

On some points in the pathology, diagnosis, prognosis, and treatment of pneumonia / by C.H.F. Routh.

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P. H. M. O. N. I. A.

U. S. F. R. O. U. T. I. D.

ON SOME POINTS IN THE PATHOLOGY,
DIAGNOSIS, AND TREATMENT
OF PNEUMONIA.

PART I.

ON THE PATHOLOGY, DIAGNOSIS, PROGNOSIS, AND THE
THEORY WHICH RECOMMENDS BLOOD-LETTING
IN THIS DISEASE.

I CAN scarcely hope in the present inquiry to bring much new matter to bear upon so vast a subject as that of Pneumonia in a paper the reading of which is, by the laws of this Society, limited to half an hour; but, looking upon this august assembly as one composed of practical men, I would rather seek, by a short sketch of this disease, to elicit the opinions of the Fellows present towards a more uniform and a less violent mode of treatment in this affection. At present, nothing is more varied: perhaps I should not be far wrong if I added, more unsatisfactory. After some fifteen years of professional life, a large portion of which has been sedulously employed in the study of disease in *continental* as well as *home* practice at the hospitals, and in private practice, I am forced to conclude that the word "pneumonia" is still made to include a variety of different diseases, requiring different treatment, and running a totally different course. I allude especially to simple inflammatory pulmonary congestion, capillary bronchitis, and some varieties of pleuritis. The treatment, besides, is far too energetic, too antiphlogistic, and, I fear, often founded on erroneous principles and theory.

The subject is so vast that I am compelled to divide its

consideration into two parts. The first, that of this evening, will include some points in connexion with its pathology. diagnosis, prognosis, and, as a consequence, the unphilosophical nature of that theory which recommends blood-letting as a useful therapeutic measure. The second part, which I hope to be fortunate enough to bring forward before this Society on a future occasion, will relate to the *experience* of various plans of treatment, especially those of blood-letting, tartar emetic with and without blood-letting, the chloroform treatment, and the milder plans of practice, generally and statistically considered; to conclude with the plan of treatment which I would humbly and respectfully recommend. In this inquiry, I feel I shall need your indulgence, and would ask you to bear kindly with me if, in the course of this paper, I venture to oppose the views of many of the most eminent of our profession. I court philosophical inquiry: I seek only the elucidation of truth.

Pathology. It is not my intention to follow out the pathology, diagnosis, or treatment of pneumonia, in its second and third stages, except where incidentally necessary to illustrate a point under consideration; the more so as I believe that, in these two last stages, the diagnosis is comparatively easy, and all are agreed that general blood-letting is then comparatively noxious; to discountenance which is the chief object of this paper. It may, however, be right to premise by stating what I conceive to be, first, the pathological appearances of pneumonia in the first stage; and secondly, what are the principal morbid changes in the blood.

In regard to the first of these points, I may generally quote Dr. C. J. B. Williams's words as the exponents of my opinions, namely, that in the first stage there is not necessarily extravasation of blood in the air-cells, but that the vessels around these are engorged, dilated, and generally congested, in actual specific gravity heavier than healthy lung, but still floating in water. The mucous membrane of the smaller bronchi and air-cells may be redder than usual, but not remarkably so. When a portion of the lung is cut and compressed, a frothy, rusty, or bloody serum exudes. The whole tissue is much reddened, and less elastic to the feel. This appearance is wholly due to congestion of the lungs. The occasional extravasation of blood in the bronchi is cadaveric, and analogous to what we observe in other hollow organs of the body, as in the intestines after peritonitis. (*Library of Medicine.*)

2. Looking to some of the pathological characters of the blood in this disease, when taken after death, it is not unusual to find it *fluid*, except in the immediate vicinity of the heart and large vessels; and, in some cases, again, this *fluid portion will not coagulate after death at all*, as in a case of Dr. J. Davy's. In other cases, the fibrinous coagula exist in large abundance; also with fluid blood, but which last coagulates very readily and firmly on exposure to the air. I believe the difference in these appearances is connected with the time during which the pneumonia has persisted, even although the disease may not have passed beyond the first stage; for then, and as the disease progresses, the state of the blood is intensely fibrinous; this tendency to hyperinosis being developed as the disease advances, and diminishing with the gradual cure. Thus Andral and Garvarret obtained, in fifty-eight cases of pneumonia (the healthy normal quantity of fibrin being 2.5 to 3.5 per 1000 parts of blood), the following result:—Maximum, 10.5; minimum, 3.4; mean, 6. From twelve other observations by various authors, the following result was also obtained:—

Rindskopf	.....	No. 1	.....	6.67
"	.....	No. 2	.....	12.72
"	.....	No. 3	.....	6.7
"	.....	No. 4	.....	5.9
"	.....	No. 5	.....	7.89
Simon	.....	No. 1	.....	9.15
"	.....	No. 2	.....	6.02
"	.....	No. 3	.....	5.63
Heller	.....	1 case	.....	4.3
"	.....	—	.....	6.1
Scherer	.....	—	.....	9.7
Becquerel and Rodier	.....	—	.....	7.4
				—
Mean				8.18
Maximum				12.72
Minimum				4.3
				—

This has been one of the reasons for which blood-letting, under an erroneous impression of its defibrinising tendency, has been so vigorously employed; whereas the hyperinosis may be due to special causes, in no way removed by venesection. I shall allude especially to some of these causes.

The correctness of these views can be further confirmed and elucidated by (*a*) experiments on the lower animals,

(*b*) by accidents in the human subject, and (*c*) by chemical investigation.

(*a*) 1. You may induce pneumonia by thinning the blood, or diminishing its vitality, or by internal remedies which have a similar effect.

2. The subsequent deposition and increase of fibrin is due to hyperoxygenation of this fluid, both by increased activity in the lungs and in the cutaneous function.

(*b.*) Pneumonia is frequently induced in typhoid diseases, and is a common cause of death after wounds or surgical operations.

(*c.*) It is probably connected with a diminution in solvents of the blood, specially the quantity of chlorides, and secondarily the alkaline phosphates.

(*a*) 1. The following experiments of Magendie prove that it may be artificially produced by defibrinising the blood. (See *British and Foreign Review*, vol. viii.) Eight ounces of blood were taken from the jugular vein of a dog, and the fibrin thereof extracted. This defibrinised blood was then reinjected. The animal became distressed, refused food, lay down, and made several attempts to vomit. The experiment was repeated. The same symptoms appeared. The animal became weaker, and finally died. On a *post mortem* examination being made the next day, the body was found very rigid, and offensive in smell. The lungs were hepatised; reddish serum was effused in the cavity of the thorax; and there was no true coagulation of the blood.

The experiment was repeated in a more gradual manner, and during several days. The results were identical; but in addition, there was inflammation and ulceration of the cornea, and the skin was covered with petechiæ and scabies. Now, Magendie believes that the pneumonia in all these cases is due to want of fibrin in the blood. In like manner, in cases of poisoning by the injection of ænanthic ether, the blood becomes uncoagulable; as also where putrid matter is injected in the blood, and pneumonia is induced. In the latter case, Magendie found that if a few drops of water impregnated with putrid meat, were injected into the blood of a dog, the animal first presented symptoms of undue activity, and was affected with fever; then, after a time it laid down, refused food, and vomited an immense quantity of black matter, characteristic of yellow fever. Pneumonia is the common *post mortem* appearance observed in all these cases. The same explanation may be given to the production of pneumonia by the asphyxiating gases from common sewers; in

which cases, owing to a chemical change of a similar kind induced in the blood, the pneumonia passes seldom beyond the first stage into the second, but into a half gangrenous, half purulent destruction of the lung.

(a) 2. The hyperinosis which follows is due to hyper-oxygenation of the blood. Dr. B. W. Richardson, a fellow of our Society, has proved that if an animal be placed in an atmosphere of oxygen, intense hyperinosis follows; and, according to his views, this is one of the reasons which leads to the death of the animal by obstructions of the heart through fibrinous coagula. In pneumonia, too, circumstances contribute to the same result, viz., the increased number of respirations, and the increased activity of the capillary cutaneous function. The number of respirations in a minute in this disease is frequently very great. Instead of 16 in a minute, the usual extremes are from 30 to 50, sometimes as high as 70 or 80, when suffocation seems threatened; but 30 or 40 respirations per minute may exist without the patient being conscious of particular dyspnoea. (Walshe.) The rapidity of the respiratory function thus more than compensates for any obstruction in the lungs, a greater quantity of oxygen is absorbed in a given time, and hyperinosis results. But the increased activity of the cutaneous function assists to bring on the same result. The skin, as is now invariably admitted, contributes to the maintenance of animal heat, and, as such, acts like a respiratory organ to consume the oxygen absorbed. The experiments of Becquerel and Breschet on rabbits, have proved this. When the skin was covered by an impermeable varnish, the temperature of the body fell, although, *à priori*, the evaporation of the sweat being also thereby impeded, an opposite effect might have been expected. It is also remarkable, that in pneumonia the extreme heat of skin is a characteristic of the disease. Indeed, this increased heat of the surface is by some physicians considered as pathognomonic of the disease, reaching to 105° and even higher; the normal temperature being 98° . It is a curious fact, and one which I may observe *en passant*, that this increased heat of skin is usually and chiefly observed in diseases where the blood is poisoned, as in scarlatina, typhus, remittent, and intermittent fevers, yellow fever, puerperal fever, etc.; and thus it may, perhaps, be considered as evidence of a similar state of blood in pneumonia. Most probably this increased oxygenation of the blood is an abortive attempt made by the *vis medicatrix*

naturæ to burn or consume the noxious agent; and this view would explain the invariable presence of feverish excitement in the animals operated upon by Magendie. Some of these animals, if left to themselves, recovered spontaneously as by this process; others, in whom a larger amount of poison was introduced, seemed overcome by it; and pneumonia amongst other poisonous effects was induced. It is also interesting to note, in regard to the second stage of pneumonia, in which hepatisation or fibrinous consolidation occurs, that there is, according to Bouillaud, invariably formed at the same time solid and resistant coagula in the right cavities of the heart and pulmonary arteries, due doubtless to the same common cause.

