FAA AVIATION NEWS

MAY 1970

COVER

Airports are where the planes are—and where midairs are most likely. See pages 7 and 8.

FAA AVIATION NEWS

DEPARTMENT OF TRANSPORTATION / **FEDERAL AVIATION ADMINISTRATION** VOL. 9, NO. 1

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FAA AVIATION NEWS is published by the Office of Public Affairs, PA-20, Federal Aviation Administration, Washington, D. C. 20590, in the interest of aviation safety and to acquaint readers with the policies and programs of the agency. The use of funds for printing FAA AVIATION NEWS was approved by the Director of the Bureau of the Budget, July 14, 1967. Send change of address to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, with a mailing label from any recent issue. Single copies of FAA AVIATION NEWS may be purchased from the Superintendent of Documents for 20 cents each. All printed materials contained herein are advisory or informational in nature and should not be construed as having any regulatory effect. The FAA does not officially endorse any goods, services, materials, or products of manufacturers.

Plain water in a pressurized container remains the most effective fire fighting agent for cabin fires. It is fast acting, non-toxic, non-corrosive and leaves no residue.

Fire in the Cabin

The modern airplane, with its advanced engineering and all-metal construction, is far from the potential torch which characterized the early wood-and-fabric planes. Apart from crashes or engine fires, the most common causes of fire in an aircraft today stem from acts of carelessness and electrical short circuits. It behooves the aircraft owner or pilot to see that some means of controlling a fire is always at hand.

Small general aviation aircraft operating under FAR 91, "General Operating and Flight Rules," are not required to have fire extinguishers, but if the airplane is to be used for hire or as an air taxi an extinguisher accessible to both pilot and passengers must be provided. (If within reach of both parties, a single extinguisher will suffice.) The extinguisher need not be permanently secured to the plane, but readily "available," a term FAA interprets to mean that it can be carried aboard with each use of the aircraft.

(Aircraft operated under FAR 121, "Certification and Operations: Air Carrier and Operators of Large Aircraft," and Part 123, "Certification and Operations: Air Travel Clubs using Large Aircraft," are required to have comprehensive fire control equipment and systems installed as a condition for certification and operation.)

Portable fire extinguishers suitable for combatting cabin fires are commonly of three types; CO_2 (carbon dioxide); dry chemicals propelled by compressed air; and water discharged by air pressure.

Carbon dioxide extinguishers are particularly suited for fires involving flammable liquids and electrical equipment. CO_2 can also be used to good effect on wood, fabric, and paper fires, but this is wasteful since plain water is a more efficient extinguishing agent for this type of blaze.

Carbon dioxide covers the fire, robbing it of air. It is a non-conductor, making it valuable in electrical fires. CO_2 is non-corrosive, leaves no residue and has no adverse effect on breathing. However, if discharged on flesh at close range, it can cause injury because of its extremely low temperature (minus 110°F.) when liberated from its container. A cloud caused by the rapid vaporization of CO_2 can obstruct vision temporarily.

In use, the CO_2 extinguisher should be held close to the base of the fire and gradually moved forward and upward, the nozzle swinging in slow, even arcs. Rapid motion, or advancing too quickly can leave areas where the fire appears to be out, only to rekindle because of surrounding hot temperatures. Re-ignition is also a possibility in electrical fires where the power cannot be cut. Intermittent reapplication of the CO_2 can reduce this hazard.

Plain water remains the best extinguishing agent for upholstery fires, the kind of blaze most likely to be encountered inside the cabin. The quenching and cooling effects of water are its chief qualities but it has the added virtues of being non-toxic and readily available. However, it should not be used to quench fires involving electricity, flammable liquids, or metals.

Water should not be used on electrical fires because of its conductivity, which could possibly lead to a fatal or disabling shock. Furthermore, water could easily make a flammable liquid (gasoline, oils, etc.) fire worse by fragmenting and spreading the burning fluid. Water produces the same scattering effect on burning metals, such as magnesium, which is used in aircraft wheels and some structural components. A fire hot enough to ignite metals is far beyond the capacity of hand extinguishers.

Both CO_2 and water extinguishers should be "winterized" according to manufacturers' recommendations when freezing temperatures are anticipated. The CO_2 bottle should be weighed periodically to assure full charge. Full volume weights are stamped on the extinguisher's data plate. Water extinguishers use stored pressure or gas cartridges (like those in seltzer bottles) as a propellant force. The state of charge in the stored pressure type can be read on a small gauge; a sealed gas cartridge is proof of charge on the other type.

Hand portable dry chemical extinguishers are relatively new, compared to water and CO_2. Originally, these were sodium bicarbonate-based compounds, but research has added several more which are as good, or better. Among these are potassium-bicarbonate base, potassium-chloride base, and mono-ammonium-phosphate base chemicals. CO_2 is the propelling agent in most dry chemical extinguishers.

Dry chemicals are effective against metal fires, burning liquids, electrical fires, and wood, paper and fabric fires. While they quickly "knock down" a fire, there is always a danger of re-ignition unless they are applied in quantity and then followed up until the fire is out beyond doubt.

The discharge of a dry chemical fire extinguisher in the close confines of an aircraft cabin in flight presents a hazard because the fine chemicals "cloud" the air. This is momentary, and probably not as dangerous as the fire. The dry chemicals also leave a residue but this can easily be cleaned up by use of a vacuum cleaner. The dry chemicals are non-corrosive components, but the vapors arising from their decomposition by heat can be irritating to the eyes and respiratory tract.

In order to be readily accessible and secure in flight, fire extinguishers should be fastened in the aircraft with an approved quick-release bracket. Installation is a job for a certificated mechanic, or an approved repair station, because it constitutes a "repair or alteration" as defined in FAR 43. An unsecured fire extinguisher, which could weigh as much as five pounds, could be a hazard flying around the cabin during turbulence, or rolling around the floor. Using a bracket to mount it makes its exact location certain in an emergency.

Fire in the cabin presents a pilot with two immediate demands: attacking the fire, and getting the aircraft on the ground safely as fast as possible. If he has no portable extinguishers on board, the pilot has no choice but to make an emergency landing. A handy cockpit or cabin extinguisher gives him, at the least, more time to choose his landing spot, and at best the possibility of putting out the fire in flight. It's worth thinking about.

Frank J. Clifford

the need to know

"Supdocs" helps those who help themselves—by making it easier to process their orders. For pilots who need Government literature in a hurry, there are sure steps to faster delivery. . . .

Your appointment for the written examination for the instrument rating you have been working for is only two weeks off. Just to be on the safe side, you drop into the flight service station and thumb through the catalog "FAA Publications—1969" to see if any test guides are available. You discover AC 61-8A, "Instrument Pilot Examination Guide," and AC 61-27A, "Instrument Flying Handbook." And you remember that you have been intending to subscribe to the *FAA AVIATION NEWS* too, so you won't have to borrow someone else's copy any more.

