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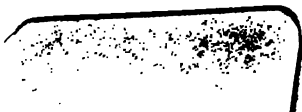
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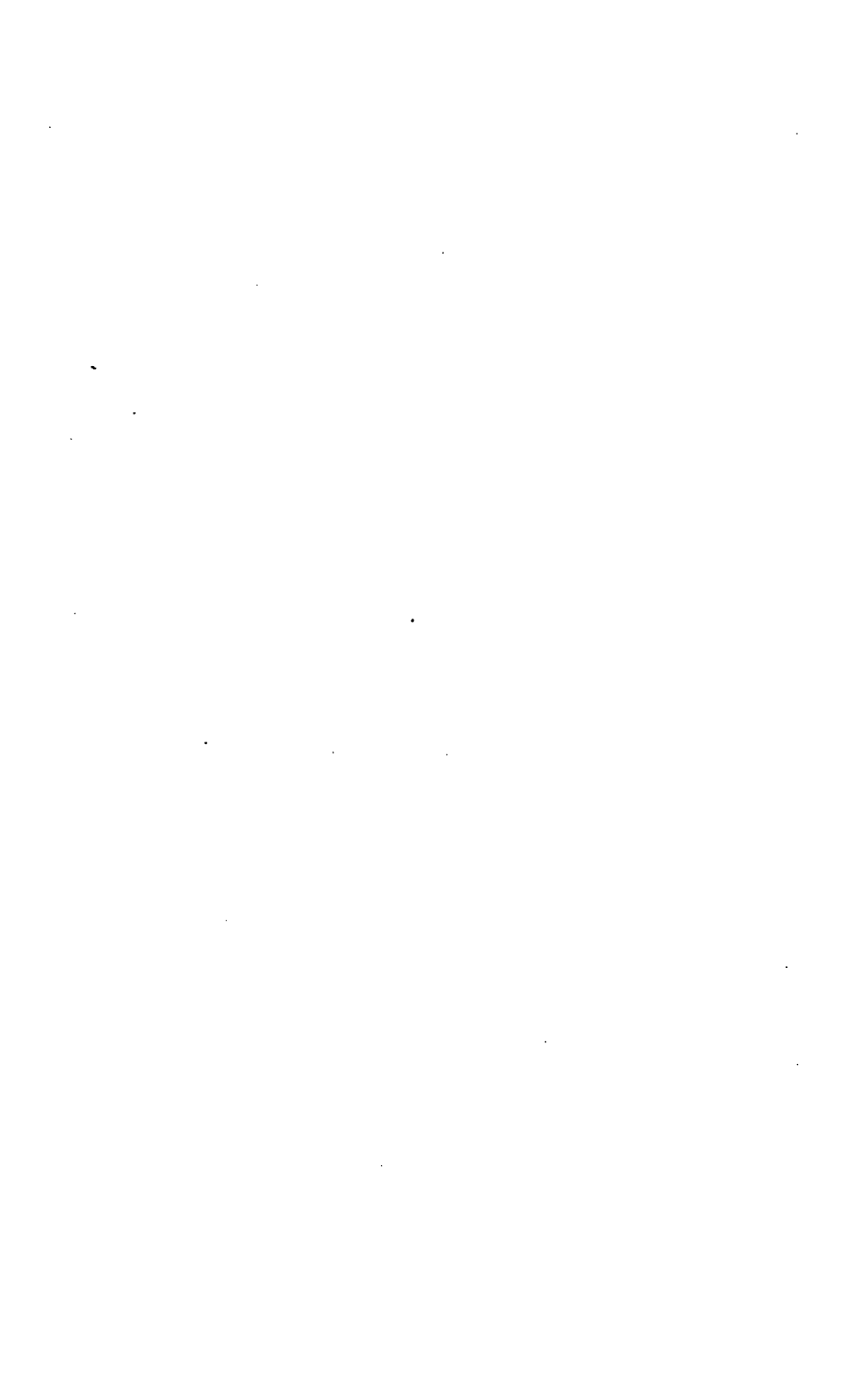
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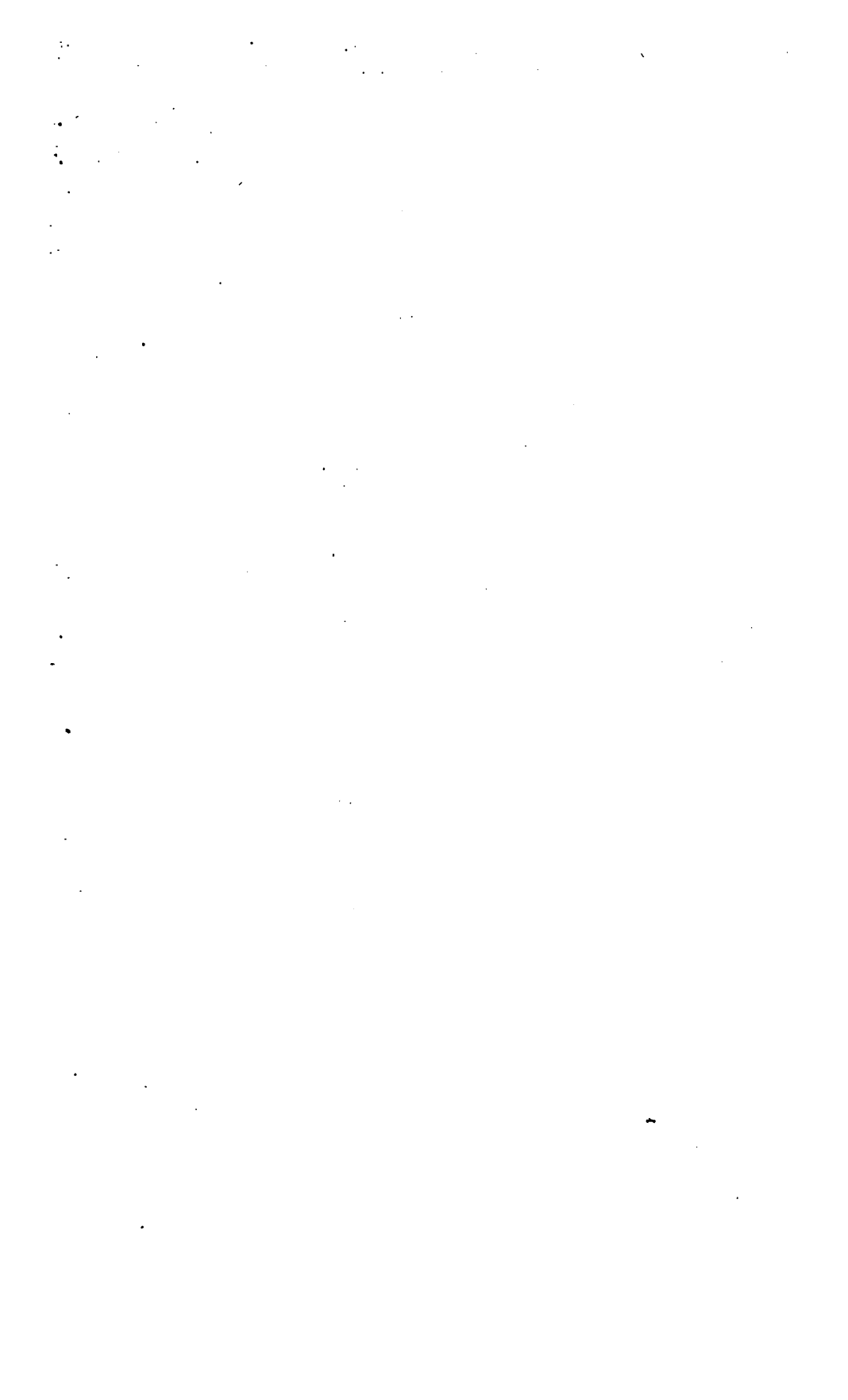


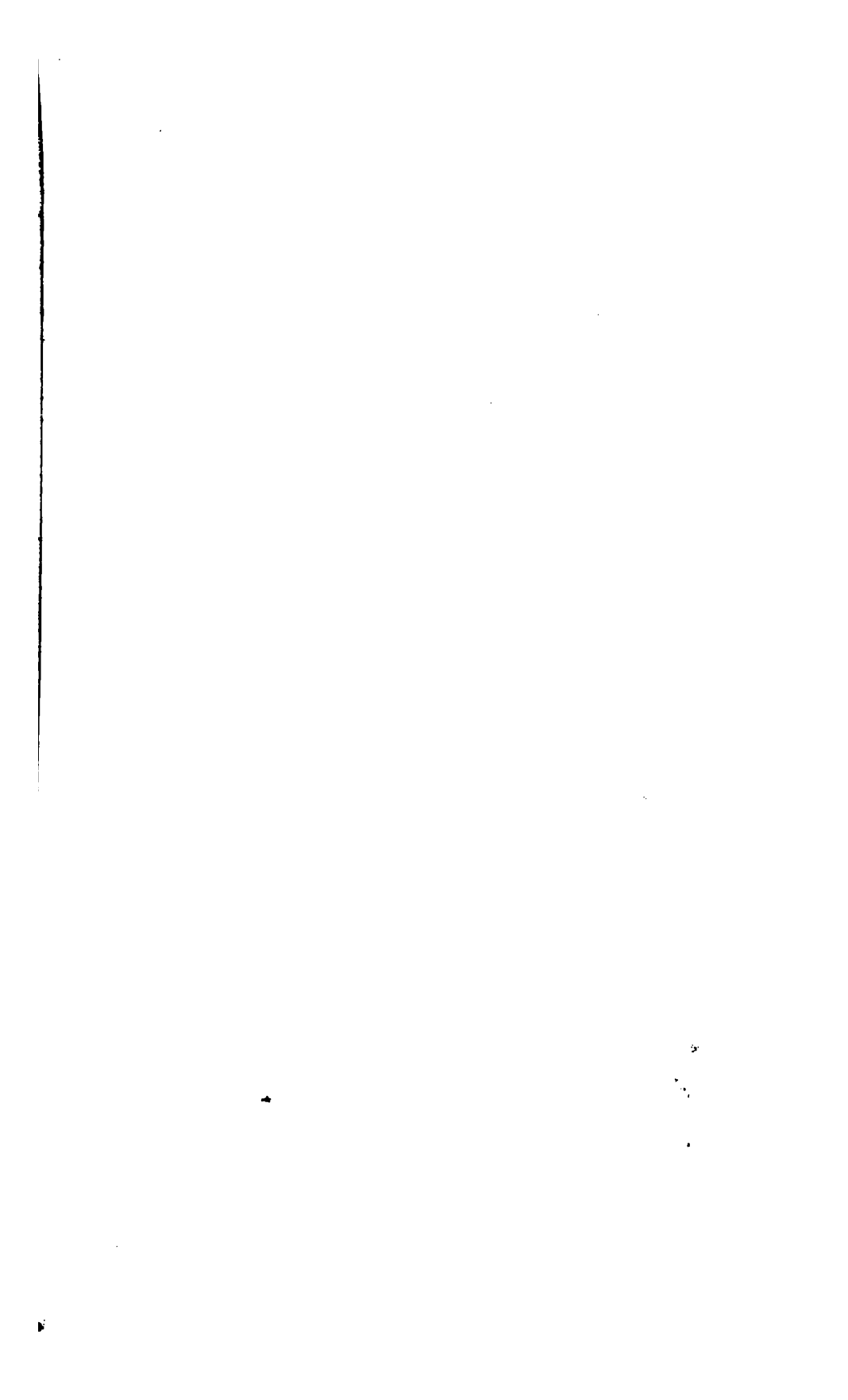
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ERRATA.

- PAGE 30, line 10 from bottom, for "the blood" read "blue blood."
" 41, " 15 " " " " "abscessing" read "obsessing."
" 73, " 12 " " " " "iv." read "iv."
" 77, " 8 " top, " "microscopic" read "double."
" 105, " 8 " " " " "j." read "Oj."
" 106, " 11 " " " " "empyema" read "emphysema."
" 134, " 7 " bottom, " "where there is no reason" read
"where there is reason."
" 136, " 14 " " " " "under &c." read "render their em-
ployment advantageous or otherwise."



ON THE
ETIOLOGY, PATHOLOGY,
AND
TREATMENT
OF
FIBRO-BRONCHITIS
AND
RHEUMATIC PNEUMONIA.

BY

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FORMERLY PHYSICIAN TO THE BALTIMORE ALMSHOUSE INFIRMARY.



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1853

THE
Following Essay,
WHICH HAD BEEN DEDICATED TO THE LATE
PROFESSOR POWER,
AS A SMALL PROOF OF THE RESPECT ENTERTAINED BOTH FOR HIS
PURITY OF CHARACTER AND HIGH MEDICAL SCHOLARSHIP,
IS NOW
AFFECTIONATELY INSCRIBED
TO
HIS MEMORY.

P R E F A C E.

THE etiology and pathological semeiology of diseases of the chest having been thoroughly examined and elucidated by so many profound observers, it may seem proper to apologize for entertaining the subject anew, and, especially, for instituting an inquiry into a disease so common as bronchial catarrh, and which generally occurs in so mild a form, that there is a proneness to regard it as far simpler and better understood than almost any other affection.

Trusting, however, that a mere gleaner may be permitted in a field from which the rich harvest has already been gathered, the following observations are advanced, with the assurance that, had they possessed an interest barely scientific in its character, the time and attention of the reader would have been spared, and that they are only brought forward now because it is believed that they involve truths of immense importance in a practical and therapeutic point of view.

A knowledge, moreover, of fibrous bronchitis serves to explain several points in thoracic pathology, which hitherto, involved in much obscurity, have led to controversy between the best observers.



FIBROUS OR RHEUMATIC BRONCHITIS

AND

RHEUMATIC PNEUMONIA.¹

THE leading object of this volume is to point out, as clearly as possible, the distinctive characters of fibrous or rheumatic inflammation of the bronchial tubes, and at the same time to show the differential diagnosis between it and ordinary catarrh; the word rheumatic has therefore been affixed to the term bronchitis, for the purpose of showing at the outset that it is intended to treat of a distinct affection, which, for want of proper anatomical accuracy as to its true seat, has been most singularly confounded with inflammation of the mucous membrane of the bronchi.

The next object is to show that there exists a form of pneumonia which is never idiopathic, but occurs as a

¹ The reader has a right to know that this Dissertation comes before him under the cloud of being a rejected address, it having already been subjected to the consideration of the Committee of the American Medical Association on Voluntary Communications, for 1853. If, however, the author's observations shall be verified by others, they must prove valuable to the profession, since they not only point out a disease never before described, and show the differential diagnosis between it and other affections with which it may be confounded, but serve, at the same time, to explain many minor points of pathology.

secondary lesion, and is always symptomatic of, and directly dependent on, pre-existing fibrous bronchitis. It is farther intended to point out the relations which the foregoing pathological conditions bear to general rheumatism and to rheumatic endocarditis, and to show that ordinary pneumonia, simple mucous catarrh, and fibrous bronchitis, with rheumatic pneumonia, often happen in the same lung as distinct, but still contemporaneous and concurrent, affections, and that where this is the case, therapeutic attention to the rheumatic element is often of vital importance to the safety of the patient.

According to the present arrangement, all medical writers admit the undisputed existence of three idiopathic or symptomatic affections of the lungs—pleuritis, pneumonia, and pulmonary catarrh or bronchitis. Now, the word pleuritis has direct reference to the anatomical seat of the inflammation. The term pneumonia is less expressive; for how comprehensive is the definition of this disease, “inflammatory engorgement of some portion of the pulmonary parenchyma.” The word bronchitis, and its definition, “*inflammation of the mucous membrane of the bronchial tubes,*” would be equally significant, and just as expressive as the foregoing, provided the air-tubes were composed of nothing but a mucous membrane; but every one knows that between this mucous membrane and the parenchyma of the lungs are the *bronchial tubes proper, composed entirely,* with the exception of some few muscular filaments, *of fibrous tissue and cartilaginous rings.*

It is of disease seated in this fibro-cartilaginous tissue, or the bronchial tubes proper, and not of inflammation of their investing mucous membrane, or ordinary catarrh, that this paper proposes to treat.