(*b.*) Pneumonia is frequently induced in typhoid diseases, and is a common cause of death after wounds or surgical operations. Its occurrence in typhus is so common as to need only to be mentioned. The recumbent position of the patient—whence the name sometimes given to this variety (pneumonia hypostatica)—favours the lodgment of the blood (in this disease unusually liquid and poisoned) in the small pulmonary capillaries, assisted also by the weakness of the cardiac action. But, from the time of Dupuytren to the present, it has been frequently observed after burns. Sir Charles Bell emphatically remarks that inflammation of the lungs is by far the most frequent cause of death after severe wounds, and especially in compound fractures. Mr. Erichsen, in some valuable observations on this subject in the *Medical Gazette*, observes that out of forty-one deaths occurring in the surgical wards of University College Hospital (in which an account of the state of the lungs had been kept), these viscera were found to be in the first or second stage of pneumonia in twenty-three cases. (Chevers on the cause of death after operations, *Guy's Hospital Reports*, viii, 83.) In these cases, the pneumonia is adynamic, and due to phlebitis; and the secondary absorption of unhealthy pus in the blood, by which its crasis is diseased.

(*c.*) This production of pneumonia is also probably connected with a diminution in the quantity of the solvents of the blood, especially the chlorides, and secondarily the alkaline phosphates. The albumen, casein, and fibrin, are doubtless in part held in solution by the alkaline phosphates and chlorides. In regard to the latter, in particular, if venous blood be made to flow in a vessel containing a solution of common salt, it will not coagulate; the fibrin is held in solution. But of the chlorides, the chloride of sodium espe-

cially is the salt which furnishes the soda base for the alkaline phosphates which maintain the alkalinity of the blood. It follows, therefore, that if the quantity of these salts is diminished in any way, it will lead to an impairment of the quality of the blood, and if carried beyond a certain point, to the deposition of the fibrin and albumen. It has been shown by Redtenbacher, from analysis in eighty cases, that during the stage of hepatisation of pneumonia, the *chlorides* almost entirely disappear from the urine, but return on the resolution of the inflammation. Now, Liebig has shewn that analysis of the urine enables us to compare the incombustible constituents with those in the blood, and observation shews that in regard to the proportion of soluble salts with alkaline base, there is hardly any difference between them. If we incinerate the blood of a healthy person and also his urine, and lixivate the ashes with water, the soluble salts of the blood ash are in nature the same as those of the urine; and it is extremely probable that in regard to their relative proportions also, a constant relation prevails (Liebig's *Letters*, p. 296). Whence he argues that we may, by reasoning backwards from the analysis of the urine, come to know the quality and composition of blood. Applying this argument to the chlorides, we may conclude that this salt is deficient in the blood.

Now the first effect of a diminution in the quantity of chloride of sodium in the food taken (and we may, therefore, infer in the blood, although from the usual presence of this salt in the blood in quantities almost normal, this diminution will not be very great), is to induce in man the phenomena of chlorosis, languor, debility, and pallidity, and even œdema and swelling of the legs (Robin and Verdeuil, ii, p. 186). Poggiale has, moreover, shewn that the number of blood-globules (on which the richness of the blood depends) is increased after the employment of common salt. The late Dr. A. T. Thomson informed me that purpura was common in those Russian soldiers who were unable to procure salt for their food. We infer, therefore, that the first effect of a diminution in chloride of sodium would be to *thin* the blood, and put the patient in a condition favourable to the production of pneumonia. But if this diminution continues, which the state of the urine would seem to show, then it is not impossible a deposition of the fibrin would follow, not only by the diminution of the chloride only, *as one of the solvents of the blood*, but by the diminution of the alkaline tribasic phosphate, which de-

rives its soda base from the chloride of sodium. This diminished alkalinity of the blood, although from the character of the fluid difficult to measure accurately, would yet suffice to induce great changes in its constitution. That the serum exuded in some of the cavities of the body, as in some cases of puerperal fever, is acid, or that the pus effused in certain diseased states, as in anthrax and furunculus, is also acid, although both are in the normal state alkaline, is evidence of such a change being possible, although in the case of the blood, from its greater quantity and its uses, so positive a result is impossible. But that a minor degree of alkalinity may exist, appears very probable, from the acid state of the secretion generally in many diseases, as in rheumatism or gout, and their cure by alkalies. Probably hereafter it may be shown that pneumonia, as a result of the absorption of pus, is more or less connected with the degree of alkalinity. Mr. Henry Lee has shewn that inflamed pus, the result of extreme inflammation, when injected into the blood, will produce fibrinous concretions, while that from chronic abscesses will not do so. I should, perhaps, here remark also, that the same absence of chlorides is observed in the urine of typhus, thus affording another link in the etiology of the two diseases.

These considerations lead me to consider that pneumonia, as it occurs in the present day, is essentially an adynamic disease. It is clear, I think, that unusual thinness of the blood predisposes to this disease. A statistical table of the number of robust as compared with delicate adults who are seized with pneumonia is still a desideratum. Among young children from two to five years old, Rilliet and Barthez have shewn that the most delicate are the most obnoxious to the disease. Again, the causes of pneumonia are chiefly those which would influence weak persons. Thus, from Grisolle's inquiries, we learn that the following is the per-centage of the exciting causes of this disease. Thus,—

	Per cent.
Contusions of thorax	1.4
Chill	24.5
Fatigue	9.6
Mental emotions	3.2
Excess or debauch	2.4
No cause traceable	41.3
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Many other considerations, some of which I shall allude to hereafter, confirm this view. Besides those afforded by the comparative results of treatment, and the manner in which the disease proves fatal, to be alluded to in the sequel, we might mention the almost invariable adynamic type and fatality of epidemic pneumonia both in man and the lower animals, its varieties in localities, and among the black races, etc., and various other points of interest, which I cannot dwell on at present.

Diagnosis. I should be sorry to impugn in any way the accuracy of the diagnosis made by medical men, in every respect equally qualified to make it as I am,—perhaps much more so. But I am satisfied that the returns of deaths from pneumonia in the Registrar-General's reports is not a correct index of medical diagnosis. Amongst fatal diseases, capillary bronchitis is not even named, and pneumonia is more commonly a cause of death than bronchitis. The number of deaths registered in London from the former disease (pneumonia), years 1840-4 inclusive, is about half that registered from phthisis, and eight times that from bronchitis; and for all England, in the years 1847-8, nearly the same as that from phthisis, and nearly twice those from bronchitis. These years, generally, are indiscriminately selected. Both these returns cannot be correct, and they are certainly at variance with the general impression, and opposed to hospital practice.

Table exhibiting the numbers of deaths from Diseases of the Respiratory Organs.

	London.				All England.	
	1840.	1841.	1842.	1843.	1847.	1848.
Laryngitis.....	26	27	40	44	762	867
Quinsy.....	74	172	67	98	556	569
Bronchitis.....	500	578	683	812	16499	14472
Pleurisy.....	88	93	77	92	1176	1029
Pneumonia.....	3927	3725	3982	4282	23447	21868
Hydrothorax....	277	210	219	257	—	—
Asthma.....	1325	1371	1123	1085	6456	3920
Phthisis.....	7366	7485	7283	7223	25088	24435
Other diseases of Lungs.....	738	783	781	787	2775	2645
All dis. of Lungs..	14190	14413	14325	14690	69800	76754

This return does not include influenza: in many cases of which, individuals die from capillary bronchitis, as shewn by Dr. Peacock.

The deaths from influenza in these same years, and for the same places mentioned, was,—

In 1840	.....	71
In 1841	.....	94
In 1842	.....	88
In 1843	.....	207
In 1847	.....	4881
In 1848	.....	3810

Comparing this result with hospitals, take, for instance, Vienna and Glasgow, we find there died in the—

	Bronchitis.	Pneumonia.	Phthisis.
Vienna General Hospital....	428	260	1567
Glasgow Royal Infirmary,			
1844-7.....	38	27	110

which results bear no analogy to the Registrar-General's report. I am aware that it has been objected that the hospitals contain but *few* children, whereas the Registrar-General's reports include children, and this objection has doubtless its value; still, I am satisfied that the deaths from pneumonia therein recorded are over stated. If this were not so, why should the results of *all England* be so much at variance with those of London? It is, moreover, well known how commonly a child dying of some chest disease is said to die from inflammation of the chest, when the term does not specify if the disease was pneumonia, bronchitis, pleuritis, or even phthisis, and yet is probably registered as pneumonia. This supposition may account for some of the cases, and the apparent discrepancy with hospital returns.

Pneumonia, in its first stages, is usually described as fever with more or less pain at the side, and dyspnœa, cough with rusty expectoration. The physical sign most depended upon is fine crepitation heard at beginning of inspiration and end of expiration; then during the whole respiratory act, and, finally, at the end of inspiration and beginning of expiration. Such is Dr. Williams' definition, which I think is the correct one. Dr. Hughes limits this sound to the end of inspiration; unfortunately all these symptoms are not invariably present in pneumonia; and conversely they may be all present, and yet the disease may not be pneumonia.

Permit me especially to dwell on one of the physical signs, I mean *fine crepitation*, or *crepitant rhonchus*, a sound which Dr. Williams aptly compares to that which is produced by rubbing a lock of hair near the ear, between the finger and thumb. This sound is that heard in the first stage of pneumonia. But it is by no means confined to this disease. It is likewise heard in acute pulmonary congestion, a disease of not uncommon occurrence at present among children; in capillary bronchitis; in some kinds of phthisis and pleuritis, pulmonary apoplexy, and œdema of the lungs; and, excepting by the *period* of its recurrence, and when taken in connexion with other concomitant symptoms, it cannot be said to be diagnostic of pneumonia. I believe it gives rise to a good deal of confusion, by the great stress so frequently laid upon it.

Acute pulmonary congestion. This disease is not usually described otherwise than as forming part of the first stage of pneumonia; but I nevertheless believe it to be sometimes distinct. It appears very rapidly, in one or two hours, usually after exposure to cold. There is a feeling of oppression in the chest, if not pain, pulse very frequent, dyspnœa very urgent, aspect of face very anxious, and great restlessness. The physical signs are those of pneumonia in the first stage. These symptoms may disappear as suddenly as they appeared, under the influence of a drastic purge, or after a warm or a foot bath, or they may remit almost as a paroxysm of remittent fever, and generally are worse at night. It not unfrequently accompanies the bronchitis of children, in whom, while there is no actual evidence of tubercle, the sputa are nevertheless distended with blood, and there is great debility. I shall best illustrate the diseases by the three following cases.

