The Nursing of Children's Diseases.

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LECTURE V.

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THE RESPIRATORY SYSTEM.

To keep the air pure at least 3,000 cubic feet of air are required by each adult per hour, and as the air of a room cannot be changed more than three times in an hour without producing a draught, 1,000 cubic feet of space are necessary for each person. The cubic space of a room is found by multiplying the length, breadth, and height in feet together. For example, a room 16 feet long, 10 feet broad, and 10 feet high, $16 \times 10 \times 10 = 1,600$, and this divided by 400 will give the number of persons who may sleep in the room $\frac{1600}{400} = 4$. In rooms lighted by gas allowance must be made for this, for though gas does not give off many organic impurities it consumes a large amount of oxygen. Heated expired air ascends to the top of a room and if there be an outlet will escape, otherwise it stagnates there to a great extent. Fireplaces ventilate the lower part of a room by the rush of warm air up the chimney. One of the easiest and best ways of ventilating a nursery or sick room is by inserting a piece of board some six inches in breadth and the full width of the window, beneath the bottom sash, which is then closed down upon it. Through the air space left between the two sashes the entering air is directed towards the ceiling, and in consequence diffused more equally and without a draught.

Children especially need good ventilation as they give out carbonic acid gas and take in oxygen in greater quantities in proportion to their size than adults do, and therefore they pollute the air very considerably and require better ventilated rooms than adults.

The signs of bad ventilation are, a sense of closeness caused by the organic impurities given off by the lungs, headache and weight in the head, with loss of vigour and languor, if the breathing of bad air is continued owing to the impurity of the circulating blood. Bad ventilation also predisposes to many diseases such as blood poisoning, broncho-pneumonia, anæmia.

Four parts in 10,000 is the normal proportion of carbonic acid gas in air. Six parts in 10,000 is the limit of health and ten parts in 10,000 is dangerous and will be evident to the senses as closeness.

Ventilation is one of the most important points in the nursing of chest diseases or, indeed, of any diseases, and it must be, of course, insisted on that draughts must be excluded. Ventilation does not mean draughts. The air must be kept at an even temperature of between 60 degrees and 65 degrees Fahr. Night air is purer than day air owing to a lessened amount of dust and impurities such as smoke, but it is colder and, therefore, dangerous for patients suffering from bronchitis and other diseases in which a perfectly even temperature is most necessary. Flowers are of use in a sick room during the day, as under the influence of light they take up carbonic acid gas and give out oxygen, but they should be removed at night as then they give off carbonic acid gas and add to the impurity of the air.

The first symptom which may be mentioned as frequently occurring in diseases of the respiratory organs is cough.

Cough is by no means always a symptom of diseases of the bronchi or lungs; for instance, in a paper read by the author at the meeting of the British Medical Association it was shewn that nearly 50 per cent. of cases of cough were due to adenoids, enlarged tonsils and other diseases of the nose and throat, about 25 per cent. to diseases of the lungs or bronchi, while the rest appeared to be due to various reflex causes, chiefly irritation of the gastro intestinal tract, as worms, diarrhœa, vomiting, etc.

Cough is frequently useful in clearing the air passages from irritating or obstructive matters, such as mucus, etc., and in those cases where this is necessary it may be dangerous to stop the cough; for even though young children do not expectorate the phlegm, they cough it up into the throat and then swallow it, so the desired effect of relieving the respiratory passages is accomplished, though the swallowed sputum may irritate the stomach and intestines causing vomiting or diarrhœa. Cough is often relieved by warming and moistening the air by a bronchitis kettle; or by giving a little warm milk to be swallowed slowly, or by cough mixtures or a linctus, this last usually contains some thick fluid as honey, treacle, glycerine etc., with, perhaps, some sedative, and its object is partly, at least, to coat over the irritated part and so prevent the irritation of cold air or

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