

## Lectures on Elementary Physiology in relation to Medical Nursing.

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### LECTURE II.—THE LUNGS.

(Continued from page 268.)

THE chest is a cavity bounded above by muscles and skin, passing from and covering the upper ribs and the collar-bone in front; behind, and at the sides, by the shoulder blades and the ribs, the spaces between each of the latter being filled by the muscles which raise and lower them during the process of breathing, and so enlarge or diminish the size of the chest cavity—a fact which can be appreciated by noticing the manner in which the ribs sink in when a prolonged expiration is made, and how the chest enlarges when a deep breath is taken. Below, the chest is closed and shut off from the cavity of the abdomen by a broad wall of muscle called the diaphragm. Each half of the chest walls is lined by a membrane called the *Pleura*, which joined together in the centre of the chest forms two separate bags and divides the cavity into two halves—right and left. Each cavity or bag contains one of the lungs, and on the left side, in addition, there is the heart with its own bag—the pericardium—the large arteries which pass out from its ventricles and the large veins which enter its auricles. Through the chest a large number of nerves pass, each of which has—as we shall hereafter see—its special function. The right lung is therefore, of course, larger than the left, and is divided into three parts or *Lobes* by a deep groove or division between each, thus providing a larger surface for the air cells of which it is composed. The left lung is divided into two lobes only. The outer surface of each lung is covered by a layer of the pleura, and the arrangement of which, perhaps, may be more easily understood if you will fold a handkerchief in two, place it over your closed fist, and draw the corners tightly together, round your wrist. Then the part of the handkerchief which covers your hand will represent the layer of the pleura which coats the lung, the layer of the handkerchief outside will represent the layer of the pleura which lines the inside of the chest walls. Between the two layers you see there is left a space or closed cavity, and in health this part of the pleura is kept moist by an oily fluid, which enables the two layers to glide easily upon each other as the lung enlarges or contracts in breathing, just as the folds of the handkerchief do when you open and close your hand inside them.

But when inflammation of the pleura takes place, and the disease known as PLEURISY occurs, these two apposed surfaces become over full of blood, or what is called *congested*; the oily secretion is replaced by a thick white fluid called *lymph* or by a thinner watery fluid called *serum*. If lymph only is effused upon the inflamed surface, it tends to glue together, or to form adhesions between, the apposed parts of the pleura—just exactly as any part of the folded handkerchief would stick together if a little gum were placed between its folds. Then, you will understand that, as soon as the lymph appears on the surface, it roughens this, and so the movement of the two layers upon each other instead of being easy and noiseless as in health, becomes difficult, and often painful to the owner, and causes a rubbing or “*friction*” sound which can be easily heard by the ear or stethoscope on the chest over the affected spot. If adhesions form, the lung is of course unable at this particular place to move as easily as it should do, and it may be a long time before the patient ceases to suffer from a certain amount of shortness of breath in consequence of the diminished activity of respiration. If, on the other hand, the effusion of *serum* into the chest is very great, the pleural bag on that side may become quite full of water, and then you will understand that the lung on that side must be compressed, and prevented perhaps from expanding at all. From this description you will realise the reason why patients suffering from pleurisy have fever because of the inflammation of the serous membrane; why they have quickness of breathing corresponding precisely to the amount of difficulty in the expansion of the lung; and why at the commencement of the attack they have pain which they describe as “a stitch in the side,” and which usually is proportional to the extent of surface which is inflamed.

As a general rule, the special Nursing of these patients consists of carefully maintaining their strength by the administration of the prescribed diet and stimulants, of so adjusting their pillows enable the chest more easily to expand. If the as to raise them in bed comfortably, and thus amount of fluid is very great, the operation of tapping or *Paracentesis* may be necessary. This is performed by pushing a trocar through a space between the ribs, and, as a rule, the back of the chest is selected for the insertion of the instrument. Through a tube attached to the trocar, the fluid flows out, and while this is being effected by the doctor, the Nurse should, unless otherwise directed, hold the patient's hands and observe whether he is becoming faint. Especially when the fluid is on the left side, and has, therefore, exerted pressure on the

[previous page](#)

[next page](#)