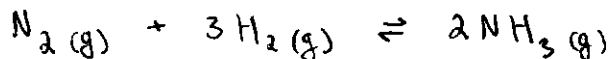


Le chatelier's Principle in Reverse - The Haber Process



$$\Delta H = -$$

Play with pressure

D: shift right

H: less moles of gas

R: $\downarrow P$

S: $\uparrow P$

Play with temperature

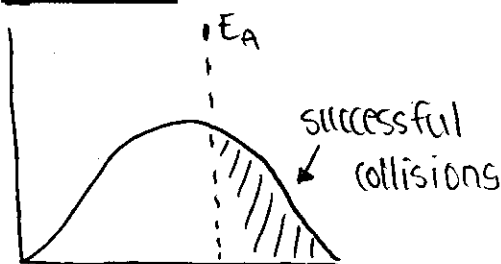
D: shift right

H: exothermic reaction

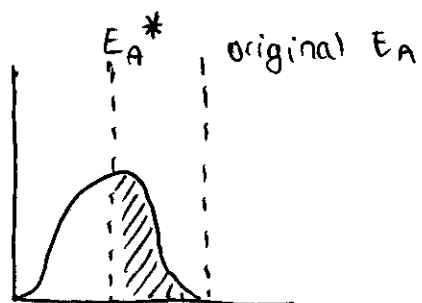
R: $\uparrow Q$

S: $\downarrow Q$

Problem



Haber invented a catalyst to overcome the kinetic problem, lowered temp. and increased pressure, Result \rightarrow more NH_3



* low temp.

* not enough energy to form NH_3