**SUBSONIC FLIGHT**

The propagation of the pressure waves from a stationary object has been discussed above. When an aircraft begins to move through the air at subsonic speeds, (a speed less than pressure wave propagation speed) the waves still travel forward and it is as if a message is sent ahead of the aircraft to warn of its approach. On receipt of this message, the air streams begin to divide to make way for the aircraft but there is very little, if any change in the density of the air as it flows over the aircraft. This warning message can be detected perhaps 100metres in front of the aircraft.

**TRANSONIC FLIGHT**

At subsonic speeds, the study of aerodynamics is simplified by the fact that air passing over a wing experiences only very small changes in pressure and density. The airflow is termed incompressible as, when it passes through a venturi, the pressure changes without the density changing. The transonic flight range encompasses sound wave velocity and consequently is the most difficult realm of flight since some of the air flowing over the aircraft, particularly the wings, is subsonic and some is supersonic. As the aircraft approaches the speed of sound, the pressure waves ahead of it will be travelling at the same speed as the aircraft and are therefore relatively stationary. They accumulate to form a continuous pressure wave and consequently will result in the removal of any advance warning of the approach of the aircraft.

**SUPERSONIC FLIGHT**

Once the aircraft is supersonic, all parts of it are considered to be above the speed of sound and therefore travelling faster than the rate of propagation of the pressure waves. An infinite number of pressure waves are produced and form a cone, the inclination of which will change as the aircraft speed changes.