CASE I. A gentleman, aged 18 years, having been engaged in fishing all day, and wading in the water, having retired to bed, was seized with a sense of suffocation at the chest, great dyspnœa; indeed, he was gasping for breath. The pulse was very rapid. A practitioner was called in, and the patient was bled *ad deliquium*. The relief was instantaneous; but the convalescence was tardy, and, finally, in the course of it purpura supervened.

CASE II. A medical student, after much walking and fatigue, was exposed to cold. All the above symptoms, with fine crepitation, were developed the next day, only the dyspnœa was less urgent. A pediluvium at night, quiet,

and a drastic purge removed the disease in a couple of days.

CASE III. This was a hospital case. A patient, in whom no phthisis was detected, after exposure to cold, came in with partial hæmoptysis and dyspnœa. There was no marked dulness observed, but in several parts of the chest, here and there, there was fine crepitation, intermixed with larger crepitation. There was also general anorexia present. The case was put down as one of pneumonia, and treated with tartar emetic. The recovery was long and tedious.

The diagnosis between this variety of disease and pneumonia may be stated as follows.

By the general symptoms. Its rapid occurrence, absence of any marked lividity, occasional remittent character, generally the dyspnœa is greater. There may be no cough present. The expectoration, at first wanting, is not frothy, usually viscid and mucous, and not unfrequently tinged with blood.

By the physical signs. No abnormal dulness anywhere. The fine crepitation not constant, and even varying occasionally in position and mixed with larger crepitation. In some chronic cases its persistence for a longer time than would be likely had the case been one of pneumonia without consolidation supervening, will help the diagnosis.

Capillary bronchitis is a disease fearfully fatal, and frequently mistaken for pneumonia in the first stage. I cannot do better here than reproduce the words of Dr. Peacock, who, in his work on Influenza, has so ably given the signs of diagnosis between this disease and pneumonia. These are—

“1. *General symptoms.* The less sthenic character of the febrile derangement which accompanies all stages of the disease; the greater degree of lividity of the face and extremities; the more rapid prostration of strength, and the earlier appearance of symptoms of asphyxia.

“2. *By the physical signs,* the absence of dulness on percussion, and the occurrence of abnormal clearness at the late periods, the fine crepitation generally, first audible in the inferior parts of one or both dorsal regions, and then rapidly spreading over all parts of the chest, and the tendency of this sign to pass into the subcrepitant or mucous rhonchus, rather than give place to condensation, such as bronchial respiration, and increased resonance of voice and cough.” (Dr. Hughes distinguishes this kind of crepitation from that of pneumonia, because it is not con-

fined to the end of inspiration. This statement, however, does not accord with Dr. Williams', before quoted).

"3. By the peculiar character of the dyspnœa, cough, and expectoration. The respiratory movements are rapid, short, and hurried, rather than laborious, irregular; and there is a sense of constriction in the chest without pain. The cough comes on generally in paroxysms, and is fatiguing from its frequency, rather than painful and very severe. The sputum consists of whitish-coloured and viscid pellets, free from air, which have a tendency to become aggregated with tenacious, solid, and irregularly-shaped masses, and wants the russet colour, glary adhesive quality and small air bubbles which characterize the expectoration in pneumonia."

Pleuritis. There is a peculiar variety of pleuritic disease, of which I have seen a few examples, in which, with most of the symptoms of pneumonia, this fine crepitation is heard to a remarkable degree. I remember such a case occurring in the practice of my late lamented friend and teacher, Dr. John Taylor, at University College Hospital. It was the case of a female, Jane Fife by name, aged 45 years, who came in with cough, palpitation, great prostration, double pleurodynia, and urgent dyspnœa. There had been general pyrexia; there was general emaciation; the physical signs were those of general dulness posteriorly and inferiorly, with bronchial respiration; there were no signs of effusion. The case was, therefore, put down and treated as pneumonia in the first and second stage. She was consequently treated by blood-letting, cupping, etc., but the fine crepitation persisted for weeks, and she left the hospital with it, although she had then neither cough nor expectoration. Dr. Taylor could not certainly conclude the cause of this, whether it was one of persistent pneumonia, œdema, or pleuritis, although it was believed the crepitation was finer than œdema, and less so, if anything, than pneumonia.

The consolidation did not vary much. Now a French writer in the *Archives Générales de Médecine* for October 1843, has there shewn that this fine crepitation may be, and often is, produced in the pleura, as well as in the lungs, and is only a variety of the friction sound. In regard to the period of the pleural affection, he has observed it in the beginning of pleurisy to be gradually succeeded by the ordinary friction sound. 2. At a later period, when false membranes only remained, the serum having been already

absorbed, he has also observed it in the neighbourhood of a friction sound. This interpretation was subsequently given to Fife's case.

Dr. Walshe mentions a case of phthisis in his *Manual* in which there was slight serous effusion in the meshes of adventitious cellular tissue produced on the pleura, as proved by a *post mortem* examination; and in which, during life, he had heard fine crepitation. The case mentioned of Jane Fife was admitted Nov. 30th; and yet as late as Jan. 13th, fine crepitation was heard. It is highly probable, therefore, that some of these cases of pleuritis with so little effusion are sometimes mistaken for pneumonia; and how frequent partial pleurisy is, in which little or no notice of the disease has been taken by the patient during life, is evidenced by the adhesions of the pleura found so commonly after death. In former times, these cases would have been treated as pleurodynia; and in these stethoscopic times, perhaps, more heroically as pneumonia. The means of diagnosis here would be in the history of the case chiefly, and in the character of the dyspnoea, absence of lividity of the face, and the nature and extent of the crepitation. The French author above alluded to, states, the crepitations in these varieties of pleuritis are less numerous, less frequent or instantaneous, than those of pneumonia; they also occur less in puffs, and are not quite so fine. They either resemble the dry crepitation observed by Laennec in emphysema, or returning crepitation after consolidation in pneumonia; although he acknowledges that the diagnosis is very difficult. He supposes that, when the pleura is moist, no sound is produced by the rubbing of one upon the other; but when inflammation occurs, then certain isolated points are formed on the pleura, which become rough, and then, by rubbing one against another, produce this fine crepitation. When these points are more numerous, then the ordinary friction sound only is heard.

There are two other diseases, both of which give rise to fine crepitation. But I need not dwell much upon either of these. In the first, œdema of the lungs, the disease is usually accompanied with general anasarca, and the crepitation scarcely so fine as that of pneumonia. In the second, hæmorrhage from the lungs, in which the uncoagulated blood may have penetrated to some of the finer bronchi, fine crepitation may be induced.

Dr. Hughes, of Guy's Hospital, distinguishes this kind

of crepitation still further. In these cases, the crepitation is moist, and accompanies the *expiration*; whereas that of pneumonia is dry, and heard only at the end of *inspiration*, and is finer. Looking, however, to the nature of these diseases, and their concomitant symptoms, a mistake in the diagnosis can only be the result of inadvertency; yet I have seen the mistake made by an eminent stethoscopist, by whom a case of hæmorrhage in the lungs was mistaken for one of pneumonia, and treated accordingly by tartar emetic, etc.

Prognosis. If I am right in asserting that cases of simple pulmonary congestion, capillary bronchitis, pleurisy, etc., have been treated as cases of pneumonia, it is not to be wondered at that the experience of different practitioners should be very different. On one side, the eminent Dr. Williams asserts that pneumonia is at all times to be considered as a serious disease; while, on the other, Chomel asserts that it is in most cases a benignant disease; and, when the individual attacked is of favourable age, he will almost invariably get well under any kind of treatment. Dr. Walshe, admitting the disease to be most serious within unfavourable ages, states that there are periods of life at which it is not easy, with common prudence, to lose a sufferer from idiopathic or sthenic pneumonia. I am myself inclined, after personal inquiry for some years, both in London and in the larger continental hospitals, especially Paris and Vienna, to believe that genuine uncomplicated pneumonia is a benignant disease. I am ready to admit that pneumonia is most fatal in England and Scotland; but this chiefly arises because the proportion of complicated to uncomplicated cases is about fifty-three per cent., and because the disease is generally too actively treated. I shall, however, again allude to the mortality in the sequel.

Treatment. I cannot here enter at length into the various methods of cure adopted in pneumonia—in other words, the experience of practice. I shall speak of three only—1, that by active blood-letting, local and general; 2, that by tartar emetic; 3, that by chloroform, emollients, and milder measures generally; and, lastly, I shall allude to that which I follow out myself, and which I would venture humbly and respectfully to recommend.

In speaking, however, of blood-letting as a remedy, it is necessary I should allude to some of the theories upon which it is based. By premising what I have to say on the experience of that practice, by such an inquiry, I shall be in a bet-

ter position to disprove the utility of its employment. The advocates of blood-letting in pneumonia recommend its use chiefly on the following grounds—

1. It diminishes the amount of fibrin, which is in excess in this disease.

2. It removes the fever and general pyrexia.

3. It removes the local pain, dyspnoea, and congestion.

4. Patients affected with pneumonia bear depletion well, and it seems therefore unphilosophical not to afford them by it the relief which it ensures.

5. It diminishes the mortality. This last point can only be answered by comparing the results of different methods of practice, and, as such, forms part of the second portion of this paper.

Let us examine these four several points.

1. It is now admitted that it is only when blood-letting is carried to an excess that the *fibrin* is diminished.

In pneumonia, according to Andral and Gavarret, and other observers, the blood, on analysis, was found, after repeated venesections, to contain less solid constituents and blood-corpuscles, but *more fibrin* and more solid residue of the serum.

Analyses of Andral and Gavarret.

		Venesection.		Day of disease.		Amt. fibrin.
1st case	....	1	....	2	....	4.0
"	....	2	....	3	....	5.5
"	....	3	....	5	....	6.5
"	....	4	....	7	....	9.
2nd case	....	1	....	3	....	5.2
"	....	2	....	4	....	7.0
"	....	3	....	5	....	6.9
"	....	4	....	6	....	8.
3rd case	....	1	....	4	....	5.5
"	....	2	....	5	....	6.8
"	....	3	....	9	....	6.4

Analyses of Rindskopf.