Not very many years ago, all forms of inflammation

of the eye were classed and treated as "ophthalmia," without regard to the particular tissue laboring under the inflammatory process; but more recent and accurate observers have clearly pointed out the differential diagnosis between the various forms of inflammation, as they occur in the different and distinct tunics of the eye. The result of this is, that in place of the old classification—ophthalmia membranarum, purulenta, tarsi, chronica, &c., and their synonymes—we have now a more accurate and concise arrangement, based upon the particular character or anatomical seat of the inflammation. And hence, under the new and more scientific classification, we have "conjunctivitis, sclerotitis, keratitis, iritis," &c. &c., all of which diseases are entirely distinct as to their pathology, etiology, and treatment.

It is very remarkable that the differential diagnosis between mucous and fibrous inflammation of the bronchi should have remained without elucidation until this time, particularly when it is remembered that the relation which these two tissues bear to each other is so like that of the two similar tunics of the eye, the sclerotica and conjunctiva. Probably the reason of this neglect is, that fibrous bronchitis is so often complicated with mucous catarrh and pneumonia.

Now, instead of arranging the forms of bronchitis or pulmonary catarrh under the heads of "pituitous, dry suffocative, catarrhus senilis, peripneumonia notha, chronic catarrh," &c. &c., the following more simple classification is hesitatingly proposed:—

Bronchitis,	$\left\{ \begin{array}{l} \text{Mucous—Frequently both idiopathic and symptomatic.} \\ \text{Fibrous or rheumatic—Generally idiopathic; often symptomatic.} \\ \text{Fibrous or gouty—Never idiopathic; rarely symptomatic.} \end{array} \right.$	$\left. \begin{array}{l} \text{Acute, subacute,} \\ \text{and chronic.} \end{array} \right\}$
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Symptomatic mucous bronchitis, in the foregoing table, has reference exclusively to that form of the disease which depends upon previous structural alterations of the pulmonary tissues. To this classification might be added those forms of catarrh originating from specific poisons, and attending variola, rubeola, or the more passive forms of vascular congestions which accompany adynamic fevers. Convulsive catarrh—hooping-cough—owing its origin to a specific irritation in the nervous organization of the bronchial surfaces, ought properly to be classed amongst the neuroses. It might be well, in view of the various forms of mucous inflammations and congestions, to adhere to the term catarrh as expressive of inflammation of the mucous membrane of the air-tubes, and, at the same time, restrict the signification of bronchitis to inflammation of the bronchial tubes proper. The terms muco-bronchitis and fibro-bronchitis may, however, be better, simply because they are clear, and, at the same time, concise. As significant of the engorgement of the pulmonary parenchyma, depending on pre-existing fibrous bronchitis, the terms *rheumatic* or *broncho-pneumonia* may be found more concise and expressive than *pneumonia notha*.

It cannot be shown that our knowledge of either the etiology, pathology, or treatment of bronchitis has improved at all since the observations of Laennec, whose work furnishes at this day the best systematic arrangement of the diseases treated of under the head of catarrh. It is of some interest, therefore, to refer to remarks of this great pioneer in diseases of the chest, who is more remarkable than any other medical writer, both for having taken hold of a great idea, wide in its application, and for having brought it out into the full and perfect daylight of discovery, so as to render its application, in its ultimate and varied details, almost perfect in

his own day. Most medical authors who have written since Laennec, speak of bronchitis as if it were a disease of which they had the most full and perfect knowledge. They write about it as if its etiology, pathology, diagnosis, and treatment, were complete in all their details.

But what says Laennec, in the very outset of his treatise on bronchitis? Loving light rather than darkness, and preferring truth to mere dogmatic assertion, he writes: "Pulmonary catarrh (I quote from Herbert's edition) is incontestably one of the most frequent of diseases; few persons pass a year without an attack. Yet it is perhaps less understood than any disease of rare occurrence. * * * Even the nature of catarrh may still be a matter of doubt." Again he says, speaking of the pathology of bronchitis (p. 61): "The extent and intensity of the redness do not bear a uniform proportion to the violence of the inflammation, the amount of the expectoration, and the acute character of the disease. * * * In very acute idiopathic catarrh, the bronchial mucous membrane presents traces of inflammation in some points only." And again, commenting on the fourteenth and sixteenth observations of Andral, Laennec says: "In both, the bronchi were extremely pale. In neither was there any other cause of disease or death observed; so true is it, that besides the light pathological anatomy is capable of throwing on these cases—and it is unquestionably strong—we must seek for other light of an entirely different kind."

Speaking of the viscid character of the sputa, in dry catarrh, he farther says: "Art possesses resources which, though not indeed infallible, are at least often successful in diminishing this viscosity, and rendering the sputa more liquid. This assertion, which will perhaps appear to be founded on the antiquated humoral hypothesis, certainly neither belongs to myself nor the present time.

* * * I employ it as an algebraic x to examine certain properties of a cause of disease (a thing that, from its nature, may very properly be regarded as *an unknown quantity*), in order, if possible, to succeed in evolving it from the system. Otherwise, I attach no importance to it; but I can affirm that I have procured great and lasting relief in many old and severe cases of dry catarrh, by the exhibition of medicines which the humoral and chemical physicians for the last three centuries considered efficacious in correcting the viscosity of the humors."

That there are more nostrums advertised for the cure of bronchitis than for any other affection, is one of the best popular evidences we can have that catarrh is but very imperfectly understood. As medicine becomes more exact and certain, empiricisms will vanish; for it is generally true that patent specifics are most largely recommended for those diseases which are least perfectly understood.

But, to return. If these significant suggestions of Laennec are to be attributed merely to his timidity, or to the mists which may have obscured his intellectual horizon, and retarded his progress in the path of truth, then have the more recent writers aided not only in rendering our understanding of this important subject more lucid, but also in separating truth from doubt, and thereby advancing the sum of positive knowledge. But if, on the contrary, there is any meaning in these doubts and warnings, which Laennec has so clearly expressed, then our knowledge of this important disease has, in the hands of more recent observers, retrograded, instead of advancing.

Every one of us has noticed that in rheumatic scleritis the visible signs of inflammation, even during life, are very trivial, compared with the often extreme inten-

sity of the symptoms which accompany it; and if in this affection, as in bronchitis, we were compelled to rely on *post-mortem* observations alone, the entity of sclerotitis could hardly be recognized, and we would often look in vain for the vascular congestions, the cinnamon-colored zone, and the coffee-colored spots, which are so well marked before death. A sclerotitis, which had been extremely well marked during life in the eye of a man who died at the Baltimore Almshouse, of acute pneumonia, could with difficulty be recognized an hour after death.

It does not appear that any medical writer, ancient or modern, has noticed the existence of any such disease as acute, subacute, chronic idiopathic, or symptomatic fibrous bronchitis, and yet it will be shown that this affection is an entity as well marked as any other existence, and that it may be recognized by signs as clear and well defined as those which indicate a pleurisy or a pericarditis.

The attention of the writer was first called particularly to the occasionally intractable and fatal character of catarrh, whilst attending, in the spring of 1842, a patient who labored under a local bronchitis, confined entirely to the lower lobe of the right lung. The subject of this attack was a lady, aged about forty, who went during a cold spell of weather to reside at a country-house, the apartments of which had been closed during the winter, and were not sufficiently ventilated or warmed for the safe reception of occupants. Subjected to this exposure, she took cold; the attack was ushered in with a slight chill, followed by unusual febrile disturbance and much flushing of the face, her complexion in health being rather pale.

This lady came under treatment on the second day of the attack, when the most painful symptom was a severe

headache, rendered more distressing by an almost constant dry cough; the respiration was hurried, and the pulse frequent, but there was nothing unusual about the chest, except a faint sibilant râle over the base of the right lung. She was largely bled from the arm, and put on nauseating doses of antimony. On the following morning, May 3, she had less headache; the sibilant râle at the base of the right lung was replaced by moist bubbles, and she raised during the act of coughing, which was now less constant and more paroxysmal, a quantity of highly aerated sputa, resembling the white of eggs when beaten into whips. The signs in other respects were unaltered.

On the 4th, subcrepitant râle was still heard over the base of the right lung, but unaccompanied with dullness on percussion, tubal respiration, increased vocal resonance, or other signs of pneumonia. The general symptoms having undergone no abatement, she was again bled freely from the arm, and put on calomel, nitrate of potash, and ipecacuanha, in addition to the antimony, besides a Dover's powder at bedtime.

This condition of things continued for eight days, at the end of which time, with a calmer respiration and diminished cough, the frothy expectoration ceased, a little viscid sputa taking its place; the pulse became more tranquil, the moist sounds at the base of the right lung cleared up, and finally convalescence was perfectly established.

About a week after this lady had left her sick-bed, when the cough had entirely disappeared for some days, and her general health seemed in a great degree restored, she took a sponge-bath, the air of the apartment being at the time rather cool. The result was a relapse, with a renewal of all the symptoms attending the first attack; the moist sounds returning and continuing at the base

of the right lung until the close of the seizure, which, in spite of the most active antiphlogistic means, terminated her life on the 29th of May.

Believing that the fatal issue in this case could not result from a bronchitis so limited, and suspecting the existence of some latent pneumonia or other mischief not betrayed by the signs or symptoms, the following inquiry was instituted:—

Examination, twenty-four hours after death.—Much emaciation; unusual cadaverous rigidity of the joints, with firmness of the muscular structures. No adhesion of the capsule of either lung to the costal pleura. The outer surfaces of both lungs present the usual appearance of health, except the lower lobe on the right side, which is of a pale red. This redness, exactly limited to the third or lower lobe, and commencing where the larger bronchus enters it, is nearly uniform, but of a deeper shade of color on the posterior face. The adjacent lower surface of the middle lobe presents to the eye the usual mottled pale gray appearance of healthy lung. Cells throughout filled with air, each part of every lobe crepitating on pressure; the lower lobe of the right lung being just as compressible and crackling as the others. Left lung—bronchia, when laid open, present nothing unusual; parenchyma perfectly healthy, with the exception of two old cretaceous particles surrounded with slight melanotic deposit. Right lung—larger bronchi filled with a frothy serum and some viscid mucus. The lesser tubes of the two upper lobes contain neither of these fluids.

In the third, or lower lobe, the air-tubes, great and small, are filled with a highly aerated viscid secretion. From the cut surfaces of the parenchyma a bloody serum exudes, but there is nothing resembling even the first stage of pneumonia; the partial engorgement of the different lobules seeming to result from intense injection

of the delicate nutritious bloodvessels supplying the terminal air-tubes, and not from congestion of the capillaries, which, surrounding the air-cells, convey the blood from the pulmonary arteries to the corresponding pulmonary veins. The bronchi running into this lobe being laid open and washed, present but very faint traces of anything like inflammation. Their epithelial or mucous surfaces seem smooth and polished; here and there a point of redness may be seen, and in one or two spots the white vessels seem to be injected with the coloring matter of blood. This membrane is neither thickened nor softened, but at many places it appears to be elevated, as if by injection of, or transfusion from, the capillaries which lie underneath it. Sections of these tubes, when separated from the surrounding parenchyma and washed, exhibit, by transmitted light, irregular spots of a dusky or brownish hue, which serve in great measure to destroy the diaphanous character of the structure. Heart perfectly healthy. The right auricle and ventricle contain much fibrin, ropes of which are also found in the adjacent vessels. Stomach and intestines healthy.

This *post-mortem* examination serves only to confirm the previous signs, but gives no additional information as to the cause of death; on the contrary, it discovers lesions altogether so trivial that it would be unphilosophical to assign them as the causes which induced the fatal result.

Here, then, is an important problem, the solution of which is of vast importance. How is it that one individual recovers without difficulty from a diffused catarrh in which all the bronchi of both lungs are involved, while another dies of a local bronchitis involving only the air-tubes of a single lobe? And why is it that one patient may die from two square inches of pneumonic engorgement, while another, treated in the same manner, re-

covers readily from a pneumonia involving one entire lung?

When a man is treated for and dies of pneumonia, or any other affection, and an autopsy is made, the attending physician is satisfied, because his diagnosis is proved to be correct. And correct it doubtless might be, as far as his observation and the present state of medical knowledge enabled him to go; but did he diagnosticate the condition in which the patient died, and provide properly for the dangers which it involved? The question should always be asked, *why* did the individual die of pneumonia, or of this or that disease, as the case may be? Hundreds of patients have recovered from pneumonia involving twice as much of the pulmonary parenchyma as we find in the supposed case, and why, therefore, did this or that individual die of the particular lesion discovered? What were the antecedents, the supervening accident, or the associated circumstances, which induced the fatal result? Of what morbid condition did the patient die? These are questions which may generally be answered at the bedside, but can seldom be solved in the dead-house. Where the alterations of the solids are insufficient to account for death, may we not in many cases look to the condition of the fluids for the cause?

Rheumatic pneumonia differs so widely in its history, mode of production, and general phenomena, from all other forms of pulmonary engorgement, that it would seem to deserve a separate consideration. The writers of the past century describe this disease, but with such bewildering indefiniteness, that it is quite impossible to form any conjecture as to their real meaning.

Some authors of the present cycle assign metastasis of rheumatism to the lungs as one of the causes of pneumonia; but they have not shown wherein this disease differs from other forms of pulmonary engorgement, nor

have they pointed out, or even hinted at, the relation which it bears to, and its necessary dependence on, pre-existing fibrous bronchitis.

The writer looked with much interest to the recent comprehensive and admirably systematic work of Dr. J. A. Swett, on diseases of the chest, and to the transatlantic labors of Dr. Walshe, in the same department, for some elucidation of these important topics; but both of these gentlemen, in considering bronchitis and pneumonia, have followed, with few variations, in the tracks of their predecessors.

Dr. Walshe, in the last edition of his concise and much improved book on diseases of the lungs, at the head of his chapter on bronchitis, defines this disease as "inflammation of the *mucous membrane* of the bronchial tubes." He, and all the writers who preceded him, seem to have believed that the bronchial tubes proper possess a general immunity from disease, since they have failed to make them subjects of even passing pathological comment. In speaking of the efficacy of bleeding in acute bronchitis, Dr. Walshe says (p. 244), that "rarely is repetition of general bloodletting called for by the violence of the disease; and while the abstraction of large quantities of blood, with a view of putting an immediate close to the disease, is perfectly chimerical, such sacrifice of blood is useless for an object assigned by some writers—the *prevention* of pneumonia—seeing that, in the adult, idiopathic inflammation of the tubes does not pass on to the *parenchyma*." It is true that, in the adult, mucous bronchitis does not run into pneumonia; but the cases presently to follow will show that, in fibrous inflammation of the bronchi, the reverse is the case, the *parenchyma* of the lung often becoming involved; so that Dr. Walshe and others are in error, not only as to their pathology, but also as to the therapeutic efficacy of the lancet.

ON THE
VASCULAR MECHANISM
OF THE
PULMONARY CIRCULATION.

IN order to appreciate fully the various lesions of circulation that occur in acute diseases of the lungs, it is well to remember, at this time, some of the points connected with the vascular mechanism of these organs.

