6 The first law of thermodynamics may be expressed in the form

$$\Delta U = q + w,$$

where U is the internal energy of the system,
ΔU is the increase in internal energy,
q is the thermal energy supplied to the system,
w is the work done on the system.

Complete Fig. 6.1 for each of the processes shown. Write down the symbol '+' for an increase, the symbol '–' to indicate a decrease and the symbol '0' for no change, as appropriate.

	U	*q*	*w*
the compression of an ideal gas at constant temperature			
the heating of a solid with no expansion			
the melting of ice at 0 °C to give water at 0 °C (Note: ice is less dense than water)			

[6]

Fig. 6.1