

In November he improved ; respiration became normal, sleeplessness was less troublesome and hallucinations were more infrequent and less persistent. Early in December he grew worse. Cheyne-Stokes respiration reappeared in an aggravated form and persisted for almost a month until he died. Dyspnea was more intense than during the first attack of Cheyne-Stokes respiration and the pauses were longer. His pulse quickened during apnea, and as respiratory movements grew shallower his eyes converged slightly, his lids closed and he seemed to be in deep sleep. If at this time his lids were lifted the pupils were uniformly found to be closely contracted. Conversation with him was slow, for he would cease speaking and apparently become unconscious during the period of apnea. With the first few shallow breaths his lids would open and his eyes would roll slightly as they are apt to do when one is suddenly roused from deep sleep. He would, so soon as respiration was fairly established, resume a conversation without interruption of argument or break in the continuity of events that he might be describing. During apnea the power of speech was lost and mentality seemed suspended. If spoken to when thus apparently dozing he was not conscious of the question. Conversation with him was tedious, for these pauses occurred once in every eighty to ninety seconds, and lasted about twenty-five seconds. The dyspnea was very wearisome to him. He was never cyanotic.

I have described this case as it illustrates Cheyne-Stokes respiration in its mildest form, and in that form in which all the accompanying rhythmic phenomena of pulse, eye and mind are present. In 1818, Cheyne (*Dublin Hosp. Rep.*, 1818, vol. ii.) first called attention to rhythmically ascending and descending periods of respiration, separated from one another by short pauses.

Cheyne-Stokes respiration should be clearly distinguished from irregular breathing accompanied by pauses. In the latter form of respiration pauses occur, followed by several long, gasping breaths which may gradually grow less violent and rapid or irregularly become so and cease with the beginning of another pause. Cheyne-Stokes respiration is characterized by a pause of from ten to forty seconds, followed by from ten to twenty respirations, which grow gradually quicker and deeper until they are dyspneic in character, both because of their violence and rapidity. During the succeeding ten to twenty respirations the movements grow progressively less violent and rapid until they cease and apnea begins. Usually the ascending and descending series of movements number about the same,