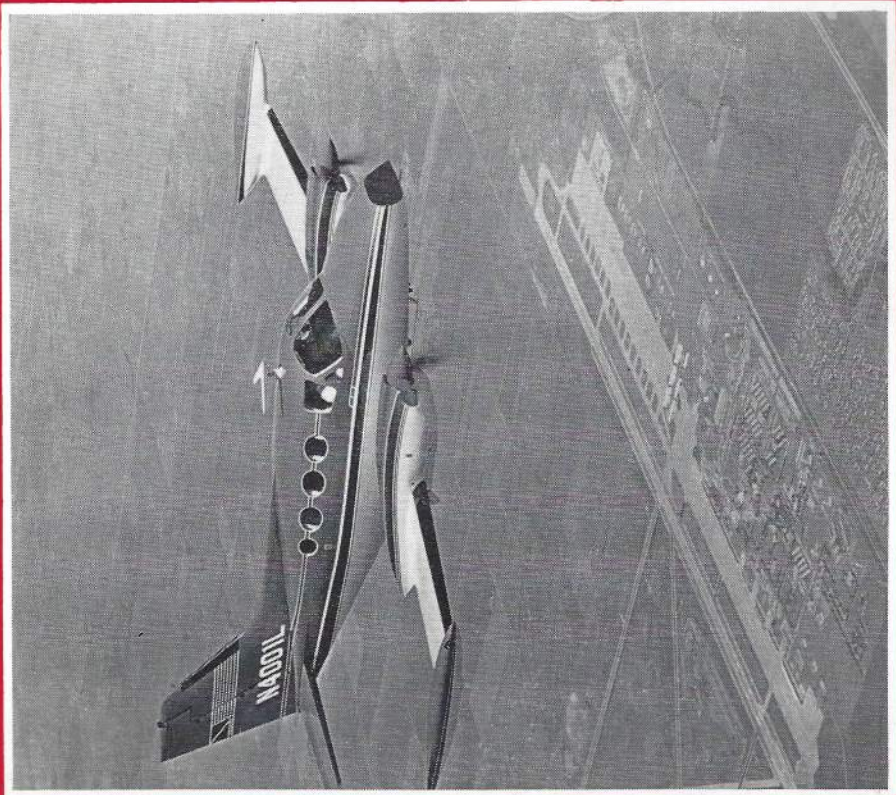


August, 1967

AIR FACTS



THE MAGAZINE FOR PILOTS

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"SURE, I FLY Garmi!"

A candid conversation with an executive pilot who flies Garmi and likes it.



Garmi, priced at \$795, is the easiest, safest way to navigate. Manufactured by Allen Aircraft Radio, Inc.—available at your dealer. Ask about it!

Chairman of the board of Rollprint Products Corporation, Sid Raiké fly his Cessna 310-Twin engine all over the country for routine business meetings. Six weeks ago he had Allen Aircraft's new Garmi (General Aviation Radio Magnetic Indicator) installed by Mid States Aviation. What does he think of it? Our interviewer finds out.

ALLEN: How did you learn about Garmi and what persuaded you to buy it?

RAIKÉ: I saw your original advertisement in the various magazines, and it interested me. I had been familiar with the operation of RMI.

ALLEN: How—through service on military aircraft?

RAIKÉ: No, through conversations with my airline pilot friends.

ALLEN: You know then that Garmi is essentially the same kind of RMI that is used on the big commercial and military ships.

RAIKÉ: Sure, except it's about two thousand dollars less because you're not tied in with a gyro that rotates your compass. And for two thousand dollars I can rotate the dial.

ALLEN: What do you consider the greatest advantage of flying with Garmi?

RAIKÉ: Instant position.

ALLEN: Can you explain what you mean by that?

RAIKÉ: There's no confusion as far as the omni is concerned. You don't have to worry about changing your omni bearing selector needle. You don't have to worry about a two (prong) position. Garmi tells you immediately what the direction is to the station.

ALLEN: Did it take you long to get used to flying with Garmi?

RAIKÉ: All of about two minutes.

ALLEN: Of course you had been familiar with the operation of RMI so...

RAIKÉ: But there's nothing to get familiar with. Garmi is obvious—Instantly apparent.

ALLEN: When do you find flying with Garmi most valuable?

