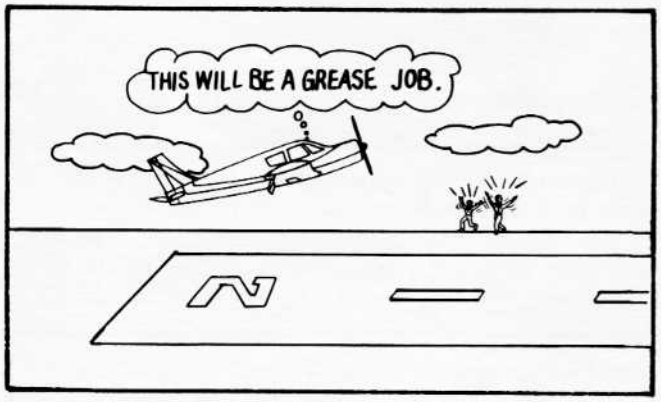
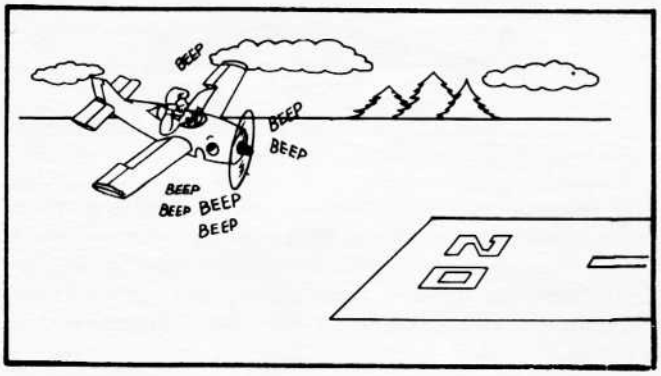
ON LANDINGS
Part III

GEAR-UP LANDINGS

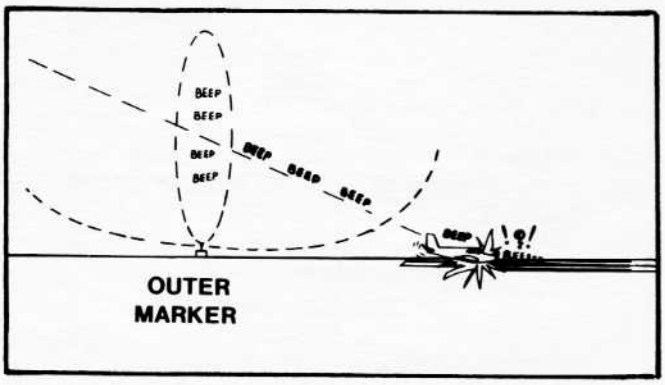
There are all sorts of stories about gear-up landings.



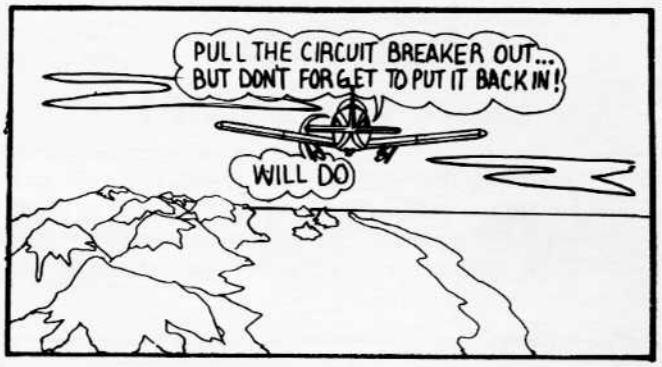
Horns, buzzers and bells were invented to warn of gear-up approaches. But pilots sometimes ignored these horns, mistook them for stall warnings, or got so distracted they continued to forget the gear until that "sinking feeling" struck them.