1st case	....	1	....	not stated	....	6.7
"	....	2	....	"	....	7.7
2nd case	....	2	....	"	....	5.9
"	....	3	....	"	....	7.7
"	....	4	....	"	....	10.3
"	....	5	....	"	....	8.1
3rd case	....	2	....	"	....	7.9
"	....	3	....	"	....	0.1
"	....	4	....	"	....	9.5

In another case of pneumonia biliosa, analysed by Scherer—

1	venesection	fibrin	amounted to	9.7	in 1000 parts
2	"	"	"	9.4	"
3	"	"	"	12.7	"
4	"	"	"	8.8	"

The same fact has been observed by Andral and Gavarret in rheumatism.

Venesection.	Day of disease.	Quantity of fibrin.
1	8	6.1
2	9	7.2
3	10	7.8
4	13	10.2
5	17	9.
6	28	7.

And Simon has observed the same fact in peritonitis. Indeed, the above statistics are taken from his work; and it is only when bleedings are carried to a great extent that the fibrin is diminished. Moderate blood-letting is therefore useless. Magendie's experiments, moreover, before quoted, go to prove that defibrinisation of the blood is a common cause of pneumonia; and, if blood-letting had the effect of diminishing its quantity, it might not cure, but rather give rise to the disease.

But, 2. It is said that bleeding diminishes the severity of the general symptoms. Granted: but, to do this, the blood-letting must be begun early, and taken in full quantities; and the secondary consequences, namely, debility and incapacity to follow out any occupation for a long period afterwards, are the results also obtained.

3. It is said to diminish the severity of the local symptoms. But such a result is rather the exception than the rule. Grisolle, the great authority on pneumonia, admits this to have been the case in some 131 cases out of 232, to which I shall again allude, and in which blood-letting had no effect. In these, however, the disease has passed the second stage. Remarking on these cases, he says, "We may hence conclude that the blood-letting had no effect on the progress of the disease, or if it had any good effect (which he believes probable), that it was only in disposing the system to absorb with better advantage the antimonials." Indeed, he himself admits that if the pneumonia has attained a certain degree of intensity, it cannot be checked, or cut short by blood-letting, though practised

ever so freely, and these statements are perfectly borne out by the experience of Chomel and Rasori. Among ourselves, Dr. Todd (*Medical Times*, vol. xxv., p. 484) believes that whether in sthenic or asthenic pneumonia, the tendency is to depress the general powers of life, or (p. 486) pneumonia has a fatal tendency in proportion as it tends to exhaust; for which reason he discards active treatment by blood-letting.

Laennec advised moderate blood-letting, and then only in strong and robust patients. The great Louis of the Hôtel Dieu remarks, "It is an error to believe you can regulate pneumonia by blood-letting. In *all* cases, if the bleeding is practised in the period when the disease is on the increase, the local symptoms are thereby *aggravated*, although the general symptoms may improve." He believes, however, it will in the end shorten the duration of the disease. From his cases, he concluded that the disease lasted only eighteen days, when bleeding was resorted to before the fourth day of the disease, when after that period it lasted twenty-one days. This is the result obtained at La Charité and Pitié. The experience of these hospitals proves that by blood-letting early, you only anticipate the period of cure, in some of the cases which yield to it.

4. Patients affected with pneumonia bear depletion well. It seems, therefore, unphilosophical not to afford them that relief which this operation ensures. But the truth of this proposition is founded in part on the truth of the three former; and if these be disputed, there cannot be said to be relief from depletion. And, again, patients do not bear depletion well in the present day. The type of existing diseases is, and indeed has been for some years back, adynamic, and in none is this more true than for pneumonia, which is fatal exactly in proportion as it is adynamic. Patients do not bear depletion as formerly; thirty years ago powerful medicines and heroic blood-letting was the order of the day, and eminently successful. The practitioner who would now follow the practice of his forefathers in this respect would meet with universal reprobation. Hence one of the reasons that that archquackery, homœopathy, has taken so well among many. Typhus and low fevers have been upon the increase, and generally those diseases arising from cachectic blood, a better instance than which I could scarcely give than the extraordinary frequency of furuncular and carbuncular disease.

The following are the number of deaths from typhus and

pneumonia for the years 1839—1850, taking typhus as the measurement of debility in the population.

Year.		Typhus.		Pneumonia.
1839	.....	1819	.....	3687
1840	.....	1262	.....	3776
1841	.....	1151	.....	3668
1842	.....	1174	.....	3923
1843	.....	2083	.....	4224
1844	.....	1696	.....	4064
1845	.....	1501	.....	3896
1846	.....	1796	.....	3151
1847	.....	3181	.....	4290
1848	.....	3569	.....	3499
1849	.....	2479	.....	3593
1850	.....	1923	.....	3108

Thus blood-letting, in theory at least, does not seem advisable. The reason it sometimes does good is probably stated correctly by Dr. B. W. Richardson, namely, that it diminishes for the time the flow of blood to the lungs, and thus arrests its hyperoxygenation.

To recapitulate, therefore, I think I have proved that—

1. Pneumonia is characterised at first by unusual fluidity of the blood, and may be produced by causes which tend to poison the blood, as proved by experiments on the lower animals, accidents in the human body, and chemical examination.

2. It is characterised by an increased amount of fibrin, from hyperoxygenation, both in the lungs and skin, and a deficiency of chlorides, in the blood.

From such facts I conclude the disease is essentially adynamic in kind.

3. In regard to diagnosis, there is reason to believe it is mistaken for simple pulmonary congestion, capillary bronchitis, and some kinds of pleuritis.

Lastly, the theory which advocates blood-letting in this disease is both physiologically and pathologically unphilosophical.

PART II.

ON THE EXPERIENCE OF VARIOUS KINDS OF TREATMENT
IN PNEUMONIA.

IN a former paper on Pneumonia, I alluded to some points in its diagnosis, prognosis, and the theory which recommended on erroneous grounds, the treatment by blood-letting. I now come to speak of the *experience* of various modes of practice: but, before I do so, allow me to recapitulate some of the points to which I alluded in my last paper.

In speaking of the pathological character of the blood, I attempted to prove that that fluid at first was unusually thin, from a deficiency of *chlorides*; secondly, that it became *hyperinosed* by the increased number of the respiratory movements, and the greater activity of the function of the skin, viewing this as a *respiratory organ* also, and the intense heat of surface as evidence of this increased action. I alluded to this last as evidence of adynamic type; and also to the frequent occurrence of pneumonia from poisonous causes, as in typhus; from phlebitis, after injuries and operations; and by artificial poisoning of the blood. I then spoke of the large number of depressing among the known causes of its production. I then referred to the diagnosis between pneumonia and some other diseases, namely, simple pulmonary congestion, capillary bronchitis, and some forms of pleuritis; then to its prognosis, and the tendency of death by depression; and, lastly, I proved that the theory which recommended the blood-letting treatment was erroneous, because its moderate employment did not diminish the amount of fibrin; secondly, because, although it checked the general fever, it lengthened the convalescence; thirdly, it did not remove the local symptoms, but, in most cases of intense pneumonia, it aggravated them; fourthly, that the type of disease was generally now more adynamic, and that pneumonia proved ordinarily fatal in proportion as this character was more marked. The last point

under this head involves the question of experience, viz., *the results of the treatment by blood-letting—its influence on mortality*. I purposely, therefore, refrained from entering upon its discussion on the last occasion; but its consideration necessarily opens the subject of the paper, to which I venture this evening to solicit your attention.

1. *Treatment by Blood-Letting*. It is alleged that, by carrying out blood-letting freely, the mortality is diminished. But who is there amongst us who will undertake to state what is the *normal mortality* of pneumonia, affected as it is by sex, age, habits of life, seasons, seat, complication with other diseases, and treatment? Take for instance the following table:—

	Cases.	Deaths.	Per cent.
Trousseau (1831-32)	58 ..	2 ..	3.4
British Army (Colonies).....	12271 ..	413 ..	3.3
Bang (Copenhagen)	54 ..	2 ..	3.6
Navy (Home and Colonies)	3099 ..	136 ..	4.3
Varentrapp (chloroform)	23 ..	1 ..	4.3
Cases treated by Baumgärtner, Wacherer, Helbing, & Schmidt	193 ..	9 ..	4.5
Husson	43 ..	3 ..	6.9
English and Scotch Hospitals ..	59 ..	7 ..	11.8
Liverpool Southern Hospital	10 ..	1 ..	10.
Laennec (1824-5)	62 ..	4 ..	6.6
Varentrapp (usual treatment) ..	266 ..	49 ..	18.4
Dietl (Vienna)	380 ..	53 ..	13.1
Bouillaud (Paris)	75 ..	13 ..	17.3
Grisolle (Paris)	391 ..	71 ..	18.1
General Hospital, Vienna	1134 ..	260 ..	22.9
Glasgow Infirmary (1844-8)	248 ..	69 ..	27.7
Drs. Walshe, Taylor, and Peacock	140 ..	44 ..	31.4
Total.....	18,506	1,137	6.1

I cannot here enter upon all the different causes which influence the mortality of pneumonia; such a course would involve far too lengthy a paper. I must, however, say a word about the influence of age, sex, and complication.

(a) *Age*. At the two extremes of life, the mortality is great. It is stated by Dr. Walshe to be, from 6 to 12, scarcely exceeding $2\frac{1}{2}$ per cent.; from 15 to 30, 6 per cent.; from 30 to 40, suddenly rising to 14 per cent.; and increasing thenceforth steadily for each succeeding decade. The following table, from Grisolle, founded on some 900 cases, carries this ratio higher.

Ages.	Mortality per cent.
13-30	8.1
30-40	18.5
40-50	22.7
50-60	29.7
60-70	26.3
Above	125

In estimating, therefore, the mortality of a given number of cases, the proportion of those of extreme ages should be carefully noted. From another table, which I collected from cases occurring in the Glasgow Infirmary, in the practice of Drs. Taylor, Peacock, Walshe, Grisolle, Hughes, etc., the proportion of seizures from pneumonia occurring at different ages was as follows:—

Ages.	No. of cases.	Per ct.	Per centage proportion.
Children	11	..	..
10-15	15	..	1.1
15-20	199	..	14.6
20-30	412	..	30.2
30-40	256	..	18.8
40-50	219	..	16.0
Above	250	..	18.7

Here the numbers for ages under 10 are not considered, as the table does not afford the means of comparison. The disease, however, if we take the periods from 10 years to above 50, appears to be most common during the decade from 20 to 30.

