Original Articles.

PNEUMONIA AND ITS TREATMENT.¹

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I HAVE selected for a subject to bring before you for discussion to-night, pneumonia, not with the hope or expectation of adding anything new to what has been written, but because a great change has occurred within the last two or three decades, in the views held by a majority of the profession, concerning its pathology, and consequently its treatment. The modern treatment of pneumonia, based upon expectancy, support and stimulation, appears to me to rest upon a tripod. First, the alleged discovery that the disease, instead of being the simple inflammation of the lung, attended by fever, that our fathers supposed it to be, is really a constitutional and as some would have it, an infectious and contagious disease, with a local manifestation in the lung; secondly, the assertion that the human constitution has changed within the last thirty or forty years, and will not bear depletion as it would once, and thirdly, the statement that venesection cannot cut short, or favorably modify the disease. Concerning the first of these propositions, although most of our modern text-books and teachers tell us that pneumonia is a constitutional disease, I have as yet seen only the assertion, without proof or reason being offered, and I am far from being convinced that the statement is correct. As regards the second, although I do not deny that some change may have taken place in our physical being, in the last few decades, still I am satisfied in my own mind that many of our patients might not only bear venesection without injury, but in some cases very greatly to their advantage. As regards the third proposition, I feel convinced, not only by the statements of others, but by my own limited experience, that venesection, properly applied as to time and amount, is capable not only of aborting certain cases of pneumonia and other inflammatory diseases, but that it will in some instances save the life of the patient, when nothing else will. The opponents of venesection are to be found almost wholly among those who have commenced practice in the last twenty, or at the most thirty years, and what proportion of the number, I ask, have ever bled a patient for any reason? What proportion have ever seen a person bled, or have any personal knowledge of the effect produced by venesection. They tell us that they do not bleed for fear of so weakening the patient that he will not be able to stand the exhaustion of the last stage, the stage of purulent infiltration. What proportion of the fifty thousand physicians, more or less, practising in the United States to-day, have ever once given this powerful remedy a trial to ascertain for themselves if it will so weaken the patient; if it will not rather, in many cases, cut short, or so modify the disease that it will never reach the dreaded third stage? Although there are at present many different methods of treating pneumonia, a majority perhaps of the modern school aim to reduce the pulse by veratrum viride or aconite, the heat of the body by large doses of quinine, and to maintain the strength of the patient by the early, continuous, and even copious use of beef tea, milk, brandy or whiskey, and whatever else of the most nourishing food the patient can be induced to take,

and all this is done in the hope that the patient will be able to bear up until all the stages have been gone through.

Says Flint in his "Clinical Medicine," "The taking of solid food should be encouraged and it should be prepared with a view to tempt the appetite; for the question is, what can the patient be induced to eat, rather than what articles of diet are allowable." Now what are the different stages, or in other words, what is this disease? Ziemssen and other foreign authors give the same description that we find in our own text books. The works upon practice for the last fifty years all give the same account of its invasion, progress and termination. First stage, congestion or inflammatory engorgement. But what is inflammatory engorgement? What is the condition of the lungs? Juergensen says: "The lungs in that stage are of a dark-red color, heavy, firm, and retain the depression caused by the pressure of the finger, showing that they contain little, or no air, but fluid; on section, the substance is found to be dense, the result of swelling of the tissue, and infiltration with a bloody serous fluid. Next comes the second stage, hepatization, marked by a very adhesive, viscous, reddish-brown, secreted fluid. This second stage is the one which is very generally present when the physician is first called, marked by a viscous, bloody, and rust-colored expectoration. Juergensen thus describes it: "The lung is now, internally and externally, of a dark, brownish-red color, solid, but easily torn; it no longer crepitates: on being cut, there usually exudes — only on pressure — a brownish-red, opaque, bloody, serous fluid. This condition, known as red hepatization, soon changes into the third stage proper, that of purulent infiltration. The cut surface is now of a straw-yellow color, and from it exudes in large quantity, a very viscid, purulent fluid, of a faint odor. It is the exhaustion of this purulent stage that the physicians who follow what they call the supporting plan, and who oppose venesection, dread.

They believe that the disease must go through its course of three stages, and therefore, instead of attempting to arrest its course, to cut it short, they limit their efforts to feeding, stimulating, watching and waiting; they do nothing to prevent the congestion which of course occupied but a small part of the lung for the first few hours — from being extended to other portions of it, or if they have not seen the case until the inflammatory engorgement has already occupied a great part, or all of the lung, do nothing to arrest its passage into the third stage — a stage from which the patient rarely recovers.

