

observe in children under five years old, who do not expectorate; but the matter may be caught or noticed if ejected from the stomach by vomiting. In mild cases the temperature is but little higher than normal, and in quite severe attacks does not rise so high as in pneumonia— 102° F. being quite high for bronchitis. This feature of temperature is important in making out the diagnosis between bronchitis and pneumonia, and also some of the exanthemata before those are well developed. The attending fever is remittent, the paroxysms being higher in the evening and early night. The functions of digestion are generally effected, the secretions being suppressed, the appetite impaired and the bowels constipated. The skin is easily kept moist by warmth and diaphoretics. The tongue is moist in the milder cases, with moderate coating of white fur. Thirst is generally well marked. Nausea not often occurs. The secretion of urine is diminished in quantity somewhat, in accordance with the severity of attack, and in a varying degree is colored by the urates. The respiration is, in moderate cases, always more frequent, reaching thirty-five per minute, but varies with the degree of violence and character of the tubes involved, until, in the capillary form, it is attended with alarming anxiety, and is only accomplished with great labor.

This capillary form may come on at once, but generally succeeds the ordinary acute form. Besides the difficulty of respiration, this is recognized by signs of obstructed circulation—the imperfect decarbonization of blood causing darkness and lividity of complexion. In the onset of inflammation of the capillary vessels, we have pyrexia, but a very high temperature is not reached, perhaps 102° F. The rapidity of circulation and respiration is very great. The pulsations are as rapid as 150 a minute, while the respirations are 50 or 60 or 70 or even 100 in the same period. The warmth of surface becomes abated; and, if the condition proves progressive, coldness of the extremities and face with increasing cyanosis, is soon accompanied by a change in the child's manner—restlessness giving way to indifference, and sleeplessness to drowsiness; this running into stupor, with still shorter respirations and more rapid, feeble pulsations, with convulsions to close the scene.

Broncho-pneumonia.—Lobular pneumonia may occur in the course of acute bronchitis, and particularly if it assumes the capillary form—the clusters of collapsed lobules, with their connective tissue, becoming involved in inflammation. The condition is better expressed by the term *broncho-pneumonia*, as it includes a variable condition of bronchitis and vesicular pneumonia. The pneumonic consolidation exists in nodules the size of a pea and larger, scattered about through tracks of air containing tissue, which coalesce to form larger tracks. It will be found to prevail simultaneously in both lungs. It is more likely to be developed

in that kind of capillary bronchitis which attends influenza, measles, whooping-cough, etc.

When inflammation in this way extends to the parenchyma of the lungs, the most prominent symptom, perhaps, is the increase of temperature, as in lobar pneumonia, reaching very soon 104° or 105° F. There is observed also less regularity and remission in the paroxysms of fever. The rapidity of respiration is increased, and becomes as frequent as 100 and more per minute, the action of accessory muscles in respiration being violent, raising up the superior chest, while the diaphragm draws in the lower portion. The action of the *alæ nasi* is conspicuous. The cough becomes more painful.

The secretion from the bronchial tubes is diminished, and, if it can be examined, will be found to be more tenacious and rusty-colored, or containing streaks of blood. The power necessary for inspiration and expiration is comparatively less in the child than in the adult, in consequence of the soft and yielding character of the bony structure of the chest. It follows that in broncho-pneumonia, as in capillary bronchitis with collapse, the muscular strength is sooner exhausted, when mechanical obstacles impede respiration.

Physical signs and diagnosis.—The *anatomical changes* which are of most importance in acute bronchitis, in respect to the physical signs are thickening and swelling of the walls of the bronchial tubes, the liquids contained in these tubes, the quantity of liquid present, and the obstruction afforded to the removal of such liquids.

As a general rule, resonance on percussion is little affected in cases of ordinary degree of extent. Auscultation reveals at first only dry sounds, the sibilant and sonorous râles being heard singly or simultaneously over the chest, according to the extent and portions of the tubes involved, the tenacity and quantity of the liquid adhering to the tubes, and the thickening and diminished calibre of the same. These dry râles cannot be too much relied upon in diagnosis, as they may arise from spasm of the same tubes, as occurs in asthma. When, in a few days, the secretion from the mucous coat is well established, these dry sounds in bronchitis are mixed up or superseded by other râles, which are moist or bubbling. These moist râles also vary, according to the size of the tubes, the density of liquids and amount contained, being coarser in the larger tubes and finer in the smaller bronchial branches. The finest of these moist râles concerned in bronchitis is that called the *subcrepitant*, which has its origin in the smaller ramifications of the tubes before entering the lobules. This subcrepitant râle is the nearest approach to the *crepitant* râle, which takes place in the vesicles themselves, and is caused by the separation of their walls on inspiration.

The moist sounds, like the dry, may fail in differential diagnosis, as they may originate in other liquids than mucus, as from *blood*, serum, etc. The subcrepitant râle indicates the presence