(b) *Sex.* This is a very important particular to be noted. Pneumonia is much more fatal in *females*, as a rule, as compared with males; and, by diminishing the number of females in any set of cases, the total mortality may be greatly reduced. From the following table, we learn that the normal proportion of females in 100 cases of pneumonia should be about 31.4. Thus, out of 2,359 cases of pneumonia, there were 1,618 males and 741 females: viz.—

Cases occurring in practice of	Admissions.	
	Males.	Females.
Briquet, Chomel, Grisolle.....	444	138
General Hospital, Vienna (2 yrs.)	604	440
Drs. Taylor, Walshe, and Peacock	113	27
Glasgow Infirmary (5 years)	102	35
Dr. Hughes	208	82
Dr. Franks	57	19
	1618	741
	2359	

But the mortality among females is always greater. Thus, out of 904 cases of pneumonia occurring in males, 199 died, or 22 per cent.; out of 506 cases occurring in females, 146 died, or 28·8 per cent.

(c) *Complications.* In England and Scotland, I believe, complications are very common. Pure idiopathic pneumonia is less often met with than secondary or complicated pneumonia. Out of 140 cases which I analysed, and which occurred in the hospital practice of Drs. Walshe, Peacock, and Taylor, there were 79 cases of secondary and complicated pneumonia, *i. e.*, a proportion of 56 per cent.; the diseases being chiefly phthisis, bronchitis, Bright's disease and dropsy, endo- and pericarditis, meningitis, erysipelas, in the order mentioned. Of these 79 cases, 17 were secondary. Out of 101 cases examined by Dr. Hughes, of Guy's Hospital, only 52 per cent. were uncomplicated, or complicated with pleurisy alone. The relative proportion of the different forms of complication, as they occur, cannot be correctly stated, because usually more than one complication coexists; and so all attempt at classification in this respect is baffled. In Dr. Hughes's cases, 22 were complicated with bronchitis, 5 with phthisis, 4 with influenza, 3 with fever, 3 with pericarditis, 2 with renal disease; and among the fatal cases, out of 24 in all, in 5 only was there nothing but the primary disease to account for the result observed.

In 54 cases of fatal pneumonia examined after death, renal disease existed in 6, and in 3 disease of the bladder, and in 4 phthisis. I believe myself that it is generally the coexistence of Bright's disease, induced by the drinking habits of the population, which makes pneumonia so fatal in this country. A table setting forth the relative frequency of this complication is still very desirable. Grisolle does not give one, although he admits the fatality of this complication. For some of the other complications, we may, from his data, approximate to a table.

Pleuropneumonia ..	31	;	out of Pneumonia 247,	or 12·5 p. ct.
Bronchitis	58	;	” ” 240,	or 24·1 ”
Diseases of circulation	12	;	” ” 58,	or 20·6 ”
Hepatic disease	20	;	” ” 277,	or 7·2 ”

The analysis above made will show how easy it is, even with the best intentions, by an accidental combination, in which due regard has not been paid to the age of the patients, the number of females and of complicated cases, to

draw fallacious conclusions from statistics of mortality in pneumonia.

I proceed now to analyse the results of the treatment by blood-letting. This is a system of cure adopted by many eminent physicians, but amongst these we must give the palm to M. Bouillaud. His method has been called the "jugulating method", *par excellence*; and, strange to say, his tables (a splendid specimen of what statistics may, in some hands, be made to prove) confirm the efficacy of the treatment. The following is a summary of his plan. He bleeds a patient to about one pound twice in the first twenty-four hours after seizure by pneumonia, in the interval applying cupping-glasses. The second day, he repeats the venesection to the same quantity. The third day, the pneumonia usually yields; if it does not, he repeats the bleeding. On the fifth day, he asserts, a cure is commonly observed; if it has not yielded, then further venesection should be carefully and very cautiously persisted in; but, even after this number of bleedings, it may be often practised with advantage.

I have here tabulated 21 cases given by Bouillaud, in which this practice was followed, which proves to what extent depletion can be carried by some practitioners.

	Bed.	Bleedings.	Cupplings.	Leeches.	Blisters.	Duration.
Males.....	1	.. 1	.. 1	.. 57	.. 1	.. 24 dys.
"	2	.. 2	.. —	.. 30	.. 1	.. 5
"	3	.. 1	.. —	.. 30	.. —	.. 11
"	4	.. 4	.. 2	.. 34	.. 1	.. 11
"	5	.. 4	.. 2	.. 52	.. —	.. 14
"	6	.. 6	.. 2	.. 25	.. 1	.. 11
"	7	.. 6	.. 1	.. 27	.. 1	.. —
"	8	.. 4	.. 4	.. 55	.. 1	.. 12
"	9	.. 4	.. 2	.. 61	.. 1	.. 23
"	10	.. 5	.. —	.. 87	.. —	.. —
"	11	.. 6	.. —	.. 50	.. 1	.. 18
"	12	.. 3	.. 2	.. 30	.. 1	.. 8
"	13	.. 1	.. 2	.. 6	.. —	.. 6
"	14	.. 5	.. 2	.. 50	.. —	.. 8
"	15	.. 4	.. 6	.. 20	.. 1	.. 8
"	16	.. 2	.. 4	.. —	.. —	.. 8
Females	4	.. 3	.. 4	.. 47	.. 1	.. 13
Mean ..	—	.. 4	.. 2	.. 40	11 on 17	10

Or, on an average, upwards of 120 oz. of blood.

In 21 cases so treated, only 3 died. But these cases

are not fairly selected, 2 only being females—a proportion of 9 per cent. only, instead of 31·4 per cent. Moreover, in these cases, 12 were from 18 to 29 years old. Two of the deaths are explained by Bouillaud; one being very much weakened by previous disease; the other was bled twice, but would not submit to a third venesection!

Grisolle has analysed 75 cases similarly collected and tabulated by Bouillaud. The mortality is stated by Bouillaud to have been 1 in $8\frac{3}{4}$ cases, or about 12 per cent. But in 49 only of these was M. Bouillaud's formula properly carried out; in the others, antimonials were given. Out of these 49, 6 died. But even these 49 cases were not average examples; the ages were most favourable—20-30. In 16, the disease was at the first stage only; in 13, at the second; in the rest, intermediate; and there were only 8 females, or 16·3 per cent., instead of 31·4, which is, as before stated, the normal number. In all these cases, moreover, the duration of the disease is reckoned from the period of admission; no account being taken of its pre-existence before that period.

Grisolle is usually classed among the advocates for the blood-letting treatment; and he certainly is so, although not to so great a degree as is generally stated. He advocates blood-letting certainly, because he thinks it shortens the disease; but he seldom trusts to it exclusively; and the cases he gives, I think, even still less justify the conclusion. Here is an abstract of 232 cases, tabulated from his book.

50 Cases in the First Stage:

Deaths, 10; or 20 per cent.
 Females, 14; or 28 per cent.
 Ages, 16-72; mean, 40.
 Blood-letting, from 1 to 7 times; mean, twice.
 Amount of blood lost not stated; mean, 36 ounces.
 Convalescence began on tenth day.
 Pneumonia double in 3 cases.

182 Cases in the Second Stage:

Deaths, 32; or 17 per cent.
 Females, 39; or 21 per cent.
 Ages, 16-77; mean, 35.
 Blood-letting, from 1 to 6 times; mean, thrice.
 Amount of blood lost, 8 oz. to 8 lbs.; mean, 48 ounces.
 Convalescence began—not stated.
 Pneumonia double in 12 cases.

It will be remarked, that the number of females in the whole 232 cases is too small by 8 per cent., being 23 per cent. instead of 31; and the proportion of complicated cases is not stated.

In 69 of the recoveries from among the 182 cases last recorded, blood-letting was employed, together with mild laxatives only; but in the 81 remaining, antimonials were freely conjoined. The number of deaths which occurred among all those treated on the former plan, as compared with all those treated on the latter plan, is not stated; and this omission in some degree, therefore, vitiates the result as a measure of the value of treatment by blood-letting singly.

Grisolle's remarks, however, on these cases are instructive. Taking, he says, all these cases (232), 101 only were successfully treated by blood-letting. In the remaining cases it did not stop the disease; and it is, when reasoning on these cases, that he makes the admission, before quoted, on the incurability of pneumonia, of a certain intensity, by blood-letting alone. As, moreover, in the above number of cases there is not the normal complement of females, this circumstance alone would necessarily diminish the cypher of mortality.

So far, then, we have evidence of the occasional inefficiency of blood-letting as a means of cure, in the proportion of at least in 131 cases out of 232, or 56 per cent. I cannot now dwell upon this part of our subject, but I shall conclude by the addition of Dr. Dietl's cases. That physician treated also 85 cases on the blood-letting system, and he lost 17, or 20 per cent. To recapitulate, therefore,—

	Per cent.
Grisolle obtained (1st stage) a mortality of....	20
Bouillaud, 1st series selected cases	14
" 2nd ditto	12
Dietl	20
	} Mean. 16.5

II. *Treatment by Blood-Letting, combined with Tartar Emetic.* This, I believe, is the ordinary treatment of most modern practitioners, and is probably the most dangerous. The great Laennec was perhaps the first physician who combined these two therapeutical agents. After bleeding a patient to sixteen ounces, he used to give tartar emetic in grain doses every two hours, sometimes, if the case were severe, increasing it to two grains, but he never exceeded thirty grains in twenty-four hours. His success was most marked. Before 1824 he says he did not keep any exact

account, but he does not remember to have lost any case. In 1824, out of 28 rather severe cases so treated, he lost only 1, and that an old man of 70. In 1825, out of 34 cases, of which 5 died, but 3 of these were brought in the hospital *in articulo mortis*, and of the 2 other cases one had cardiac disease, and the other chronic pleurisy. He concludes, therefore, that out of 57 pneumonias, he lost only 2 old men of 70. These results have been objected to by Louis, as the number of venesections is not stated, and the patients were probably not all affected with pneumonia. No great reliance can, therefore, be placed in his cases for tabulation. In England, Dr. Hughes, who has published two excellent monographs of this disease in the *Guy's Hospital Reports*, gives a totality of 300 cases. Of these, however, only 101 were treated by himself. The remaining cases, in two groups, one consisting of 145 cases, and the other of 54, were only examined after death, at least it is not stated that they were treated by himself. Taking the whole 300, the following general remarks may be made.