Professor Loomis in Pepper's valuable "System of Medicine" uses the following decided language: "If it is remembered in the treatment of pneumonia that the pneumonic lung no more requires treatment than do the intestinal ulcers in typhoid fever, and that we are to be governed by the patient's general condition, and not by the physical changes in the lung, as indicated by the physical signs, it is evident that all those measures which have been employed for the arrest of a local inflammatory process, have no place in our therapeutics." This *may* be the correct view. It is not for me to attempt to deny a statement made by a physician of Professor Loomis' great knowledge and experience, nevertheless, were I the subject of pneumonia, I should much prefer that measures should be taken to *attempt*, at least, to limit and control the

¹ Read before the Essex South District Medical Soc.ety.

acute inflammation going on in the lung. He continues : "It is for this reason that venesection, which at one time had its stronghold in the treatment of pneumonia has now fallen into disuse. Now the principle upon which this theory is based appears to be that the disease, like small-pox, will run a prescribed course, always the same in point of time, differing only in degrees of mildness or severity, and it is the physician's duty not to attempt to arrest its course, but to keep up the strength so as to enable the patient to bear the suppuration going on in the whole of one lung."

Loomis defines croupous pneumonia as an acute general disease, with a characteristic local pulmonary lesion. "Anatomically considered," he says, "it is an acute inflammation of the vesicular structure of the lungs, resulting in infiltration of the alveoli with inflammatory products, which renders them impervious to air."

Dr. Hiram Corson, of Pennsylvania, from whose articles upon this subject I have freely quoted, says: "I regard pneumonia as simply an inflammation of the lung tissue, and I don't worry myself to distinguish between catarrhal pneumonia and croupous pneumonia, for it makes no difference, so far as treatment is concerned, which it is; and because, too, neither myself nor any one else can tell which it is during that time when treatment is so indispensable."

Juergensen says: "It will be found very difficult and perhaps impossible to draw the distinction between a case of catarrhal and one of croupous pneumonia, if one does not see the case until consolidation is complete." When is consolidation complete? Why, in the first stage. He says of the lungs then, in the first stage: "They are of a dark-red color, heavy, firm, and contain little or no air."

Juergensen thus defines the disease; "Croupous pneumonia, anatomically considered, is an acute inflammation of the alveoli and bronchioles, in which a fibrinous exudation is poured out on the free surface of the mucous membrane and there coagulates." Says Dr. Corson, after a minute description of pneumonia "I am almost ashamed to have taken up so much space with a description of this disease, which, after all, is simply an *inflammation of the substance of the lung*," and I would ask, is there anything in this description or in any other description of pneumonia, which we meet with, to lead one to look upon it as anything more or less than an inflammation of the substance of the lung?

Now, how ought the subject of such an inflammation to be treated? Professor Loomis says: "A summary of the arguments against venesection seems to be conclusive." He tells us that indiscriminate bleeding immensely increases the mortality of the disease, and that it is especially fatal in old people and in young children, in patients of exhausted constitutions, and in those suffering from chronic diseases, and particularly from Bright's disease. No doubt, but can Professor Loomis find a physician at the present time, who advocates indiscriminate bleeding, or who would bleed a patient under the circumstances he enumerates? He further says, that it is absolutely unnecessary in the majority of cases of young adults, and also young children. I am not disposed to differ much with this statement, but when he says that in the majority of cases, it has no influence whatever, either in cutting short the disease, in lessening its duration, or in diminishing the pyrexia, though occasionally, these results *appear* to follow

from its use when practised early; I should give more weight to the assertion if I could know that Professor Loomis has given venesection a fair and impartial trial. Although he further states that in the majority of cases it hinders the critical fall of temperature, and delays convalescence, and that recovery is equally, if not more rapid, when it is not practised, still he admits that in a few cases, a moderate venesection may be necessary in the early stages, to avert immediate danger of death from asphyxia.

