

# CHEMISTRY ADVENT 2018

11

1880

1882

1884

1886

1888



**ELLEN SWALLOW RICHARDS**

1842-1911



**HENRY LOUIS LE CHATELIER**

1850-1936



**SVANTE ARRHENIUS**

1859-1927



The first American woman to obtain a degree in chemistry



In 1884 became an instructor in sanitary chemistry at an MIT lab



Made a map of chloride concentrations in drinking water, leading the first water quality standards in America



Wrote books about cooking and cleaning science in the home



Le Chatelier's principle, published in 1888, can be used to predict the effect on some equilibria when conditions such as temperature are changed



Also carried out extensive research on metallurgy



Almost achieved the synthesis of ammonia from nitrogen and hydrogen in 1901, but abandoned this research after an explosion in his laboratory



Stated that salts dissociate into charged ions when dissolved in water



Defined acids as substances which produce  $H^+$  ions in solution, and bases as those which produce  $OH^-$  ions.



In 1889 stated that activation energy must be met for reactions to happen



Predicted that human-caused  $CO_2$  emissions could cause global warming