



Highlights and Margin Notes in  
Wolfgang Langewieshe's

***Stick and Rudder: An Explanation of the Art of Flying***  
**Chapter 5 Notes**

Perhaps my notes and observations will inspire you to buy your own copy and learn from this classic...or to take the copy you already own off the shelf and revisit its great lessons, just as I am doing again now.

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Continuing my notes on Wolfgang Langewieshe's essential classic, ***Stick and Rudder***.

**Part II: SOME AIR SENSE**

**Chapter 5: "The Law of the Roller Coast"**

Page No.	Highlighted Text (Langewiesche's words)	My margin notes
78	What it means to <i>fly</i> : you go up in the air and lose your connection with the solid ground.	
	Most beginners think that it is literally the pilot who does the "flying," that he keeps the airplane up by some mysterious knack, a sort of balancing trick. And they think that the moment the pilot stops "flying" the airplane, or makes a mistake in his "flying", the airplane will fall down. Actually the airplane largely flies itself.	Flying (especially instrument flying) is the process of continually correcting for what you just did.
	The most important thing to know about the controls is the less you use them...the better the airplane will fly.	Trim, stability and control
	Flying: 90 per cent of doing nothing at all!	
	You will be more relaxed as you learn.	
79	The beginning students...sometimes can't see the obvious things just because they are obvious.	
80	What the airplane "wants" to do with the engine throttled back—that is, what it will do if you take your hand entirely off the stick...is to glide very steep and fast—in fact to dive....	A stable airplane will seek its trimmed airspeed, or more correctly, angle of attack.
	In an airplane, "slow" and "fast", "high" and "low", "up" and "down", "lift" and "drop" are tied up with each other in a peculiar fashion.	Energy management
	Speed and height are two forms of the same thing...forms of energy.	
81	(with the engine throttled back) you can't get speed without sacrificing altitude, nor can you maintain speed without paying out altitude.	
	Once you are stalled, there is only one way to regain speed and lift: point your nose down and dive the airplane.	
	The pilot is extremely careful not to slow the airplane up too much unless he has enough air space under him for recovery from a stall—plus a big margin of safety.	
	If altitude is money in the bank, speed is money in the pocket. Just as altitude can be converted into speed, so can speed be converted into altitude....don't go broke.	
81-82	<i>Low and slow</i> is the pilot's idea of dangerous flying. <i>Low and fast</i> is fairly safe. <i>High and fast is the safest.</i>	
	The only way in which you can quickly get ride of excessive speed in an airplane is by converting it into "lift" or altitude.	

	Landing can take place only if the ship is flying at a very slow speed—stalling, or nearly so.	
	Speed will keep the airplane floating.	
83	In lieu of brakes, many airplanes have flaps. Once the flaps are down, and airplane has very much more drag than with the flaps up, and hence it can be glided much more steeply without picking up speed.	
	A heavily flapped airplane loses its speed very fast.	
	The first effect of putting [flaps] on is a temporary increase in lift.	
84	The first effect of “spilling” them, that is, retracting them, is to cause a temporary loss of lift.	Flaps increase camber, wing area, and therefore lift; as a result they increase drag, especially at full deflection.
	All that has been discussed for power-off flight is essentially true also for flight with power on.	
	With power on you can maintain your height without killing your speed, and you can maintain speed without sacrificing height. But that is just about the only thing the engine can do...engines are puny.	
	[the engine] can exert just enough additional pull to pull the airplane up a gentle grade, but only slowly, gradually.	Actual climb angles are extremely shallow.
85	If you should ever be almost stalled and want new speed in a hurry, your throttle won't give it to you fast enough. The only thing that will give it to you fast enough is to nose down.	First rule of stall recovery: reduce angle of attack.
	Taking off from a small field...the inexperienced pilot has a strong tendency to point the nose up steeply and simply hope that the airplane will climb out. The experienced pilot will therefore point his nose up only as high as absolutely necessary to clear obstructions.	Vx climbout, and avoiding AoA so great the drag causes the airplane to mush.
86	A zoom may take most of the ship's excess speed away from it. The inexperienced pilot in this situation will hang on, with the stick well back, and wait for his engine to gradually give him new speed. The experienced pilot will not try to “stall” along in this fashion.	
	What the experienced pilot does, therefore, is to nose down a bit, once he is past the trees, and get back to a reasonable speed by sacrificing a little of his height....	If using excess speed to “zoom” over an obstacle during takeoff.

I'll add chapter highlights and notes until we reach the end of the book. If you're impatient—and I hope you are—you won't wait for my musings, but instead will secure your own copy of *Stick and Rudder* now. Beyond simply reading its words, you'll truly analyze, criticize, mark up and understand Langewiesche's teachings to, as Adler suggests, **make this book your own**.

I look forward to your comments on these notes and the larger work. Please send your thoughts to me at [mastery.flight.training@cox.net](mailto:mastery.flight.training@cox.net). Thank you.



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