Now, if Professor Loomis's views are correct regarding venesection, then, some of the most able and experienced physicians of the present day, who have had abundant opportunities of testing and comparing both methods of treatment, have deceived themselves in their estimate of the safety and value of this powerful remedial agent. Among the physicians of our own time, who advocate and practise bleeding, may be mentioned Drs. John Atlee, Traill Green, Austin Flint, H. I. Bowditch, J. F. Meigs, Alonzo Clark, Fordyce Barker, W. Pepper, Henry Hartshorne, and the late Professors S. D. Gross and George B. Wood; while in Great Britain, may be mentioned the late Professors Alison, Watson, Christison, Copeland, Laurence, Chambers, Parkes, C. West, Gairdner, Symonds, F. Winslow, Aitken, Markham, Handfield Jones, Dyce, of Aberdeen, Sutton, George Johnson, B. W. Richardson, and others. These are men whose opinions are entitled to great consideration, and be it remembered that, unlike most of its opponents, they have fully tested this measure, and know whereof they affirm.

Professor Hartshorne says, in relation to the treatment of pneumonia: "I am convinced by experience that prompt and moderate antiphlogistic treatment may greatly lessen the danger of pneumonia, if not shorten its duration. Probably nine cases in ten would recover without the abstraction of blood; the tenth might die for want of it." The opponents of blood-letting assert that more cases of pneumonia recover under the present system of treatment. Professor Hartshorne says: "I believe that the mortality of pneumonia has increased in Philadelphia, and elsewhere, since blood-letting has been so generally abandoned." Professor Gross, and most, if not all, of those whose names I have mentioned, have expressed the same opinion. In the same connection, Hartshorne further says: "The late Dr. L. P. Gebhard, of Philadelphia, informed me that in a large practice of more than half a century, he had never lost a case of *simple* pneumonia; his treatment being (according to cases), 'moderately antiphlogistic,' as above described. Those who object to venesection in *all* cases of pneumonia, do so, almost invariably, on theoretical grounds, *without having tried it*. Its occasional use is justified with almost equal unanimity by those who have had experience with it. This was well brought out in a discussion of the subject at Richmond, Va., in 1881, the "net result" of which was thus expressed by Dr. Martin, of Boston: "I trust that it may go out to the world, that the American Medical Association sanctions the occasional use of the lancet, at least."

But let us return to Professor Loomis, who is one of the latest exponents of the modern treatment of pneumonia. He continues: "A careful study of the pathology of pneumonia, not only leads one to the conviction that venesection must do harm, but it strongly contraindicates the employment of all those remedial agents which have been used to arrest a simple pulmo-

nary inflammation." Hence, he condemns tartar emetic, veratrum viride, aconite, and all other cardiac sedatives; also calomel and antimony. Of expectorants, he says: "They have no place in the treatment of pneumonia." Counter irritation by blisters or other irritants, he condemns as of doubtful utility, though he admits that occasionally, blisters may be applied during the *third* stage, to hasten the process of resolution, and promote the absorption of plastic exudation. Carbonate of ammonia he mentions but to condemn, and digitalis, he thinks, does more harm than good; camphor and musk he pronounces inferior to alcohol, but advises champagne as a diffusible stimulant. Having thus condemned almost *in toto* the method of treatment heretofore in use, let us see what Professor Loomis recommends to take its place. He has given us the key-note to his system of treatment in the following sentence: "In all severe types of croupous pneumonia, there are two prominent sources of danger, heart insufficiency and high temperature." There are consequently, two prominent indications for treatment, namely, to sustain the heart, and reduce temperature. The essential part of the treatment itself is comprised in three words: food, stimulants, and quinine, to which he adds the administration of opium during the first four days, and the necessity of complete rest.

Those of the profession, and I believe there are many still living, who have witnessed the great and immediate relief to the pain and difficult breathing by free blood-letting at the onset, or in some cases, by the use of wet-cups only; those who have seen more than one case of pneumonia cut short, aborted in its first stage by a timely venesection, those who have watched the cough become looser and less in frequency under the exhibition of small and repeated doses of ipecac, or Dover's powder; those who, later in the disease, have noted the expectoration become freer and easier under the administration of ammonium carbonate, would scarcely be satisfied with the above line of treatment, or feel that they were doing justice to their patients.