You sit right down and write a chatty note to the Superintendent of Documents telling him what you want, enclose a check for the amount and send it off that very day.

After two or three days you start looking in the mail for your instrument examination guide and handbook. A week goes by, and you aren't worried but a little impatient. You *did* send it airmail and how long does it take from Topeka to Washington? Ten days go by and still no delivery—and now you are frankly annoyed; this is cutting it a bit too close. You mentioned in your letter that you had the exam coming up in two weeks, so there is no excuse for their delay. Now the last mail before your examination arrives and you can't really believe the postman: "Sorry, nothing from Washington. . . ."

You charge into the instrument exam anyway, and you blow it. Patiently you explain to the FAA examiner that it wasn't really your fault. Those lazy Government bums in Washington never sent the publications you needed; surely you should get some consideration for that? The FAA examiner smiles patiently and offers you another test date in three months. He also suggests that you send a follow-up letter to your publications order, just in case it went astray.

Then you discover that your check to the Superintendent of Documents has already been cashed and returned to your bank! Now you sure that you have been the victim of a bureaucratic plot, and you sit down immediately to draft angry letters to the President, your Senator, Congressman, City Councilman, and the Veterans of Foreign Wars. You make it crystal clear that if you are killed flying in bad weather, your blood will be on the hands of FAA or the Superintendent of Documents or both.

But considering the success of your letter writing efforts lately, you decide to go to the source of your current aggravation. So you call and arrange for a tour of the Superintendent of Documents headquarters, and hop a jet plane to Washington determined to show those bumbling idiots how to run their business.

You listen impatiently while your tour guide explains that the Superintendent of Documents' office is the agency of the Government Printing Office authorized to sell and distribute all Government publications. Each day, they receive anywhere from 10,000 to 60,000 requests and on March 19, the day of your tour, there are 372,000 separate orders being processed throughout the system—59,000 of which are requests for subscription items. "Supdocs" sells and distributes about 27,000 separate publications, making it one of the world's largest publishing houses.

Your actual tour begins in the financial section, a large room in the Government Printing Office building where some 50 clerks are busy going through the contents of machine-opened envelopes—the morning mail. All mail goes first to the financial section, where the money is removed and the amount enclosed is marked on the original order. By law, all money received by the Superintendent of Documents must be deposited into the Treasury within 48 hours of receipt. The financial section works six days a week, with day and night shifts. Each of its employees is required to process at least 800 letters a day, although 1,000 a day is not unusual for a busy worker. Now you know why your check was returned by the Treasury to your bank long before the publications you ordered arrived.

You observe that letters with checks move along much faster than those with cash, which have to be upended and counted down to the last penny. You smile patiently as your guide tells the story about the lady who sent in a wad of $50 bills. That dumb you are not! You are surprised, just the same, at the number of trusting souls who risk sending cash—perhaps in the mistaken notion that it will produce quicker results than a check.

From the financial section you follow the orders to a cash mail sorting section, where they are segregated into three categories: orders for single sales items (books, guides, etc.); subscription requests; and inquiries requiring an individual reply. Each of these categories is processed in a different manner.

All requests which are simply orders for specific single sales items go into one basket, and are dispatched promptly to the next processing station. Similarily, all requests concerned solely with subscription items go into another container and are dispatched quickly to the mail address unit. However, if the same request calls for both types of items, covered by a single payment, the processing is slowed down considerably, since the sorting clerk cannot place one order in both containers. Your order must wait until he has time to abstract the necessary information onto an order form for you. You remember now, with a wistful sigh, a warning in the FAA catalog not to join subscription items with other publications, but you didn't really pay much attention and you wonder how much time it has cost you . . .

Your guide now calls your attention to the third category of mail handled by the sorting clerk—inquiries requiring a reply. You perceive that the letters are frequently written by hand, some even clumsier than your own, and that some of them require a magnifying glass or apparently a deciphering code book to be understood. Some are unsigned, or bereft of home address; some ask questions so involved that only a Delphic oracle could be expected to supply all the answers.

You realize that this is one of the real obstacles to swift handling of orders at Supdocs. You see how orders printed neatly on order forms (provided by the Government agency issuing the publication) move ahead swiftly, (they are usually processed within ten working days), while customers like you, with your chatty letters, may wait twice as long, while your request is deciphered, abstracted and answered. You recall now with some dismay that you threw in a query about some Government seed catalog your wife was interested in also.

So now you manage only a weak grin as your tour guide tells you about the number of times the sorting clerk has to play detective, telephoning local post offices or banks in an effort to track down the author of a request for a 15 cent pamphlet.

Your guide then leads you to the stock card unit, the next stop for single sales orders. Here the item must be identified by the issuing agency number as well as by title. Requests with a precise title are much more quickly identified than those with a fragment of the title, or a subject reference only—which may require more lengthy detective work. (The use of order forms by-passes this step, saving perhaps a week of delivery time.)

The next step is the Selective Items Unit where publications are stored. Requested items are taken from stock and sent to the mail room, where the complete packet is assembled and mailed.

When subscription items arrive at the mail address section, an address plate is made. This process normally takes from 6 to 10 working days, depending upon the backlog of requests. Your guide points out that forgetting to put your zip code on your request can cause additional delay because it must be included on the mailing label and therefore a clerk has to stop and look it up. He also explains why there is a normal four to eight week delay before you receive the first copy of the subscription item ordered. The Superintendent of Documents must order the number of copies he needs to meet subscription demands by the first day of the month; orders processed after the first must wait for the following issue. If subscriptions are not renewed promptly, your address plate may be destroyed, and there will be a delay in handling the renewals. That is why it is best to order your subscription for the longest period available.

Your guide now lets you in on a few tips for pilots who really need to get hold of a publication in a hurry. With a little foresight, he says, you should send off for the material you need well ahead of your need-to-know date, but there are occasions when the need is abrupt. If you use an order form and fill it out properly, and request special delivery handling (include about $1.00 for the additional cost), your order will be processed within 72 hours of arrival, and may turn up in your mailbox within a week.

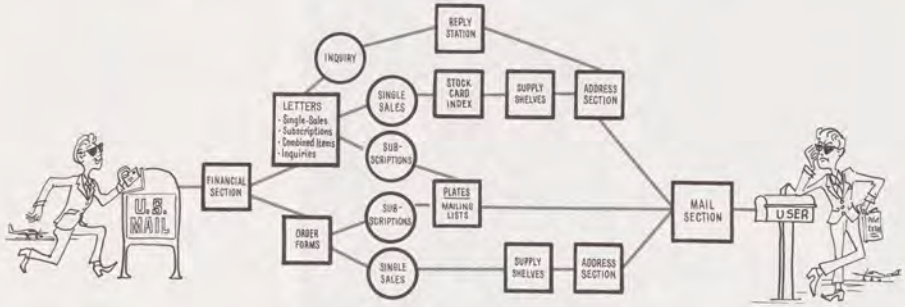
Make sure you include enough money for special delivery. If you send too much,

Continued on page 6

Above—all requests received by "Supdocs" go directly to the financial section where the money is removed and the amount is marked on the order. All money received must be deposited into the Treasury Department within 48 hours by law. **Below**—when customers call with inquiries about publications, the answer is researched on the spot.

