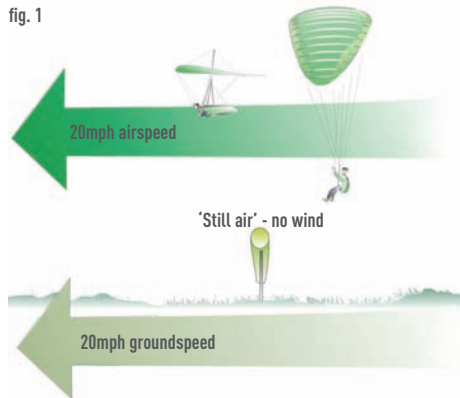
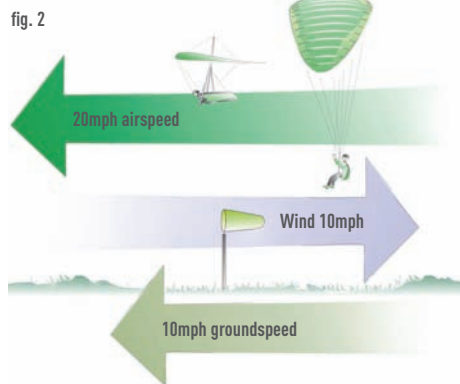


The dynamics of the air we fly in and how it affects us as pilots of hang gliders and paragliders

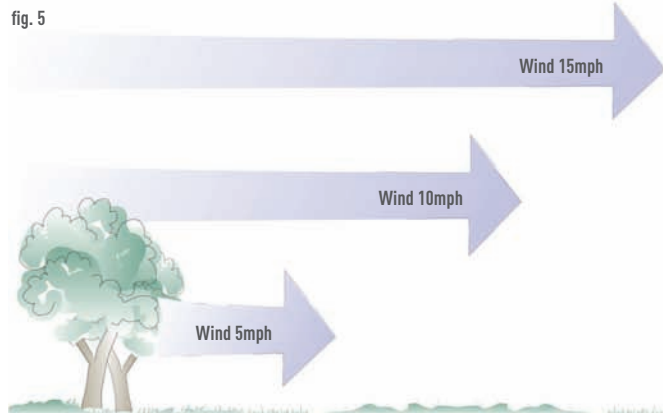
The speed of your glider through the air is its airspeed, which you as the pilot control. If you are flying with an airspeed of 20 mph on a day when there is not a breath of wind then your speed over the ground (your groundspeed) will also be 20mph (fig. 1). More often there will be some wind, and this



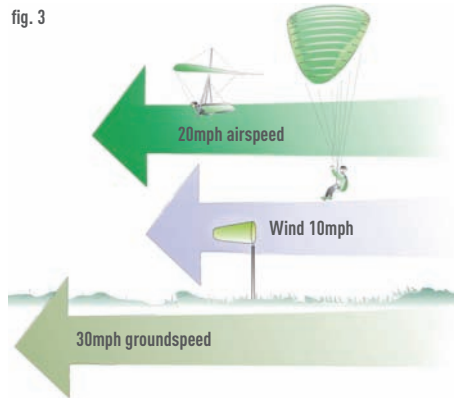
can significantly effect your speed over the ground. Imagine you are again gliding at 20 mph, but you are flying directly into wind, and the windspeed is 10mph. So basically you are flying at 20 mph within an enormous mass of air moving in the opposite direction at 10 mph. In this case your groundspeed will be only 10 mph (fig. 2).



If you now turn to fly downwind, maintaining your safe airspeed of 20 mph, your speed over the ground will be a rapid 30 mph - you are flying at 20 mph within an enormous block of air, at the same time as the block of air is being moved across the ground in the same direction at 10 mph (fig. 3). In this situation there is a danger (especially if you are not very high) that the sight of the ground flashing past underneath may mislead you into thinking that your airspeed is too high. Many pilots have made

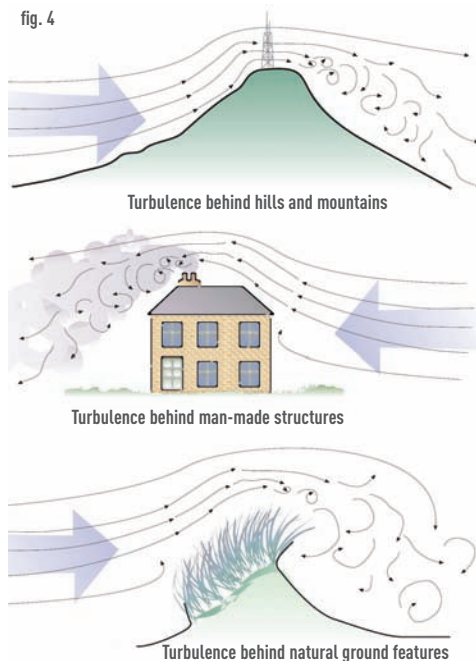


this mistake and slowed their gliders down, and so stalled. You must learn to assess airspeed by the feel of the air on your face, the sound, and most importantly, the feel of the glider - and you must learn not to be misled by groundspeed.



turbulence

Try always to fly your glider in areas clear of turbulence. Disturbances in the smooth flow of air are caused in various ways, some of which are shown below (fig. 4). Turbulence also occurs in and around thermals. You will be learning a lot more about turbulence and wind gradient at your school and for the rest of your career as a pilot.

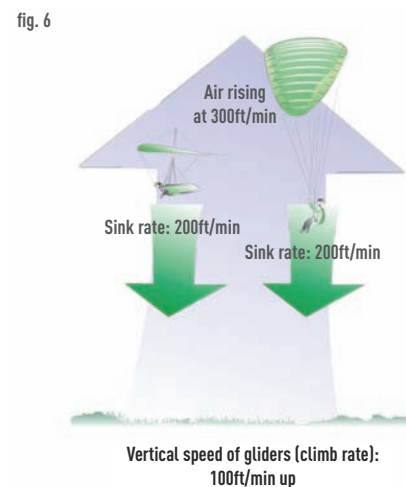


the wind gradient

The air flowing over the surface of the earth is retarded by friction and blows slower the closer it is to the surface. This is known as a wind gradient. You will learn to respect it and to guard against its effects by increasing your airspeed when descending through it to land (fig. 5 - at foot of page).

soaring

A glider soars (gains height) when it is flying in air which is rising faster than the glider itself is descending through it (fig. 6). For example, when the wind blows onto a ridge a glider flown in the band of rising air deflected upward by the ridge face can soar for as long as the wind continues to blow. In summer the warmth of the sun creates thermals which can carry a glider up to a height of several thousand feet if the skilful pilot circles round and round in their confines.



There is another form of soaring which involves exploiting the upgoing portion of invisible ripples in the air which sometimes occur downwind of ridges and mountains in fresh winds. These are termed 'waves', and it is possible to gain considerable height by using this wave lift.

Soaring is the great challenge of all forms of gliding: once acquired your skills at detecting and using invisible rising air currents can keep you aloft for hours at a time, or allow you to venture off cross country, floating silently across the countryside for mile after mile.