Ages.	Cases.
Children	10
Under 20	45
20—30	78
30—40	55
40—50	40
50 and above	63
Age not mentioned	7
	133
	112

There were, besides the 10 children, 82 females, or 28 per cent. Both sides were affected in 98 cases out of 297, or 33 per cent.

Fifty-three cases only were uncomplicated, or complicated with pleurisy alone, *i.e.*, a proportion of nearly 18 per cent. The deaths among the simple only, were 12, or 22 per cent. In 3 of these cases, the disease was double. In 4, the malady was much advanced when under treatment; a very bad lot of cases, it must be admitted.

In the 101 other cases, however, which were spoken of in the first series, and which he treated—

Ages.	Cases.
Under 20	24
Under 30	38
30—40	19
40—50	8
50 and above	12
	101

There were 25 females, or 25 per cent.; 19 per cent. had double pneumonia; the mortality was 24 per cent. The simple uncomplicated cases were 52, the mortality was 22 per cent. (See above.)

The vast number of complicated cases is remarkable; viz. 51 per cent. The number of females is 6 per cent.—too small.

In the treatment pursued, the general rule was to bleed to approaching syncope, and to administer a pill containing a quarter of a grain of tartrate of antimony, and half a grain of opium, with one or two grains of calomel every three, four, or six hours, according to the severity of the symptoms. These remedies were assisted by a saline containing from twenty to thirty minims of antimonial wine. If in a few hours, or by next day, the symptoms were not subdued, or recurred, he repeated the venesection. Triple venesections were uncommon: a fourth very rare. Cupping was preferred to from six to twelve ounces; the medicines being generally diminished in quantity and frequency as the case progressed. Blisters were used with good effect in the later stages. Dr. Hughes does not like to trust alone to the tartrate of antimony. Of these 101 cases, he only used his plan in 41; mortality 6, or 14 per cent. In other 9 cases, in which no mercury was given, mortality 2, or 22 per cent. In other 37 cases, bleeding was not admissible or unnecessary; mortality 13, or 34 per cent.

These cases at first sight seem to favour the blood-letting system, since a united mortality of 16 per cent. resulted from this practice, as opposed to 34 per cent. without it: but this difference Dr. Hughes attributes to the class of cases, and their marked typhoid character.

In a series of cases which I collected, and which occurred in the practice of Drs. Walshe, Taylor, and Peacock, and which, through their kindness, I was enabled to tabulate on a former occasion, the treatment adopted generally, at least by the two former gentlemen, resembled that of Dr. Hughes, although perhaps not so antiphlogistic; viz. blood-letting, local and general, with tartar emetic, although more moderately employed. The abstract of these cases is as follows. I would divide them into simple or idiopathic, complicated, and secondary.

1st. Idiopathic:—

61 cases, 2 deaths, or 3·2 per cent.

14 were double, 2 cases were females.

9 were of pleuropneumonia.

2nd. Secondary :—

17 cases, 10 deaths, or 58 per cent.

3 were females.

3rd. Complicated, with diseases in order of frequency, phthisis, bronchitis, Bright's disease of kidney, and dropsy, endo- and pericarditis, meningitis, erysipelas :—

62 cases, mortality 51 per cent.

23 were females.

In this number the females are in too great minority; the proportion being 27 out of 140, or 19 per cent., instead of 31. The united mortality from all the 140 is 43 deaths, or 30 per cent. But among the complicated and secondary, it is enormous, viz., 53·1 per cent; and while I do not say that in all these active measures were employed, still it was in the majority; and, *à priori*, it is in these that we should expect the most disadvantageous effects from blood-letting. In regard to the ages, out of the 126 cases 86 were under 40, the rest above. Making all allowance for the large proportion of bad cases, it must be admitted that the mortality is high, even as compared with our continental hospitals. It should, however, in justice be added, that University College Hospital and the Royal Free Hospital being small hospitals, it is only the worst cases which, as a rule, are taken in.

To Grisolle we are also indebted for some cases treated by blood-letting and tartar emetic. He gives us two groups of cases :—the first consists of ordinary cases, thirty in number; the second, of thirty cases in which, blood-letting having been carried to a degree, further than which it could not be carried, tartar emetic was conjoined as a last resource.

In the first group of cases 10 died out of 80, or 12 per cent. These had been bled first to from one to three pounds, the tartar emetic treatment being, however, conjoined. The recovery in these was later than that of patients treated by blood-letting alone; but then they were cases which had resisted that treatment singly.

In the second series of cases, out of 30, 18 died, or 60 per cent.; but these were examples in which, as before seen, the blood-letting had been most heroically followed out. The cases were, therefore, from this cause, as well as the intensity of the disease, most unfavourable.

Taking these two classes of cases conjointly, we have

110 cases, with a mortality of 28, *i. e.*, about 25·4 per cent.

The following is a *resumé* of these cases:—

80 cases :

Deaths 10, or 8 per cent.
Females not stated.
Ages 16-70, mean 35½.
Double pneumonia, 8.
Half lung attacked, in five-sixths.
All second stage.
Blood-letting 1 to 3 lb.

30 cases :

Deaths 18, or 60 per cent.
Females not stated.
Mean age 49.
Double pneumonia, not stated.
Part of lung attacked, not stated.
Stage, not stated.
Blood-letting carried to the utmost extent.

From these tables, it appears, important data are omitted.

To recapitulate, therefore, by blood-letting and tartar emetic conjoined, Dr. Hughes, whose practice I believe to be a fair sample of British treatment, obtained, out of 101 cases, a mortality of 24 per cent. In the simple cases, of 22 per cent. Grisolle, out of 110 cases, had a mortality of 25·4 per cent. Drs. Taylor, Walshe, and Peacock, out of 140 cases, of 30 per cent.; on the simple cases, of 3·2 per cent.; on the complicated and secondary, of 53 per cent. These results are unfavourable in regard to complicated cases, but favourable in regard to simple. These three examples of cases give a mean mortality of 26 per cent., which as a whole is not a favourable result.

III. *Treatment by Tartar Emetic.* Here I must be very brief, owing to the extent to which I have already noticed this treatment when speaking of blood-letting. The tartar emetic treatment took its rise in Italy, where it was introduced by Professor Rasori first, and subsequently by his pupils Tomasini and Areteus at Padua. It was subsequently taken up by Peschier, of Geneva, then employed and experimented on by Laennec at Paris. The former physicians gave it in fearful doses, and there is no doubt that they exceeded prudence in this respect.

Under a more prudent use of this remedy, Louis and others obtained better results. Out of twenty cases treated by tartar emetic, only three died. Grisolle's own experi-

ments prove the efficacy of this treatment better than any other that I am acquainted with. He selected forty-four cases in which venesection was not practised at all, but tartrate of antimony alone was given. The following is a *resumé* of forty-four cases so treated:—

Deaths, 6, or 13 per cent.

Females, 8, or 18 per cent.; too small by 13 per cent.

Ages, 15-71; mean, 37.

Second stage in 35 cases.

Half lung seized in three-fourths of the cases.

All the fatal cases were above 50 years old; and, what was interesting to note, in the cases which recovered, there did not appear to be any intermediate convalescence, the patients recovered so rapidly. Indeed, although the stethoscopic signs had not completely disappeared, they would not believe they were not quite well, and left the hospital.

Dr. Dietl, of the Wieden Hospital in Vienna, equally experimented with tartrate of antimony. Out of 106 cases treated by this remedy alone 20·7 per cent. died, that is, 22 patients; a mortality a shade higher than that which he obtained by the blood-letting treatment, as before seen, viz., 17 out of 85 cases, or 20 per cent. To recapitulate again: in those cases treated by tartrate of antimony alone, prudently given, there were—

	Cases.		Deaths.		Per Cent.
Louis	20	....	3	....	15
Grisolle	44	....	6	....	13
Dietl	106	....	22	....	20·7
<hr/>					
Mean	170	....	31	....	18

This is a higher mortality by 1·5 per cent. than by blood-letting alone, or 8 per cent. less than that by tartar emetic and blood-letting conjoined.

In reflecting upon these numbers, they are interesting as proving that, as a rule, when tartar emetic is conjoined with blood-letting, the mortality is usually greater than where either tartar emetic, or venesection, is employed singly, so far militating against the combination of these two remedies, because the more depressing. It must be confessed, however, that when cases yield to blood-letting, convalescence sets in earlier; but the recovery of health and strength is not so complete or frequent as when tartar emetic is the only remedy employed.

IV. *The Chloroform Treatment.* This treatment is com-

paratively new, and of German origin. A very good abstract is given in the *Medical Times* of some twenty-three cases so treated by Varentrapp. The mean period of admission was on the fourth day of seizure. Twenty-one were males, and two females. The skin became moist usually after the first inhalation, but never later than the fourth or fifth. The pain at side usually disappeared between the third and fourth day. The cough and frequency of respiration were quickly diminished. Fever disappeared about the fifth day. Good easy sleep was usually attained about the third to fourth day. The mortality was one, or $4\frac{1}{3}$ per cent. We should here remark, first, that this number of cases is too small; and, secondly, too favourable, by reason of the women not being numerous enough. Moreover, as three bad cases were admitted during the period of Varentrapp's experiments with chloroform, all of which died, and which from their severity and complications were not treated by chloroform, these cases should be in fairness included. This would raise the mortality to $11\frac{1}{2}$ per cent. But even this mortality is comparatively low, especially when age is taken into account: the youngest being 19, the eldest 62—mean age 32. These results, however, are confirmed, and even more favourably, by those obtained by Wacherer, Baumgärtner, and Helbing, who, out of 193 cases, lost only 9, or $4\frac{1}{4}$ per cent. This result, it must be confessed, is highly favourable; and if correct, and if the cases are fairly selected, is preferable to that obtained by any of the previously mentioned methods of treatment. This, however, I cannot verify, not having been able to obtain a copy of the original papers. I know not if the chloroform, when inhaled, increases the amount of chlorides in the blood. If it does, here is one way of explaining its beneficial effect. One way, and one obvious at once in which it does good, is that suggested by Dr. Richardson, and alluded to before; viz. that it arrests for a time the oxygenation of the blood during its transit through the lungs, and thus diminishes the quantity of fibrin formed.