All other structures of the body receive comparatively a small portion of the circulating current, either for their nutrition, or to furnish the materials for secretion; the lungs, on the contrary, performing the great function of oxidation for the whole economy, have not only all the blood of the body passing through them at each round of the circulation, but, at the same time, are supplied by two bronchial or nutritious arteries, proportionate in size to the alimentary vessels of most other organs of like weight and bulk, by means of which the nutrition of the pulmonary parenchyma is carried on. And not only so, but the functions performed by these two pulmonary circulations are so nearly independent and distinct, that most of the return blood from the bronchial arteries is returned by two corresponding venous trunks, one of which enters into the vena azygos on the right side, and the other into an intercostal vein on the left; and their

currents, soon mingling with the torrent of the general circulation, pass directly back again to the lungs, to be deprived of carbon, in common with the accumulated volume of venous blood from the general economy.

A small portion of blood from the bronchial arteries¹ goes to nourish the walls of the air-cells, and, parting with its carbon the moment it receives it, returns directly through the pulmonary veins to the left side of the heart. It is in this respect alone that these two distinct circulations have either capillary connection with, or vascular dependence on, each other. With the exception, then, of this very slight connection, the lungs have two distinct and independent vascular arrangements, one of which is concerned in oxidation and general depuration, and the other solely in local nutrition and waste. Derangements in the physiological performance of these pulmonary circulations constitute the vascular lesions, which become of prime importance in the consideration of both pneumonia and bronchitis.

It may be remembered, also, in this connection, that the pulmonary arteries have not only the anatomical character, but also the functions of veins, to perform in conveying the blood, and that their walls are thinner, and do not possess the elasticity belonging to the arterial tunics. These vessels are, therefore, more liable to become receptacles for the gathering together and retention of abnormal quantities of venous blood, when, from states of chill, adynamia, pulmonary engorgements, or other causes, its passage through the lungs is retarded.

In simple inflammatory engorgement of the lungs, the pulmonary vessels are the sources and seats of congestion, while the bronchial or nutritious arteries furnish the

¹ See a paper by Mr. Rainey, *Medico-Chirurgical Transactions*, for 1845, and Davies on *Diseases of the Heart and Lungs*, p. 17.

materials for inflammation. Splenization of the lung furnishes an example of simple congestion in the capillaries of the depurative circulation, and shows a condition in which the terminal pulmonary veins and arteries are alone implicated. On the other hand, congestion or inflammation of the bronchial structures affords an example in which the capillaries of the nutritious arteries and veins are alone involved.

Let it be supposed that a fourth of the whole pulmonary parenchyma labors under pneumonia, then one-fourth of the channel by which the blood passes from the right to the left side of the circulation is seriously obstructed, or entirely cut off, and increased action of the heart is required to force the blood through the diminished passage from the venous to the arterial side of the circulation. Under these circumstances, an individual whose pulse in health is eighty, must require, when laboring under the specified degree of pulmonary engorgement, to have his heart contract one-fourth oftener, or to beat one hundred times in the minute, in order that his circulation may still go on. That nature often obviates this necessity to a certain extent, by accommodating a portion of blood in the spleen, and in the large veins about the heart, lungs, and portal vessels, and thus withdrawing it from the moving current, is very true; and that art often accomplishes the same end, by abstracting blood from the circulation, is equally true; but, in spite of these conservative provisions, there will be more or less obstruction to the pulmonary circulation so long as the engorgement lasts.

The same position is true with regard to the respiration, the ratio of its frequency bearing a very uniform proportion to the amount of respiratory surface cut off from atmospheric contact. Thus, in lobular pneumonia, it is well known that, where other signs fail, the fre-

quency of the respiration is a very fair index of the degree of engorgement. A child, whose respiration in health is twenty, will very surely have its frequency augmented to forty or sixty, where the functions of one-half of the pulmonary air-cells are disabled by pneumonia or its consequences. The great value of this reasoning is, that it goes to prove the leading importance of free bleeding in pneumonia.

Ordinary pneumonia commences with congestion in the capillary vessels of the depurative circulation, and it is only when these passively dilated tubes come to be irritated by the retained globules, or by the presence of some salt which renders the retained fluid exciting to the nervous organization of these delicate vascular walls, that a morbid afflux of blood takes place through the nutritious artery to the point of congestion, bearing with it the materials for inflammation, and causing the terminal extremities of that vessel to pour out its plastic lymph.

This congestion, by packing to repletion the depurative capillaries, causes the serum of the retarded blood, by a process of mechanical transudation, to soak through their walls into the interstitial cellular tissue, whereby another source of obstruction to the pulmonary circulation is established. And thus passive congestion, mechanical transudation, and the more active work performed by the nutritious arteries, in pouring out plastic lymph, are the phenomena which, together, constitute inflammatory engorgement of the pulmonary parenchyma.

In anemic and hydremic subjects,¹ congestion of the lungs resulting in pneumonia often arises from asthenic states of the nervous system. Under these circumstances, tonics and stimulants often accomplish the same bene-

¹ "Sanguis moderator nervorum."

ficial ends as are seen to occur under an opposite state of things, or in plethoric subjects, from bleeding and antimony. And, in innumerable instances, it is necessary to stimulate and bleed at the same time, in order to bring about successful results; for, without the adoption of both plans, the institution of either singly is attended with danger to the patient. Suppose a healthy individual, struck down by a pneumonia, is found, on the second day of the disease, with more or less engorgement, and that his condition is marked by a cold surface, hippocratic face, and a lethargic state of the nervous system. Put him in a dry room, heated to 70° or 75° Fahr.; give him brandy, and bleed him largely; and, with proper subsequent treatment, he will very surely recover; fail to do any one of these things, and he will just as surely die. No dogmas have impeded so much the successful advance of practical medicine, as the stimulant and contra-stimulant doctrines; for, although theoretically these principles are made to appear contradictory and opposed to each other, yet experience has proved that the contemporaneous use of both plans will often effect cures which the adoption of either, singly, would fail to accomplish.

Having explained the mode in which the vascular lesions take place, and the order of their occurrence in ordinary pneumonia, it is well to remember that the fibrous tissue of the bronchi is traversed solely by the minute branches of the nutritious arteries, and that, where symptomatic pneumonia happens as a consequence of fibrous bronchitis, the order in which the vascular lesions take place is precisely the reverse of their occurrence, as already pointed out, in simple uncomplicated pneumonia. Insoluble uric acid, or its compounds, phosphates, or the extractive matters found in the urine, not being eliminated from the blood, are

deposited in the meshes of the fibrous tissue, exciting nervous irritation, followed by vascular lesions, exudations, transfusions, and all the general phenomena incident to rheumatic inflammation. This process having set in, a symptomatic remora of blood takes place in the depuratory capillaries belonging to the inflamed bronchi, and a congestion, leading to engorgement, reaching the first or second stage of pneumonia, and rarely going beyond it, often takes place. This form of inflammation is propagated from the fibrous tissue of the bronchi, both by contiguous and continuous sympathy.

Where the rheumatic inflammation is propagated to the pulmonary parenchyma by contiguous sympathy, the pneumonia is apt to be limited, and the engorgement is found wrapping, to a greater or less extent, one or more of the larger bronchi, constituting what is understood by central pneumonia, a comparatively rare variety of this disease. But when the inflammation extends by continuity, along the fibrous tissue of the bronchi, to the air-cells, the pneumonic engorgement found on the periphery of the lung is generally limited, but often diffused, involving more or less of one or both lungs; and, in rare instances, sudden death occurs from an active hyperæmia taking place throughout the whole pulmonary parenchyma, constituting what Laennec has well described as suffocative catarrh associated with pneumonia (Herbert's edition of *Laennec*, pp. 207 and 93). Again: the rheumatic element is also transferred from one lobe of a lung to another, by the same law of metastasis which is observed in the rheumatisms of the white and fibrous tissues of the body generally. But this vascular sympathy of contiguity or continuity becomes still more important where idiopathic pneumonia and fibrous bronchitis occur contemporaneously, but as separate and distinct affections, in the same lung; for, under these

circumstances, when the already existing engorgement of the pulmonary parenchyma comes to be intensified by the rheumatic element, the congestion surrounding the different pulmonary structures is so absolute, and the pressure on the surrounding vessels so great, that the circulation in the delicate and tortuous branches of the nutritious arteries is in many places as effectually cut off as though a ligature were tied about them, and death of the lobules, thus deprived of nutrition, or gangrenous eschars, are the necessary results. Could this accident ever result from simple uncomplicated inflammatory engorgement, its frequency would, of course, be much greater than it has been ascertained to be.

These considerations go to show how fatal plethoric states of the circulation must often prove to individuals laboring under pneumonia, and to prove the great value and importance of depletion for the relief of ordinary inflammatory engorgement of the pulmonary parenchyma, compared with the advantage to be derived from diminishing plethora in almost any other acute affection. And as bleeding is known to be of such signal advantage in simple pneumonia, how much more important it must be to relieve plethora, where this disease happens to be concurrent with, or symptomatic of, rheumatic bronchitis, which last affection exerts so great a control over the origin, intensity, and duration of the other.

Loss of blood in pneumonia removes congestions, lessens the action of the nutritious arteries, and renders the circulation thirsty, if it may be thus expressed, so that the fluids forming the congestion are taken up, and removed by siphonic acts of the surrounding vessels. There are two modes by which pneumonia recovers, one by secretion or exudation, and the other by absorption. Every one must have noticed that where large depletion has been practised, the lung returns to its healthy con-

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dition by absorption, and without much exudation of fluids into the bronchial tubes; but that where the disease has undergone resolution spontaneously, the plethoric state of the circulation not having been removed, the engorgement recovers by a process of melting down, or by transudation and excretion from the cell and terminal bronchial surfaces.

RHEUMATISM
AND THE
RHEUMATIC ELEMENT.

No one who reviews the medical literature of present and past times, can help wondering at the vast space occupied by the consideration of this important affection; nor can he fail, at the same time, to admire the zeal, industry, and patience, which led the older writers, especially, to bestow on it so large a share of their time, labor, and reflection.¹

We are told that the first writer to use the term "Rheumatism" was Thémison, who practised medicine at Rome during the reign of Augustus.² "Le rhumatisme connu, auparavant sous le nom de goutte aigue ou epidémique, lui est rédévable de la place qu'il occupe dans la nosologie."

In the *Compend. de Méd. Pratique*, art. "Rhumatisme," and in Van Swieten's *Commentaries* (xviii. 2), is the following, from Coelius Aurelianus: "Est autem passio generaliter acuta, atque strictura suffecta, *adjuncto levi humoris fluore*, quem rheumatismum vocant."

¹ I have here to express my indebtedness to Dr. A. Stillé, who kindly furnished me with several authorities relating to some points connected with the subjects under consideration.

² Sprengel, *Hist. de la Méd.* ii. 22.

From the remote period at which these writers lived till now, innumerable authors have treated of this affection under the heads of rheumatismus, arthrodynia, dolores rheumatici, myositis, myitis, cauma rheumatismus, arthrosia acuta et chronica, arthritis rheumatica, febris rheumatica, &c. &c.

It is here intended not to make a long voyage in search of truth on the oceans of doubt and confusion presented by the numberless authorities on rheumatism, but simply to refer to those who have in anywise alluded to its connection with acute inflammatory affections of the chest.

A number of medical writers, particularly the humoral pathologists, long ago noticed a relation between rheumatism and acute diseases of the lungs; but they referred to this connection so vaguely and indefinitely, that subsequent authors, unable to glean from them any available principles or established facts, have unwisely, it is thought, neglected the whole subject.

Writing on rheumatism, Tissot says:¹ “ Il n’y a point de partie que cette douleur n’attaque . . . elle se jette aussi sur les parties intérieures. Sur le poumon elle occasionne des toux très opiniâtres, qui enfin dégènèrent en maux de poitrine très graves.”

“ Lorsque le rhumatisme se porte sur les *bronches*² dit Rodamel en traitant du rhumatisme chronique, il existe une toux avec gêne plus ou moins grande dans la respiration, qui semble ne point différer de la toux catarrhale connue sous le nom de rhume;” . . . “ D’après le caractère de la matière expectorée dans le cas de rhumatisme sur les bronches, c’est sans doute à cette espèce d’affection que doit se rapporter la maladie de poitrine

¹ Œuvres, i. 241.

² Dict. des Scien. Méd. xlviii. 548, art. Rhumatisme.

éprouvée par d'Yvoiry, médecin de Lyon, et dont il donne la relation sous le titre de Métastase rhumatismale sur la poitrine, avec menace de phthisie, dans un Essai de Médecine publié conjointement avec ses confrères Morizot et Brion." . . . Again (p. 549): "Le *parenchyme des poumons* est beaucoup plus rarement affecté par la métastase rhumatismale que les membranes qui y adhèrent. Aussi, à peine trouve-t-on dans les auteurs quelques traces d'observations de *péricapneumonie* de ce genre. Quant à la *pleuro-péricapneumonie*, elle est un peu moins rare, et Rodamel en rapporte un exemple fort remarquable. Selon cet auteur, la *péricapneumonie* rhumatique est toujours précédée de douleurs rhumatismales dans les extrémités." Then again:¹ "La métastase rhumatismale sur la poitrine peut ne déterminer que les affections convulsives connues sous les noms d'*asthme* et d'*angine de poitrine*. Rodamel a vu la première de ces maladies survenir après la disparition d'un rhumatisme chronique qui avait son siège à la cuisse et à la jambe." And again:² "Rien de plus ordinaire que la complication du rhumatisme et du *catarrhe pulmonaire*; maladies qui surviennent en quelque sorte indifféremment sous l'influence des mêmes causes. . . . Dans l'épidémie catarrhale de 1574 décrite par Baillou, les malades éprouvaient dans les omoplates et dans la poitrine, des douleurs vagues semblables à celles de la pleurésie."

Sydenham and Etmüller noticed that muscular rheumatism was a very constant accompaniment of the influenza, which prevailed under their observation in the year 1676. Huxham remarked the same thing during the epidemic catarrhs of 1737 and 1743, and says that most of his patients suffered with distressing pains in the

¹ Dict. des Scien. Méd. xlvi. 551.

² Ibid. p. 570.

head, back, and limbs. And Störck makes mention of a grave form of catarrhal fever complicated with acute rheumatism.

In describing "le catarrhe goutteux du poumon," Barthez says:¹ "Entre toutes les inflammations rhumatismales des viscères il n'en est point d'aussi commune que la pleuropneumonie rhumatismale."

Stoll² says: "La même humeur rhumatisante, quand elle se jetoit, &c. . . . Les *coryza*, les *migraines rhumatismales*, les *douleurs de dents*, *d'oreilles*, les *fluxions sur les jones*, les *enrouemens*, et les *catarrhes de poitrine* proprement dits, n'avoient pas une autre *origine*." And again:³ "L'humeur rhumatisante abandonnoit les membres subitement, et au moment ou on s'y attendoit le moins; et elle se portoit sur la portrine, on elle occasionnoit la dyspnée et l'orthropnée, avec une toux tres violente, de l'oppression, et des crachats quelquefois sanguinolens."

The relation between rheumatism and diseases of the heart appears to have been understood by Pinel, and by Meckel, of Berlin, and was very distinctly pointed out by Mathey and Odier, about the beginning of the present century. "L'affection rhumatismale du cœur, dit Odier, se reconnoit par les palpitations, les angoisses, les syncopes; symptômes que sont quelquefois mortels; quelquefois aussi ils subsistent après le rhumatisme, et dégénèrent en maladies chroniques."

It is owing, most probably, to the clearness and distinctness of the above statement, that the connection between rheumatism and heart disease is so well understood at the present day; and, on the other hand, it can only be ascribed to confusion and vagueness of description, that the still more important relation of rheumatism with

¹ Dict. des Scien. Méd. ii. 128.

² Œuvres, i. 57.

³ Ibid. iii. 71.

acute affections of the lungs has been so completely overlooked by recent observers.

Bouillaud and Chomel adopted the ideas of their predecessors as to the common origin of heart disease; but they deserve on that account no less credit for having confirmed and established, beyond the power of contradiction, the truth of the doctrine.