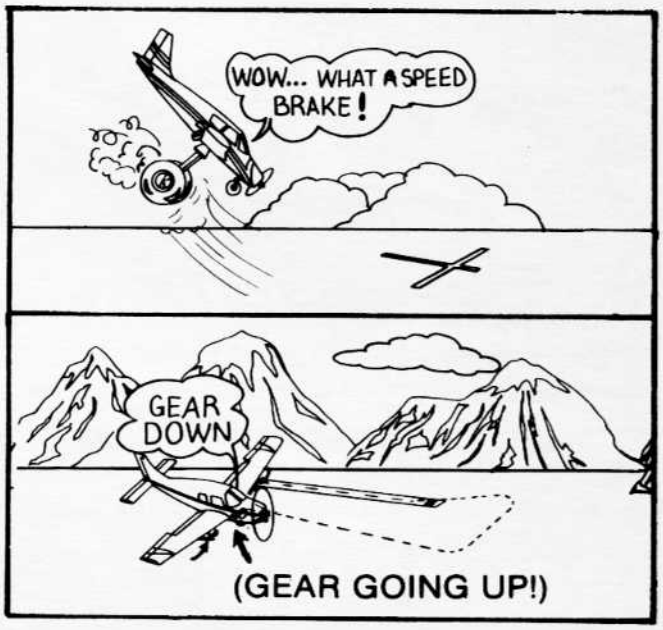
Other pilots thought that they heard the outer marker horn blaring all the way down to a gear-less touchdown!



Of course, there's always the Circuit Breaker Club. Circuit Breaker Club members pull the warning horn breakers out on training flights and then forget to put them back in.



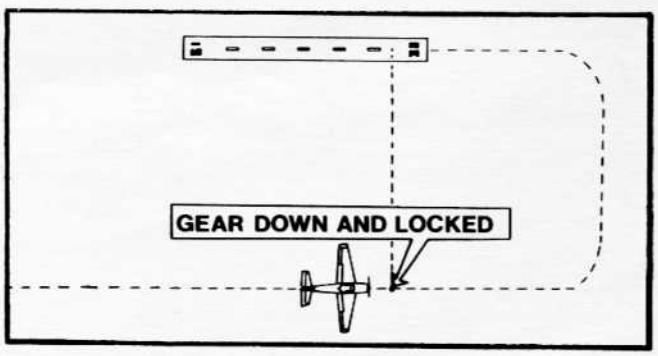
Other pilots cleverly used the landing gear as speed brakes during descent, then manipulated the handle again in the pattern—only to raise the gear by mistake.



The *only* way to prevent these and other landing gear mishaps is to establish a set routine and stick to it.

Always put the gear down at a standardized point in the pattern.

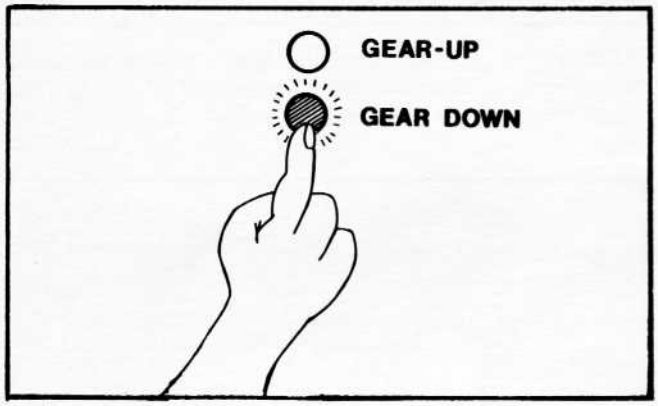
For instance, have the gear down and checked before you're on downwind, or, in any event, by the time you're abeam the "numbers."



Always use your before-landing checklist and a GUMP check (Gas-Undercarriage-Mixture-Prop).

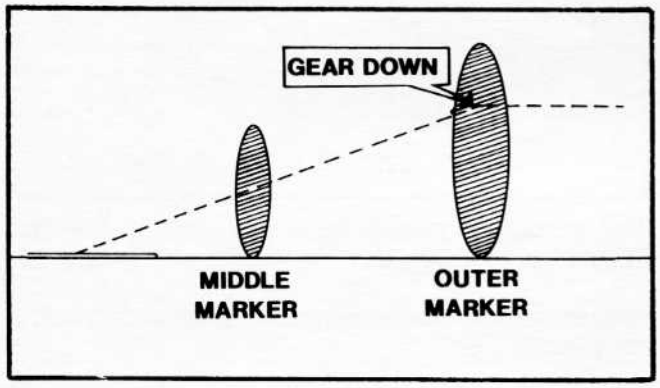
Gas
Undercarriage
Mixture
Prop (OR PUMP)

When lowering the gear, always check the gear indicator for "down and locked." Make it a habit to physically touch the gear indicators and say out loud "gear down", or "down and locked," or "three in the green."