RAIKÉ: I'd say—when you are close to a station—where your omni needle starts to waver—you know immediately just about how close to the station you are as far as your azimuth bearings are concerned. You don't know with your regular omni set. In addition to that, the needle of the Garmi swings sooner than the two prong needle on the omni.

ALLEN: When you fly cross-country. Any special advantages there?

RAIKÉ: It is excellent for intersection flying—where you're flying an airway and have to report on an intersection. It tells you when you are coming up on that intersection. With an omni, your needle is way over to one side and you don't know whether you're close-or far.

ALLEN: Do you use Garmi for flying IFR, VFR or both?

RAIKÉ: Both.

ALLEN: Did you need any other special equipment after installing the Garmi?

RAIKÉ: No, none.

ALLEN: Do you find the savings on space on the panel helpful?

RAIKÉ: In my particular case no—but I can see an advantage, depending on how your instruments and panel are set up.

ALLEN: Any further comments?

RAIKÉ: It's just a great instrument. Like I say—what could be better than instant position.

Amateur bead-sinker.

Psychology of Instrument Flying

By

RICHARD L. COLLINS

THE OTHER DAY an instrument-rated pilot stopped by the office to visit for awhile. Instrument flying was very much on his mind, and it turned out that even though he was rated, and had been for awhile, he didn't do much IFR work. The title up there at the top of the page was something he coined in explaining his reluctance to get a clearance and charge through a cloud. He was able to examine IFR, and say, "Yes, this is how it works," but he obviously wasn't able to then convince himself that "This is how I do it, and here I go." Any IFR flying he had done very likely wasn't enjoyable.

One's state-of-mind probably is the most important thing going when it comes to instrument flying. Flying in clouds is for a fact

eerie at first. On pretty days you can look out and see the ground moving by below, you can sense movement, and the old brain can convince itself that this is indeed a practical proposition. Inject the bird into a cloud, though, and you might as well be swimming underwater in iced tea. There's nothing to look at. No sense of motion. No nothing but the collection of gauges and radios on the instrument panel which say that the airplane is right

side up and moving in the proper direction at the proper speed. This is accompanied by the stress of dealing with ATC and of flying the airplane. It's no wonder some people have difficulty getting used to instrument flying, and people who fly VFR a lot before going into IFR are probably affected more than people who move right into instrument flying as soon as they get a private license. Old instrument pilots can also find IFR uncomfortable if they go at it after a lay-off, or find themselves flying just a bit over their head, weather or traffic-wise.

There was recently an article in a medical journal on the analysis of stress on pilots flying in a severe weather project. The pertinent point was that the amount of stress was directly related to the pilot's evaluation of the turbulence. The report also said the stress response to severe weather flying may be related to a pilot's previous experience.

How About Us?

This can be interpolated to just plain weather flying, and anticipated and actual stress is bound to have a lot to do with reluctance to fly instruments. Pilots who go at

IFR with cool, and who can look at a flight as a piece of cake, and fly it as such, operate with a minimum of sweaty palms — that being a pretty good measure of stress.

If a pilot is tense at the beginning of an instrument flight it's bound to be because his preliminary evaluation is that it's going to be difficult. If there's a lot of tension, and more than a little case of the normal jitters which accompany beginning instrument flying, and if there are any misgivings about the flight, then it should be scratched.

Yes/No

Instrument flying is really not difficult. The traffic control system doesn't have a lot of kinks left, the equipment in our airplanes is good, and radio navigation is relatively simple. That, at least, is the way someone who has been doing it for a while looks at it. When first starting out it doesn't seem that way because in the instrument training process it's not possible to have enough exposure to the system

to feel at home with it. A friend mentioned a while back that it was common for people to say how easy it was, when it was really very hard. This friend had been away from instrument flying for a long time when he said that. Recently he's done a lot of IFR, and now he says there's nothing to it. It is all a state-of-mind, and a pilot's biggest job in IFR flying, once the basics are learned, has to do with making peace with himself.

Stress Analysis

In the past few months, we have made quite a few IFR trips in the New York/Boston area. This is supposed to be pressure-cooker type/IFR airspace, and it's interesting to take an inward look at pilot-stress on some different type flights.

First trip was in a Skyhawk, and it started off VFR in Massachusetts, bound for Trenton. The CWB mentioned threatening but not really bad weather, so the trip started out VFR.

