

Supplemental Notes for use with *Stick and Rudder*

Wolfgang Langewiesche's *Stick and Rudder* (ISBN 0-07-036240-8) is the classic introduction to flying. Even though it was published in 1944, it still stands today as the most straightforward introduction to flight.

The notes below cover the relevant changes in aviation that have occurred since the publication of the book.

Terminology

Langewiesche uses the older term *flippers* for what is now universally called *elevators*. He does this for a reason he explains later in the book, but be aware that this is not a term one will find in use today. Just mentally substitute the word elevator wherever you read flippers.

Langewiesche refers to a single aircraft as a *ship*. This shows aviation's connections to the nautical world. One will still find this term in use in aviation, although its use is waning.

There are a few other items that stem from the time the book was written. One is the references to Army aviation — at that point the Air Force was still part of the Army. Another is the use of masculine references throughout the book. At the time the book was written, the rules for standard English were that masculine pronouns included both males and females. (Women were well established as pilots as early as the 1910s.)

Airplane Design

Basic airplane design hasn't changed since the book's publication as much as one might expect. However, there are a few changes to keep in mind:

As is apparent even in the title of the book, Langewiesche writes for a airplane controlled by a *stick*. Most training aircraft now use a control wheel (commonly called *the yoke*) instead of a stick. This changes nothing about how the airplane is flown. Moving the stick left and right is exactly equivalent to turning the yoke left and right. Moving the stick forward and aft is exactly equivalent to pushing the yoke forward and aft.

The *tricycle landing gear* arrangement is nearly universal in aircraft types developed from the 1950s on. This arrangement is much more logical and easy to operate than the *conventional gear* (also known as tailwheel or taildragger) arrangement. Therefore, the discussions that refer to ground loops and the chapter on landings need to be read knowing that tricycle gear airplanes are handled differently and respond differently on the ground. Flight is unaffected.

One change in airplanes that has *not* occurred is the “safety plane” that Langewiesche anticipates throughout the book. After several decades of experiments, those ideas never were adopted by mainstream airplane manufacturers (or buyers).

However, improvements in the design of the airplanes has lead to a great reduction in susceptibility to spins in non-aerobatic aircraft. In fact, it is quite difficult to spin most modern light aircraft and most will recover immediately upon the pilot’s relaxation of the pro-spin control inputs. More about this below.

Changes in Training

Pilot training has changed greatly since the publication of *Stick and Rudder*. Much of the change was the adoption of Langewiesche’s ideas and recommendations by flight instructors. One of the objectives of his book was to change instruction, so there are some passages that point out failures of instruction at the time. Modern good instruction has implemented these suggestions.

One area that Langewiesche places considerable emphasis on is inadvertent spins. At the time, spins were poorly understood, and the leading cause of accidents. This is no longer the case. Aircraft are now harder to spin, and instruction has improved in this area. Today, inadvertent spin accidents still occur occasionally, but not nearly as often as in the 1940s. In fact, most accidents today are not caused by lack of pilot skill in some situation, but caused by poor judgment by the pilot (lack of self-discipline). Examples are: low altitude stunts, flying when impaired (sleepy, sick, etc.), and just flat not paying attention. The number one situation causing accidents today is continued flight into weather for which the pilot isn’t qualified.

Another note about the stall and spin discussions in the book: The angles in illustrations are exaggerated. Some of the stall diagrams look like the airplane would be pitched up by 80 degrees! In reality, it’s 10 to 20 degrees. The drawings exaggerate the angles because they are more easily seen and understood that way.

One last change worth noting is that the *1-2-3* system (also called the *needle, ball, airspeed* system) of instrument flying was replaced by the the Duckworth *attitude instrument flying* system about at the same time as *Stick and Rudder* was published.

Enjoy!

After having reviewed many aviation books, I believe that Langewiesche’s classic is still the best presentation of the basics of *Stick and Rudder* flying. I hope you enjoy reading this book!