The great Boerhaave, who caused the University of Leyden to flourish so rapidly, and whose genius exerted such entire sway over the medical mind for more than a century, says, in the very last of his practical aphorisms: "There is a disease allied to the gout and scurvy, which is very common in England, and is called a *rheumatism*, which is preceded by a sanguine constitution infected with some sharp defect, manly age, plentiful living, a sudden cooling of a heated body, spring and fall, transpiration interrupted, an inflammatory disposition, but showing itself slower than in pleurisy. It begins with a continual fever, creates a most terrible, tearing pain, increasing cruelly upon the least motion, long continued and fixed in one place, abscessing the joints of any limbs, but most particularly troublesome to the knees, loins, and rump-bone, excruciating, and invading sometimes the brain, *lungs*, and bowels, with a tumor and redness of the place, and going off and returning again by fits." And again: "Its proximate cause seems to be an inflammation of the lymphatic arteries of the membranes which are about the ligaments of the joints, but not fierce enough to change it into an imposthumation." . . . "Hence appears why this disease is so frequent, and is seen in so many shapes, and is very dangerous if it invades the brain or *lungs*; and why it is difficult, then, to find out the same."

The translator and publisher of these aphorisms adds, in a note: "Our author had forgot to treat of this disease

in his former editions, and, truly, I never heard him make any mention of it in his lectures during two years I constantly attended him," &c.

Van Swieten says¹ that Boerhaave suffered under a mild form of rheumatism in 1721, and that in the summer of 1722 he had a very severe seizure, lasting many months, and adds: "Perhaps, as he had suffered this pain the former year, though in a less degree, and less stubborn, it incited him to treat of this affection. This was before he was attacked with that violent fit. These things, when considered, may not seem absurd. But all that he writ concerning the rheumatism does not fill two short pages, and concludes the aphorisms. Besides, such was the firmness of mind in this excellent man, that, I doubt not, he writ them during that terrible disorder."

Now, in order to appreciate correctly the value of the suggestions contained in the foregoing quotations, it is well to remember, at this time, the etymology of the word rheumatism, so that the full meaning of the various authors who refer to this disease, or to a rheumatic element, as the producing cause of acute chest affections, may be the better understood. Rheumatism is a modern form of the word rheumatismus, or *ρευματισμος*, from *ρευματιζω*, to be afflicted with defluxions. Now, by a defluxion was understood a coryza, catarrh, a descent of humors from a superior to an inferior part, or the collection of them on some point or organ. The word humor was applied to any fluid of the body. Peccant humors signified fluids or secretions in a state of disease.

A defluxion or discharge of rheum from the nose or bronchial tubes signified precisely what we understand by catarrh, as the etymology of the words will farther

¹ Commentaries, xviii. 4.

show. Now, it would appear that rheum, when discharged externally, as in bronchitis, was not regarded by the humoralists as the product of a mucous membrane secreted by mucous follicles, but as a fluid, owing its origin and continuance to the accumulation, from within, of the morbid humor on the lungs.

The older writers differed, not only as to the character of rheumatic inflammations, but also as to the nature of the element or humor which produced them; some regarding the disease as a simple phlegmasia; while others, and especially the humoral pathologists, looked upon it as a special inflammation. Many of the latter use the term rheumatism in a general sense, having reference to a variety of diseases in various organs; while others restrict its signification to inflammations affecting synovial capsules, or fibrous and sero-fibrous tissues. And as to the producing element or peccant matter giving origin to the inflammation, some appear to have thought that it depended upon a number of morbid humors or defluxions, differing under various circumstances. Many more, entertaining an opposite opinion, believed the phlegmasia to be induced in all cases, wherever seated, and without regard to the anatomical composition of the structure, whether parenchyma, mucous membrane, or fibrous tissue, by a peculiar arthritic acrimony or rheumatic essence.

Stoll, for example, speaks of rheumatism in both a general and special sense. In his great work, *Médecine Pratique*, where diseases are arranged according to the seasons of the year in which they were observed, rheumatism is constantly spoken of, and "l'humeur rhumatisante" is made the grand producing cause of a variety of diseases, widely different in character, and affecting very dissimilar structures. On the contrary, in his *Aphorisms*, where he refers to these same affec-

tions, the term *rhumatisme* is rarely used; but we find, on page 46, the words “une acrimonie arthritique,” which convey a meaning definite, concise, and restricted, but just as unintelligible as “l’humeur rhumatisante.”

And having spoken of the difference between true inflammation and rheumatic inflammation, he writes a chapter (*Méd. Pratique*, i. 273) on a “Fièvre *rhumatisme d’origine bilieuse*.” He then speaks of rheumatism as a cause of enteritis, and in another place endeavors to establish a relation similar to that already noticed in regard to catarrh, between dysentery and rheumatism. This last opinion of Stoll has, however, been successfully controverted by M. Bouillaud.

Ægineta says¹ that “any humor which is not natural, or a weakness of the particles, may bring on a disease of the joints.” And of the morbid element in question, Bonetus says: “Morbus a serosi, salsi, fervidissimi, ac tenuissimi humoris, jecoris vel lienis vitio in vasis cumulati decubitu exortus.” So Ballonius, too, describes rheumatism as “conferta humoris serosi diluvies.”

The great Boerhaave, who speaks in his lectures of at least a dozen different humors, was reflecting and writing on defluxions, their causes and effects, all his life, and yet he appears not to have had the faintest idea of true rheumatism until he suffered from a severe attack of this disease in his own person. In the whole six volumes of his works he never mentions rheumatism, and yet, according to the etymology of the word, he had been writing on it, and little else; and when the labor of his life was over, and the first edition of his books published, he seems suddenly to have discovered, from his own personal experience as an invalid, that he had been narrating medical dreams all his life, and that he had at last to

¹ Van Swieten, xviii. art. Rheumatism.

describe a painful reality. ' He must have resolved, at the very outset of his career as a lecturer and writer, never to use the word rheumatism, however much he might think and write about it, seeing how much, and to what little purpose, his remote and immediate predecessors, especially Sydenham and Musgrave, had already spoken and written on the subject.

Finally, it would appear from all that we have gathered, that the older writers had no uniform or established opinions common amongst themselves, either as to the composition of these humors, their modes of conveyance to the seat of the affection, or the number and character of the diseases which they were supposed to produce.

At the present day, we find the medical mind still divided as to the essential or non-essential characters of rheumatism. Chomel, at the head of one sect, believes it to be a disease *sui generis*; he says: "Le rhumatisme a une nature propre et spécifique." Bouillaud, at the head of an opposite class, regards rheumatism as a true inflammation, modified only by the character of the structures involved. They both agree as to its seat, and confine its signification to inflammations of the synovial, fibrous, and sero-fibrous tissues. But, as to the rheumatic element, Chomel is no less obscure than the other writers. He informs us that the inflammation is peculiar and essential, but he is not clear as to the first ingredient or principle which confers on it, in addition to the ordinary phenomena of inflammation, "une nature propre et spécifique."

Graves¹ describes a case of arthritis, "combined with inflammation of the bronchial mucous membrane." The subject of this attack—Loghlan—had suffered, he says, on previous occasions, from repeated attacks of

¹ Clinical Lectures, p. 346.

articular rheumatism. Dr. Graves, falling into the error of all other writers, does not refer the pulmonary mischief to its true seat—the fibrous and cartilaginous tissues of the bronchi—but describes graphically the characteristic cough which attends these cases, where the articular inflammation and the fibro-bronchitis happen contemporaneously. He says: “Every time the patient coughs, he feels like one stretched upon the rack; at every convulsive motion of the chest a severe pang is felt in every joint, and the ordinary rate of suffering is increased to positive agony.”

The only modern writer who has alluded, with any degree of distinctness, to the connection between rheumatism and acute diseases of the lungs, is Latham, in his lectures on rheumatism. He speaks of it only as a symptomatic affection, and has noticed that the lungs were more or less implicated in every 5½ cases. He says, farther: “In the four examples of bronchitis occurring out of 136 cases of acute rheumatism, the affection was nowhere mere catarrh, but an inflammation largely diffused through both lungs, producing deep oppression and dyspnoea.”

It was very explicitly stated, at the outset, that the disease under consideration in this essay is seated in the fibrous and cartilaginous tissues of the bronchial tubes. And with regard to the *rheumatic element*, it is now proposed to define, as concisely and clearly as possible, what the author believes to be the ingredients directly concerned in the production of fibrous bronchitis, and of rheumatic inflammation generally, in whatever portion of the synovial, fibrous, or white tissues it may occur.

First. It is believed that the most common producing cause of rheumatism is the presence in the blood of *insoluble lithic acid and lithate of soda*, which salts being arrested in the terminal bloodvessels supplying the

white tissues, act as irritants, and thus become the primary link in the chain of morbid phenomena constituting, so far as this cause is concerned, one form of rheumatic inflammation. For this diathesis, nitrate of potash, phosphate of soda, and the alkaline carbonates, are all excellent remedies, but phosphate of ammonia is incomparably the best solvent both of uric acid and of its compounds. This opinion is confirmed by the testimony of Dr. Bird.

The salts of lithia, one of the alkaline bases, especially the phosphate, succinate, and benzoate, would most probably prove valuable solvents of uric acid; but the rarity and costliness of lithium, obtained from the minerals petolite, spodumine, and lepidolite, must ever prevent their being brought into general use.

Secondly. It is believed that rheumatic inflammations of another class depend upon the retention in the blood of large quantities of nitrogenized matter, which is eliminated, during a healthy performance of the various functions, almost exclusively through the excretory exhalants of the skin.

A number of carefully conducted experiments, by Seguin and Anselmino, have proved that the average quantity of saline and organic matters exhaled from the whole cutaneous surface nearly equals that which is voided by the kidneys. That the skin is abundantly provided with emunctories for the performance of this important function, has been demonstrated by the labors of Mr. Erasmus Wilson, who counted on the hand 3,528 perspiratory pores in a single square inch; and estimating the number of square inches on a man of ordinary height and bulk at 2,500, he deduced that there is an average of 700,000 pores through which the cutaneous drainage takes place. A healthy individual is constantly eliminating nitrogenized matter both by the skin and

kidneys. In the fluids exhaled from the cutaneous surface, Faraday has detected ammonia, Berzelius has found osmazome, and a body resembling, if not identical with urea, has been recognized by both Golding Bird and Landerer. These, together with other nitrogenized ingredients, the exact character of which is not understood, constitute about 707 grains of organic matter voided from the skin of a healthy individual in twenty-four hours. The reciprocal powers of compensation, which render the skin and kidneys so vicariously and intimately connected, are too well understood to require comment. It may, however, be stated, in general terms, that it is owing to disturbances in the balance of these two very similar functions that the erythematous eruptions of the skin and nephralgic attacks happen so very much more frequently in the spring and autumn, and during variable weather, than at seasons when the temperature is equable.

Transient exposure of the surface to cold, over-indulgence in meat diet, a fever of simple excitement occasioning a temporary waste of the tissues, and other trivial causes, give to the blood an excess of nitrogenized elements, which are soon voided by the kidneys in the form of urate of soda, lime, and ammonia. But such causes, producing an excess of these salts, are soon removed; if the individual exposed to cold gets into a warmer air, the action of his skin is resumed, the simple fever subsides, or, if an excess of nitrogenized matter exists in the blood, less meat is almost sure to be taken at the next meal, and thus instincts, growing out of the particular wants of the system, often regulate the supply. So true is this, that if a man feasts for several days together on canvasback ducks, venison, or any other highly nitrogenized food, he will be sure at last to loathe the particular articles which have already satu-

vingt unième consultation, troisième centurie, parle aussi d'un rhumatisme causé par une rentrée," &c.

Some writers, looking upon these cutaneous eruptions as the effects rather than the causes of the inflammation in question, regarded their appearance as both critical and salutary. In the same dictionary, in sixty volumes, where the critical eruptions are spoken of, page 537, is the following: "Aussi nous bornerons nous à dire ici en résumé, qu'après une durée indéterminée du rhumatisme, surtout de celui qui est aigu, on a vu survenir, en différentes parties du corps, tantôt sur celles qui étoient souffrantes, tantôt indistinctement, en quantité fort variable, et durer plus ou moins de temps, des éruptions qui ont reçu le nom de *gale*, de *dartre*, de *pourpre*, de *vesicule*," &c. "Tissot a vu la crise secondaire être caractérisée par une éruption de vesicules, suivies d'ulcérations." And again: "Baillou pense que le principe qui produit ces différentes éruptions cutanées est le même qui, étant sur les muscles ou les articulations, occasionne le rhumatisme."

Baillou seems nearer the truth than those who regard the eruptions in question as amongst either the causes or effects of arthritic inflammation; for why may not the functions of the skin be disabled, and eruptions result as a consequence of the drainage through its perspiratory pores of fluids highly saturated with saline ingredients, just as nephralgia and, with a continuance of the cause, vascular lesions and inflammations of the kidneys are produced by the passage through their delicate vessels of irritating salts?

In the examples quoted, it is hardly possible that the metastasis or retrocession of the eruptions had any share in the production of rheumatism, but far more likely that the existence of the cutaneous affections had disabled the functions of the skin, and consequently that the retained nitrogenized elements were the true cause

of the inflammation in question. Be this as it may; one thing is most certain, that where, from any cause, the perspiratory functions of the cutaneous pores are seriously impaired, the azotized materials thrown back upon the circulation are in part gotten rid of by the vicarious acts of the kidneys, while the rest are retained, giving rise often to neuralgia, but still more frequently to subacute rheumatism. This condition of things is most generally brought on by constant exposure to a low temperature during sedentary occupations, and more particularly where these are carried on in apartments on the ground floor, or in cellars not duly ventilated and warmed.

In this form of the disease, great palliative relief is often obtained from the exhibition of the bitartrate and acetate of potassa, and also from the bicarbonates of soda and potassa; but the happiest effects result from the use of diaphoretics, hot baths, and all other agents calculated to restore the functions of the skin.

When, from a sudden check of perspiration, an individual experiences a sense of aching in all his limbs—"courbature"—a hot-bath, a stimulating diaphoretic, or a pint of warm wine whey, with a Dover's powder at bedtime, generally affords prompt relief by restoring the function of the perspiratory pores. But when, from greater or longer continued disability in the functions of the skin, a fixed rheumatism exists, resort must be had to *cimicifuga*, *eupatorium*, or some other class of diaphoretic agents, such as sulphuret of antimony, *guaiacum*, &c. If *dyspepsia* exists as a concomitant trouble, it is often requisite, at the same time, to direct special treatment to the peculiar condition on which it may depend. It is in the relief of excessively chronic cases of *dyspepsia*, and more particularly that form of the disease depending on the *follicular gastritis* of Andral, and asso-

ciated with neuralgia and chronic rheumatism, that the Thomsonians and hydropathists, and advocates of the Russian bath system, claim their chief triumphs. In long-continued functional disorders of the skin and mucous membranes, either one of these classes of hardy empiricisms will, provided it do not kill, often effect a cure.

Thirdly. There is a form of rheumatism depending on the abnormal presence of earthy phosphates in the blood; and, under these circumstances, an excess of the triple phosphates of lime, soda, and magnesia, will often be found in the urine, but not uniformly; the solvency of these salts, and consequent capacity of the kidneys to eliminate them, depending, in great measure, on the proportion of phosphoric acid united with the earthy bases. As superphosphates they are readily secreted, and generally render the urine only slightly turbid, but occasionally as white as milk; and, still more rarely, being precipitated to the *bas fond* of the bladder, they come away in considerable quantities, and in form and consistence resembling soft mortar.

When the supply of phosphoric or some other acid is insufficient to render these earthy bases soluble, they are retained in the blood, giving rise to depressions of the nervous system, pain in the back (particularly over the lumbar region), nerve ache, rheumatism, and sometimes, on the point of being secreted, obstruct the tubuli uriniferi, giving rise to nephralgia, which may lead to congestion and inflammation of the kidneys.

