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Hyper-Distention of the Pulmonary Alveoli

AS A THERAPEUTIC AGENT IN
CHRONIC DISEASE OF THE RESPIRATORY
MUCOUS MEMBRANE.

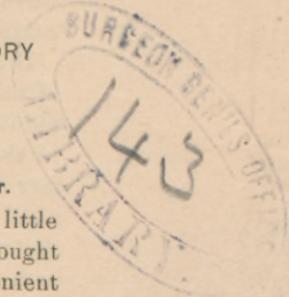
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As mentioned in the last edition of my little treatise on "Inhalation,"* I have long sought for an apparatus applicable to the convenient administration of inspirations of condensed air. All the available apparatus that I have seen are so bulky as to practically confine the treatment to the office of the practitioner, to the great consumption of his time, and to the corresponding expense of the patient; circumstances which necessarily limit resort to this valuable therapeutic agent. The apparatus of Waldenburg, figured and described in the volume referred to, is very satisfactory, and in the cheap form constructed for the clinical room of the laryngoscopic department of Jefferson Medical College Hospital, is not beyond the reach of patients in quite moderate circumstances; but it is by no means a portable instrument. And until a portable instrument is constructed at a moderate cost this method of treatment is not likely to make much progress in America, despite the favor that has been awarded it in Europe.

It was with great pleasure, therefore, that about a year ago I received a letter from my esteemed friend, Dr. W. Y. Gadbury, of Yazoo City, Mississippi, detailing me a plan he had adopted successfully in a number of instances,

* Philadelphia, 1876, page 55.



and requesting me to avail myself of my better facilities for encountering suitable cases, to put his plan to the crucial test from which he was debarred by lack of proximity to a large medical centre.

Dr. Gadbury employs the rubber compressor of the hand-ball atomizer; and his plan is as follows: The patient, having dilated his lungs to their greatest capacity by a forced voluntary inspiration, immediately compresses the nasal passages with one hand, while he places the tube of the compressor between his lips with the other, then closes the lips gently upon it, and rapidly works the compressor. A few squeezes pump an intermittent current of compressed air into the lungs; and as soon as the distention becomes unpleasant, or the need of an expiratory movement is required, the instrument is withdrawn, to be replaced and re-employed in the same manner a few moments subsequently; the operation being repeated four or five times in succession.

I have given this plan a trial during the past year, in my private practice, and in the clinical practice of the hospitals with which I am connected; and am in a position to estimate its value and capabilities. It cannot be safely employed in all the cases in which insufflations of compressed air, as supplied from the apparatus of Waldenburg and others, are applicable; but it has a sufficiently wide range of utility to commend it to professional attention; and in a certain class of cases, to which allusion will be made presently, it is of greater service than the bulky machines adverted to.

In patients liable to hæmoptysis, or other hemorrhages, and in certain cardiac and visceral disorders, the intra-thoracic compression, if left

to the patient, is apt to be too powerfully exercised, and thus to be absolutely detrimental; and it is to the hands of patients that the instrument is to be confided. It is seldom safe to employ compressed air with a pressure exceeding from one-sixtieth to one-thirtieth of an atmosphere, and quite delicate handling of the ball-compressor is requisite to keep within this limit, while the size of the compressor prevents access of air in large volume, or at constant pressure. Thus, for general purposes, this plan, unmodified, cannot supersede the use of more complicated appliances.

There is one use of the Gadbury method, however, to which I desire to call the attention of the profession prominently; and that is its employment as a mechanical expectorant. Time and again I have placed the little compressor in the hands of a patient with bronchioles and air cells clogged with mucus and pus, to see its use immediately followed by copious expectoration, to the great comfort of the patient. The process is repeated until it ceases to be followed by expectoration, and then there is absolute or relative relief from the desire to cough, until re-accumulation indicates a renewal of the procedure at intervals of a couple of hours, or longer, according to circumstances. I have frequently availed myself of this method of clearing the air passages previous to careful physical examinations, when abundance of moist rales were present, and have been better able to estimate the actual conditions of the respiratory organs on auscultation afterward. Hence, in chronic bronchitis, of whatever origin, compressed air can be employed with advantage in this way, to discharge the mucous accumulations from the air passages, and spare them much of the topical irritation to which they are other-

wise subjected. In a few instances I have seen chronic bronchitis relieved by the use of this method, without any medication whatever, and far more rapidly and effectually than follows the administration of medicinal expectorants, which are too often coupled with the disadvantage of interference with the processes of nutrition by their nauseant influence upon the alimentary tract.

The physical action of this mechanical expectorant is simple. The hyper-distention of the air cells permits the access of air under pressure to points beside and beyond the masses of mucus clinging to the walls of the bronchioles and alveoli, and excites effective cough, which removes the partially detached masses. Several of my consumptive patients clear their passages out at bedtime in the manner indicated, and secure a good night's rest, free from disturbance by cough, without the administration of opiates. When they rise to dress, they clear the parts of the accumulation over night, in like manner, and attack their breakfast with relish. Some individuals have little or no occasion to expectorate during the intervals, and can pursue their vocations, relieved of the frequent and recurring plague of an annoying and harassing cough. The therapeutic advantage of an agent capable of doing this much is incontestable; and it is for the purpose of drawing attention to this simple and inexpensive contrivance, and of having its merits tested on an extended scale, that this article has been written.*

*Dr. Cohen presents the above as a preliminary article, to be followed, as leisure permits, with a description of the adaptation of a blow-pipe contrivance for the same and similar purposes, and some remarks on the pathological conditions in which it may be resorted to with prospect of advantage.