You will ask, perhaps, what treatment I would advocate in this disease, for I do not always treat the patient as I would. In some cases, he will absolutely refuse to be bled, when his physician advises it. Again, in some cases, the patient, or his friends, will yield their consent so reluctantly, if at all; they will be so fearful of the measure, that I feel confident that if venesection is practised, and the patient ultimately dies, his death will be attributed solely to the loss of blood. But I firmly believe that in a great majority of cases, if we see and recognize the disease in its first stage — the stage of congestion — we can, and ought to arrest it. At this time, the congestion is hourly spreading further and further through the lung, and advancing to the stage of red hepatization, and I believe that prompt venesection, and that alone, will cut short the disease in many cases; nor have I, in a great majority of cases, the great fear of after-prostration, and heart failure and insufficiency, that so disturbs Professor Loomis, Dr. Reynolds, and others. In many cases, at this stage, the pulse is full, hard, and firm, and in some cases, at least, where it has lost in some degree, its force and hardness, I believe the weakness to be more apparent than real, the immediate and direct effect of a severe inflammatory disease upon a vital organ; and as the result of prompt blood-letting, such a pulse will often acquire more volume and power. It is a well-known fact that men, strong, robust, and ap-

parently healthy, will, in two or three days after the commencement of an attack of acute pneumonia, pleurisy, or peritonitis, exhibit indications of decided weakness, depression, or rather oppression, and debility. What has dissipated their strength so suddenly? The disease has not continued long enough to cause exhaustion, and, if we can arrest it at this point, the patient will, in a few days, be as strong as before; but if we let this disease go on unchecked for a week or ten days; if we let it spread over and cripple the greater part, or the whole of one lung; if, in spite of the anorexia and the fact that the patient turns from food with loathing, we assiduously ply him with nourishment, which, in many cases, he cannot digest or assimilate; if we give him stimulants early and often, notwithstanding the fact that the greater part of one lung is engorged with blood, and the patient is the subject of an acute inflammation, with high fever, *then* I think we shall have just cause to fear exhaustion and heart-failure.

To again quote Dr. Hartshorne: "Few if any pathologists will hesitate to admit that a difference, often momentous, exists between the *exhaustion* of a system weakened by the continuance for some time of severe disease, and that *oppressive* debility with which the most robust person may be temporarily affected under the influence of an acute malady such as pneumonia, meningitis, or croup." Again he says: "The mortality of pneumonia in Philadelphia has for some time certainly increased, not in the hospitals, where the average character of the patients has always made them unfavorable subjects for depletion, but in private practice. It is not too bold an assertion, indeed, for one, who without partisanship, maintains his conviction of the occasional importance of venesection and local depletion as remedies, that while uncomplicated pneumonia, under moderate depletory treatment, was, thirty years ago, rarely fatal outside of hospitals, and not frequently so within them, the indiscriminate stimulating method, now often applied to all classes of cases, has increased very considerably the fatality of this and other inflammatory diseases, in private practice." So much for the opinion of Dr. Hartshorne, one of the most learned and accomplished physicians in Philadelphia, and I may safely add, in the whole country.

And now I want to insert a short quotation from Dr. Reynolds, the author of Reynolds's System of Medicine, which should have appeared earlier: "If the general condition be one of weakness, it matters not that the brain, the heart, or the lungs may be in a state of so-called inflammation; *the weakness is the one thing that demands immediate treatment, and to neglect its treatment is to run the risk of sacrificing the patient to a theory of a compound state, even now but imperfectly understood.*" It appears to me that such teaching as this, by a man in the position Dr. Reynolds occupies, is calculated to do great harm, by misleading the young practitioner, who has not had the experience to enable him to distinguish between the *apparent* weakness so invariably present in pneumonia, and the real weakness of exhaustion from prolonged disease.

But to return to the subject of treatment. I desire to again quote Dr. Corson, who tells us in one of his articles that he has bled hundreds of patients, of all ages, and has never seen any of the injurious effects, either immediate or remote, which are so dreaded by many of the physicians of our time, nor has he ever

had cause to regret using the lancet. He says: "To me it is simply an inflammation, and I would use rapidly, as early as possible, the means which, in the practice of half a century, I have found safe and most efficient in allaying inflammation. Well, here is my patient. He had a chill hours ago; he had some pain in his side, some cough, and he feels very weak; his face is flushed, he is hot and thirsty, his pulse over a hundred and the thermometer rises to 103°; he breathes scarcely at all through the most of one lung; there is a little blood, and viscous fluid, slightly rust-colored, in the basin by the bedside; he knows how he got sick; he 'was down in the iron ore shaft all yesterday at work, came up in the evening to come home, and being in a perspiration, soon, in facing the wind, cooled off too suddenly.' I propose to bleed him, but he objects on account of his great weakness. I tie up his arm, and bleed him twenty ounces, or perhaps he feels faint by the loss of less than that. He expresses himself as being relieved somewhat of his oppression, he can lie more comfortably, he feels relieved of the fulness in the chest, but still he has a little pain in the side, or in the breast, just above the nipple. I order him one-quarter grain of sulphate of morphia; direct that a towel be wrung out of cold water, ice-water, if convenient, be applied over the affected part, to be changed frequently, or instead, a bladder of ice and water. Then ordering a mixture which contains some spirits of nitre, with about the third of a grain of morphia to a teaspoonful every two or three hours, I leave him with an express direction not to worry him by any offer of food. Next day, or even the same day, perhaps, if I find that he is not entirely relieved of the pain, and is still expectorating viscid sputa, I bleed him again freely, and if need be, cup him, and after that he is generally safe. Some one will say, 'that may do very well for your strong, iron-ore diggers, but it would prove fatal to our delicate patients.' Perhaps so, but in my experience, I have found that the weak and frail need to have the same means used to allay a toothache, or a sciatica, a pleurisy or a rheumatism, as the robust. They bear the remedies to cure an ague as well, and need them as greatly as the strongest. I have often bled the infant strangling with croup, with immediate relief; weak women with pleurisy or pneumonia, old men, and aged, very aged women, to relieve affections of the brain, or avert a paralysis."