It remains for me only to sketch the method in which the chloroform was exhibited in Varentrapp's cases.

The chloroform was not given to stupefaction, but about sixty drops were placed on a compressed piece of cotton, and the vapour allowed to enter the lungs for ten to fifteen minutes. If cough was excited, or unconsciousness seemed about to be induced, the cotton was removed for a few moments. Every two, three, or four hours, the inhalation was repeated. If the first three or four inhalations produced

any effect on the head, or irritation on the lungs, this soon passed off. The average number of inhalations was seventy-four in ten and a half days, the minimum being twenty-seven days in five, the maximum a hundred and sixty-two in fifteen days. (*Medical Times*, 1851, p. 414.)

v. *The Milder Treatment.* I am compelled here to be brief, for the reason before stated. That pneumonia will get well with a milder treatment is proved in two ways. 1. By the negative evidence of quackery. 2. By the positive evidence of legitimate experiment, and this with no increase of mortality.

1. The best evidence afforded by quackery is given by those patients treated homœopathically. And here let me guard myself, by saying that I do not admit the accuracy of the statistics given out by those of that persuasion. I have elsewhere, I think, gone far to prove that their cases are often inaccurately diagnosed and selected. But yet there can be no doubt that they do sometimes treat cases of genuine pneumonia, and that these also sometimes get well—cured, in fact, by *nature*, in spite of the treatment. Amongst these, Tessier's cases are more worthy of notice. I have elsewhere analysed them. His cases were selected because, instead of 50 per cent. complicated cases, he had only 17 per cent. His mortality was also understated, being, in fact, not three deaths out of forty-one cases, or 7 per cent.; but five deaths out of thirty-five cases, or 14 per cent. This ratio of mortality, looking to the simple nature of the cases, is high as compared with the returns of legitimate practitioners. Yet, it is the fact that we have here thirty cases getting well without active treatment; and other similar cases present themselves in hospitals devoted to this delusion. So likewise the cases of Moreau, Compagnani, and Monata, where pneumonia was cured by cold water, so far as they go, justify a similar conclusion.

2. The positive evidence of legitimate practitioners proves this likewise. Grisolles, though timid to carry out his plan further, gives eleven cases which, treated simply by emollients, recovered, although the symptoms persisted longer than in those who were treated by blood-letting. Dr. Dietl obtained the best results by this treatment. Thus, out of 380 cases, treated in the Wieden Hospital in three years—

	Cases.	Died.	Per cent.
Treated by repeated blood-lettings	85	17	20
„ tartar emetic	106	22	20·7
„ simple dietetic means .	189	14	7·4

Even in the General Hospital in Vienna, the treatment is almost simply dietetic. The medicines given are merely so many apologies for therapeutics; perhaps a quarter of a grain of bichloride of mercury, or a few grains of the extract of grass, during a whole illness. But the patients were warmly covered; and, if we except the discomfort occasioned by stethoscopists, and the noisy visits of the multitude of students, which alone retard and sometimes prevent recovery, it is simply nature which effects the cure. The mortality was in 1847-8, 260 out of 1,134 cases, or 22·9 per cent.

Dr. Todd, among ourselves, uses a very mild treatment, and discourages blood-letting, and even tartar emetic. After ample experience of this treatment, he found the most successful treatment was generally to give the liquor ammoniæ acetatis or citratis in large and frequently repeated doses, which does not exercise any depressing effect upon the patient. In pursuing this treatment, he gives full doses, six or eight drachms, every three or four hours; applying diligently counter-stimulants, such as mustard, or flannel soaked in warm turpentine, over a large extent of surface of the chest. With this are combined opium, with or without calomel, and occasionally a mild aperient; and the patient is supported from the first with animal broths in small quantities, and at short intervals, and sometimes a small amount of stimulus. "Under this treatment", he remarks, "deaths from pneumonia have become extremely rare among my cases. The fatal cases are those of patients who come in far advanced in the disease, or in whom the disease has rapidly invaded a large surface of one or both lungs; but even such cases often do well under this treatment, combined with support and stimulants." (*Med. Times*, 1852, p. 481.)

VI. *The Treatment recommended.* I think it follows from the above statistics, if we except the chloroform treatment, about which we cannot yet judge accurately, that the blood-letting treatment conjoined with tartar emetic is, in the present type of disease, the worst, and the dietetic the best. Still I conceive that there are certain indications of treatment at once so obvious that, if we seek to be something more than passive practitioners, we should be wrong to neglect them: and this is especially true in serious examples of pneumonia; and if these be fulfilled, they bid fair materially to assist dietetic measures. These indications appear to me to be—1. To diminish the general fever,

specially the increased pulmonary and cutaneous respiration; 2. To relieve the local symptoms by removing the local mischief, and promoting expectoration; 3. To check the tendency to death by depression.

1. To diminish the general fever, especially the pulmonary and cutaneous respiration, both which last increase the hyperinosis. In pneumonia, as I have already said, apart from the peculiarity of the chest symptoms (although no doubt resulting from them), the pulse is unusually rapid, and the skin pungently hot.

(a) The quick pulse is, I fear, not sufficiently attended to in general. I believe that, as in fever, or puerperal fever, it is a very bad sign if it exceeds 140 or 160 per minute. This extraordinary frequency denotes diseased blood to a large extent; it is the evidence of a nervous shock, which may prevent nature from rallying. But, whether a pulse be rapid from nervous shock, or even inflammatory fever, its persistence is injurious, because the waste of the body, and of its life, (which is the blood, now undergoing the ordinary chemical changes in excess), is therefore the more rapid, and in the end will give rise to great debility. In pneumonia, therefore, to check if possible the material depressing tendency is a most important part of the treatment. The pulse must be reduced in frequency. The surest means to effect this is, I believe, *aconite*. The cutaneous temperature is equally certainly reduced by *oleaceous* inunctions; and therefore it is that I seldom if ever bleed, although I would not be so dogmatical as to say I never will. Besides, as before stated, bleeding fails in 53 per cent. of pneumonia.

To those who are acquainted with Dr. Fleming's admirable work on *Aconite*, and the experiments upon which he founded his conclusions, the efficacy of this remedy in checking fever must be well known. It acts upon the heart, directly reducing the frequency of its beats, as well as the number of the respiratory movements; and, if we can judge from the few cases of poisoning in man, it rather impedes, and in excess actually prevents, the coagulation of the blood. Unfortunately, however, *aconite* is feared and avoided in England as an internal therapeutical agent, because believed to be most uncertain in its effects: and this opinion is justified if we employ the ordinary tincture of the *London Pharmacopæia*; but it is a prejudice to apply it to the tincture of the alcoholic extract of the root of the *aconitum napellus* or *ferox*, both of which are to be depended upon. With children, I have more than once been surprised at the

effects produced by it in allaying fever, even in comparatively small doses. The tincture of the extract which I have been in the habit of using contains one grain of the alcoholic extract of the root to twenty drops of alcohol; and the dose for an adult varies from half a drop to three minims. I have given it up to five drops to an adult three times a day; but, in this case, poisonous symptoms supervened—a sort of tetanic rigidity of the entire voluntary muscles, and a tingling sensation all over the body. In another case, where the dose ordered was three and a half minims three times a day, the patient, wishing to get well the sooner, as he supposed, took a double dose. Complete paralysis supervened, with loss of pulse, fainting, sickness, and vomiting. The pupil became so dilated that the iris was not to be made out. A simple purgative cured the first case; the second did not recover till two or three hours by stimulants, especially ammonia. The potency of this preparation is therefore manifest. One drop of opium has been known to poison an infant; and, even for children under three or five, a quarter of a grain of Dover's powder, or one-twentieth of a grain, has often a marked effect. Four and a half grains of opium and two drachms of the tincture have been known to kill a man. There is no doubt that seven drops of the tincture of aconite before alluded to would have killed my man, if nature had not assisted him, and prudential measures had not been adopted. For practical purposes, I believe I may say that one drop of this tincture is at least equivalent to one grain of opium. I therefore use it with great care, especially with children, on whom I think it exercises an influence equally as strong and peculiar as opium. Thus, if one or two drops be added to eight ounces of water, although only half an ounce be the quantity given for a dose, *i. e.*, from one-thirty-second to one-sixteenth of a drop, and repeated every two hours, an effect is usually manifested on the feverish excitement in a very few hours. With an adult I never would now begin with more than two drops, repeating one drop every two hours till the pulse falls. But even this is a large dose; and, in most cases, one drop to begin with, and a quarter to half a drop repeated every two hours till the pulse falls, will be found sufficient. In its action, it must be carefully watched; the patient must be often seen; and great care must be taken that the party to whom its administration in our absence is confided, is trustworthy; and directly the patient looks pale, and feels faint, its use should be discontinued.

Here, then, is a remedy to be preferred to blood-letting, because, while it is equally powerful in its action, it has the advantage of sparing his blood for the future contingencies of the disease.

(b) The peculiar heat of skin which exists in the first stage of pneumonia is believed, as I before stated, by several eminent observers, to be pathognomonic of the disease in the first stage. If it be made to include under this term the pulmonary congestion alluded to, I must fully concur in it. I believe that it is owing to hyperoxygenation of the blood in the *cutaneous* capillaries even more than to the hurried respiration in the lungs, which, in an inflamed lung, must be necessarily interfered with and defective, as occasionally evidenced by the lividity of the countenance. Following out Mr. Taylor's practice, and encouraged by the experiments of Messrs. Becquerel and Breschet on the effects produced by varnishing over the skin with various substances, I have been commonly in the habit of ordering my patients, especially children, to be rubbed over the entire body with a mixture of sweet oil and mutton suet; and I can speak in the most commendatory terms of its effect in cooling the surface of the skin, and reducing the fever; and this in cases where sudorifics had failed in producing perspiration. I can give no better explanation than that already suggested for these results: but I speak practically, and after extended experience: indeed, I may say I know no surer means, and I might add, no speedier remedy; for it is generally effective within three hours in reducing heat of skin and most of the unpleasant effects of anorexia. The disadvantage is the objection usually made to oleaceous inunction by adults. Probably, in some of these, a wet sheet or hydropathic packing would effect the same result.

