

have overlooked the fact that the converse of this action takes place in inspiration, and that, with the size of wound which we are now considering, the collapse of the lung during inspiration is not merely the passive result of the elasticity of the latter, but the active result of the exhaustion of the air from it by the expansion of its fellow, with which it is in direct communication. This can readily be seen by means of the apparatus. You will perceive that if the bag is left to itself, at the close of expiration it collapses slowly, but if the handle of the bellows is immediately raised again the collapse is instantaneous.

Thus we see that with this size of the wound the lung remains entirely unaffected by the motion of its own side of the chest, while it has a movement which results from the expansion and contraction of the opposite thoracic cavity, and which is precisely the reverse of its normal action.

We also perceive that the sound lung does not receive its entire supply of air from the external atmosphere, but that a portion of the supply is vitiated air from the other lung. The withdrawal of this amount of air necessitates the entrance of an equal amount through the wound, in addition to the quantity required by the expansion of the wounded side.

But let us now suppose the wound, instead of being sufficiently free to present no obstruction to the passage of air, to be so much reduced in size as not to allow the entrance of quite enough air to keep pace with the expansion of the chest, and the additional demand by the sound lung. The moment this degree of narrowness of the wound is attained, sufficient air will pass through the trachea into the collapsed lung to supply the deficiency. The close of inspiration, therefore, will find the lung not completely collapsed as in the former case, but slightly expanded. At the same time a new element comes into play in the expiratory act. The air contained in the pleural cavity, not finding perfectly free exit through the wound, is compressed against the lung, and offers an obstacle to the ready passage of air into it from the opposite side. The consequence is a less degree of inflation during expiration than would otherwise take place.

The gross result, therefore, of slightly narrowing the wound has been to diminish the play of the lung, the expansion during expiration being

lessened, and the collapse on inspiration rendered less complete.

Hence it is evident that by progressively diminishing the wound, a point would be reached at which the lung would remain motionless, in a state of partial expansion, the various forces operating upon it (including its own elasticity) exactly neutralizing each other.

If now there were intervals of quiescence as in normal respiration, the lung would gradually collapse again by its own elasticity; but in embarrassed respiration these intervals never exist. Inspiration immediately follows expiration, and thus the effect is kept up and the lung not permitted to subside. At the same time, as seen through the wound, the lung has an appearance of moving, which results from the rising and falling of the ribs. This appearance is so deceptive, that I have introduced an instrument and touched the lung before I could be fully satisfied that it was motionless.

The area of the wound corresponding to the condition in question will be found to have a definite relation to one-half the area of the glottis. And here I may remark in parenthesis, that it is curious with what unanimity authors agree in instituting comparisons between the size of a wound in the chest-wall and the entire area of the aperture between the vocal chords, forgetting that this aperture has to supply air to the sound as well as to the disabled lung, and that therefore only half its area should be taken for comparison with a wound of one side of the chest.

*(To be continued.)*

## ADDRESS IN MEDICINE.\*

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*(Continued from Oct. number.)*

At the same meeting Sir J. Lister showed himself to be a strong partisan of Metschnikoff's theory of phagocytosis, and, in the course of his speech, he attributed the usual harmlessness of non-antiseptic silk ligatures to the imbibition of the threads by leucocytes, which then destroy bacteria, and," he added, "how little did the late Conheim think that his discovery of diapedesis of leucocytes in inflamma-

\*Read before the Canadian Med. Association, Sept., 1890.