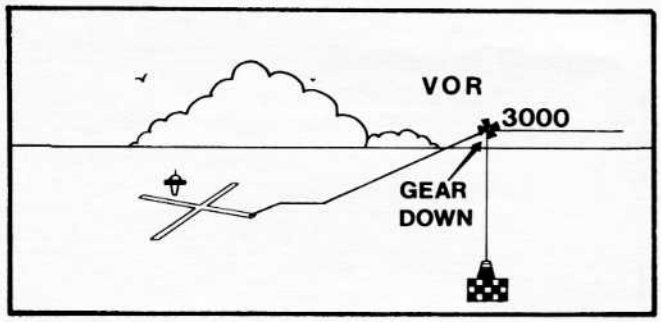


How to handle the gear while IFR?

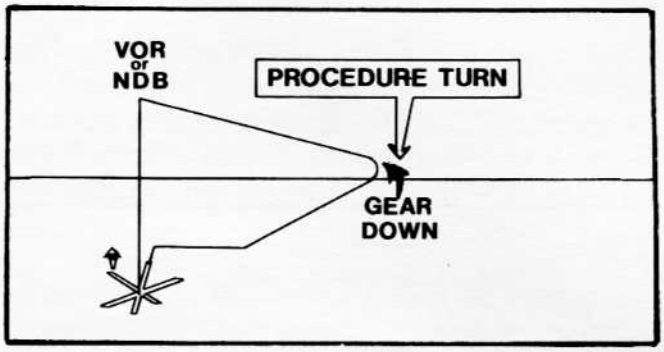
On an ILS approach, a suggested procedure is to extend the gear when the glide slope is intercepted.



For localizer and VOR approaches, the gear should be extended when passing the final approach fix (FAF) inbound.

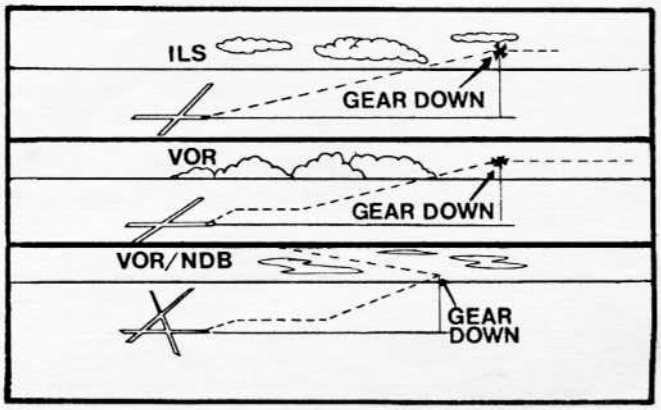


With no final approach fix, extend the gear when you roll out of the procedure turn and start your final descent.

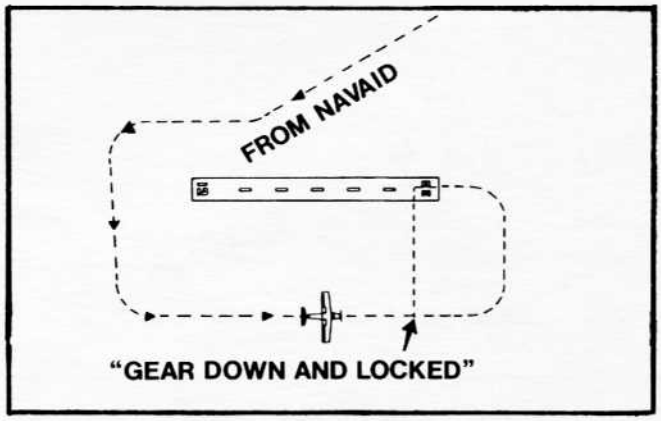


What about circling approaches? Here there are two schools of thought:

One says to put the gear down as you would while flying a normal IFR approach.