As the New York area was approached, it started raining. Somehow, it's never been possible to maintain confidence in VFR flying when the rain starts pattering on the windshield, so the first action after the precipitation started was a call to Newark Approach Control. To begin with, VFR traffic advisories were requested, and soon they had the Skyhawk on their radar (no transponder, so it took a lot of omni twiddling for cross-bearings and a couple of turns). As soon as radar contact was established, the subject of a low-level

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IFR clearance was raised. Newark and Trenton were both VFR, but it looked spooky. Surprisingly, about 15 seconds after a "Direct Solberg, Direct Yardley" at 4,000 was requested, it was issued.

The period between when it started raining and when the clearance was received was one of considerable stress. Once the clearance was issued, the stress disappeared and the rest of the flight was nice.

In looking back, the thought which comes to mind is how smoothly the rest of the flight would have gone had the clearance been complicated. For instance: "Cleared to the Trenton Airport from present position direct Emerson Intersection, V116 Sparta, the 181 radial of Sparta to the Boonton Intersection, V3 Solberg, Direct Trenton, Climb to reach the Emerson intersection at 3,000, then climb to cross V3 at 4,000, then climb to and maintain 6,000." With a clearance like that, the psychology of instrument flying would have probably gone to the devil and the plan would have changed to one of flight back north to where there was no rain.

A More Difficult Flight

The next flight was fouled up somewhat. The clearance, issued before take-off, didn't come through anywhere near as requested — it even started off in the opposite direction. In that the weather was clear and three miles, the obvious goof followed—"Cancel IFR, we'll go VFR."

Once airborne it was like flying

a proper mixture

DOLLARS AND SENSE

We've seen lots of boats and it's amazing how many boat owners load their craft up with gadgets, widgets and chrome plated gee-gaws.

We aircraft owners can't do this (and probably wouldn't want to anyway) because any addition to our aircraft must be a proper mixture of dollars and sense.

Number one, any addition to original equipment costs money. Number two, it adds bulk. Number three, it adds weight. And the question must be asked, "Is the weight, space and money worth it?"

So, should you buy a Monitair Combustion Monitor? Is it a proper mixture of dollars and sense?

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Perhaps we should change the markings on the dial from degrees Fahrenheit to "subtract 2°/mile from cruise" and "subtract 5°/mile from reserve for engine overhaul." If we did this, you'd know it was worth it.

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around in a bowl of soup. So, meekly, a Center frequency was requested. When called, Center came back with a lecture to the effect that if we'd just gone ahead and taken off with that clearance they gave, they would have vectored us along our requested flight path as soon as radar contact was established. It wasn't possible to know that in advance, though, but we finally made friends and they issued the clearance originally requested.

This was one of those days. From 9,000 the ground was visible right below the airplane, and there was blue sky straight up. No clouds, just impenetrable goo everywhere but straight up and straight down. That's the hardest kind of instrument flying there is. You can see, sort of, but you really can't see enough to keep the airplane going straight. And, you feel obligated to look for other aircraft rather than stay continuously on the gauges. Part of the autopilot seemed palsied so the airplane was hand flown most of the way. Also, there was some water or something in a fuel line and when tanks were switched at one point an engine sputtered and belched for a moment like it wasn't going to run on that tank. It was one of those flights that seemed longer than it was. It ter-

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of palms. Once back, a correction toward the needle was made, and after about 5 minutes things were working very smoothly — altitude nailed right down, heading in good shape, and he seemed relaxed.

What had happened to him right at first happens to everyone in one degree or another. All outside visual reference is gone and it seems imperative to do something — which in this case was a slight movement of the wheel to the left. Not realizing he had unconsciously moved the wheel, George didn't really expect anything on the instrument panel to change. It did, though, and when it did he wasn't in the groove and the instrument panel still had a foreign look, with everything in the wrong place — lots of stress. One friendly instrument was finally found, though, and from there he branched out to the rest and in a few minutes had an instrument scan going which would take good care of things, and he had settled down and realized that this really was going to work. It's possible with a lot of practice and a lot of recent experience, to turn one's mind to instrument flying almost instantly, but for new or occasional instrument pilots it takes effort, and a realization that it is going to take effort.

