- Division of attention between the flightpath, ground objects, and the handling of the aircraft.
- Timing of the start of a turn so that the turn is fully established at a definite point over the ground.
- Timing of the recovery from a turn so that a definite ground track is maintained.
- Establishing a ground track and determining the appropriate "crab" angle.

As for other ground track maneuvers, one of the objectives is to develop division of attention between the flightpath and ground references while controlling the aircraft and watching for other aircraft in the vicinity. Another objective is to develop recognition of drift toward or away from a line parallel to the intended ground track. This is helpful in recognizing drift toward or away from an airport runway during the various legs of the airport traffic pattern.

For this maneuver, a square or rectangular field (bound on four sides by section lines or roads that are approximately one-half mile in length) should be selected away from other air traffic. The aircraft should be flown parallel to and at a uniform distance just to the outside of the field boundaries, not quite above the boundaries so that the flightpath may be easily observed from either seat by looking out the side of the aircraft. The closer the track of the aircraft is to the field boundaries, the steeper the bank necessary at the turning points. The distance of the ground track from the edges of the field should be the same regardless of whether the course is flown to the left or right. Turns should be started when the aircraft is abeam the corner of the field boundaries, and the bank normally should not exceed 45°. These should be the determining factors in establishing the distance from the boundaries for performing the maneuver.

Although the rectangular course may be entered from any direction, this discussion assumes entry on a downwind. On the downwind leg, the wind is a tailwind and results in increased groundspeed. Consequently, the turn onto the next leg is entered with a fairly fast rate of roll-in with relatively steep bank. As the turn progresses, the bank angle is reduced gradually because the tailwind component is diminishing, resulting in a decreasing groundspeed.

During and after the turn onto this leg (the equivalent of the base leg in a traffic pattern), the wind tends to drift the aircraft away from the field boundary. To compensate for the drift, the amount of turn is more than 90°.

The rollout from this turn must be such that as the wings become level, the aircraft is turned slightly toward the field and into the wind to correct for drift. The aircraft should again be the same distance from the field boundary and at the same altitude as on other legs. The base leg should be continued until the upwind leg boundary is being approached. Once more, the pilot should anticipate drift and turning radius. Since drift correction was held on the base leg, it is necessary to turn less than 90° to align the aircraft parallel to the upwind leg boundary. This turn should be started with a medium bank angle with a gradual reduction to a shallow bank as the turn progresses. The rollout should be timed to assure paralleling the boundary of the field as the wings become level. *[Figure 9-5]*

While the aircraft is on the upwind leg, the next field boundary should be observed as it is being approached to plan the turn onto the crosswind leg. Since the wind is a headwind on this leg, it reduces the aircraft's groundspeed and tries to drift the aircraft toward the field during the turn onto the crosswind leg. For this reason, the roll-in to the turn must be slow and the bank relatively shallow to counteract this effect. As the turn progresses, the headwind component decreases, allowing the groundspeed to increase. Consequently, the bank angle and rate of turn are increased gradually to assure that upon completion of the turn, the crosswind ground track continues the same distance from the edge of the field. Completion of the turn with the wings level should be accomplished at a point aligned with the upwind corner of the field.

As the wings are rolled level, the proper drift correction is established with the aircraft turned into the wind with a change in heading of less than 90°. If the turn has been made properly, the field boundary will again be the same distance as it was in the previous legs. While on the crosswind leg, the wind correction angle should be adjusted as necessary to maintain a uniform distance from the field boundary.

As the next field boundary is being approached, the pilot should plan the turn onto the downwind leg. Since a wind correction angle is being held into the wind and away from the field while on the crosswind leg, this next turn requires a turn of more than 90°. Since the crosswind becomes a tailwind, causing the groundspeed to increase during this turn, the bank initially should be medium and progressively increased as the turn proceeds. To complete the turn, the rollout must be timed so that the wings become level at a point aligned with the crosswind corner of the field just as the longitudinal axis of the aircraft again becomes parallel to the field boundary. The distance from the field boundary should be the same as from the other sides of the field.

Usually, drift should not be encountered on the upwind or the downwind leg, but it may be difficult to find a situation where the wind is blowing exactly parallel to the field boundaries. This would make it necessary to use a slight wind correction