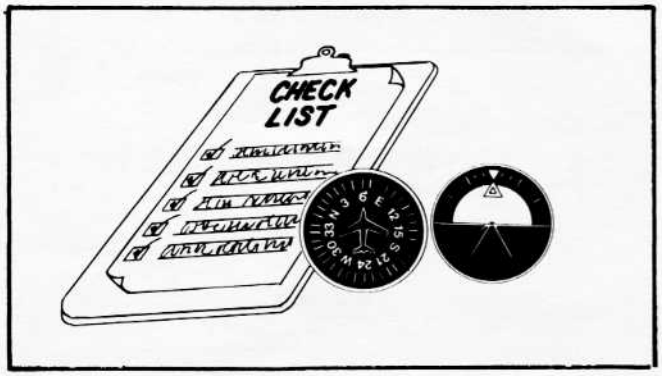


The second "school" suggests extending the gear on downwind, abeam the runway, if the runway is in sight. The advantage of this second technique is that if you lose the runway, a go-around is easier without the gear already being down. The disadvantage is that it's non-standard from your straight-in habit pattern and may cause a distraction when you are trying to keep the runway in sight. You may forget the gear. That's why a last gear check on short final is strongly advisable.



You've really got to establish your own gear procedures—and stick to them.

So, use your check list on every landing. Put the gear down at a standardized point every time, and always recheck for "three green" on short final.



WHAT ABOUT LANDING GEAR EMERGENCIES?

Always have your checklist and POH handy for ready access to emergency procedures.

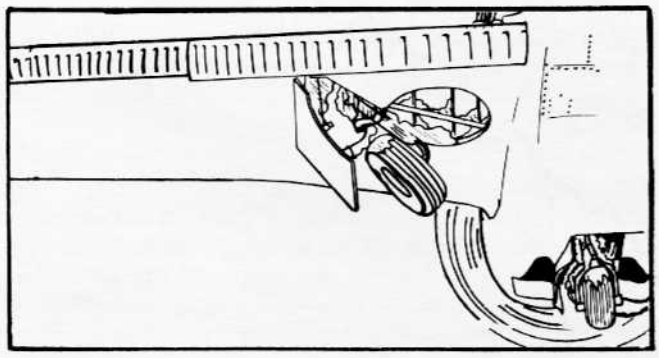
Other tips? One so basic as to be seldom mentioned is an adequate fuel reserve. Don't stretch it, even in good weather. An unforeseen gear problem at the end of a long cross-country, with little fuel left, is *stressful.* Leave a cushion of time to work any last minute problem with the landing gear.

If you have a gear problem, climb out of the pattern, then review your emergency gear extension checklist before doing *anything.* If necessary, also refer to the POH for a description of the landing gear system. If in doubt, don't hesitate to ask for assistance by radio from an FBO with expertise in your aircraft.

As a general principle, here's the drill for emergency gear extension. Slow the aircraft, then place the gear handle or switch in the "down" position. This is the first step in just about every procedure. Some pilots flying aircraft equipped with only a "one shot" emergency gear extension system have wasted their one and only chance for a gear extension because they forgot the first simple step of putting the gear handle down.

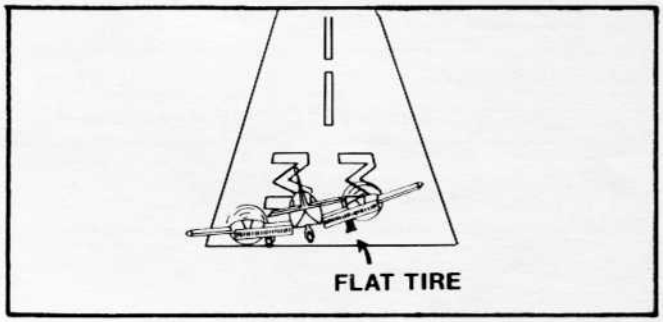
If all else fails, you may have to resort to *special* flying techniques. One technique is to slow fly the airplane or pull an extra "G" or two by a sharp pull-up to help gravity pull the gear down. Whatever you do, don't outfly your ability or exceed the limits of the airplane.