This is the method of treatment which Dr. Corson has practised for some fifty years, and I believe it to be much nearer right than the practice now so generally adopted.

In conclusion, I would say that I would by no means advocate or practise venesection simply because a patient had pneumonia, pleurisy, peritonitis, or meningitis, but I would use it in those cases only in which I considered it safe, and better adapted than any other measure for the recovery of the patient. Its use requires experience, judgment, and discrimination, but I do believe that the weakest of our patients with primary pneumonia will better bear moderate depletion, than the most robust will bear assiduous feeding and stimulation.

After venesection, I would give to such of the more robust patients as I thought required it, small doses of tartar emetic, carefully watching its effects, but those who required it would be few. In some of the less robust cases, I would give small doses of ipe-

cac or Dover's powder, and in all I would, until infiltration became complete, if the case arrived at that stage, administer opium in sufficient doses to tranquilize the nervous system, and procure sleep.

Milk I would give after the first day or two, if the patient did not object, and before that if he requested it, and more nourishing food as soon as he asked for it, but if I found indications of exhaustion coming on, and had reason to believe that he could digest and assimilate food, I should urge him to try its effect before that. If the temperature was excessive, and was not reduced by venesection, I should try to reduce it by cold compresses, or quinia, or both, and I would give my patient stimulants as soon as I felt satisfied that real exhaustion was approaching, with the first indications of failure of the heart, but I would not commence the early use of stimulants to prevent the exhaustion that *might* occur later in the case.

I will not mention other details; they are of less importance, and about which there is less diversity of opinion. In the interest of our patients I sincerely hope that this paper may be the means of inducing some one or more of my brother practitioners to investigate and test for themselves this powerful and too much neglected remedy, and if suitable cases are selected and the remedy used according to correct principles, I feel certain that they will learn to highly value the lancet, and to rely upon it in many cases of inflammatory disease.²

THE STAINING OF THE BACILLUS OF TUBERCLE.

BY E. W. CUSHING, M.D.

YOUR secretary, gentlemen, has requested me to supplement my last paper before this section, in which I went over the proofs of the infectious nature of tuberculosis, by a practical demonstration of the method of staining suspected sputa for microscopic examination, with reference to bacilli.

I have accepted his invitation, at some risk of wearying you, and perhaps of being considered a bacteriomaniac, since I realize how different it is to read of a practical process, from what it is to see it done. I have still in my note-book copies of descriptions of staining for tubercle bacilli, given in 1883 and 1884, by Ehrlich, Fraenkel, Ernst, and others; but it all seemed far-off, and made no deep impression on me.

I am sure it would have aroused more interest in me, for this important matter, if I had seen it done. It is curious how mythical and difficult strange chemicals seem, until one has handled them; methyl-violet seems transcendental, and vesuvium portentous, even dangerous. But when handled and used they are as commonplace as hectograph ink, or easter-egg stains.

There are many ways in which tubercle bacilli may be stained, and several in which they may be so stained as to be differentiated from all other bacilli. Some methods are easy and simple, others more complicated. In this, as in many other things, however, the easiest way is not always the best way, for it is not now a question of showing their presence when they are abundant, that is easy enough in any way: the diffi-

² The writer also desires to express his obligation to the article by Joseph Stubbs, M.D., entitled "Pneumonia treated by Venesection," printed in the *Philadelphia Medical and Surgical Reporter*, July 8, 1882, No. 2 of volume 47.