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U. OGDEN, M.D., *EDITOR.*

R. ZIMMERMAN, M.D., L.R.C.P., London, *171 Church Street Toronto, Corresponding Editor.*

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All communications, remittances and Exchanges must be addressed to the Corresponding Editor, 171 Church St.

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Selections: Medicine.

THE NATURE AND ACTION OF THE CAUSES OF DYSPNŒA IN PNEUMONIA, OTHERWISE THAN HEPATIZATION, AND THEIR SPECIFIC TREATMENT.

BY BEDFORD BROWN, M.D., ALEXANDRIA, VA.

The function of respiration may be affected very differently in individual cases by the same extent of consolidation of pulmonary tissue in pneumonitis.

The consolidation of one-half or three-fourths of one lung may, in one patient, prove the cause of no serious disturbance of respiration, while the same extent in another case would be attended with an extreme degree of dyspnœa. Again, a very limited pneumonitis, which in one person would scarcely elevate the respiratory rate above the healthy standard, may in others cause serious respiratory embarrassment.

These facts, which are familiar to all medical men, would indicate that the symptom of dyspnœa to which we attach so much importance in our prognosis, and as a guide to treatment in pneumonia, does not always correspond in degree with the amount of tissue involved in the process of hepatization, but that other causes are also operative for its production, the nature and action of which are necessary to be clearly comprehended.

The importance of dyspnœa in pneumonia, in these particulars as a symptom, cannot well be over-estimated. No fatal case of pneumonia has ever come under my observation which was not characterized by the most distressing dyspnœa.

Prolonged and close investigation of the subject of dyspnœa, convinces me that it is not a simple result only of mechanical obstruction of a certain set of air cells, but that really the causes of this symptom are rather of a complex character, and are most intimately associated with the disordered functions of both the heart and lungs. As a confirmation of this statement, we know that with a sound heart acting with perfect rhythm, slowly and forcibly in pneumonitis, though very considerable consolidation of lung may exist, there will generally be but slight resulting dyspnœa. On the contrary, if, in pneumonia, the heart acts irregularly, feebly, and with unusual frequency, though the area of hepatization may be moderate in extent, there will almost of a certainty be troublesome dyspnœa.

In health, the respiration rate varies from nineteen to twenty-one per minute, while the pulse rate also varies from sixty to seventy per minute. This is the normal pulse-respiration ratio or equilibrium. There are also *abnormal* pulse respiration ratios. For instance, when the rate of cardiac action rises to one hundred and twenty-five, probably the respiration rate will, of necessity, also rise to forty or more. This is an abnormal pulse-respiration rate. Thus it is just as essential that this equilibrium should be maintained in disease as in health, by the adaptation of the rate of respiration to that of the heart. The latter follows the former invariably in the process of adaptation.

When hepatization has been fully established, the pulmonary circulation is absolutely suspended through the consolidated portion of lung. It is positively cut off from that avenue. Therefore all the blood of the entire system must