If you think you'll be flying in freezing conditions, or takeoff from a snow or slush-covered runway, cycle the gear on departure before you climb into freezing air. Otherwise, the gear may be "frozen" in the up position when you reach your destination.

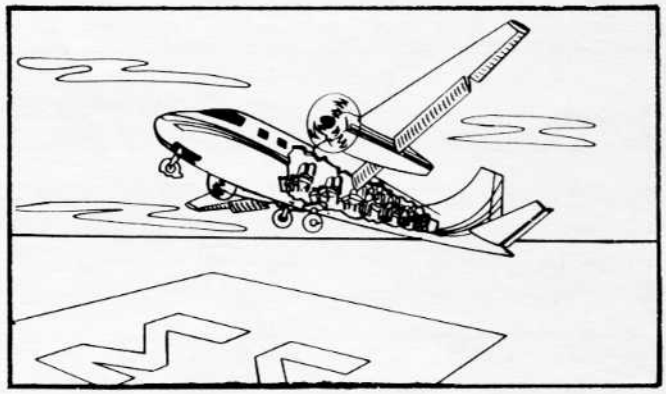


ANOTHER GEAR EMERGENCY: THE FLAT TIRE

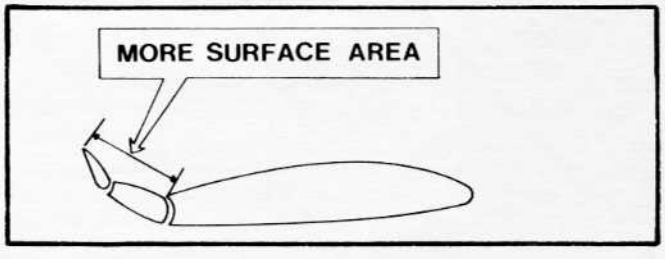
It does happen occasionally. Some POHs deal with the problem, advising you to burn fuel out of the tank on the same side as the flat. Other procedures call for full flaps, control deflections, and some braking designed to keep the weight on the good tire.



If a nosewheel is flat or the nose gear won't extend, you may want to carefully shift weight aft (within limits, of course) to help hold the nose *off* the runway until the aircraft slows. Passengers can move to rear seats if these seats are empty!

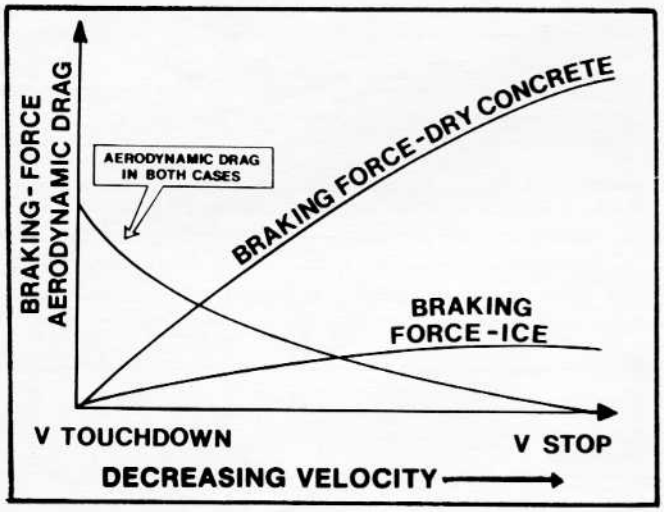


Full *down* trim can make the "up" elevator more effective on some airplanes.