Above—assembly of the final package entails checking the original order with the package to make sure all publications are included. Completed orders are grouped by geographic location for mailing. Remember to include your zip code to help avoid delay.

Routing of Orders through the Superintendent of Documents



(FAA Artist's conception, not official GPO design.)

Continued from page 5

a refund will be made, but if you send too little, your material will arrive by regular mail—along with the incorrect amount refunded.

With regular mail, your order for single sales items or subscriptions should reach you within six to eight weeks, depending upon where you live. If you have heard nothing in this time, you should write directly to the CUSTOMER SERVICE BRANCH, U.S. Government Printing Office, P.O. Box 1533, Washington, D.C. 20402. List *all* of the publications you ordered (to help Supdocs trace your request) and send a photostat of your cancelled check.

If it turns out that the Superintendent of Documents has mishandled your order, the desired publications will be sent to you special delivery at Government expense.

What happens if an item you request is out of print? If it is to be reprinted, your original order will arrive with the notification that the out-of-stock item will be sent to you when it becomes available. If not, the Superintendent of Documents will refund your payment.

As a last step in your tour, and a final hint on how to get publications in a hurry, your tour guide takes you around to the Government Printing Office bookstore in the lobby of the building. GPO bookstores are located in Chicago; Kansas City, Mo.; and in San Francisco, as well as in Washington, D.C. Additional outlets are planned for Atlanta, Boston, Dallas, Denver, and Los Angeles.

The advantages of dealing with the bookstore are obvious the moment you step inside. You discover a virtual treasury of FAA publications neatly displayed in a rack, which may be purchased on the spot. You are not surprised to hear from the bookstore manager that pilots from cities as far as 200 miles away fly into Washington just to pick up a particular publication.

Even if the desired booklet or magazine is not on hand, the bookstore can help you get it from Supdocs faster than you can manage to on your own. The bookstore will have catalogs that will help you identify the item precisely and list the price. The order you deposit with the bookstore will be airmailed (or at the main bookstore, handcarried) to Supdocs for you and processed within a special section, so that you may expect to receive your materials in the shortest possible time.

Your guide tells you that if you really are keen on Federal publications, you ought to know about the "Selected List of Government Publications," which publishes the titles of newly-issued or still popular Government publications from various agencies. The list is sent free, on request, bi-weekly to approximately one million persons.

For the really omnivorous reader, there is also the "Monthly Catalog of U.S. Government Publications," which lists all publications issued by all Federal agencies each month, including material published for official use only. A yearly subscription to the "Monthly Catalog" costs $6.00. For either of the above items, write to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

The tour ended, you shake hands sympathetically and assure your man that he is doing a good job. You leave with a sense of having really learned something, and you are halfway back to Topeka before you remember that you never did find out what happened to your instrument flight guide and handbook—although you can guess. Anyway, if they don't turn up soon, you can always fly in to Kansas City and clean out their bookstore. An old pro always knows how to get what he needs to keep him flying—and legal.

Judith A. O'Hare

PROCESSING TIME TABLE

SUBSCRIPTIONS	6–8 Weeks
SINGLE SALE ITEMS BY LETTER	2–3 Weeks
SINGLE SALE ITEMS BY ORDER FORM	5–10 Days

Subscription time varies according to type—weekly, monthly, etc.

How to Get Publications Promptly

(1) Use an order form, not a letter, unless absolutely necessary. Order forms (which may be freely duplicated by the user) are included in the catalog "FAA Publications," sent free upon request from: Distribution Unit, TAD 484.3, Department of Transportation, Washington, D.C. 20590.
(2) Send separate orders for a subscription and a non-subscription item.
(3) Get the exact name of the publication and the agency number.
(4) Send a check, not cash. Send exact amount.
(5) Enclose a self-addressed mailing label if you have no order blank.
(6) Use special delivery when needed.
(7) Use GPO bookstores if accessible.

BLIND SPOTS V

Fifth in a series of articles discussing the visibility problems of pilots in light planes.

Over the Wing

High wing aircraft block the pilot's visibility overhead. Approaching to land, he must make it a habit to avoid having other aircraft become positioned in his blind area.

Above—in level flight, pilot of high wing plane might not have been able to see low wing craft approaching from his left. While turning on downwind course the raised wing offers a good opportunity to scan the sky that is normally hidden above the wing. **Left**—the blind area above, forward, and to the rear of a high wing aircraft increases upward, like an inverted pyramid.

High wing aircraft have excellent visibility ahead, to either side, and below. Most are vulnerable, however, to other aircraft descending to their level from behind. On approaching and entering an airport pattern, therefore, the high wing airplane pilot must be especially alert for other aircraft overtaking him from above. Once another plane penetrates his blind zone, it may not be seen again in time to avoid a collision (see p. 8).

If he makes his approach starting with a downwind leg, the high wing pilot should already be at the pattern altitude, as indicated by the airport management. At this point he must be concerned both with aircraft circling within the pattern and with other aircraft entering the pattern above or below him and to either side.

He can never take it for granted that all other aircraft are at the proper altitude for the pattern, and he should take the trouble to actually see other planes reported on UNICOM. If he expects traffic above and to his left, for example, he can raise his left wing slightly in order to scan higher in that direction.

Flying the downwind leg, the inexperienced pilot tends to concentrate his attention on the inside of the pattern, looking toward the intended runway. The fact is that faster aircraft could be overtaking him on either side; he must scan in all directions. Rolling his aircraft slightly to either side will give him a better opportunity to spot traffic descending toward him from his left or right; and if these are low wing aircraft, he may be in *their* blind spot.

Before turning on a base leg, a careful scan should be made for aircraft which may have extended the pattern far downwind. Such traffic may be difficult to pick out against a varicolored landscape, and particularly against a setting sun. During the actual turn, the raised wing will offer a broad view of the outside of the turn, and the pilot should use this opportunity to clear the airpace.

If known traffic ahead (as reported on the UNICOM channel, or observed earlier) cannot be spotted while turning base, it may be advisable to break out and go around, rather than chance continuing on a potentially conflicting course.

Turning from a base leg to final approach affords another opportunity to clear the air overhead possibly blocked out during level flight by the wing. The pilot should pay particular attention to possible traffic on long final approach well above his altitude, or on short final below him.