It is particularly this form of rheumatism which occurs in the crowded wards of hospitals, where the nervous system of the inmates is depressed by previous diseases, and where they are constantly breathing an atmosphere charged with ammonia and carbon. It was probably this form of the disease which Sydenham

referred to when he spoke of scorbutic rheumatism. Saucers filled with muriatic acid, or some other suitable agent, ought to be constantly exposed in the wards of every hospital, in order to get rid of the ammonia, which not only acts as the vehicle for the spread of specific contagions, but serves, at the same time, together with other nitrogenized compounds and carbon, to depress the vitality of all who breathe it.

It is in this form of rheumatism, depending on triple phosphates, that citric acid is found to act so happily. Good cider-vinegar (acetic acid), or an infusion of tamarinds, will be found to act as well as lemonade. The lime, soda, and magnesia, which are here the immediate cause of diseased action, unite with citric, and still more readily with acetic acid, forming extremely soluble salts, which are easily eliminated by the skin and kidneys.

Three varieties of rheumatism have thus far been spoken of, two of which, depending on the presence of certain salts existing in the blood, can be gotten rid of by the use of appropriate solvents, while the other form of the disease can generally be managed by restoring the functions of the skin.

There is still a *fourth* variety of rheumatism, depending, it would seem, upon the presence in the blood of those compounds which are found in the urine, and called extractive matters, the chemical composition of which is not yet ascertained. Cases resulting from this cause frequently run on for months or years, uninfluenced by any known remedies, and, in spite of all experimental efforts to arrest their progress, result finally in permanent distortion of the joints, chronic bronchitis, with structural alterations of the heart, and, sooner or later, in death.

These extractive matters are produced by some fault, either in the primary or secondary assimilation; and

while there is no solvent alterative by which they can be gotten rid of, still, in some cases, their formation may be controlled, and in others prevented, by remedies addressed to the stomach, or by building up the general health and strength.

Where the error consists in derangements of primary digestion and assimilation, much advantage is often derived from regulating the diet, giving bitter tonics, and such other agents as are likely, by improving the digestive process, to prevent the faulty elaboration on which the formation of the extractive matters in question depends.

Where the stomach is healthy, and the fault is rather in the conversion of the elements of blood into the more solid tissues, nutritive diet, fresh air, cascarilla, cinchona, strychnia, cod-liver oil, and such other means as add to the tone of the general system, often prove of service. I have seen, also, marked good effects, under these circumstances, from the use of salts of the peroxide of iron. The succinate of the peroxide is one of the best preparations. But there are no fixed rules to direct the use of remedies in this condition, and the whole therapeutic course directed for its relief is, at best, but rational empiricism.

Two children, a brother and sister, the girl aged ten, the boy eight years, labored under rheumatic endocarditis of several months' duration. In both cases, a marked murmur was heard with the first sound of the heart, and increased impulse could be seen and felt as high as the second and third ribs. In the girl, the cellular tissue surrounding the eyes was generally more or less puffed, and in the boy, this congestion extended to all the capillaries of the head and neck, particularly after slight exertion, when his complexion, usually ruddy, assumed a dusky hue. In both, moderate exercise gave rise to

palpitation and dyspnoea. The boy suffered also with a dry cough, and slight catarrhal fremitus could generally be recognized in his case. He complained frequently of fleeting pain in the left arm. The girl suffered occasionally with violent headache, when her face was always much flushed, and slight pressure over either the fibrous expansion of the temporal or occipito-frontalis muscles invariably caused much pain. The urine in both cases was often of a deep color, but, at the same time, furnished no particular indication for treatment. The tongue of each was very red, and the papillæ unusually elongated, rendering these organs as rough as the surface of a nutmeg grater. The mucous follicles on the back wall of the pharynx, and about the roots of the tonsils, were very much enlarged, and stood out above the level of the common mucous surface.

In these cases, colchicum and all the usual remedies for rheumatism were tried for more than three months, without improving in the slightest degree the condition of the heart in either case. Finally all the previous remedies were laid aside, and they were both treated for follicular disease (chronic follicular gastritis of Andral), with the very best and most unlooked for results. Under the exclusive use of bread and milk diet, and a pill before each meal (composed of nitrate of silver gr. vj; extract of gentian ʒj; ext. of cicuta ʒss; ft. pil. xxx), the symptoms began very soon to improve, and at the end of two months, under the continued influence of this treatment, they seemed perfectly relieved, with the exception of a very faint murmur, which can be still heard, with the first sound of the heart, particularly in the case of the boy.



ILLUSTRATIVE CASES.

THE following eleven observations have been selected as presenting striking illustrations of the rheumatic law. The conclusions afterwards stated are deduced from an analysis of these and sixteen other carefully observed cases :—

CASE I.

THE MILDEST FORM OF SUBACUTE FIBROUS BRONCHITIS.

January 4, 1852. Mr. McN., a clerk in a drygoods store, aged twenty, has had a very distressing cough and much headache for the last seven weeks, in spite of which he has been going about and attending to his duties as usual. After some exposure early in November, he suffered for a day or two with general muscular rheumatism, and slight pain in the left ankle-joint. In a short time the pain and aching in the limbs passed off, and he was seized with a harsh dry cough, which has continued, with greater or less intensity, until now. He has taken several cough mixtures, by the advice of his physician, and within the past two weeks has resorted to the use of nostrums.

Throat and pharynx healthy; pulse seventy; respiration fifteen; skin dry. No trace of anything wrong about the heart or lungs, except a faint sibilant râle on

the right side. Says it hurts him to comb his hair, and has tenderness over the broad tendon of the occipito-frontalis and the fibrous expansion of the left temporal muscles. The sensibility is marked, and exactly limited to the outline of these fibrous sheaths.

5th. The urine, which has been rather more abundant for the past twenty-four hours than the normal quantity, is of a dark color, has a specific gravity of twenty-three, and is highly charged with crystals of uric acid and some urate of soda. He says that it varies very much, both as to quantity and color; that one day it is pale, and the next day dark.

Directed him to take a warm bath every night at bedtime, and to avoid exposure to night air and damp days. R. Phosph. ammonia ζ ss; aquæ ζ iv; add. ext. actææ racemosæ ζ ss; syr. prunus Virginianæ ζ iv. M. S. A tablespoonful every six hours.

15th. He failed to take the bath, but has used the prescription with the best effects, and has had no cough for the past three days. A number of cases similar to the above have been relieved, either by alkalies, citric acid, or extract of cohosh and warm bathing; one or more of these remedies having been advised as the appearances furnished by the urine seemed to indicate them.

CASE II.

SUBACUTE RHEUMATIC BRONCHITIS.

D. B. R., aged thirty-eight, an officer in the United States navy, of hardy constitution and resolute character, had never been liable to attacks of any sort. On the 15th of April, 1850, he came under my care, from Washington, where, during a season of cold and damp weather,

he had often gone to his lodgings at night with wet feet, and, from much exposure, had contracted a harsh, dry, and unproductive cough, of about three weeks' standing. Auscultation recognized no trace whatever of anything wrong about the chest, in which he had no pain, except in the act of coughing, when he felt as if the "lungs were scraped with some rough instrument." The effort to take a long breath brought on a spell of coughing. Tongue white; pulse and respiration at a healthy standard. He was informed that he had rheumatism affecting the bronchial tubes, and, in reply to this announcement, said: "I never was subject to anything of the sort in my life, and do not see how a man can have rheumatism without pain." His cough was most troublesome in the evening, and particularly so for an hour or more after going to bed. R. Phosphat. ammoniæ ʒss; aquæ ʒvj. M. S. A tablespoonful thrice daily. R. Vin. colchici ʒj. S. Take twenty-five drops with each dose of the solution.

The following morning he sent for me, and remarked, as soon as I saw him, that he had been seized in the night with violent pain in the left shoulder-joint, and that he believed his rheumatism had been produced by talking and thinking about it. It was explained that it was merely a transfer of the disease to the shoulder-joint, in which the pain was so severe as to tie him down in bed, the slightest movement of the left arm being extremely painful. The cough had, in a great measure, ceased. He passed a sleepless night, had considerable fever, with moderate heat of skin. Took from the arm some twelve ounces of blood, directed the colchicum and alkali to be continued, and ordered ten grains of calomel at bedtime. At the end of ten days the cough had entirely subsided, and the pain in the shoulder was quite relieved; but there was probably some transfer of the rheumatic element to the fibrous theca covering the spi-

nal cord, since he continued to suffer for several months with fleeting pains, more or less severe—but differing from nerveache in being more diffused—in the head, shoulders, and limbs. During the following autumn he suffered less pain, but was troubled with great depression of spirits, amounting at times to absolute melancholia. This condition continued, with slight variations, until January, 1852, when he again came under my care. Seeing that his appetite, strength, and general health seemed good, it was difficult to decide what to do; but, remembering that his disease had its origin in rheumatism, and suspecting that this element might still be lurking, in a chronic form, about the tissues covering the spinal cord, I made an examination of his urine, and found it charged with a superabundance of earthy phosphates; to correct which diathesis, I put him on the acid of one lemon daily. At the end of a month, he seemed to have improved little or none. He was then advised to take twenty grains of powdered *cimicifuga* thrice daily, and to continue the lemon acid. At the end of about another month, having carefully adhered to the remedies, he declared himself much better; which opinion was confirmed by the united testimony of his friends. When I last saw him, he was still taking the *cimicifuga*, to the use of which he was disposed to attribute his relief. His condition, from some cause, was greatly improved; indeed, he seemed to be perfectly well.

REMARKS.—There is one point in this case worthy of special notice, which is, that so long as the rheumatic element remained, as it had done for more than two weeks, about the fibrous tissues of the bronchi, there was no marked symptom except the cough, and no indication for active treatment; but when the metastasis of the disease took place, the cough declined, and pain in the shoulder came on, with heat of skin, and very

marked disturbance of the general circulation. The transfer took place without a renewal of the causes which were likely to augment the intensity of the rheumatic law, which goes to show that a very acute rheumatism may affect the bronchia without giving rise to much disorder in the general economy, or to symptoms affording a sure index of the necessity for depletion or other active interference, which the successful management of these cases so often requires.

CASE III.

ACUTE RHEUMATIC BRONCHITIS.

A lady, unmarried, about thirty, of delicate figure but strong constitution, had always enjoyed uninterrupted good health, with the exception of an attack of typhoid fever, from the effects of which she had perfectly recovered several years previous to the attack which is here recorded. Having endured much loss of rest, mental anxiety, and fatigue, while engaged in nursing a sick relative, besides being exposed, during a cold and inclement season, to the varying temperature of heated and cold apartments, she was attacked, on the 6th February, 1849, with prolonged chilliness, scarcely amounting to rigors, followed by the assemblage of phenomena which usually attend symptomatic inflammatory fever. The only evidence of local disorder was a constant hard and dry cough, notwithstanding which auscultation discovered nothing about the chest except a faint isolated and occasional sibilant r le over the dorsal surface of one or both lungs. From the 14th of February to the 7th of March, a rattle, variable as to size, dryness, and abundance, could be uniformly heard

on the right side, over a diameter of about two inches, the centre of which was about one inch and a half below the inferior angle of the scapula. At this point, accurate comparison with the opposite side could detect neither increased dulness, vocal resonance, nor fremitus, at any time. Every other part of both lungs seemed perfectly healthy, except that throughout this very protracted acute attack a sibilant râle could be often heard over the scapular region of one or both lungs. The cough was generally dry and unproductive, except that now and then a small quantity of extremely viscid mucus was voided, mingled occasionally with small quantities of albuminoid serum, and, floating on this, a highly aerated sputa, resembling the white of eggs when beaten into whips. One of the most constant and annoying symptoms was the irregular occurrence of the most copious and exhausting sweats, which happened three or four times in the twenty-four hours, during the night or day, through the entire course of the disease. The pulse ranged from ninety-five to one hundred and sixty, and the respiration, at times irregular, was often found as high as fifty-five in the minute. The patient complained throughout of extreme sensibility to the impression of cold, the least exposure of the hands, face, or neck, to the air of the apartment, which was about 70° Fahr., causing her to complain of chilliness. This was probably owing to the very free sweating, which caused rapid evaporation from the surface. The urine was uniformly small in quantity, had the color of dark brandy, and contained, at every examination, urate of soda, and a large excess of uric acid. This case was treated by free depletion, both general and local; the blood, which cooled at a temperature of about 64°, showing an unusual amount of the buffy coat, especially that which was drawn late in the disease. She was kept

constantly under the influence of compound nitrous powders, antimony, or nauseating doses of ipecacuanha. Prussic acid and digitalis were unavailingly used to control the heart's action, and, towards the last, aromatic sulphuric acid was resorted to for the purpose of preventing the very copious sweats. This treatment was instituted in accordance with the advice of two physicians, deservedly eminent in the profession. Seeing that the case was difficult and dangerous, the skill and experience of these gentlemen had been called in requisition early in the disease. Finally, on the night of the 7th March, our patient labored under delirium, had cold extremities, an extremely rapid respiration, and a pulse of one hundred and fifty-five in the minute, and excessively weak. The powers of life seemed to be failing rapidly; the skin was bathed in a cold sweat; the face, which had been uniformly more or less flushed, became pale, and the countenance anxious, with a sharp or pinched look about the features. The prognosis was that our patient would die before morning. The dorsal decubitus, and other evidences of nervous prostration, showed that she was too weak to bear depressing agents; and, indeed, a stimulant, in the form of weak wine whey, had already been resorted to. At this juncture, the râle still existing as it had at first been noticed, at the base of the right lung, and a murmur having been observed for the past two days, synchronous with the second sound of the heart, it was suggested, for the first time, that this might be a case of rheumatic bronchitis, that the rheumatic element had beset the heart, and that, as the urine was charged with uric acid and urate of soda, benefit might result from the use of some alkali.

Both of the gentlemen before referred to, to their honor be it said, were too thoroughly versed in the practical and theoretical doctrines of their profession,

and too loyal to the established principles of the best authorities, to admit for a moment any such proposition. They believed that an old gouty or rheumatic subject might be troubled with a symptomatic cough, but an acute idiopathic, fibrous, or rheumatic bronchitis, was something they did not comprehend, and the existence of which they were not prepared to admit; but, as an alkali could do no harm, they did not object to the trial. Accordingly, all other remedies being laid aside, the patient was put on twenty grains of the bicarbonate of potassa every three hours. The following morning, eighty grains of this salt having been taken, we found our patient better. She had slept considerably, the respiration was calmer, and the pulse had fallen to one hundred; but the auscultatory signs at the base of the right lung, and the murmur with the second sound of the heart, remained unaltered. The urine being scanty and high colored, it was agreed to change the bicarbonate of potassa for the phosphate of ammonia, which latter was directed in doses of fifteen grains every four hours. Having continued this treatment until the 11th, all the general symptoms had vanished. The pulse and respiration had resumed their healthy standard, the sweats had entirely ceased, and careful inspection of the chest could detect no trace either of the murmur with the first sound of the heart or the crepitant r le at the base of the right lung. All drugs were discontinued, and the patient pronounced fairly convalescent.

But the point of greatest importance, and of most interest, so far as the etiology of this disease is concerned, remains to be noticed. This lady, having been convalescing for three days, complained, on the night of the 14th of March, of slight chilliness, followed by fever and sweating. On examining the base of the right lung, no trace of either moist or dry sounds could be heard over

the point where they had so long persisted, and from which they had been absent only three days; but, from a point about three inches higher up, and from thence to the spine of the scapula, over an irregular space of from two to three inches in diameter, fine and coarse crepitant and subcrepitant rattles were distinctly heard. These sounds, confined to the limits of their new situation, were well marked the following day, but soon disappeared under the use of the alkali, which was continued for several days, rendering the urine light-colored and very abundant.