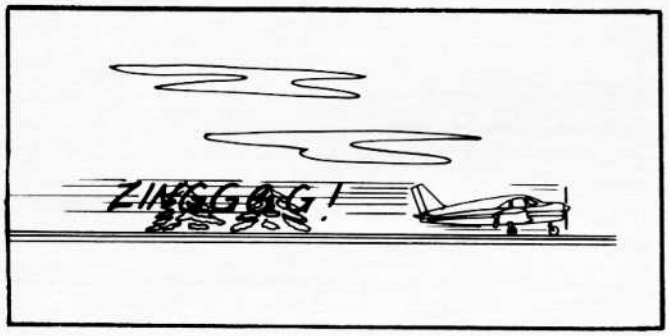


LANDING ON WET, ICY OR SNOW-COVERED RUNWAYS

Where runway friction is low or nil, aerodynamic braking becomes much more important. Use aerodynamic drag to your advantage on landing—especially when the runway is wet or icy. Simply hold the nosewheel "off" until it settles on its own.

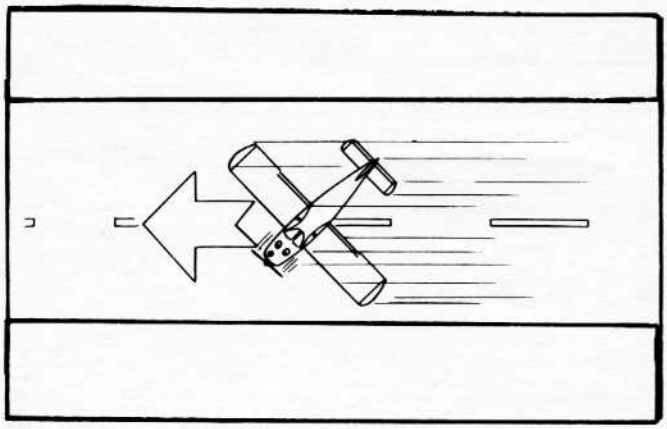


But braking isn't the only problem.

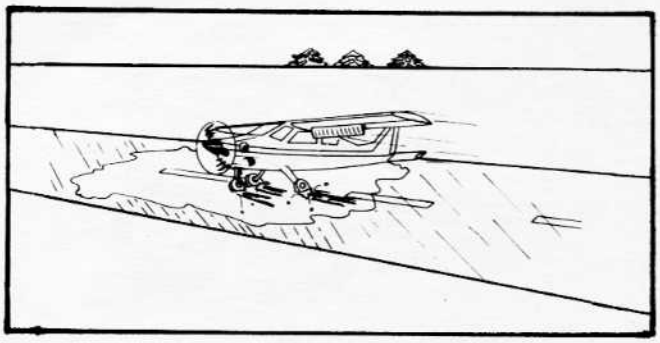


Skidding is another real hazard on a wet or icy runway.

Improper braking is the villain because locked brakes stop the wheels from rolling and braking effectiveness drops to nothing (not to mention steering effectiveness).



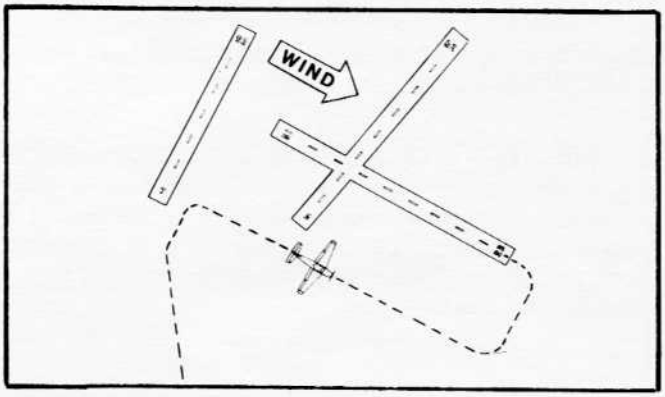
Skidding sideways is a fast ticket to blown tires or collapsed landing gear.



If you have to confront icy or wet conditions, have as many factors going for you as possible.

Pick a nice, long runway oriented into the wind.

If unavailable, consider diverting elsewhere.



Taxiing on ice is its own headache. If you must taxi, taxi *very* slowly.

In a twin, use differential power. Also, use reversible props, if so equipped.

Another point. A clean, plowed runway with snow banks alongside at the beginning of a sunny day may become a sheet of ice when the melting snow freezes at the end of the day. This is something you might not expect in such pleasant, bright weather.