Final approach is the landing phase in which most midair collisions around airports occur, but the fateful circumstances leading up to such accidents usually develop earlier in the pattern. The pilot who is well aware of the blind spots of a high wing airplane, and who consistently maneuvers his aircraft to peer into hidden airspace from the moment he approaches the airport pattern, can give his undivided attention to landing the aircraft once he heads for the threshold.

Final tip: look out for double shadows on the ground. ■

Hazards of Practice

Most midair collisions at airports involve training flights

Beech 18

Editor's Note: This is the third in a series of articles analyzing midair collisions in general aviation.

High winds and low ceilings are familiar winter weather conditions at Bellingham (Wash.) Airport, on the east shore of Puget Sound, but on February 24, 1968, the winds were light and the visibility unrestricted. Nevertheless two general aviation aircraft flying VFR near the airport converged and collided with a loss of two lives. Analysis of this tragic accident points up a circumstance which repeatedly contributed to the high toll of midair collisions in that year (38 accidents, 62 persons killed or injured): *pilots engaged in instructional or practice flying are the most frequent victims of midair collisions that take place around airports.*

One of the pilots was a commercial fisherman who at the age of 41 had taken up flying as a hobby. He had logged just 12 hours up till that fateful afternoon in February, when he took off from Bellingham Airport in a Piper Super Cub, accompanied by his married daughter, on a practice/pleasure flight over the Sound. Thirty minutes later, in level cruise three miles north of the airport, the Cub was involved in a collision with a twin engine D-18 Beechcraft under the command of a pilot holding commercial and flight instructor certificates, with nearly 7,000 hours of flying time in his logbook. In spite of the clear weather, neither pilot had seen each other up till an instant before contact was made —too late for evasive action. How did it happen?

No aircraft in existence offers the pilot a clear, unobstructed view in all directions. Generally speaking, high wing aircraft block out that area immediately above the wing and fuselage (see "Blind Spots V," p. 7), whereas low wing aircraft block out the airspace below the wing and fuselage. When a high wing aircraft is positioned below a low wing plane, in close proximity, it is not difficult to see how neither pilot might be aware of the other's presence. To prevent this situation from developing, all pilots should maintain extreme vigilance at all times, but especially around airports or other areas of known heavy traffic. *Make it a habit to begin a change of altitude or heading only after careful visual inspection of the airspace through which you intend to fly.*

Practice Instrument Approach

According to the accident report filed by the National Transportation Safety Board (NTSB), the twin Beechcraft had departed from Sand Point Naval Air Station in Seattle at 3:26 local time, had refueled at Arlington Airport and continued on toward Bellingham with the intention of practicing instrument (non-precision) approaches using the Bellingham VOR. The safety pilot, who was also in command of the aircraft, occupied the right front seat. At the time of the accident, the Beechcraft was being flown by the pilot in the left front seat, who was wearing a hood.

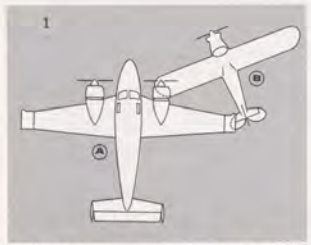
As they passed over the Ferndale fan marker 3.2 nautical miles north of Bellingham Airport, the safety pilot radioed his position to Bellingham Flight Service Station (the field has no control tower). He gave his heading as 146°, his altitude as 1100 MSL. His airspeed was approximately 100 knots. He was not aware of any other aircraft in the area of this time. Bellingham FSS advised him of weather conditions at the airport. These radio contacts were recorded at 5:00 p.m.

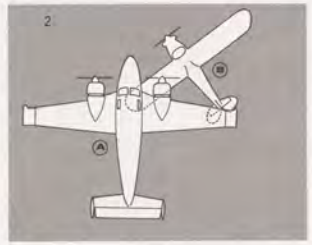
As indicated by the NTSB report, the collision sequence began with the Piper Super Cub positioned ahead of and below the Beech. According to ground witnesses, both aircraft were observed to be approaching each other at an approximate angle of 30°, at about the same airspeed and altitude. The Piper was observed by persons on the ground to be flying to the right of the flight path of the Beech and on a converging course. No evasive action on the part of either plane was observed. Both aircraft were seen to continue on these courses until they collided. The time was 5:01 p.m.

At this instant the safety pilot in the twin Beech caught sight of the Piper ahead of and below his aircraft. An immediate pull-up was attempted, but without success: the right propeller of the Beech chopped into the left wing of the Piper.

A later examination showed that the rotating blades of the propeller had chopped successive slashes along the top surface of the wing starting at the wing tip. The wing spar was cut at an angle of about 30°. The chewing action on the rotating Beech propeller forced the Piper aircraft to swing toward its left, as the prop continued slashing the wing structure on inboard toward the fuselage. The prop then cut into the

Piper Super Cub





FATAL SERIES. Drawing No. 1 shows the wing of the Piper (B) in contact with the Beech 18's propeller. The Cub developed a nose-left turning moment by resistance to passage of the wing through the propeller plane. Drawing No. 2 shows the Piper spars being cut and the fin broken by the Beech wing pushing to right.

Drawing No. 3 shows the Cub beginning to pass under the Beech. The Cub crashed out of control, killing both occupants. The Beech was damaged, but landed safely.

main wing-to-fuselage attach points of the Piper's right wing, which separated from the aircraft.

As the two planes drifted together, the vertical stabilizer of the Piper struck the leading edge of the Beech's right wing, deflecting the stabilizer 90° to the right of its normal station. The Super Cub then passed directly under and toward the rear of the Beech (the landing gear and flaps of the latter were retracted), fell into a righthand spin and crashed into a level pasture in a steep, nose down, inverted attitude.

Both occupants of the Cub were killed.

Although substantially damaged, the twin Beech was still controllable. The pilots circled over the crash area while notifying Bellingham FSS to send emergency equipment. The Beech was then able to land safely at the airport. Neither Beech pilot was injured.

The NTSB investigation report noted that:

(1) Neither aircraft filed a flight plan.

(2) The Piper had no radio, no rotating beacon.

(3) The Piper's student-pilot was apparently flying in command of an aircraft for which his license was not endorsed, and he was carrying a passenger apparently not aeronautically qualified.

(4) The Beechcraft had an operating rotating beacon.

(5) At the time of the accident the sun was at a bearing of about 80° to the right of the nose of the Beechcraft (approximately the same bearing as the Piper), at an angle of 6° above the horizon.

These observations notwithstanding, the NTSB reported the probable cause of the accident to be the failure of the pilots in command of both aircraft to see and avoid other aircraft.