REMARKS.—A point of much interest in this case is the happy influence exerted by the use of alkalies, exhibited even at the ninth hour, and the effect these simple agents had in controlling the uric acid diathesis, and thereby dissolving out and removing the irritant or *splinter* from the seat of the disease.

But the point of most importance is, that the pneumonia, having changed from the third or lower to the middle lobe of the right lung, furnishes actual proof of the metastatic character of the disease, and that a transfer of the inflammatory process may take place from one portion of the fibrous tissue of the bronchi to another, just as it is so often observed to do in like structures of the body generally. The cardiac murmur, which must have originated from the bronchitis, shows also, very clearly, the rheumatic character of the disease.

CASE IV.

CHRONIC FIBROUS OR RHEUMATIC BRONCHITIS, OF FIVE MONTHS' STANDING.

April 10, 1849. J. M., a little girl, born of healthy parents, and aged nine years, attends one of our public

schools. After exposure to rain, some time in October last, she went home, and remained in her wet clothes. The following day she was attacked with fever and cough, which confined her to bed for five weeks, during which period she was treated for the "catarrh fever." After she left her room, the cough still continued, and, the fever returning, she was again laid up. This happened some three or four times, the least exposure, particularly to damp air, augmenting the cough and renewing the fever, so that she has been confined to her bed during most of the winter. She has been taking, for the past five weeks, cod-liver oil, by the advice of her physician, who at last concluded that her case was tubercular phthisis, as well he might, from the general symptoms. She has circumscribed rosy spots in both cheeks, fever in the evening, followed by night-sweats, a deep and constant cough, somewhat metallic in its character, and producing a tolerably abundant mucous sputa, mingled with a frothy and very viscid serum. She is greatly emaciated and extremely feeble, the slightest exertion producing dyspnoea. Pulse and respiration very variable as to frequency, the one averaging perhaps twenty-six, and the other about ninety-five. Bowels regular; urine of a pale straw color, except in the morning, when it often deposits a reddish sediment.

Inspection of the chest detects flatness, with less active expansion on the right than the left side. Thrill felt on palpation nearly alike on the two sides, but vocal resonance greatly in favor of the left lung, over which latter the respiration is everywhere even and clear, but excessively exaggerated or puerile in its character. On the right side, coarse crepitant rattle, very metallic in sound, from the clavicle to the fifth rib, and from thence to the base of the lung, on its anterior surface, the vesicular murmur is healthy, but feeble in character, and

mingled with some subcrepitant rattle. Crepitant rattle is also heard over the axillary region, where it is mingled with a coarse ronchus, and from the summit of the lung, on its posterior surface, to the inferior angle of the scapula, below which line, on the lateral as well as the dorsal regions, there is abundant subcrepitant rattle. Resonance, on percussion over the left lung, much greater, and on the right side rather less than normal; the difference in this respect being most marked above and a short distance below the clavicles. Slight alteration in the rhythm of the heart, and a low rough murmur synchronous with the second sound. R. Phosph. ammoniæ ʒss; aquæ ʒvj. M. S. A teaspoonful every six hours. R. Vini colchici ʒij. S. Twenty drops with each dose of the solution. R. Syr. ferri iodidi ʒij. S. Twenty drops thrice daily, in water. These remedies to be given alternately for three days, commencing with the alkali and colchicum.

It is to be regretted that no record was kept of the successive steps in the progress of this case to a favorable termination, farther than that the above remedies were given to the exclusion of any other agents, changing them every third day, until the middle of June, when the cough had entirely ceased, and the general health seemed to be perfectly restored. In the winter of 1850 this child had a return of cough, attended by fever and sweating. The mother having kept the phials, had them refilled by the apothecary with their former contents, which she gave with the same happy results.

During the past spring of the present year (1852), I attended this same child, now about twelve years old, in an attack of acute rheumatic sclerotitis and vascular keratitis of the left eye. In this last attack, the urine furnished no single indication for treatment. In spite of free depletion from the arm, rigid diet, numberless

doses of calomel and nitre, repeated blisters to the nape of the neck, the use of alkalies and citric acid, the inflammation, attended by extreme photophobia, held out with the greatest pertinacity for more than two months. The little patient was at last greatly benefited by taking sulphate of quinia and bicarbonate of soda, combined; which remedies were given at the suggestion of Dr. A. DuBois. Finally, the inflammation left the eye, with a point of thickening on the sclerotica, about the size of a flattened millet-seed, between the inner canthus and the cornea, in which latter were two small nebulous deposits. It may be well to add, that there was slight vascular keratitis, but little or no conjunctivitis in this case, and no ulceration of the cornea, and that astringent and anodyne collyria were not resorted to in the way of local treatment, nothing having been used but repeated warm bathing, applied from a basin with the hand, the eye being closed.

CASE V.

ACUTE FIBROUS BRONCHITIS, WITH SYMPTOMATIC PNEUMONIA, ENDO-PERICARDITIS, AND, FINALLY, A TRANSFER OF THE RHEUMATIC ELEMENT TO THE THECA VÉRTEBRALIS.

Mrs. B., a lady in affluent circumstances, aged about fifty, of fair complexion and rather delicate figure, has always enjoyed uninterrupted good health, with the exception of occasional attacks of dyspepsia, which were invariably relieved by the use of the Saratoga waters. About September last, this lady, in the enjoyment of her usual good health, went to West Point. On her return home, while in New York, she rode several miles in an open carriage, and, not being adequately provided with wrappings suited to the coldness of the day, suffered much

from exposure to a damp air. After returning to her lodgings in the city, she experienced a sense of chilliness, accompanied by pain in the region of the stomach. On the day following (October 2), notwithstanding a feeling of great indisposition, she came as far as Philadelphia, where she consulted a medical gentleman, who regarded her attack as one of influenza, an epidemic of which was prevailing at the time. On the 6th, observing that the sputa were slightly rusty, he examined the chest, and recognized unequivocal signs of pneumonia, occupying a space about the size of a dollar, over the middle of the lower lobe of the left lung, on its dorsal surface. As the engorgement was very limited in extent, and attended by very mild general symptoms, her physician made use of a gently antiphlogistic course, which, together with mild anodynes, relieved her condition so far that, on the 12th, she felt herself well enough to return home, and accordingly set out by steamboat for Baltimore. I saw her, for the first time, on the 15th, at her summer residence, three miles, in a north-western direction, from this city. She was extremely restless, and complained much of a general but undefined sense of distress. Pulse ninety-six; respiration twenty-one. Over a diameter of about two inches, on the posterior face and about the centre of the left lung, a coarse crepitant rattle, such as occurs in resolvent pneumonia, was heard, mixed up with some subcrepitant and an occasional sibilant râle; also, slight dulness on percussion, compared with the corresponding point on the right side. Suspecting, from the persistence of these signs, which had now lasted for thirteen days, that this might be a case of rheumatic bronchitis, I put my ear over the heart, and discovered a very marked murmur with its first sound. She assured me that she had not experienced the slightest uneasiness over the præcordial region. Seeing that she had fibrous bronchitis,

with symptomatic pneumonia and endocarditis, her case was pronounced dangerous. R. Bicarb. potass. \bar{z} ss; acid. hydrocyanic. \mathfrak{u} xij; water \bar{z} vj. S. A tablespoonful every four hours.

19th. She was seized the night previous with a very acute pain in the region of the heart, extending in the direction of the xiphoid cartilage. Pulse ninety-five, and intermittent; respiration irregular. Advised a sinapism to the chest. R. Phosphate of ammonia \bar{z} ss, water \bar{z} vj. Make neutral by adding carbonate of ammonia, and give a tablespoonful every six hours, with twenty-five drops of wine of colchicum at each dose.

20th. Still much pain in the region of the heart, with tenderness on pressure over the intercostal spaces. Murmur with the first sound less distinct; marked pericardial friction over the middle third of the sternum. Pulse more irregular than yesterday. Constant nausea, with eructations of wind and efforts to vomit. Ordered twelve leeches to be applied along the left margin of the sternum, and ten grains of calomel at bedtime.

22d. She is disposed to sit up in bed; little or no pain in the chest; cough hard, dry, and unproductive; stomach so irritable that she can retain nothing on it. Ordered an epispastic over the heart, and a drop of hydrocyanic acid every three hours. The blistered surface to be dressed with an ointment of iodide of potassa.

The foregoing symptoms continued, with varying degrees of intensity, until the 30th, when she was moved to her residence in the city.

Nov. 3. Pulse small, frequent, and very intermittent. Both sounds of the heart muffled and indistinct. Considerable dulness on percussion over the præcordial region. She can only breathe with comfort when she sits up in bed, with the body bent forward, and the head supported. Some moist crepitant râle at the base of both lungs.

Slight sibilant and subcrepitant râle at the point at first described, over the lower lobe of the left lung, in which place the moist sounds have varied from day to day. At one visit a crepitant, and at another time a subcrepitant râle was heard; while on other occasions these sounds were mingled, and then again both were absent, and nothing could be heard at that point but a faint sibilant râle. Apprehending, at this stage of the case, death from effusion into the pericardium, she was put on diuretics and hydragogue cathartics.

12th. She was seized at night with pain in the back and about the left scapula; and a sister, to whom she beckoned, on going to the bed, found that she was unable to articulate a single word. Some thirty-six hours after this seizure, complete paralysis of the nerves of motion supervened on the left side only, but without loss of sensibility. She remained without material change in her condition until the 5th of the next month, and then she lapsed into profound coma, which continued until the 7th, when she expired.

The medical gentleman who attended this lady in Philadelphia says, in a note, that he did not examine her heart, there being no general symptoms leading him to suspect mischief in that seat. It would seem, then, in this case, that the rheumatism commenced in the fibrous tissues of the left bronchi, from whence it was transferred to the mitral valve, that next the pericardium became involved, and lastly, that a metastasis of the morbid element took place to the arachnoid covering of the spinal theca and dura mater. And, moreover, it should be remembered that the inflammation affecting the fibrous tissue of the bronchi was propagated to the parenchyma of the lung, giving rise, early in the disease, to a local subacute pneumonia, which continued, with varying intensity, throughout the attack.

CASE VI.

IDIOPATHIC RHEUMATIC BRONCHITIS, WITH SYMPTOMATIC PNEUMONIA, ENDOCARDITIS, AND INDUCED PHTHISIS.

The following case has been given in detail, because it was found impossible to convey intelligibly the numerous points of interest in a more condensed form, and especially to present them in the chronological order of their occurrence.

W. E. V., a merchant, aged forty-two, of sinewy and slender figure, and having no hereditary predisposition to disease, has always led an active life and experienced excellent health, with the following exceptions:—

In the winter of 1839, he had an attack in which he labored under a severe cough, attended by fever, which confined him to bed for six weeks; having been actively treated, he recovered perfectly. In the spring of 1844, he had a bad cough, which lasted for three months, but did not confine him to bed. And again, in the winter of 1848, he placed himself under my care, during an attack of rheumatic bronchitis and pneumonia, which lasted about five weeks. In the intervals between these different seizures, he lost his cough, and seemed to enjoy the most perfect health.

April 5, 1852. Mr. V. called at my office, and informed me that his health had been as good as usual until the previous Saturday (the 3d), when he went from a furnace-heated room to the funeral of a friend, where he was much exposed to cold and damp air, besides getting his feet wet. The next day he had soreness and aching in his limbs, and some cough, but did not remember to have experienced anything like a chill.

The pain and soreness in his limbs had, in great measure, passed off, but the cough was more troublesome. He had dryness of skin, and a slightly coated tongue, but no fever. Inspection of the chest detected nothing wrong except a slight sibilant râle and faintness in the vesicular murmur on the right side. Directed for him an anodyne and antimonial cough mixture.

8th. Having been sent for, I find Mr. V. sitting up in his chamber, a high and dry room, comfortably warmed by a blazing open wood-fire. Cough hard and dry, but not very constant. Complains that he could get no sleep, and thinks he must have had fever during the night. Slight puffiness around the eyes; skin dry; tongue white; some appetite, no thirst; bowels costive; urine normal in quantity, high colored, and somewhat turbid; pulse seventy-two, open, soft, and regular. Sounds, rhythm, and impulse of heart perfectly healthy. Faint sibilant râle on the right side. Directed him to keep at rest, and take a dose of Henry's calcined magnesia.

9th. Signs unchanged. The urine voided yesterday exhibits, under the field of a microscope, granular urate of soda in great quantity, and a few crystals of uric acid. R. Ext. actæa racemosæ ʒss; spt. nit. dulcis ʒiv; syr. prunus Virginianæ et aquæ aā ʒiv. M. S. A tablespoonful every six hours. Under the influence of these remedies, he continued to improve until the 16th, when he felt so well that he left his room and walked to his store, the day being rainy, and the air very damp and raw. On the following morning he felt much worse, and was again confined to his house.

18th. In bed, laboring under considerable fever; tongue white; great heat of skin, and much thirst; had a copious sweat, and lost much sleep the night previous. Respiration eighteen, pulse one hundred and ten. Some headache, anorexia, slight nausea, cough harassing, with some

expectoration of a highly albuminoid serum, mingled with small mucous flakes. Slight catarrhal fremitus, and some coarse subcrepitant râle at the base of both lungs. Bowels constipated; urine scanty, and very high colored. Resume the cohosh mixture; take an ounce of Rochelle salts and a drop of hydrocyanic acid every three hours.

20th. Discover a slight roughness at the beginning of the second sound of the heart. The sweats still very profuse; urine small in quantity, and highly charged with crystals of uric acid and irregular particles of urate of soda. Stop the previous remedies. To take ten grains of calomel at bedtime, and twenty grains of phosphate of ammonia every six hours.

21st. Has had five stools, preceded by slight tormina, and attended with considerable tenesmus. General symptoms and auscultatory signs unchanged.

23d. Cough paroxysmal and very dry; tongue white; bowels costive; copious sweating; urine scanty, and deposits an abundant fawn-colored precipitate. R. Submur. hydr. gr. xxv; nit. potass. ʒij; pulv. ipecacuanhæ ʒij; in chart. xij. S. One every three hours.

25th. Respiration twenty-four, pulse one hundred and twenty. Cough short and hacking; sputa rusty, small in quantity, and much aerated. Profuse sweating. Tongue, having been uniformly white and moist, is now covered with a dry brown coating. On the left side of the chest, a fine dry crepitant râle is heard from the spine of the scapula to a point a little below its inferior angle, over which region there is greater vocal resonance, tubal respiration, thrill on palpation, and dulness on percussion, than at corresponding points on the right dorsal surface. No longer roughness with the second, but marked murmur with the first sound of the heart. He is bathed in a profuse sweat, and complains of great prostration, which he attributes to the copious

perspirations, but which is most likely owing to the shock inflicted on the nervous system by the occurrence of the engorgement. He manifests the most inordinate sensibility to cold, desiring, when he turns on his side and exposes the back of his neck, that the bedclothes be drawn close about his throat and head. He will not allow his hands or any part of his surface to be uncovered for a moment. Notwithstanding these copious sweats, he has burning about the soles of his feet, which feel very dry and parched. Have taken twenty-five ounces of blood from the arm, ordered a hot foot-bath, and directed a continuance of the previous remedies.

26th. Fine dry crepitant râle is still heard over the dorsal surface of the left lung, mingled with a coarse crepitus. The blood drawn yesterday is covered with a thick and remarkably firm buffy coat, and shows unusual precipitation of red globules. Sweating still very profuse. He suffered during last night, and now has distressing strangury, and makes repeated efforts to pass a very small quantity of highly-colored urine, which is largely charged with phosphates and lozenge-shaped crystals of uric acid. Continue treatment.