Approach

Later, when Boston Center cleared us for an approach too high and too close to the localizer, it was decided control had better switch. We had been watching George fly, and when first having at it in person things were pretty sloppy and

the heading wandered off about 20 degrees.

Whether it's another pilot or an autopilot helping with the flying, the man who is going to shoot the approach needs to have the bird in hand for at least 15 minutes before starting down. Mainly to establish the fact that he is going to do a smooth job of flying the airplane and keeping those needles where they belong, and to let any stress dissipate before getting to the exacting part of the flight. (The girl who copied this piece put "exciting" instead of "exacting" in the previous sentence, which is just what this is all trying to avoid.)

After Take-Off?

A question which comes up is how about right after the first take-off where you have the airplane cold turkey and go blasting into clouds. First, the navigational problems right after take-off aren't quite as demanding as in an approach to minimums. Second, the pilot isn't likely, or at least shouldn't be, as

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tired; and third, some of the sloppiest instrument flying done is probably that right after entering the clouds for the first time in a while. The stress is likely to be high until the pilot has flown in the clouds for a few minutes.

Good Flight

Another flight, if you will. This one was in Trenton Aviation's Super Skymaster. It has originally been planned in a Skylane, but there was no glideslope aboard, and the destination was forecast 200 & 1/2 at arrival.

This one was a good flight because the clearance came through as requested, it was over a fairly familiar route, and coming after the other flight, as it did, it was flown with plenty of recent experience. It was almost disappointing that the weather at destination was 400 broken and 2 upon arrival, and clear a few minutes later. Disappointing because for some reason everything had gone so well, and we were loaded for bear to keep those needles crossed until the approach lights showed through the mist as the altimeter read 200' above the ground. It's helpful for a flight to go well occasionally, so you can go back and think about it, and try to make all future flights come out

the same way. It was a good flight simply because we were relaxed, which made everything go smoothly.

Another Pilot's Experience

Not too long ago another pilot related an incident which bears a good lesson about stress and instrument flying. This fellow was terminating a long day's flying just after dark. It was raining, and there was some turbulence. An omni approach was being shot, and the first one was missed even though the weather was above minimums. So was the second one. At this point the pilot realized that his flying was getting worse instead of better, and that he better do something different. So, he went to an airport which had radar service and they gave him a radar approach. This was good. On the omni approach there was more than he could handle at the moment. By removing one thing—the chasing of the omni needle—he was able to remove enough stress to get the job done. The good thing is that he was able to recognize his problem and develop a solution.

What Might Help?

What are some things a pilot can do to promote confidence and relaxation during instrument flight, and to avoid getting in a dither?

If a person needs to develop confidence in light airplane IFR in general, a good way to start is to go with an accomplished instrument pilot on an actual IFR flight and just observe. It's better not to try

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to do any of the flying or clearance copying on a first confidence building flight. Just watch. If the pilot being watched is a good one everything will work smoothly, no pressure will build on him, and when it's over with IFR flying will look like a simpler proposition. After an observer flight or two it might help to switch sides and fly the flight with the accomplished pilot helping a little and then slowly move into it all.

Once on your own, it becomes simply a matter of avoiding situations that apply a great deal of pressure. A pet peeve here is overplanning. It's just as bad as underplanning. Some people like to make out elaborate flight logs, with times and legs and speeds. This is only an exercise in mathematics, though, and if a pilot thinks he has to have his detailed flight log and then gets a clearance along a different route, he's got troubles. It seems better to stay flexible, to study the possible routes, to ask what routing will be likely, and to have a lot of paper to write on. That way the Tower will seldom be saying V276 when the pilot is thinking V143.

Self-confidence is a hard thing to develop in just the right measure, but it's one of the most important things in instrument flying. Until a pilot can stroll to his bird for an IFR without misgivings, he's not really ready. An instrument flight does tend to be as easy, or as difficult, as the pilot decides it is going to be before takeoff.



new angle

CHAPTER ONE

"At this very moment, thousands of men, trying to learn to fly, are wasting tens of thousands of air hours simply because they don't really understand how an airplane flies; because they don't see the one fact that explains just about every single thing they are doing; because they lack the one key that with one click unlocks most of the secrets of the art of flying.