Overriding Responsibility

This tragic accident underlines the hazards of instructional and practice flying around airports. There is no question that approaches, landings and takeoffs must be practiced frequently, in the process of training as well as in the interests of maintaining proficiency, and that such practice must take place at airports. The fact remains, however, that the pilot in command of the training flight must never allow his interest in the learning or teaching process to override his responsibility for constant scanning and vigilance for other traffic. Sad experience has shown that once two aircraft become positioned in each other's blind areas, their presence may not be discovered in time to avoid a collision, when they are on converging courses in either the vertical or horizontal plane.

A special accident prevention study by NTSB has shown that the great majority of midair collisions occur between aircraft that are on converging or even parallel, rather than head-on, conflicting courses—the most dangerous angle of convergence, indeed, is 0° to 10°.

Furthermore, it was reported that of the 40 aircraft involved in midair collisions in 1968 in the vicinity of airports, more than three-fourths were engaged in either training or instruction.

These grim statistics are a reminder to the flight instructor that however conscientious a teacher he may be, his safety responsibilities come before all other considerations. The pilot who flies as safety pilot during a training maneuver should also be reminded that his duties are not to be taken lightly. And finally, every pilot must be continually reminded that the sky is not his to enjoy alone, and that the act of becoming airborne involves him in serious obligations toward other persons. Nor can this responsibility be abdicated because of a designated copilot, safety pilot, etc., or because an FAA ground-based facility is monitoring a procedure.

Lewis Gelfan

The typical family medicine cabinet usually contains at least a few common medicines that could dangerously handicap a pilot's performance without his knowledge.

Pilots and Pills

Simple relief remedies that work on the ground can be dangerous in the air

"... and the county Medical Examiner's report revealed that both the pilot and his passenger were under the influence of barbituates when the accident took place."

Certain barbituates produce an initial sense of excitement, later followed by sleepiness, lack of attention, etc. The pilot and passenger mentioned in this report may have been totally unaware of drowsiness setting in when they attempted to land their light plane at a small airstrip in the country. The 37-year-old pilot was thoroughly familiar with the area and had been in and out of the landing strip frequently. The weather was "ceiling and visibility unlimited." Yet the aircraft struck several well-marked power lines, crashed and burned: two fatalities.

The report is typical of the many general aviation accidents in which medical drugs are known to have played a contributory or primary role. Some of these drugs were legitimately prescribed by a physician who was not informed of his patient's intention to fly soon afterwards; some were over-the-counter medications easily available at any drugstore; and certain others were obtained through illegal channels.

The hazards of flying after using narcotics or sedatives are obvious, and anyone who ignores the danger is a potential menace to himself and others. Any pilot who is addicted to drugs of any kind, or who is suffering from a condition which requires the use of addictive drugs, should be grounded in the interest of safety as long as the addiction or condition persists.

Beware of the Unexpected

Individual reaction to drugs not only varies from one person to another, but also may vary considerably within the experience of any given person, especially if triggered by emotional disturbances, alcoholic indulgment, or the use of other medications. The possibilities of recurrent or unexpected side effects of a drug mean that the user may be incapacitated as a pilot at any time, without warning or knowledge of what is happening to him. He may feel keenly alert and clearheaded one moment and slump into a stupor the next. Illegal use of any form of "junk" is a felony on the ground; in the air it leads to fatalities.

Less well known but also serious are the dangers of flying while under the influence of physician-prescribed drugs. The first question every pilot should ask his physician, when handed a prescription to be filled for any type of ailment—even sunburn—is, "Should I continue to fly?" If the physician cannot answer the question directly, the nearest Aviation Medical Examiner will be happy to do so.

Investigators probing an accident which took the life of a 44-year-old man and his teenage son discovered that he was receiving morphine regularly to control pain due to terminal cancer. On the day of his fatal accident he was returning home in bad weather after his weekly visit to his doctor in a distant city. Enroute, he landed on the wrong airport, on the inactive runway, and made a hurried takeoff to avoid an air carrier on final. He crashed a few minutes later.

Brief Your Physician

The responsibility for informing the family physician that his patient is a pilot belongs to the pilot. Unless he is a professional pilot, his doctor may not be expected to remember his flying status, or anticipate the fact that the advice, "Take it easy for a while," may not necessarily spell "grounded" to an eager aviator. The fact that he is excused from work may simply afford him a splendid opportunity to go flying during the week when rental aircraft are most readily available. True, he may have been coughing and sneezing his head off, but the antihistamine given him by the doctor should relieve his discomfort, *he thinks.*

So it may, but it may also relieve him of his mental alertness and possibly produce dizziness, nausea, headaches, muscular convulsions, etc. FAA's *Guide to Drug Hazards in Aviation Medicine* grounds pilots for 24 hours after the administration of the usual dose of most antihistamines.

Similarly, a vaccination and the ensuing slight pain in the left arm may not appear sufficient reason to stay out of the cockpit. But aching, lassitude, vomiting, etc., all possible subsequent reactions, do not make for good airmanship or sound judgment under deteriorating flight conditions.

The list of medications which should bar flying for at least 24 hours includes many drugs which would surprise the layman pilot. In addition to the antihistamines already mentioned, these include most vaccines and immunization sera, local anesthetics (as used in dentistry, for example), paregorics, penicillins, sulfa drugs, quinine and atabrin, amphetamines (such as certain reducing pills), insulins, tranquilizers, sedatives, and many, many others.

A great danger lies in the ability of many "miracle drugs" to suppress pain and other symptoms to the extent that the pilot feels capable of functioning normally, so he disregards the possibility of side effects which could interfere with handling an aircraft. In discussing the subject with his doctor, the pilot-patient should remember to mention any other medications he may be using, in addition to those presently being prescribed. Some drugs which produce very little reaction when used alone have pronounced effects in the presence of certain other chemical agents. In this sense, potable alcohol is to be considered a drug.

Least suspected by the user, and therefore perhaps potentially the most dangerous of all, are the patent medications that are freely available on the shelves of drug stores, supermarkets, and elsewhere.

Common non-narcotic analgesics (pain killers) such as aspirin, or oil of wintergreen, may bring on nausea, ringing in the ear or temporary deafness, hallucinations, etc., if taken in excessive dosage.

Cough syrups commonly contain mixtures of elixir terpin hydrate and codeine, which have a powerful sedative effect. Some contain antihistamines and some have an alcoholic content ranging from 12 to 40 per cent. Anti-motion pills, used to combat air sickness, also depress the central nervous system and induce drowsiness.

Other little-suspected types of medication which might be cause for grounding a pilot temporarily include certain sun-tan preparations, laxatives, antacids (sodium bicarbonate may cause great discomfort from gas at altitude) and nasal decongestants. The layman cannot make a safe judgment simply from reading the list of ingredients; he should seek a medical opinion.

