

# Soaring ON INSTRUMENTS

by Robert Stanley

THE CONCLUSION OF AN ARTICLE BEGUN  
LAST MONTH

Master straight flight first. With the turn indicator and ball centered, any aircraft will fly straight ahead. If cruising speed is maintained, the plane will remain on an even keel. This is the simplest of all flight maneuvers, yet the one which must be mastered before going much further. The one infallible means of escaping from a cloud in which continued flight would be dangerous or undesirable depends upon your ability to keep that turn indicator and ball centered despite any contradictory information your senses may tell you. *NEVER assume you are going straight unless the turn indicator is centered.* Regardless of personal sensations, *never assume you are turning opposite to that direction which the turn indicator indicates.*

The greatest asset one can have is complete relaxation. Forget you are in an aircraft. Think of the controls as mere mechanical means whereby one can cause the instruments to do one's bidding. Never think of yourself as doing a turn; think rather in terms of pointer deflection. Erase from your mind all concept of controlling the aircraft—merely strive to control the instrument panel. It will do the rest. Be as detached as possible.

*Never gaze at one instrument.* It is too complex a game for that. Let your glance rove from airspeed to turn indicator, to ball, to variometer, etc. Soon you can respond simultaneously to two or three instruments without consciously looking at any one of them. Your field of vision can grasp a whole panel at a glance once you have subdued the beginner's habit of gazing fixedly at one dial at a time.

For blind soaring, speed control is the greatest problem, a problem upon whose mastery depends one's success in riding a cloud to its top. Never jerk the stick. In applying aileron, do not simultaneously apply elevator, or vice versa. Divorce the two controls and apply them in distinct separate movements. Ease on elevator corrections promptly as required, but make it a smooth, easy pressure, free from jerk. The instant speed begins to build up, or slow down, apply a correction. As soon as the airspeed hand has stopped its motion, your nose will be on the horizon. You have applied a correction to achieve this, so remember to remove part, or all, of the correction, otherwise the hand will reverse, and lead to a galloping sort of motion in which the speed alternately varies in a series of dives and zooms. Consider the airspeed meter as a giant flywheel, that once in motion, will continue beyond the point at which we wish it to stop unless we anticipate and check it a bit prematurely. Above all, *be relaxed.* Anxiety, fear, or any form of tenseness causes us to subconsciously pull back on the stick, resulting in stalls and real difficulties. Guard against pulling back on the stick. Let the plane do 90% of the flying—merely a touch when it tries wilfully to escape.

Speed control in turbulent air is principally a proposi-

tion of indolence. Don't over work yourself. If a bump boosts your speed, relax; another will drop it back to normal in another second or so. If it persists, correct for it, but don't overwork yourself. Gusts roll and yaw a plane violently, but seldom make any real effect upon its longitudinal attitude.

Starting with gentle turns, after a few hours practice, one should progress on to steep turns. Shallow turns and steep turns are similar, save for amount of practice required. Going into a turn, lead slightly with the rudder. (Right rudder gives right deflection of the turn pointer, right aileron rolls the ball to the right, and back stick decreases speed.) Leading with the rudder skids the ball slightly on the high side. Never let the ball remain on the low side, the same side as the pointer.

When the desired rate of turn has been reached, apply slight reverse aileron and keep the pointer stationary at the desired position with the rudder pedals. Do not let it drift. Since the inner wing is moving more slowly than the outer, slight reverse aileron invariably accompanies all turns. In recovering from a turn, keep ball on high side by reverse aileron pressure, and ease on slight reverse rudder until turn indicator is centered. Then relax aileron, letting ball drop down to center. Keep pointer in middle with rudder. Keep ball in center with aileron. Never control ball with rudder. Disregard all vertigo sensations in turn recoveries; they will falsely tell you that you have started a turn in the opposite direction, but if you believe your instruments, the feeling will quickly be supplanted by some other sensation, probably equally confusing, and equally to be disregarded.

Mastering simple turns, go on to steep turns. As turns become steeper, speed would tend to build up. Ease the stick back enough to keep the speed on the cruising figure. Considerable reverse aileron will be needed to hold up inner wing. Keep ball still on high side. If your speed builds up unusually high, glance at the pointer. Chances are you will find that you have drifted off into too steep a turn. If so, roll it out to the desired figure, and the speed will decrease to normal. *AT ANY TIME THAT THINGS GET OUT OF HAND, RETURN THE TURN INDICATOR TO CENTER, AND KEEP IT THERE!* Your turn indicator will never lie unless it has stopped, in which case it will stolidly remain centered. Never will it falsely indicate a turn. Hence, if your turn indicator says you're turning, rest assured you actually are turning.

Few persons have ever crashed from blind spins. A spin is too easily recognized, and easily recovered. All difficulties in flying blind eventually end up in a tight, diving spiral, speed mounting, pilot pushed violently into his seat due to centrifugal force, stick all the way back, and airspeed still increasing, with the turn pointer fully deflected. Just as in the barber chair, the pilot does not sense his turn, permits it to become too steep, is bewildered as speed mounts up with apparent disregard of back stick, and finally in panic, disregards the turn indicator,