My experience, however, of this mode of treatment is limited to a few cases of fever, in which it was followed with good effect; and the reports of M. Hegele of Augsburg, who states that he used it successfully in forty cases of pneumonia. The experience of Moreau, Moneta, and Compagnani, before referred to, tends to the same direction.

2. The second indication is to relieve the local symptoms by removing the local mischief and promoting expectoration. I shall best explain my practice here by speaking of the plan adopted under three heads. *a.* Remedies acting *generally* on the system, and at a distance from the affected

part, by derivation. *b.* Remedies acting *locally* by derivation. *c.* Medicines acting locally and generally by relieving pain and promoting expectoration.

(*a*) Of these, there are three which I shall notice; pediluvia, Junod's apparatus, and purgatives. It is curious how rarely pediluvia are employed in pneumonia, particularly among adults. Abroad, indeed (although the why and wherefore I have never been able to discover), there is a belief that it is dangerous practice in inflammatory diseases of the lungs: and yet M. Junod's exhaustion pump, which acts precisely on the same principle, is favourably mentioned. It is generally always practicable to bring about deliquium by stimulating pediluvia. If the patient be placed in the sitting posture, and his feet, up to his hips nearly, placed in warm water, the temperature of which is gradually raised by the addition of more and more boiling water, as the patient can bear it, he will usually faint in about twenty minutes. I have seen a strong, robust, plethoric man, with high fever and active cerebral congestion, made to faint in twenty minutes by this simple means; and the fever has given way, on his recovering his senses, to copious perspiration. In this manner, we may often produce all the effects of a good venesection and yet spare our patient's blood. In simple pulmonary congestion, indeed, no other remedy is required.

Purgatives, since the prevalence of cholera, have not been much in vogue; yet their derivative effects are well marked in many instances, and as such they are most efficacious in the outset of pneumonia. I need not, however, dwell upon this point, as it will be readily admitted, not to speak of their beneficial effect in preparing the system for the use of other medicines, and the clearing of the *primæ viæ*.

After all, however, of all measures applied at a distance from the affected part, to derive from it, none is so effective as Junod's exhausting apparatus (*Gazette Médicale*, 1850, pp. 115, 709). Pounds of blood may by its means be drawn from the body and collected in the extremities; and in this manner all that blood-letting can do is effected. The local congestion is removed, and comparative ease is obtained, and again the blood is saved. The quantity of blood in the system is not necessarily favourable to hyperinosis or inflammation. And if this be impeded, by retarding the rapidity of its flow through the lungs by aconite, and if the skin be rendered nugatory as a respiratory organ, by oleaceous inunction, we hold both general and local disorder

under control, and may soon expect recovery. I hope that this apparatus may be, ere long, more generally employed in England. It has done good service already abroad; and we should not hesitate to adopt a good measure merely because it varies from our usual routine.

(b) Among the local derivants, cupping, leeches, and counterirritants are much employed. Of the good effects of the two former I am fully satisfied. But here, again, I dissent from their employment otherwise than as an exceptional practice. I believe this is very seldom necessary, and particularly leeching with children.

I have seen leeching chiefly used in the practice of others. It certainly has cured, and very generally does cure, the pneumonia; but it commonly kills the patient, or lengthens unnecessarily his convalescence. Among adults, its effects are more salutary; I would almost say especially so in cases treated by venesection. If M. Bouillaud's cases recover, I believe they owe it to the two average cuppings and the forty leeches. But I think either is generally unnecessary. *Dry cupping* will do all that is required. It will, if *extensively* applied, and herein lies the secret of its successful employment, effect all that the ordinary cupping or leeching could do, without weakening the patient. The employment of *blisters* is variously spoken of. Some say they are injurious, as giving rise to so much distress, and prefer mustard poultices. This depends of course a good deal upon the patient's feelings. But I think more depends upon the *manner* in which they are applied. The cantharidine mixture, or the solution of the acetum lyttæ in chloroform, vesicates the skin very speedily, and if the surface be covered with cotton wadding immediately after the application, the vesicle soon rises, and with comparatively little discomfort to the patient. And if the wadding be repeated every two or three hours, repeated vesicles will form, which may be successively cut. In this manner, the local distress will be greatly relieved. I have seen a patient with mitral disease and great pulmonary congestion, of *several weeks' duration* (and in whom blood-letting, either local or general, was contraindicated), lose in this manner quarts of serum, and be so far relieved thereby, as to be able to get up and resume her ordinary occupations; and, indeed, in one case, the patient, who had been unable to walk for months, found herself so far recovered as to be able to walk up to my house and back, a distance of a mile and a half each way, to visit me, apparently, as she assured me,

without much inconvenience. I am aware this is strong language; but at the risk of being called an enthusiast in my advocacy of blisters, I am bound to speak from my own experience.

If blisters, however, be objected to, I think that flannel dipped in turpentine, applied to the chest, and especially as a sequence to the dry cupping, is the next best remedy. Patients are almost always able to bear this species of counterirritation in preference to mustard poultices, and for a longer time, and the effects are certainly less painful, and as lasting. Here, also, however, the surface over which it is applied should be large. The remedy, if only partially applied, is of little value.

Among the medicines which promote expectoration, etc., I have found the most useful to be—

(c) Small doses of calomel, and tartar emetic in quarter grain doses, given at first. I give the calomel as an alterative, or occasional purgative, not with a view to touch the mouth. The tartar emetic is certain as an expectorant and sudorific. The secret of its employment, I believe, is to give it in the early periods—the first three or four days—and not to persist in its employment too long, else it weakens the patient a good deal, and depression of the system will not cure pneumonia. By the use of these remedies, the inflammation may be generally checked by the third, fourth, or fifth day, and the fever so reduced as not to require more active treatment. So soon as the fever, however, is reduced, and even before, if any irritative or hectic excitement supervenes, I conjoin cod-liver oil. I will not here give an explanation of its operation; I must be content to speak from practice, and this is highly encouraging. It possesses one advantage, my patient often looks better, fatter, and stronger at the end of his convalescence than he did previously; and this is always a favourable and agreeable result to both doctor and patient.

3. The mortality in pneumonia I have stated to be large in proportion as the tendency to death by exhaustion exists. To obviate this, from the first, I prescribe moderate quantities of beef tea. I would rarely give the patient the *diette absolue* of the French. The more prudent diet appears to be one of the nature of the middle diet of an hospital; and this even in what are called dynamic pneumonias, as opposed to the typhoid varieties, in which stimulants and nourishing aliment are from the first necessary. I have not yet tried the plan, but it ap-

pears to me as possible that admixture, in soups, of large quantities of salt, might be found useful in improving the character of the blood, dissolving the excess of fibrin, thus facilitating its removal, and generally by augmenting the quantity of chlorides in that fluid.

Such is the plan of treatment I would urge upon the notice of the Society.

Three principal objections have, in the course of the reading of this paper, been urged against my views. First, I have been blamed for travelling out of England to find statistics of treatment; and, therefore, it is believed the arguments adduced do not apply to this country. I deny this conclusion. The science of vital statistics proves that the laws of life and death in disease vary in different countries more apparently than really. But in my case I have had no option. This country is famed for its hospitals, and they are noble monuments of British generosity. But the responsibility lies heavy upon those who direct these institutions. The information they could convey is contained in closed books, and the cause of humanity derives no more good from them than from so many monasteries. Individuals profit, it is true, and so far benefit their own patients; but the public is none the wiser. I would have gladly and proudly selected English statistics in preference, if I could have done so.

Secondly. It has been said that while the paper I have written favours dietetic treatment, I have not adopted it. This may be true; but if so, it is because I have also wished to improve it by combining it with the science and practice of medicine, applied with, I trust, simplicity and common sense. At any rate, my treatment is mild in comparison to the usual practice.

Lastly; it has been objected that I have not given any statistics of my own treatment. I admit this also; but I hope hereafter to do so, after larger experience, and in the expectation of deriving additional support from experiments made by others of my compeers. All I can say is, that since I have relinquished blood-letting, my deaths have been but few and far between, and my recoveries more numerous. Life and death are not in the hands of man. These are overruled by a higher Power. But if a man believes a plan of practice he adopts to be successful, it is not the less his duty—in all humility, it is true, yet in all honesty—to make it known.

To recapitulate :—

1. It is impossible to state the normal mortality of pneumonia with our present data.
2. It is particularly affected by age, sex, and complication, on which, in estimating results, sufficient stress is not laid.
3. The results of different modes of practice seem to be :—

	Mort. per cent.
By blood-letting singly	14 to 20
„ tartar emetic singly	13 „ 20
„ blood-letting and tartar emetic conjoined	24 „ 30
„ chloroform	4½ „ 11
„ simple dietetic treatment	7 „ 12

4. The treatment I recommend is—

(a) Reduce the fever by aconite. (b) Relieve the local symptoms by dry cupping, Junod's apparatus, pediluvia, purgatives, blisters, avoiding as much as possible all abstraction of blood, local and general. (c) Promote expectoration by small doses of tartar emetic, chiefly at the beginning of the disease; and (d) give small alterative doses of mercury, if necessary; and, lastly, rather support your patient by mild emollient diet. In this manner you best avert the tendency to death, and diminish the mortality.

1. It is a very common mistake to suppose that the
main body of the text is the only part of the
document which is of any value. In fact, the
main body of the text is often of no value at all,
and the only part of the document which is of any
value is the title page.

2. The results of the experiments are as follows:
The first experiment was conducted on a small
scale, and the results were as follows:
The second experiment was conducted on a larger
scale, and the results were as follows:
The third experiment was conducted on a still larger
scale, and the results were as follows:
The fourth experiment was conducted on a very large
scale, and the results were as follows:
The fifth experiment was conducted on a very large
scale, and the results were as follows:
The sixth experiment was conducted on a very large
scale, and the results were as follows:
The seventh experiment was conducted on a very large
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The eighth experiment was conducted on a very large
scale, and the results were as follows:
The ninth experiment was conducted on a very large
scale, and the results were as follows:
The tenth experiment was conducted on a very large
scale, and the results were as follows: