

# liquid air

## Schaubberger

(2) "A process for the liquefaction of gases by the Joule-Thomson effect. In this process devised by Carl von Linde (1842-1934) for liquefying **air**, the air is freed of carbon dioxide and water and compressed to 150 atmospheres. The compressed gas is passed through a copper coil to an expansion nozzle within a Dewar flask. The emerging **air** is cooled by the Joule-Thomson effect as it expands and then passes back within a second copper coil that surrounds the first coil. Thus the expanded gas cools the incoming gas in a process that is said to be regenerative. Eventually the **air** is reduced to its critical temperature and, at the pressure of 150 atmospheres (well above its critical pressure), liquefies. The process is used for other gases, especially hydrogen and helium. Hydrogen has first to be cooled below its inversion temperature (see Joule-Thomson effect) using **liquid air**; helium has first to be cooled below its inversion temperature using liquid hydrogen." [Collins Dictionary of Science. Oxford University Press, Great Britain, 1984, ISBN 0-19-211593-6.] — Ed [The Energy Evolution - Harnessing Free Energy from Nature, The Liquefaction of Coal by Means of Cold Flows]