The Right Seat

An Introduction to Flying for Pilot's Companions and Would-be Pilots

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INTRODUCTION

Karen's new boyfriend Walt is an experienced pilot. Karen wants to be a good companion and share Walt's enthusiasm for flying, but the truth is she's terrified of it. Every time the newspapers report an accident to a small plane, Karen's fear gets worse. Curiously enough, newspaper accounts of automobile accidents don't affect her at all, even though she has friends and acquaintances who have been injured in automobiles. Her fear of flying seems to be irrational, and it is beginning to come between her and Walt.

John has always wanted to fly. Down at our local airport he often hangs around, angling for an invitation to go up. Not long ago I took him along on a business flight to a nearby city. As we were cruising along, I let him take the controls and fly the airplane. I couldn't help enjoying the thrill he was getting as he guided the airplane through the skies. Together we watched the hills and fields and towns slip by beneath us. John loves flying but he's not sure yet if he wants to go for his private pilot's license. Some day maybe he will. Meanwhile, he enjoys learning a little more about aviation every time he flies as a pilot's companion.

Margaret's friend Susan just earned her pilot's license. Susan's ambition is to fly for the airlines some day. Both women are college students, and the cost of learning to fly is out of the question for Margaret right now. Nevertheless, she would like to learn as much as she can, to be able to help Susan when they fly together. Also, she would like to be able to join in discussions about flying with Susan and her pilot friends.

Barbara is a busy career woman. Her husband Don owns an airplane for their joint consulting business, and he flies a great deal. Barbara goes along, when she has the time, but she is tense and uncomfortable all the way. "Suppose Don had a heart attack," she thinks, "what would happen to us? I guess we would crash and both of us would be killed." Barbara was surprised to learn that with a little knowledge and practical preparation she would be able to handle the airplane, that she could not only save her own life but also have a good chance of getting Don down to earth and to emergency medical care quickly, should her nightmare ever come true. In fact—as she found out—this has happened successfully on several occasions.

I wrote this book for Karen, John, Margaret, Barbara—and you. My purpose is to teach you enough about small airplanes so that you can:

- be more at ease as a passenger;
- understand more about what is happening at every phase of a flight;
- be of real assistance to the pilot in various ways;
- be able to share the joy of flying more fully with a friend who is a pilot;
- know enough to converse intelligently with pilots;
- be capable of managing the airplane and landing it safely, should the pilot become incapacitated.
- make a better informed decision about whether or not to take flying lessons yourself.

The book is called *The Right Seat* because it is a time-honored tradition in aviation that the pilot sits in the left seat, while a passenger sits on the right. The Wright brothers' machine was flown by a single person lying prone in a central position on the airframe. Early two-seater airplanes had both seats in line, usually with the passenger in front, the pilot in the rear. The first side-by-side seating was introduced in the United States, where automobiles were driven from the left seat, so it was natural to adopt the same convention.

Actually, nearly all aircraft can be flown equally well from either seat, since they have a complete set of dual controls. It is true that the principal flight instruments are usually centered in front of the pilot on the left side of the instrument panel, but these instruments are often duplicated on the right; and anyway, they can always be seen from the right seat. I am going to assume you occupy the right seat when you go flying, and I am going to write as though you have never actually handled an airplane before. If, in fact, you have already assisted a pilot friend in one way or another, you will be able to progress all the faster in becoming a competent pilot's companion, and maybe eventually becoming a pilot yourself.

Chapter 1 will acquaint you with a variety of general aviation aircraft. "General aviation" means all kinds of flying except for air line companies and the military. We shall examine some similarities between different airplanes, and some differences. The main point of the chapter is to familiarize you with the working parts of the airplane, and with its instruments, and to give you a good basic understanding of how it flies.

Chapter 2 will explain how pilots know where they are and where they are going. It will teach you how to use an aeronautical chart and how to use radio navigation.

Chapter 3 is about using the radiotelephone (called a communications or "COM" radio) to talk to controllers and others on the ground and to receive useful information and instructions from them.

Chapter 4 presents a menu of possible ways to be helpful to a pilot as you ride along in the right seat. As the captain is in command on a ship, so is the pilot in absolute command in an airplane. But if the pilot is willing, there are many useful things you can do, such as handling the communications, keeping watch outside for traffic (other airplanes), plotting and following the course on a map, getting weather information by radiotelephone, even flying the airplane while the pilot takes a break.