The Federal Aviation Regulations which prohibit flying while under the influence of drugs (Part 91.11) do not identify specific drugs as harmful and others as not. Responsibility rests on each individual pilot, with respect to all forms of medication, to keep himself informed as to when he may fly safely. Ask a physician: don't guess. ■

Partial List of Common Drugs Which Interfere with Flying Ability

(1) Analgesics, narcotic (opium, morphine, codeine, etc.)
(2) Analgesics, non-narcotic (includes aspirin)
(3) Anesthetics (includes procaine, cocaine, nitrous oxide, etc.)
(4) Antacids (sodium biocarbonate, etc.)
(5) Antihistamines
(6) Anti-motion sickness agents
(7) Arsenicals
(8) Cathartics (senna, castor oil, etc.)
(9) Depressants (atrophine, belladonna, etc.)
(10) Hormones (some)
(11) Laxatives
(12) Nasal decongestants
(13) Penicillins
(14) Quinine, atabrine, etc.
(15) Reducing agents (some)
(16) Sedatives (bromides, barbituates, etc.)
(17) Stimulants (amphetamines, etc.)
(18) Sulfa drugs
(19) Sun tan agents (some)
(20) Tranquilizers

For details and complete listing, consult your physician or an A.M.E.

Famous
FLYERS

Do-it-yourself Smith

Inventor of free fall parachute was a man of parts

Split-second reaction to an emergency, a throwback to her circus days, enabled Hilder Smith to untangle her twisted parachute during an air show over Los Angeles Harbor.

"He floats through the air with the greatest of ease. . . ."

This refrain might well have served as a tombstone epitaph for Floyd Smith, a onetime circus aerialist turned aviator, who is credited with designing the basic free parachute in use in military and civilian aviation for over 50 years. His self-contained, ripcord-activated parachute design has saved the lives of more than 100,000 pilots and passengers in emergencies since it was first successfully tested 51 years ago.

Born October 17, 1884, in Genesco, Ill., Floyd began drifting westward while still in his teens. By the time he was 23 he was already a seasoned veteran of the flying trapeze, having been a cowboy, machinist, orange grower, sugar factory worker, etc. The excitement of his life dazzled a 16-year-old classics student, Hilder Youngberg, who married Floyd over her parents' stormy objections to a circus-type son-in-law and joined his high wire act in Los Angeles.

After a five-year tour as an aerialist team, Floyd and Hilder decided the "Big Top" was too small for them. To fly higher, they needed an airplane, and promptly set out to build one, although neither had ever flown. They drew on popular magazine articles for technical guidance.

Construction began in January 1912, with Hilder shaping the wing ribs and applying the fabric while Floyd did the heavier work (which included thinking). A unique control system evolved—unlike other planes of the time which used wheel, shoulder yoke, and often foot pedals, Floyd Smith's plane was controlled laterally, vertically and horizontally by the wheel.

Exultant after his first flight on June 12, he lost no time in rigging a second seat and dual controls for Hilder. The Smiths set out on a barnstorming sweep that carried them through the southwest and ended a year later in Kansas City, Mo., where they were grounded by creditors.

Floyd Smith and his wife Hilder hit the barnstorming trail weeks after first successful flight on June 12, 1912 in an aircraft he designed and built with Hilder's help.

Back in Los Angeles, Floyd went to work for plane builder Glenn Martin, starting as a mechanic, but quickly rising to become Martin's chief test pilot. While putting a Martin biplane through its paces in the spring of 1914, Floyd had a wing failure at 1,500 feet. Unable to parachute free because the aircraft was spinning down, he had no choice but to crash land. He escaped unhurt, but was shaken up enough to decide that there must be a better way of getting down.

What was needed to escape from a disabled, uncontrollable aircraft as it spun toward the earth was a chute to be opened by the wearer, not the plane, Floyd reasoned. With the parachutes of the time, this was impossible since they were all fastened by a rope to the aircraft. The rope either held a parachute container fast to the aircraft while the flyer's falling body pulled out the chute, or it pulled the parachute out of a pack worn by the flyer. In either case, a churning aircraft would foul the chute with fatal results.

A few weeks later, his wife Hilder almost fell to her death during an exhibition jump while wearing a "static" Martin-Broadwick parachute during an airshow over Los Angeles Harbor. Glenn Martin had persuaded her to make the jump, her second, and as it turned out, her last, at about 600 feet. Twisting about as she jumped, Hilder managed to foul her chute. She free-fell 400 feet, her chute a long plume streaming behind her, but her training in the circus enabled her to jerk and haul the lines until the chute opened, 200 feet above ground.

Although he discussed some ideas for a free fall parachute with Martin's chief engineer, Charles F. Willard, Floyd had no opportunity to develop them. Then in the fall of 1918, he was summoned by Willard to work for the Army Air Corps.

With the help of another pilot, Guy Ball, Smith tested all existing chutes and produced his own modifications, endeavoring to overcome the basic weakness that characterized foreign chutes. By installing a flexible vent on his early models, he created a chute that would withstand a load of 500 pounds against a wind velocity of 125 mph.

Floyd Smith is also credited with adopting silk as the main parachute fabric, an innovation that reduced weight, made packing and deployment easier, and was stronger by far than any other fabric.

By Dec. 8, 1918, Smith had a workable free-fall parachute. Proof of his success could be seen almost daily in the skies over McCook Field as dummies floated softly to earth under silken canopies. Then suddenly the war ended.

Pilots and even scientists were now publicly dubious about a free-fall parachute. Some said a parachutist falling free would lose consciousness before he had a chance to pull his ripcord. Others said fear would freeze a man into immobility, or the rushing wind would cause a man to flail himself to pieces. Smith offered to prove them wrong by live-jumping his chute himself. He was denied permission.

On April 28, 1919, professional jumper Leslie L. Irvin, 22, arrived at McCook Field with the startling news that he had been designated by the Army to test Smith's chute. Churning with suppressed indignation, Smith piloted Irvin aloft in a DH-4 as the brash youth prepared to make the world's first free-fall parachute jump. Irvin leaped into instant, international fame, while Smith was shunted into the shadows of historical controversy.

Irvin opened the chute immediately and landed safely but hard, breaking his ankle —a fact that prompted skeptics to assert that the parachute was not safe, after all.

The doubters had something to think about on May 14, 1919, 17 days after Irvin made his jump, when Floyd Smith stepped over the side of a DH-4 cruising at 1,200 feet and fell free for 300 feet before pulling his ripcord. The chute cracked open—and lowered Smith gently to the ground.

With minor modifications Smith's first chute was to remain the standard service chute for nearly 50 years. It was 28 feet in diameter with a 48-inch flexible vent. It had 40 shroud lines, arranged in groups of 10 each, tied to a "D" ring sewn into the harness webbing with a breaking strength of 3,400 pounds. The chute could be opened manually or by static line.