29th. Strength improved; no movement of the bowels for several days. Complains of pain about the umbilicus. Fine dry and coarse crepitant râle and a sniffling respiration are heard over the lower two-thirds of the left lung, on its dorsal surface; marked bronchial respiration and bronchophony, with increased thrill on palpation. Murmur with the first sound of the heart more marked. Pulse ninety-five, respiration eighteen. Continue nitrous powders, omitting the calomel; give the alkali as usual, and a purgative enema.

30th, morning. Respiration twenty-eight; pulse one hundred and four; quicker in its throb, and less compressible. The ear can no longer detect fine crepitus,

but moist ronchi are heard here and there, especially when a deep breath is taken; vocal resonance, fremitus and dulness on percussion more marked, showing that a considerable portion of the lung has lapsed into the second stage. Urgent thirst, skin moist, face flushed, tongue covered with a heavy brown coating. Have taken fifteen ounces of blood from the arm, and directed the treatment to be continued. *Evening.* Blood drawn this morning is very much cupped and covered with a dense buff, measuring about one-third of the entire thickness of the clot, which can be taken by its edge and lifted from the bowl without breaking. Auscultatory signs unchanged; respiration twenty-four; pulse has not varied since the morning either in force or frequency. R. Vin. colchici $\bar{\text{z}}$ iss; tinct. digitalis $\bar{\text{z}}$ ss. S. Give thirty drops, with a dose of the alkaline solution, every six hours, and continue the other agents.

May 1. General condition and auscultatory signs unchanged. Pulse one hundred and one; respiration twenty-two. Urine the color of port wine, and charged with uric acid crystals, having the form of *truncated columns*, and the appearance, under the field of the microscope, of plates having parallel lines. Dr. David Stewart, who is very familiar with the various appearances presented by urinary deposits, saw this specimen. He says that he has only met with one or two examples of this form of uric acid. Golding Bird has described this peculiar crystalline arrangement as having occurred in a specimen of urine which had been treated with urate of soda and acetic acid. Not only the sample of urine taken on the 1st May, but other specimens, when evaporated to dryness, left on a plate of glass a white semi-transparent salt, disposed in closely-set lines, crossing each other generally at right angles, but forming occasionally, at their points of union, acute and obtuse

corners. I at first supposed them to be an amorphous distribution of muriate of soda, but, comparing them with precipitates of this salt, it was easily seen that this could not be the case; and, on adding a little phosphate of soda to the solution of table salt, the crystalline arrangement above described at once appeared. It is probable, then, that the precipitate in question was a microscopic salt, composed of muriate and phosphate of soda combined. The existence of urate of soda in the blood having been established, the above appearance goes far to prove the truth of the theory proposed some time since as to the supposed action of phosphate of ammonia. It will be remembered, when this agent was proposed as a remedy for rheumatism, that the theory of its action was believed to be that it converted urate of soda, which the skin and kidneys cannot void, into two soluble salts—urate of ammonia on the one hand, and phosphate of soda on the other, both of which are very soluble and readily eliminated, the one by the skin, and the other by the kidneys. Continue treatment.

May 3. Has had a refreshing sleep of some hours. Tongue moist and cleaning; skin moist without sweat. Pulse seventy-two; respiration fourteen. Abundant coarse crepitant râle of resolvent pneumonia on the dorsal surface of the left lung. Urine more abundant, but no less turbid, and of a dark mulberry color. Reduce the dose of colchicum and digitalis to ten drops. Divide the nitrous powders into four parts, and give one of these at the usual intervals. Discontinue the alkaline draught.

4th. He has had a refreshing sleep, and seems fairly convalescent. No thirst, but considerable appetite, and craves something salt. With an easy cough he gets up a small quantity of non-aerated semi-opaque bronchial

mucus. Tongue cleaning; pulse sixty-eight; respiration fourteen. Fremitus, bronchial resonance, and dullness on percussion greatly lessened. Reduc crepitant râle from the spine of the scapula to the base of the left lung. Murmur with the first sound of the heart scarcely perceptible. Stop all medicine, and give beef-tea and chicken-broth.

6th. Having, on the morning of the 5th, placed Mr. V. under the care of a friend, I left town until this morning, when I find my patient in the same improving condition, the physician reporting no unfavorable change. He has taken no medicine since the morning of the 4th, except one or two doses of colchicum and digitalis, and an enema of warm salt and water.

7th. Received a message from him this morning, stating that he was very ill. Finding him laboring under violent nephralgia of the left kidney, over which there is extreme sensibility to pressure, pain along the course of the ureter, some irritability of bladder, and slight strangury. The pain came on about ten o'clock last evening, and increased as the night advanced. He has entire suppression of urine, not having voided any since yesterday. No distension of bladder. He ate yesterday, for the first time since his attack, a quantity of ice, and drank some ice-water, but, having very little thirst, the whole quantity of fluid taken was much less than on any previous day. He slept last night for the first time without fire in his room, but it is believed that the temperature did not fall below 68°. Says that the enema which he took last night felt cold in his bowels, and that his clothes were wet during the exhibition of it. All of these causes may have contributed to depress his nervous system and arrest the action of his skin. Supposing that the nephralgic condition may arise from insufficiency of water in the blood to dissolve the excess

of salts while in the act of being secreted by the kidneys, and that crystals may have formed in the tubulæ uriniferi, and there excite irritation and consequent congestion, he is advised to take warm diluent drinks; to apply cloths, wrung out of hot water, to the abdomen, and have cups applied over the region of the kidney.

Noon. The remedies have afforded no relief. Blood shows no indication of buff. A few drops of urine, passed during the morning, are found to contain the granular urates of soda or lime in great abundance, and some crystals of uric acid. Twenty grains of phosphate of ammonia every four hours.

Evening. Pulse one hundred and twenty; respiration twenty-four. He has had a very free evacuation of amber-colored and very turbid urine. The pain and tenderness over the region of the kidney are quite relieved. At five o'clock this evening, he was seized with severe pleurodynia a little below the left nipple; he finds it impossible to take a long breath, and complains of fleeting pain in the direction of the humero-intercostal nerve. R. Sol. sulph. morph. (Magendie's) ℞xv; spt. æth. sulph. C. ʒj; aquæ ʒj. M. S. At one dose. Continue the alkali, and apply a sinapism over the seat of pain.

8th. Has passed a restless night; cough short, suppressed, and frequent; sputa sanguinolent, orange-colored, and slightly aerated. Complains still of pain in the side, with inability to take a full inspiration. Pulse one hundred and twenty-eight; respiration twenty-six. Fine dry crepitant râle of pneumonia below the spine of the scapula and over the lower border of the axillary region. Continue alkali, and resume the colchicum and digitalis in doses of thirty drops every six hours.

9th. Pain along the inferior margin of the pectoral muscle. Pulse one hundred and twenty-six; respira-

tion twenty-two; face flushed; eyes bright; voice feeble and tremulous; tongue coated and very dry. Apply cups over the seat of pain. R. Calomel ℥j; pulv. ipecac. ʒss; potass. nit. iij. Ft. chart. xij. M. S. Give one every three hours, and continue previous remedies.

10th. Has passed a quiet night. Pulse one hundred and twenty; respiration twenty-four. Feels no pain, except at the end of a deep inspiration. Profuse sweating, bowels constipated, urine very dark-colored. Murmur with the first sound of the heart more marked and prolonged. Tactile fremitus, dulness on percussion, and vocal resonance very marked over the lower third of the lung, on its dorsal surface. Over the inferior axillary region, the resonance is bleating in its character, dulness on percussion absolute, and palpation detects no trace of vocal thrill. These last signs go to show that the suspected pleurodynia was in fact pleurisy. Continue treatment, and give an enema.

11th. No material change. Continue treatment.

12th. Some bubbles of crepitant ronchus over the dorsal surface of the lung. Pulse ninety; respiration sixteen. Constant nausea, and sometimes vomiting; one stool. Reduce the nitrous powders to one-half, and prolong the interval to six hours. Panada, eight parts; wine, one part; give a wineglassful every three hours, besides his ordinary diluent drinks.

13th. Tongue moist and clean; much sweating. Pulse seventy; respiration fourteen. Coarse crepitant ronchus more abundant on the posterior surface of the lung. In other respects, the actual and comparative state of the signs, both auscultatory and tactile, over both the dorsal and lateral regions, remain unchanged, except that the dulness on percussion and absence of vibration indicate a greater quantity of pleuritic effu-

sion, encroaching now on the infra-scapular region. Reduce the dose of colchicum and digitalis one-half.

14th. Has passed comparatively a good night. One large and very fluid stool; profuse sweating. Pulse eighty, respiration fourteen. Abundant fine and coarse crepitant ronchus over the dorsal and lateral regions on the left side, notwithstanding which he has coughed but little, and expectorated only a very little non-aerated viscid mucus; indeed, throughout the attack, the amount of sputa has been very much less than might have been expected from the degree of cough and the abundance of moist sounds. Continue treatment.

15th. Some sudamina have made their appearance above and below the clavicle, over the abdomen, and on both flanks. Notwithstanding the temperature of the room is 73° without fire, he manifests great sensibility to cold on the slightest exposure of his person, and begs to have a shawl thrown around him whenever he is raised or turned in bed for the purpose of examining the dorsal surface of his chest. Apply a blister 6 × 8 in. to the left lateral region of the thorax, and dress the blistered surface with an ointment of iodide of potassa.

18th. Pulse sixty-eight, respiration fourteen; profuse sweating, anorexia, and vomiting, proceeding rather from sedation than from gastric irritation. Stop the nitrous powders, digitalis, and colchicum. Give dilute sulphuric acid, ten drops every six hours.

22d. He has passed a very restless night, and complains this morning of oppression about the chest, and a feeling of great exhaustion. Expression of eyes dull, pupils dilated, but respond readily to light; skin moist; extremities cool. Pulse one hundred and six, and very feeble; respiration twenty. Murmur with the first sound of the heart unchanged. Abundant moist sounds over

the dorsal surface of the left lung, where the vocal resonance and thrill to the hand have undergone no diminution. Absence of vibration, and extent of absolute dulness on percussion over the lateral region, indicate a greater quantity of pleuritic effusion. This morning, after a violent and long-continued paroxysm of cough, in which the nurse says he nearly strangled, he got up a plug of concrete mucus and albumen, covered on its outer surface with what seemed to be semiorganized plastic lymph. It is about an inch and a half in length, bears the appearance of having been retained for a long time, and must have been moulded in one of the primary bronchi. R. Carb. ammoniæ ʒij; gum. acaciæ ʒj; aquæ menthæ ʒvj. M. S. A tablespoonful every three hours. Rub his whole surface with dry mustard, and give strong coffee and wine-whey.

23d. He is very desponding, and thinks his case hopeless. Emaciation excessive; has slept three hours during last night. Muscles of the face relaxed, giving to his countenance a combined expression of innocence and dejection. Continue treatment, and let him take occasionally through the day a sip of mint-julep, made with good old brandy.

24th. Strength and general condition improved. Stop the carbonate of ammonia. R. Strychniæ gr. ij; acid. acetic. ʒj; aquæ destill. ʒj. M. S. Ten drops every eight hours.

26th. Appetite improved; auscultatory signs unchanged. Continue treatment, and give black tea and chicken-broth in addition to his other diet.

27th. Has slept the entire night, and says he feels much better. So great has been his sensibility to cold and fear of being chilled, that this is the first day he has allowed his hands to remain for a moment outside of the bedclothes. Little or no sweating; bowels constipated.

R. Bitart. potass. $\bar{3}j$; chart. iv. One every six hours until the bowels are moved.

28th. No action of the bowels. Give a purgative enema, and continue previous treatment.

June 1. Strength, appetite, and general condition greatly improved. Tongue moist and clean; pulse ninety, respiration sixteen. Cardiac murmur with the first sound less prolonged and audible. From the spine of the scapula to the base of the left lung the vocal fremitus and dulness on percussion have within the last few days lessened very much. The sound on percussion is manifestly clearer at one or two points than over the rest of the dorsal surface. This would seem to indicate that the pneumonia is clearing up in irregular patches. There having been so little secretion, the engorgement must have been taken up by absorption. Signs indicate a greater amount of pleuritic effusion. Continue treatment, and give, besides, infusion of juniper Oij; acetate of potassa $\bar{3}ij$. M. A wineglassful every three hours.

4th. No changes to note. R. Ol. jecoris aselli $\bar{3}xij$. S. A dessertspoonful thrice daily. R. Creasote $\mu viij$; aquæ $\bar{3}ij$. M. S. A teaspoonful with each dose of the oil. A small quantity of solid animal food for breakfast and dinner.

6th. Strength much improved; complains of slight gastrodynia and some pyrosis. Has considerable cough, which is deeper and more developed than heretofore. During the past twenty-four hours he has expectorated about a teacupful of semitransparent highly tenacious mucus, deeply stained with the coloring matter of blood. It adheres to the cup when turned upside down, floats on water, and exhibits, under the microscope, an abundance of blood, but no trace of pus globules. The blood is nowhere found in separate dots or streaks, but is so intimately united with the mucus as to form a perfectly

homogeneous mass. Give him more nutritive food, and a little ale at dinner. Continue the strychnia.

8th. The sputa yesterday were unchanged in character, but more abundant; to-day they are less copious, and contain one or two plugs of concrete albuminoid mucus. Vocal fremitus nearly alike over the posterior face of both lungs.

10th. Sputa less abundant and more diffluent. He is sitting up to-day for the first time.

12th. Sat up four hours yesterday. Cough shorter and more suppressed; product less abundant, hardly stained with blood, and floats in the spit-cup on a small quantity of serum. Continue treatment.

16th. Less cough at this stage of the case, and no expectoration. From the middle of the scapula to the base of the left lung the dulness on percussion is absolute; no trace of respiratory murmur, and palpation detects no vocal vibration, showing that as the pneumonic engorgement passed away the lung was compressed, and its place occupied by pleuritic effusion.

21st. He rode out to-day for the first time. After moderate exercise, pulse one hundred and two, respiration twenty. The pleuritic effusion is manifestly greater in quantity. Take no medicine, live on nutritive diet, and exercise moderately in the open air.

July 20. He has spent the past three weeks in the country, where he has walked about half a mile each day. Came to town, because, within the past five days, he has experienced a great increase of cough. This cough is clearly owing to a return of air to irritable bronchial surfaces, from which it has been so long excluded. A loud redux friction sound can be heard over the axillary region. It would seem that one-third of the effused fluid has passed off, and there is every probability that the whole of it will disappear in a short time.

August 12. No farther diminution of the pleuritic effusion. He has very little cough, has gained some flesh and strength, and his spirit seems much better.

September 10. During a severe paroxysm of cough, he expectorated about half a gill of pus, with a small quantity of blood. Take a moderate potation of wine, brandy, or porter, at dinner, and a tea composed of cortex cascarrilla ʒij; life everlasting (gnaphalium polycephalum) ʒij; boiling water Oj. A wineglassful before each meal, taken cold.

October 13. He has been passing his time in a fine open region of country, twenty miles north-west of Baltimore, and about one thousand feet above tide-water. He at first occupied a lower apartment, which was somewhat damp. The result was a renewal of pain in the left side, with manifest deterioration of his general health. He then moved into a dry attic room, having a sunny exposure, since which time he has been doing better, and is now able to take much more exercise. He has cavernous plashing, respiration and resonance just below the middle third of the clavicle on the left side, and raises each day some flakes of mucus, and a quantity of nummulated sputa. Continue treatment.

Early in November, this gentleman went to Aiken, South Carolina; this residence was advised not with any hope of cure, but as a palliative expedient, and in order that he might still exercise in the open air without contracting intercurrent pneumonia and catarrh, which he could hardly hope to avoid at home. The last accounts of him are to the 6th of the present month, March, when he was able to walk three miles daily, without difficulty.