Chapter 5 explains, in detail, how to handle an airplane and bring it to a safe and speedy landing if the pilot should become disabled.

This has actually been done successfully on several occasions by non-pilots with help from the ground by radiotelephone, and even without any preparation at all. With some forethought and preparation it becomes a relatively simple procedure. My hope is that the chapter will inspire you to seek actual "pinch-hitter" instruction from a qualified flight instructor. This specialized instruction is focused on just what you need to do to bring an aircraft down to a safe landing. Four or five hours is all it takes, and being prepared is like an insurance policy; it is well worthwhile even though one hopes it will never be put to use.

At the end of every chapter is a problem set, to let you try out your knowledge. And the Appendix contains answers and discussion for all the problem sets.

You may be surprised at my use of "they", "their", and "them" as singular pronouns. All aspects of aviation are of interest to men and women alike, and all the opportunities for professional as well as amateur flying are equally available to both sexes. Most authors who write "he", "his, and "him" have a mental image of a man, and the reader gets the same impression. To say that "he" really means "he or she" doesn't solve the problem of the subtle sexist influence of all-male personal pronouns. But I find "he or she" clumsy, especially when repeated again and again. The solution, which I have adopted throughout this book, is in every dictionary—even the venerable Oxford English Dictionary: "They" and "their" and "them" can be used for the singular, meaning "he or she", "his or her", "him or her", when the sex is unspecified. And although it sounds odd at first, one soon gets used to it. After all, the same thing happened long ago with "thou", "thy", and "thee"; "you", which had been permissible only as a plural form, came into use in the singular, and now we think nothing of it.

Alice Schwartz, Claire Greene, and Ann Elsbach were kind enough to read drafts of the manuscript and to make numerous thoughtful comments. I am grateful to them. The book is much improved as a result of their labors, but of course they bear no responsibility for errors or murky passages that may remain.

LANDING THE AIRPLANE

Now comes the hard part. Your aim will be to fly the airplane onto a runway in such a manner that it touches down in a level or slightly nose-high attitude, not nose-first. You will have been brought to a very large airport (ideally a military one) with an extremely long (a couple of miles) and extremely wide (150-300 feet) runway. An ambulance will be waiting for you, and fire engines will follow you down the runway as you land. All you need to do is set the airplane down somewhere on that vast stretch of asphalt or concrete.

I will describe, step by step, how you should land the airplane, but there is no substitute for a few hours of actual instruction. And a few hours is all it should take to make you competent enough. The basic idea is implicit in the descriptions in Chapter 1 about how to fly the airplane. You will be descending toward the airport at reduced power and an airspeed not too different from what you had been cruising at. This is because you initiated the descent by a simple power reduction without retrimming, and the trim setting determines the airspeed (approximately). But some time before you land, it will be necessary to reduce the airspeed. The slower you can land, the safer, provided the airplane keeps flying until the moment it touches the runway. Here the airspeed indicator is the critical instrument. The aim is to keep the needle well above (say 15 k above) the bottom of the green arc. For most small general aviation aircraft, 70 k would be a good landing speed; heavier and more complex aircraft (including all twins) need more speed, usually landing at 80-100 k.

While descending, you can slow down quite easily by trimming for a more nose-up condition. If you have forgotten how the trim sets the airspeed, refer again to Chapter 1. Suppose you had been cruising at 120 k and now you're descending at 130 k. By trimming more nose-up you can easily reduce the airspeed to 80 k (for example). When you do this, you will find that you are no longer descending so fast, so you will want to make a small power reduction to resume the descent. Your aim is to arrive on final approach to the runway with the airplane trimmed for about the speed at which you expect to touch down. Thus, for small airplanes, 70 k on final approach is about right.

The question whether or not you should turn off the autopilot for your descent and landing is a tricky one. It depends on how familiar you are with the autopilot in your airplane. If you know how to use it, it can be a godsend, because it relieves you of so much work, all the way to touchdown. If you are unfamiliar with it, there could be more problems than it is worth. Here are a few points you should learn about.

The simplest autopilot function is to keep the wings level, and there are some autopilots that do only that, nothing else. Find out how to use your autopilot as a simple wing leveler. Then find out how to make a gentle turn by means of some kind of knob on the autopilot or by temporarily killing the autopilot while you make the turn manually.

Next you need to know how to carry out climbs and descents while the autopilot keeps the wings level. The important thing here is to know how to disconnect any altitude-hold function. As noted already, you wouldn't want to reduce the power while the autopilot held the altitude constant, or the airspeed could fall off to dangerously slow.

If you have practiced these few simple tricks with the autopilot, it can enhance the safety of your descent and landing by ensuring that the wings remain level at all times except when you make small changes of heading. The greatest danger a novice faces in taking over from the pilot is that in the ensuing panic and confusion the airplane will be allowed to enter a steep bank and the dive that is bound to follow. This is what the autopilot protects against. So if you have learned how to use the autopilot effectively, I would recommend keeping it working all the way to your landing. This is contrary to the advice of FAA and the airplane manufacturers, but we are dealing here with a very special situation.

To be able to use the autopilot for landing, you will have to learn one more thing. If your autopilot exerts no control over pitch (nose-up or nose-down attitude), you will simply manage that manually with yoke and pitch trim. However, if the autopilot does control pitch, you have to learn where the little knob or lever is that will raise or lower the nose. Practice that at a safe altitude, because then

you will be able to use it at the very last stage of the touchdown. Remember, always, that autopilots are made so that they can be overriden with a little force if necessary. But if it comes to that, you may as well just switch the thing off entirely.

If your airplane has retractable gear, do not forget to lower the gear after these speed reductions have been made. The controller will remind you about the gear, but you may as well do it yourself and take no chances. The gear lever is always clearly marked, but sometimes it can't be moved until some little catch is moved aside, or the lever may have to be pulled out toward you before it can be moved down. Whatever the system is, you will know you have lowered the gear by the green lights that come on—the gear-down lights.

Pilots are taught to use flaps when they land, but I am convinced that a novice like yourself—especially if you have never landed an airplane—should not under any circumstances use flaps for landing. Flaps place the aircraft in a more nose-down attitude for landing. However, when first deployed they may actually make the nose go up, so that the pilot has to trim down to counteract this. The nose-down attitude obtained with full flaps is good for seeing the runway over the nose, but it also makes the actual landing much trickier. Since with flaps the airplane descends more nose-first than without them, an operation called "flaring" has to be carried out at the last minute; flaring means raising the nose slightly just before touchdown. Doing this right is probably the hardest thing in flying, and student pilots go through a lot of bad landings before they learn the feel of it. So, although you will land a little faster without flaps, you will be much closer to the almost-level (slightly nose-up) attitude you need when you touch the runway.

I have spoken glibly about your being on the final approach course to the runway. How will you get there? Don't worry about that, the ATC controller will put you there by a series of easy-to-follow instructions. If possible, they will bring you, by means of radar, to an airport where there are facilities for what is called a PAR, which stands for "Precision Approach Radar". Every military field (and some civilian airports) have this capability—the military call it GCA, "Ground Controlled Approach". When you have established

communications with a controller, verify that they do, indeed, plan to bring you to such a facility, and if they have other plans, explain how important a PAR is to you in view of your never having landed an airplane before.

In the PAR/GCA procedure, the radar gives the controller three-dimensional information. It shows not only how well you are lined up on the approach course that leads to the runway, but also whether you are above or below the correct glide path as you descend. There will be a continuous stream of instructions and encouragement, all you have to do is comply. For example:

> "Three eight Romeo start a left turn, now stop the turn . . . that's good . . . now you're a little high . . . that's better, you're coming down to the glide slope now . . . start a right turn, stop the turn, good now, you're doing fine . . . a little low now . . . that's better . . ."

And so on down to the runway.

If the controller says you're a little high, reduce the power very slightly by pulling back the throttle or power quadrant just a few millimeters. You are trimmed for a good airspeed (around 70 k), so don't pull or push the yoke, just use the yoke to start and stop the gentle turns commanded by the controller. If the controller says you're a little low, bring in more power. For obvious reasons, you should worry more about being too low than about being too high.

If you are not being guided by PAR/GCA, you will probably have the help of a VASI, a Visual Approach Slope Indicator. The VASI consists of two pairs of light beams on either side of the runway threshold, so situated that when you are on the glide path, the nearest lights are white and the farthest ones are red. If you get too low, the nearest one will change from white to pink and then to red, so then both pairs of lights will be red. Red means "danger, too low", so add power and get back on the glide path. If you are too high, the farthest lights will change from red to pink to white, so then all the lights will be white. In that case reduce power slightly. The VASI makes it almost as easy as PAR/GCA to come down smoothly to the runway threshold by making very tiny adjustments to the throttle setting.