Denalt Performance Computer." What is it and where can I get one?

Scranton, Pa.

The Denalt Performance Computer is a shirt pocket-sized, easily-read computer for instant determination of the takeoff run and rate of climb under the density altitude conditions under which the aircraft is operating.

Computers are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. They may be purchased for 50 cents each. Specify whether for a fixed- or variable-pitch propeller

• "First Green?"

In reading ads for used airplanes I find reference to "fabric in first green, or fabric in second green." What is meant by this, and how is it arrived at?

Pocahontas, Ark.

You are referring to the fabric condition test using a Seyboth fabric tester. Aviation suppliers stock this device. In use, a plunger measures fabric resistance to tearing against spring tension. "Third green" indicates the highest resistance. In the order of declining resistance, the range is:

Third green, second green, first green, orange, yellow, red—least resistance.

• The First Flight?

I recently read a magazine article that purports to show documentary and photographic evidence that a Mr. Lyman Gilmore built and flew an airplane in California 19 months before the Wright brothers flew. Was that the way it happened?

Ludlow, Vt.

Aviation historians at the Air and Space Museum at the Smithsonian Institution in Washington, D.C., said they've heard the claim before but until proof to the contrary turns up they'll continue to believe the Wright brothers made the first powered flight of a heavier-than-air aircraft.

• Call for Inventor Brown

Please let me know more information about the "Brown Automatic Pilot Controlled Flagman System", or please advise me where to get this information.

Hermosillo, Sonora
Mexico

Write directly to the inventor for specific details. He is: George M. Brown, 1100 S.E. Birch, College Place, Wash. 29324.

FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D. C. 20590

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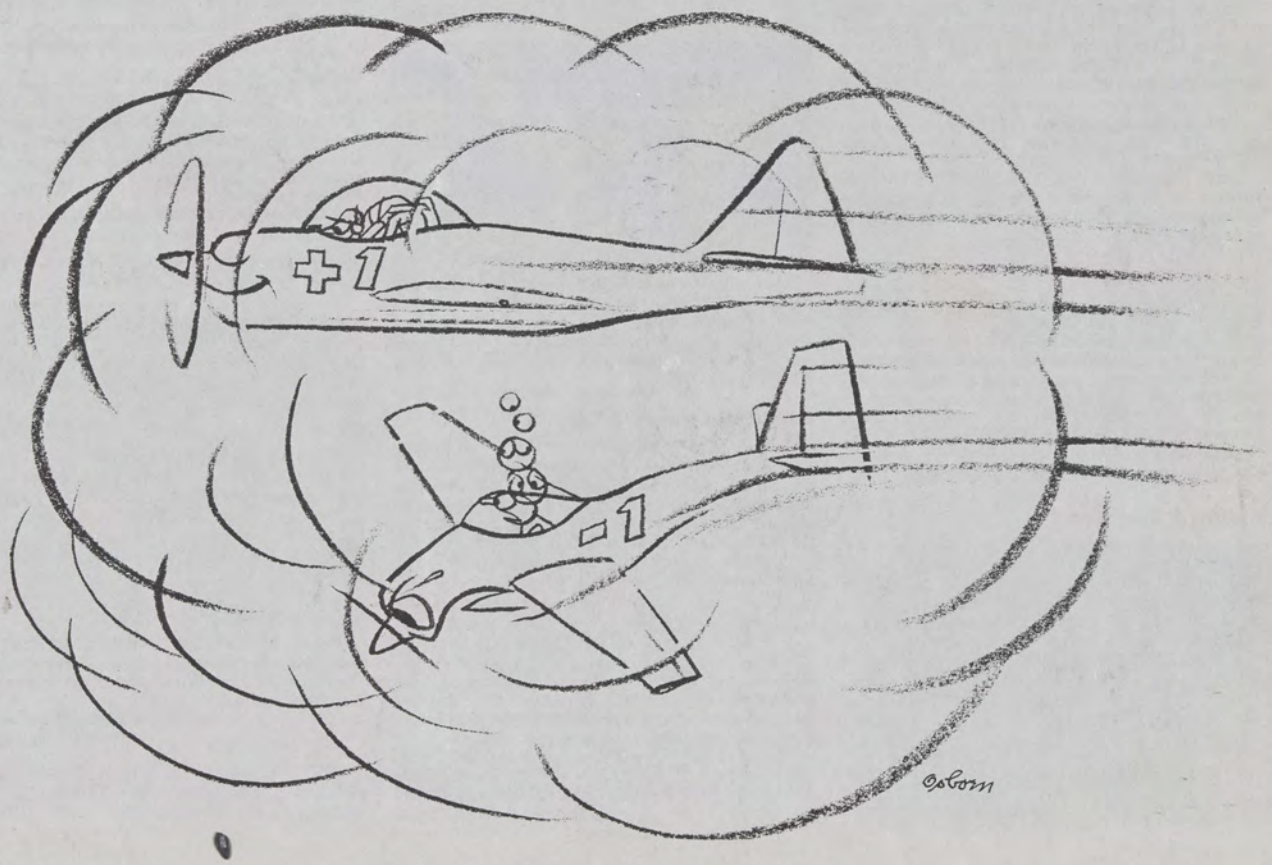
Lost in a fog and fuel getting low?



Don't try to guess—use your radio