Floyd's business sense was inferior to his inventive genius. His patent rights to the free fall parachute were challenged by others eager to manufacture it, and although he was always upheld eventually by the courts he received relatively little credit in the public mind as the inventor who realized an age-old dream of mankind —to glide independently to earth like a bird. Nevertheless, he devoted the remainder of his working days to the further perfection and refinement of the parachute.

He died in 1956. His survivors include his wife, son, and four grandchildren. ■

Floyd Smith models the free-fall parachute he designed and demonstrated in 1919.

Pilot
BRIEFS

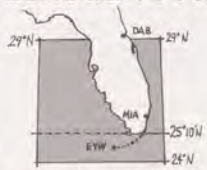
■ INSURANCE SAFETY INCENTIVES OFFERED . . . Airway Insurance Underwriters, in conjunction with FAA's General Aviation Accident Prevention Program, have developed two new premium savings programs. A five per cent premium reduction will be given for all aircraft insured by a company whose aircraft are transponder-equipped, and a five per cent premium reduction will be given for aircraft flown by pilots who have had a biennial voluntary safety checkride with an FAA-certified flight instructor.

■ AIRPORT'S INITIATIVE WINS AWARD . . . the community of Harlingen, Texas, was presented with an FAA Airport Beautification Award for their efforts in converting a former military air base into a functional, modern aviation facility serving both commercial and general aviation. Improvements contributing to the beautification program included construction of a modern terminal building, painting and renovation of hangars and removal of numerous old buildings.

■ "AGRICOPTER" SUBJECT TO FAA RULES . . . FAA has alerted farmers and landowners to the erroneous information published on the Bensen Aircraft Corp. B-8MA "Agricopter." Available in various kit forms, the aircraft must be FAA certified and operated by a licensed pilot. Published statements are not correct that these regulations do not apply if the aircraft is flown below 150 feet and if the spraying of crops is limited to the operator's land. Individuals who operate the aircraft without complying with the agency's regulations are subject to FAA enforcement action for violating safety rules.

■ ORDER FARs FROM GPO, NOT FAA . . . Instructions for ordering Federal Aviation Regulations not yet put into volumed form, as given in the April issue of the FAA AVIATION NEWS, should have read, "Order from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402." FARs should not be ordered from FAA. Orders sent by error to FAA will be forwarded to the Superintendent of Documents, but there will be some delay in processing them.

■ SPECIAL REGULATIONS FOR FLORIDA AREA REVOKED . . . FAA has revoked Special Federal Aviation Regulation No. 15, concerning flights over water and outside the land mass of Florida. The area involved lies within a rectangle beginning at 29°N lat., 85°W. long., thence clockwise to 29°N lat., 79° 30'W long., to 24°N lat., 79° 30'W long., to 24°N lat., 85°N lat., to the point of origin; or over land South of 25°N lat. Flights over this area previously required flight plan approval by appropriate military authority and functioning two-way radio equipment on board



Pilots planning to fly over Southern Florida or adjacent water should check their flight service station for current regulations, or consult the "Airman's Information Manual."

FAA Considers Rulemaking on Smoking Aboard Aircraft

Air travelers, aircraft operators, crewmembers, aircraft manufacturers, medical and technical experts, and others interested in the question of smoking in passenger compartments of aircraft operated by air carriers, air travel clubs, and commercial operators are invited to have their say, pro or con, on the subject.

The Federal Aviation Administration, responding to two recent petitions asking for a ban or restriction on smoking cigarettes, cigars, and pipes, has issued an advance notice of proposed rule making asking the flying public what their feelings are on this matter.

Smoking on passenger-carrying flights is now prohibited on takeoff and landing, and when otherwise considered to be necessary by the pilot in command. (See FAR 121.317).

One petition asked for a total ban on smoking by passengers and crew, and cited a number of medical references and other reports in support of the proposal. The second petition asked that smokers and nonsmokers be seated in different parts of the aircraft. Both petitions asserted that nonsmokers are obliged to breathe smoke-contaminated air in the passenger section, a possible health hazard and annoyance.

Also cited in the first petition was the possibility of a cabin fire being touched off by careless smoking. FAA has not been shown any evidence of significant hazard due to this cause.

In conjunction with the Department of Health, Education and Welfare and the Defense Department, FAA has under way a study to measure the amounts of tobacco smoke contaminants in aircraft in passenger use. Also part of the study is an analysis of existing air circulation systems in air transports, and passenger attitudes on smoking.

Comment on the following specific questions is requested:

- On the basis of the medical evidence referred to and other available data, is exposure to tobacco smoke in transport aircraft, assuming normal ventilation, so injurious to the health of non-smokers as to justify rulemaking that would require separating smokers from non-smokers in the passenger compartment or other relief as mentioned below?
- If relief should be provided for non-smoking passengers, would it be practical to provide it by separating smokers from non-smokers in the passenger compartment? By confining smokers to the rear of the cabin, or to one side? Would a movable partition be feasible?
- Could an increase in the ventilation rate in the passenger cabin, or an improvement in filtering, or both, be made if relief should be provided for non-smoking passengers?
- Short of prohibiting smoking entirely, should relief be provided by any other means?

Comments on the advance notice, "Smoking on Aircraft Operated by Air Carriers, Air Travel Clubs, and Commercial Operators," (Docket Nos. 10012 and 10033; Notice No. 70-14) should be submitted in duplicate on or before June 23, 1970, to FAA Rules Docket, GC-24, 800 Independence Ave., S.W., Washington, D.C. 25090.

Proposals for FAA regulatory action controlling smoking among aircraft passengers include segregating smokers from non-smokers by cabin bulkheads.

FAA Studies Economics of General Aviation Airports

Of some 1,400 publicly-owned general aviation airports analyzed in a recent FAA study, the majority were found to be without operating revenue surplus and dependent on Federal, state and local agencies for development capital.

On the average only airports with at least 25,000 or more annual itinerant operations, or with more than 100 or more based aircraft, reported an operating revenue surplus. Operating revenues and operating expenses at less active airports just about coincide—indicating that communities are spending no more on their airports than they expect to take in.

The report identified paving of landing areas as the most pressing development need, with hanger construction next.

"Report on FAA's 1969 General Aviation Public Airport Financial Survey" (AD 701 760) is available for $3 a copy from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151. Orders should include title, "AD" number and check or money order made payable to CFSTI.

Derelict Aircraft Left at Airports Causing Poor Public Impression

Junk aircraft are becoming an eyesore at many of the nation's airports, giving air travelers a false impression of air safety conditions. The Federal Aviation Administration is launching a program to persuade airport operators to get rid of dismantled and permanently disabled aircraft disfiguring the airport landscape.