"In the textbooks, this thing is discussed under the name Angle of Attack. The story of the Angle of Attack is in a way the theory of flight: If you had only two hours in which to explain the airplane to a student pilot, this is what you would have to explain. It is almost literally all there is to flight. It explains all about the climb, the glide, and level flight; much about the turn; practically all about the ordinary stall, the power stall, the spin. It takes the puzzlement out of such maneuvers as the nose-high power approach; it is the story of the high power approach; it is the story of the landing. No maneuver can be fully understood unless you understand this one thing. You may then still not be able to fly well; but you will understand flying . . . and you will get by."

You have just read a condensation of the first two paragraphs of "Stick and Rudder" by Wolfgang Langewiesche (McGraw-Hill). It's worth while to re-read the entire chapter occasionally. Then put a Monitor Angle of Attack Indicator on your panel to read all the time. It's worthwhile, too.

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onds during which I could and probably should have made the decision to go around. I was instead busy dumping flaps for it was apparent we were moving faster than the bouncing airspeed needle would seem to indicate. By the time it became obvious that we had rather more speed and less runway than is comfortable, we were at midfield. It was here that I swallowed my pride and gave first thought to going around. This was now patently too late, for immediately beyond the river at the runway end a formidable bluff rises steeply to the north. It vaguely occurred to me that if I tried now to regain flying speed on the rapidly vanishing runway we might well do the complete job. A compromise was clearly indicated, so in the few remaining seconds, I managed to turn off the master switch and fuel cut-off. With traction in short supply (or so it seems no doubt in all overshoot accidents) we slid slowly off the end of the runway over a low stone step. This sheared the nose wheel and

probably saved us a swim in the river as well. Aircraft parked immediately adjacent to the end of the runway made any thought of a ground-loop seem much too expensive.

While my passengers were congratulating one another on being alive and uninjured I was quietly dying of embarrassment. If it were not for the obvious empathy of the many pilots who quickly gathered after our noisy arrival I could have vanished on the spot. A cursory examination revealed that though the damage to the plane was not extensive, we would need one blade of the propeller straightened and a new nose wheel assembly before it might be flown home again.

What Next?

Within minutes our host Don Fernando was on the spot and had outlined in detail what now would be required by Mexican protocol. Also within minutes we had an unsolicited invitation by a truly charitable group of flying engineers from the Garrett Air Research Company in Los Angeles to ride with them as far as Calexico in their three Cherokees, two days later. By adding weight in the form of several husky Mexicanos to the tail of the 210 we were able to push it to a suitable parking area. There were a few anxious moments while it sat up-ended and vulnerable when several aircraft landed uncomfortably close.

To say that the weekend was in no way sullied by our misfortune would not be quite true. On the

then he has flown to Serenidad with the Commandante, assessed the damage and returned with the damaged propeller. I understand that the Mayor then sealed the plane. As the matter now stands the propeller has been fixed. When a new nose wheel assembly arrives from the Cessna people it will be flown down with another pilot and a mechanic, the plane made flyable and retrieved. In the meantime I have filed an accident report with the District Office of the FAA in Phoenix, a requirement even for accidents outside the continental United States.

As I recapitulate our little adventure I can see that it could have been much worse. My timing was bad but had we been a little faster we would have made the river and perhaps much more damage. There is also the spectre of an attempted "go around" with too little time or space. The same mishap deep in Mexico without adequate insurance would certainly mean financial disaster. The Mexican officials were most cooperative all along the line. Finally, the willingness of those wonderful engineers from Los Angeles to go out of their way to help us will never be forgotten.

During the past two years I have worked hard to earn an instrument rating and to keep it current. Now I am wondering if perhaps a bit of the basic art of flying has been sacrificed on the altar of procedure worship. At any rate, my first project when our plane comes home will be to go out and practice those short field landings and takeoffs.

*Back Home*

After bidding our friends farewell at the airport in Calexico we departed for Tucson by rental car. My first act the next morning was a call to our insurance agent. I am, he assured me, completely covered even when flying in Mexico. Shortly a call from the claims adjuster in San Diego brought more peace of mind. It seems that having taken several planes out of the area in recent months he is thoroughly familiar with Sr. Pacheco and the protocol. By sending him, duly notarized, an authorization to take possession of the plane and a detailed description of the accident he would be able to relieve me of the need to return to Mexico. Since

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