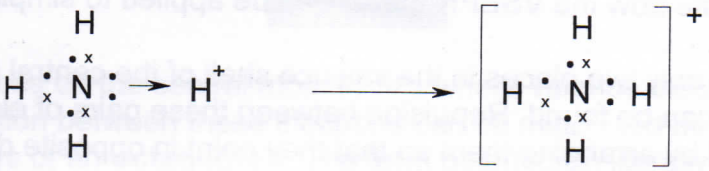
A DATIVE COVALENT BOND

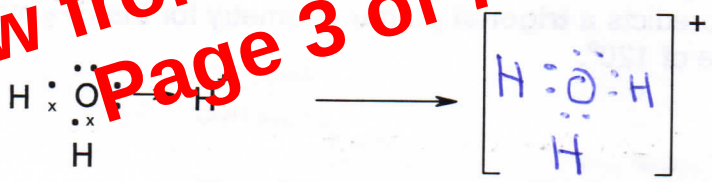
In some substances **both** the bonding electrons are supplied by **one** of the two atoms involved in the bond – in this case the bond is described as being a **dative covalent bond**.

Consider the formation of the ammonium ion from ammonia gas and a hydrogen ion;



The nitrogen atom has a lone pair (non-bonding pair) of electrons. The hydrogen ion (H^+) has no electrons at all. When the ammonium ion is formed both the electrons used to join the ammonia molecule to the hydrogen ion come from the nitrogen atom – a dative covalent bond is formed.

Another example is the hydrogen ion (H^+) forming a dative bond with water to form the hydronium ion (see Units 2 and 3 later).



See equilibrium. pH.

Electrolysing $NH_4^+ Cl^-$

→ Cl gas given off at + terminal

→ Ammonium is attracted to the -ve electrode (as dissolved in water.

Not H – O – H because a lone pair of electrons has a greater repulsion than a bonded pair of electrons.