



Highlights and Margin Notes in
Wolfgang Langewieshe's

Stick and Rudder: An Explanation of the Art of Flying
Chapter 20 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 VII: Some More Air Sense

Chapter 20: "Thin Air"

Page No.	Highlighted Text (Langewiesche's words)	My margin notes
366	For cruising, altitude makes any airplane more efficient	True airspeed
367	Improved efficiency...a slight sacrifice in speed, in form of range and endurance and thus in actual traveling speed	
369	There is a rule of navigation that, when flying in a headwind, you should fly fast. If the head wind is strong, you should fly fast at almost any sacrifice of fuel economy.	(2020) Headwind = rich of peak
	With no wind or a tail wind, the opposite is true; it pays doubly to fly high, Endurance increases with altitude	
369-370	The airplane must be flown efficiently during the descent. The temptation is always to leave the throttle set, retrim the stabilizer, and dive slightly, converting altitude into soul-satisfying speed and stiffness of controls. But speed beyond a certain point is always wasteful in an airplane.	Don't dive into a descent
370	For best miles per gallon, the descent should be made with the indicator showing at most 5 mph more than the speed of normal glide; the engine should be throttled back accordingly.	
371	The most efficient altitude...two-thirds the airplane's service ceiling. Add 5 mph or so; that is the Speed of Best Distance, power on—the flight condition in which your airplane will make the most miles per gallon.	
372	True air speed...2 percent to your indicator reading for every thousand feet of altitude.	
376	Slightly nose-high flight, "mushing", is an abomination. Actually it is the most efficient way for an airplane to fly!...least waste of energy.	At least of endurance is your goal. But airplanes are built for speed. Maximum endurance is only more efficient if the flight is longer than can be flown nonstop at a higher speed but can be flown nonstop at Carson's speed.
379	[at higher altitudes] actual air speed is faster	True airspeed
	If the air flows heavily enough into the pitot tube of your air-speed indicator to push the needle to the usual place, then it also flows heavily enough against your wings to give you the usual amount of lift.	Fly the same indicated airspeed regardless of density altitude.
380	Your landing run at the average Western airport [is] about one-third longer than at a sea-level airport.... Any attempt to use any special technique will here again only mess you up.	

382	Often the choice is between taking off uphill up-wind and taking off downhill down-wind. It can be an extremely difficult choice. A take-off uphill may not get you off, but it has the advantage that it is easy to stop should you find you can't get off; the wind, the brakes, and the slope will all help you.... A downhill take-off is, of course, much easier; but, should it fail to materialize, it will be hard to stop without nosing over; the wind, the brakes, and the slope will all help...nose you over. Since the uphill up-wind run can be tried without serious risk, it may be worth trying first.	Not the conventional wisdom.
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Secure your own copy of *Stick and Rudder* and make your own notes and observations. Beyond simply reading its words, 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. Thank you.



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