To aid airport operators in their housecleaning operation, FAA has published advisory circular AC 150/5190-1, "Minimum Standards for Commercial Aeronautical Activities on Public Airports." The circular discusses and illustrates how, through proper application, such standards can operate to the advantage of all businesses operating at the airport.

Copies of the circular are available free from the Department of Transportation, Federal Aviation Administration, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

Flow Control Cuts Weather Delays

After a six-week trial period, FAA has placed into full operation a central flow facility to minimize enroute air traffic delays and traffic congestion due to weather and system saturation.

The centralized flow control office, located in FAA headquarters in Washington, is an improvement over the previous practice whereby each of the 21 ARTCCs in the 48 adjoining states exercised aircraft flow control on a local basis. While this proved effective in many cases, it was essentially a short-term solution to the congestion problem.

During the test period, enroute delays of long-distance traffic moving into Kennedy International were almost eliminated and a better balance of aircraft in holding patterns was achieved.

TWO FOR ONE. A 40,600-pound thrust engine has been installed on the starboard side of a VC-10, replacing two smaller jet turbines of equivalent thrust. The modified VC-10 can fly safely on the two smaller portside engines while the larger experimental engine is being flight tested.

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.

• Happy Ending

As one of the pilots who overheard the radio transmission during the dramatic save of a Cessna 172 over Huntington, W.Va. (FAA AVIATION NEWS, March, 1970, "Somewhere Over the Rainbow . . .") I am curious about the participants. Any photos available?

Nosey Pilot
Huntington, W.Va.

The two FSS participants were identified in the article. The couple in the plane, now Mr. and Mrs. Sam M. Williams, are shown above, by special permission.

• Draping the Cabin

Curtains installed in general aviation aircraft violate the "see and be seen" concept of flight safety, and show a lack of understanding or responsibility on the part of the owner or pilot. Most pilots with whom I have discussed this realized the restriction of visibility but did not recognize the hazard.

Although one popular manufacturer shows his lack of safety concern by installing curtain rods, pilots certainly can explain to the ladies that pretty drapes can cost him 50 percent of his peripheral visibility.

Walter B. Stout
Reseda, Calif.

• A Shade of Difference

I like many of the features of the new charts, such as printing on both sides to halve the amount of paper to handle and the printing of the map to the edge of the paper for easy matching with the adjoining chart.

However, I have one complaint: I miss the clear-cut, easy-to-see contours, distinctive elevation coloring, coding or shading, and peak elevations in bold type as on the old charts. The difference in the old and new charts in this regard, particularly in mountain flying, is like the difference between a VFR flight by day and night.

Harrison M. Tice
Carmichael, Calif.

The contour interval on the old sectionals was 1000 feet, but this was changed to 500 feet on the new sectionals to provide for better definition. In relatively flat areas the new chart also has provision for intermediate contours of 250 feet and auxiliary contours of 100 feet. Shown in the old manner, the increased number of contours would have interfered too greatly with other chart information. It was therefore necessary to screen them to subdue their intensity.

The elevation color coding has not been changed but these too have been shaded to speed recognition of relative heights and shapes of terrain.

As for peak elevations, at least as many and in some areas more, are shown. An added safety feature is terrain clearance heights, shown within each thirty minute area, representing the highest elevation within the area. This is increased by the maximum vertical error which might exist and then rounded off to the next higher hundred feet.

If weather deteriorates and the pilot is not sure of his exact position, he knows at a glance that he can clear any terrain in the general area by flying above this elevation.

• Fuel Starvation

While on a flight from Davis, Calif. to Tahoe, Nev., the engine of my single engine aircraft quit at 9,500 feet after 20 minutes of flight. When the engine failed the outside temperature was 75°F. I checked the carburetor temperature, fuel quantity, and mixture and all were normal.

After careful experimenting I found that with full rich mixture and full carburetor heat I could get the engine to run in spurts. If either were changed the engine would not run. I arrived over Placerville Airport and as soon as I reached 4,500 feet the engine returned to normal operation.

A careful ground check disclosed no water in the system or any mechanical discrepancy. I have since learned that the manufacturer determined that an air bubble formed in the fuel lines about five or six inches below the fuel tank when the aircraft was above 9,000 feet under certain temperature and pressure conditions.

What can be done to correct this?

Maj. Russell H. Robinson
Davis, Calif.

The manufacturer has developed a fuel line vent modification designed to prevent power loss when air or fuel vapor gets into the fuel lines. This modification is available through Service Letter SE 69-26, dated Dec. 31, 1969 which included Service Kits SK 172-31 and SK 172-32.

A maintenance note concerning this problem will be published in an early edition of FAA's General Aviation Inspection Aids, a publication which goes to all FAA GADOs, as well as to many A&Ps.

• Teacher's Pets

I'd like to be added to the growing list of those who appreciate the versatility of flight service station specialists.

Recently, I arranged to have my private pilot ground school class visit the McAlester, Okla., Flight Service Station. I expected a quick walk-through so I couldn't have been more surprised, pleased and impressed with the full two hours of indoctrination and demonstrations my students received. The visit was a total success from my point of view as an instructor, and those who shared in the learning experience will benefit from those two hours the rest of their flying careers.

Hats off and thanks to O. D. Magness and his fine crew at the McAlester FSS.

F. J. Harbin
McAlester, Okla

• Measuring Sound

In the article "New Sound for Airports" in the December, 1969, *FAA AVIATION NEWS*, you make the statement that a reduction of 10 EPNdb represents a halving of perceived noisiness.

This does not seem correct. It would seem more reasonable that 10 EPNdb represents a factor of 10 or $\sqrt{10}$ in perceived noise reduction and that six or three EPNdb represents a halving of perceived noisiness.

Alfred A. Filippini
Landover, Md.

Noise levels may be measured on a variety of units for example, sound intensity *in watts, sound* pressure *level in microbars, and* noisiness *in effective perceived noise decibels. Since the human ear has an extremely large range of reception, logarithmic units are used to facilitate definition of various levels.*

For doubling or halving of sound intensity *or power, the increment is three decibels. However, for doubling or halving of sound* pressure *levels the increment is six decibels, since sound power is proportional to the pressure squared. With regard to the subjective rating of* noisiness, *10 EPNdb represents doubling or halving since this has been judged by a jury of individuals to be the equivalent of doubling the "noisiness" of a sound signal.*

• Light for the Blind

I thought the "Blind Spots IV" article (FAA AVIATION NEWS, March 1970) on night visual approaches was very enlightening, if you will forgive the pun. Who made that stunning photo?

Night Flyer
Texas

The photograph was made by T/Sgt. David L. Reis, U.S. Air Force, and kindly provided by AEROSPACE Magazine.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
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Don't pull on the bottle

If you're gonna push on the throttle

Suggested by James G. Kelley
Roanoke, Virginia