REMARKS.—It has been seen that the first day this case came under notice, careful inspection of the chest detected no morbid sign, except a slight sibilant ron-

chus, and that for the first ten days there were no symptoms indicating the existence of any other affection than a catarrh, which seemed to be very mild. On the 18th, after some exposure, the disease returned, accompanied with fever and sweating, but still without a sign of any affection besides bronchitis. The subsequent acute morbid lesions, commencing with the endocarditis on the 20th April, and ending with the pleuritis on the 7th May, seem to stand in the relation of dependence upon the pre-existing idiopathic bronchitis, unless, indeed, this last-named primary lesion be regarded as symptomatic also of the foregone state of the fluids. From the 5th to the 18th, the urine was charged with the urates of soda, lime, and ammonia; but so soon as the fever and sweating set in, these salts were replaced by crystals of uric acid.

The endocarditis, recognized for the first time on the 20th, indicated very clearly the existence of rheumatism, and the transfer of the murmur from the first to the second sound of the heart, noted on the 25th, shows evidently the metastatic character of the morbid element. It is manifest, also, that the endocarditis, when first observed, did not exist as an idiopathic lesion, but that it was symptomatic of the pre-existing fibrous bronchitis. No signs, general or local, of pneumonia, were noticed until the 25th day of the attack, and the seventh from the date of the relapse, when the occurrence of the pulmonary engorgement was announced by the following contemporaneous signs: increased acceleration of pulse and respiration, fine dry râle, rusty sputa, and a brown tongue. It is hardly likely, therefore, that a latent central pneumonia had existed prior to this time; it is far more reasonable to suppose that it depended on an extension directly by contiguity, or con-

tinuity of the rheumatic inflammation from the fibrous tissues of the bronchi to the pulmonary parenchyma.

The profuse sweating, which began with the fever on the 18th, and continued throughout the attack, and the great sensibility to cold which the patient experienced, owing to evaporation from the surface, are particularly worthy of note, as signs strikingly characteristic of acute rheumatic bronchitis. Prior to the 18th, the inflammation seemed to be subacute in character, and the urine was charged with the urates of soda and lime; but so soon as the fever and sweating set in, and as long as they continued, this salt was replaced by uric acid.

Until the pneumonia set in, there had been no great degree of prostration, but, after the engorgement took place, the asthenic condition was very marked, and was most probably induced by the morbid accumulation of blood in the capillary vessels of the pulmonary parenchyma. The direct shock inflicted on the nervous system by pneumonic engorgement seems not to be sufficiently appreciated; it is as great in many cases as if a bullet had passed through or lodged in the lungs.

The excessive buff on the blood, which was not only greater, but more dense and resistant on the 30th than on the 25th day of the attack, is always found in the acute form of rheumatic pneumonia; it never occurs to the same degree in ordinary engorgement, and rarely in any other affections, except articular rheumatism, and some forms of serous inflammation.

The strangury, which happened on the 26th April, and the nephralgia on the 7th May, were doubtless owing to the irritation produced at the neck of the bladder, in the first case, and afterwards in the kidney, by the passage of uric acid. These accidents go to show still farther the large share of morbid action exerted by the rheumatic element throughout the whole course of this

prolonged attack, strangury and nephralgia being no uncommon occurrences on the subsidence of rheumatic inflammation. It may be here remarked that, in cases of nephralgia, depending on the irritating presence of uric acid and its compounds, with soda and lime, I have seen twenty grains of phosphate of ammonia afford complete relief in the space of five minutes; and, where triple phosphates were found in excess, I have witnessed just as immediate subsidence of pain from the exhibition of lemon-juice or vinegar.

The paroxysmal character of the cough, as well as the very great disproportion which it bore to the amount of sputa, is very striking. Even when the ear detected abundant moist sounds, the cough was often dry and unproductive, which was doubtless owing to the albuminoid and viscid character of the secretions.

Most observers have with truth come to the conclusion that rheumatism is the common producing cause of pericarditis; but it is not insisted upon that the rheumatic element is also a producing cause of pleurisy, because the pleura is not, like the pericardium, a fibro-serous tissue. Now with regard to the pleuritis, which commenced in this case on the 7th May, it may be remarked that it came on when the fluids were highly charged with the urates, which had already produced nephralgia, congestion of the kidneys, and consequent suppression of urine, so that the farther elimination of these salts from the blood was entirely prevented; and, besides, the cutaneous exudation had been arrested by chill, so that the nitrogenized elements could not be gotten rid of by the skin. Under these circumstances, then, the pleuritis set in, and, in the absence of all other causes adequate to the production of an inflammatory process, it seems fair to attribute the pleurisy to

the irritating presence of uric acid, or its compounds with soda.

If the arrangement of the pleura in its anatomical relations with the adjacent structures be considered for a moment, it will be found that it corresponds at some points with the serous membranes lining the theca vertebralis, pericardium, and other fibrous tissues proper; and, at others, with the gliding surfaces of the different articulations. Its close relation with the fibrous expansion of the diaphragm, and its fusion with fibro-cellular tissues, as it passes from the margin of every rib and covers the intercostal spaces, exhibits the first resemblance; and its close adhesion to the costal and cartilaginous surfaces, composing, in part, the walls of the chest, shows how nearly it approximates the arrangement of the internal articular coverings. To carry out the analogy, why may not the pleural cavities be regarded as the capsules of large soft joints? These differences in the topographical arrangement of like tissues, may account for the frequency of idiopathic pleuritis, and the rarity of peritoneal inflammation. Is there anything more unreasonable in a lithic acid than in a traumatic or tubercular pleuritis, except that the causes inducing the inflammatory lesions are more visible, as well as tangible, in the one case than in the other? It is believed that, as rheumatism comes to be better understood, it will be regarded more and more as an important link in the production and catenation of morbid actions.

When it was found in this case that the pleuritic effusion did not yield to diuretics, blisters, iodine inunction, and other treatment, it may be asked by some why the operation of paracentesis was not resorted to, in order to relieve the compressed lung by evacuating the fluid contained in the pleural cavity. In answer, it may

be stated that it was believed that the withdrawal of the fluid would of necessity fail to produce the relief desired, and that the consequences of the operation would most likely, under the circumstances, prove rapidly fatal, and for the following reasons. When a lung is simply carried or compressed by a pleuritic effusion, its structure remains perfectly intact, and on the spontaneous or mechanical evacuation of the fluid it becomes permeable to air, and resumes again its healthy functions. If slight pleuritic thickening and adhesions have taken place in the investing capsule of the lung, these will in most cases yield, so as not to interfere materially with the expansion and consequent return of the lung to the complete and healthy performance of its functions. But where, as sometimes happens, adhesive inflammation has taken place in the parenchyma of the compressed lung, and its different structures are matted and bound together by organized exudation matter, no healthy expansion can ever afterwards take place; and if, under such circumstances, the pleuritic effusion be withdrawn, the admission of air through the puncture, to take its place, or the formation of a vacuum, must be the necessary result. Now, if there is any condition under which a vacuum is particularly abhorrent to nature, it must be this.

Where a lung laboring under simple pneumonia is compressed by pleuritic effusion, adhesive inflammation does not take place, because its tissues are kept apart by the engorgement in all the capillaries, so that the gluing together of its different structures cannot happen. Neither is inflammatory adhesion likely to occur in ordinary catarrh, because of the repugnance mucous surfaces have to adhere, under the most favorable circumstances for adhesion. But in fibrous bronchitis there is a very opposite state of things; and where a lung laboring under this form of inflammation becomes compressed by

pleuritic effusion, its different structures are likely to be inseparably bound together by regularly organized adhesive lymph,¹ and for very obvious reasons. The blood, in the acute form of this disease, is always in the state most favorable to the pouring out of plastic lymph. The inflammation extends in many cases to the cellular plait-work of the lungs, and sometimes to the air-cells; but the pneumonia thus induced is generally limited, rarely goes beyond the first stage of engorgement, and consequently does not, as before explained, oppose a barrier to the complete pressure together and adhesion of the different pulmonary structures.

In the case before us, with a full knowledge of the accidents likely to result from a compressed lung, the operation of paracentesis was abandoned, because it was believed that permanent adhesions of the pulmonary parenchyma had already taken place.

To show the danger of puncturing the chest under the circumstances just narrated, the following case is given, where the operation of paracentesis was performed for the purpose of giving issue to a pleuritic effusion, which had supervened on a long-continued attack of fibrous bronchitis.

Eliza Phene, unmarried, aged twenty, came into the lying-in ward of the Baltimore Almshouse, October, 1843, pregnant with her second child, of which she was delivered in a few days. Some bronchitis of both lungs supervened two weeks afterwards, which became chronic, and lasted more or less through the following spring and summer. About the middle of March, it was found that she had contracted a pleuritic effusion in the left side, rendering about two-thirds of the parietes of that lung

¹ See a paper by Dr. Corrigan, under the ill-chosen title of *Cirrhosis of the Lung*, Dublin Journal of Medical Science, vol. xvi.

dull on percussion. As well as could be ascertained, this had been present about two weeks. Under treatment, it was in some degree absorbed, but, in consequence of exposure, it increased, and rendered the whole left side, even to its summit, dull on percussion, with a total absence of respiration. The pulsation of the heart was also found to be on the right side.

This state of things continued till September 11, 1844, when paracentesis thoracis was performed. At that time she suffered greatly from dyspnoea. Pulse one hundred and twenty-four, respiration twenty-four. Percussion over the left lung was dull everywhere, and no sound of respiration could be distinguished, except at its root, where we heard bronchial respiration and bronchophony. The impulse of the heart was on the right side, and there was more or less subcrepitant râle throughout the whole of the right lung, together with puerile respiration. The operation did not succeed, and the patient, after undergoing a variety of treatment, died on the night of October 6, suddenly. Immediately after the operation, the left side of the chest became sonorous on percussion, but there was no sign of respiratory murmur. The failure was owing to the fact, as we found afterwards, of the lung not expanding as the fluid was withdrawn.

Autopsy eighteen hours after death.—The only abnormal change that had occurred was in the lungs and pleura. The place where the puncture had been made in the chest had reopened, and was giving vent to a yellow sero-purulent fluid of a very disagreeable odor.

The heart was found somewhat pressed over to the right side; it had probably been more so, but the evacuation of the fluid had allowed it to resume nearly its natural place. The left lung, compressed to the size of a child's lung of ten years of age, was found lying close

to the spine, and the pleural cavity was filled with the fluid above mentioned. The pleura itself was covered with a pyogenic surface, and the membrane was much thickened. The lung did not at any place crepitate between the fingers and thumb, and seemed in a state of carnification, its structures being bound together by adhesive lymph. Throughout both lungs, a few small white masses about the size of a millet-seed were discoverable, which we supposed might be tubercles, or concrete albumen; but none were discoverable on the pleura.

This case, together with the previous considerations, is of much importance in deciding, in some instances, as to the propriety of an operation for empyema. I have operated for thoracic empyema in but two other cases, each of which turned out well. It is to be regretted that no notes were taken on either occasion.

The first case occurred in a son of Dr. Waters, aged about eight years. The empyema in this case resulted from an attack of uncomplicated, acute, idiopathic pleurisy. Most of the particulars connected with it having passed from my mind, I applied a short time since to the father, who obligingly furnished the following statement:—

“DEAR SIR:—

“Your note of the 15th inst., referring to my son’s extraordinary illness and recovery, I proceed now, at the earliest opportunity afforded me, to answer, in the order of the questions enumerated.

“1. It was some time, probably late in May, 1838, that the operation was performed.

“2. My son was then about eight years old.

“3. As he was taken ill in January or early in February preceding, according to my recollection, the

pleurisy had existed some three months when the operation took place.

“4. I apprehend that three pints or more of fluid were taken from him when the issue was stopped, and then it was still flowing as freely, it is probable, as when the puncture was made.

“5. The issue continued, and freely, for a week or more, whenever the orifice was opened; nor did it cease to give matter—I judge for three weeks at least—until, supposing that it was wellnigh exhausted, we suffered it to close. In consequence, the fluid formed again, when a second puncture became necessary, which was followed by another copious flow of matter, though not so abundant as the first. This time we were careful to keep the orifice open till the appearance of pus entirely ceased, which I presume was as late as the last of August, or 16th September following.

“The second operation was performed some six weeks after the first.

“6. My son showed no sign of convalescence whatever until the issue seemed completely exhausted, and, indeed, not till some time after that; I might say, as strongly probable, not till late in September, or early in October. When convalescence became decided, the return of health was rapid, though he did not so rapidly regain his strength and the use of himself. This was owing to the position in which he was suffered to lie in bed during the period of his extreme illness. As his life was despaired of on all hands, he was permitted to lie, for weeks, with his legs drawn up to nearly a right angle, in consequence of which, and of his perfect emaciation and helplessness, the muscles behind the knee became shortened and completely rigid. His extremities had accordingly to be rubbed, oiled, and pulled violently, for weeks, before he could even stand, unless by

supporting himself; and much longer it was, probably not earlier than January following, before he could walk across the room without personal aid, or some mechanical assistance, as chairs or tables arranged for the purpose.

“At what period his health was fully re-established, I am not prepared to say; that is, my memory is not sufficiently retentive to state with precision and certainty. During the process of recovery, however, he complained of nothing, except after he began to crawl about the floor, like a child in its first efforts at the same exercise or movement, he would occasionally cringe a little, and, to use his own words at the time, said to us, that something *pinched* him about the region where the puncture was made. He has had no acute disease since, and, for years, his health and spirits have been as good and uniform as any other person's of my acquaintance; I mean, of course, as respects personal comfort and enjoyment, inclusive of freedom from positive malady.

“The attack, at the onset, was exceedingly rough and violent, and, unfortunately for us, our family physician was from home when sent for, and my son ought to have been bled thirty hours before his physician saw him at all. The consequence was, the disease took an unyielding hold, and in its progress assumed extraordinary, and, I apprehend, anomalous forms, so that gentlemen of large experience and known ability in the profession, concluded, at one period, that the lung was hepatized and much enlarged, as seemed indicated by the appearance of the chest, and the fact that the heart pulsated on the right of the sternum. It was some weeks, maybe three or four, more probably six, after this, that you saw the case for the first time, when that entire emaciation had taken place which you so well remember.

“The subject of this case is now a strong and active

gentleman, in his twenty-third year. He has slight curvature of the spine, the convexity of which is towards the right scapula, and from the centre of the sternum to the spinous process of the middle dorsal vertebra he measures two inches more on the right than on the left side, but the deformity is not a source of even the slightest inconvenience."

In the foregoing case, the emaciation was so very great that the inequalities of the alveolar processes were distinctly visible through the upper lip, the mouth being closed. The matter also jugged out between the ribs, rendering each intercostal space very prominent, but without any disposition to point at any particular place. The division of the tissues, to give exit to the matter, was a mere nick or transverse cut, rather than a puncture; all of them together—skin, muscle, and pleura—were hardly thicker than ordinary drawing-paper.

The subject of the other operation was the captain of a bay boat. The quantity of greenish-yellow matter removed was somewhere over three pints. No precaution was taken, either by a flap opening or otherwise, to exclude air; on the contrary, the puncture was made with an ordinary thumb lancet, low down on the left side. And then, to excite inflammation, and thereby alter the condition of the pyogenic surface, some three or four very small gum-elastic bougies, twelve inches long, were introduced to within half an inch of their heads, which were firmly tied together by a string, and this was made fast to the side by adhesive straps. They were suffered to remain in the pleural cavity for about thirty-four hours. The man suffered little or none from the effects of the operation, and at the end of two weeks returned home. A month after, having come back to the city, suffering, as at first, from dyspnoea, it was ascertained that the puncture had closed perfectly, and that

the side was again filled with fluid. A second puncture was made, and after the matter, amounting to about a quart, had discharged itself, a weak solution of iodine was thrown into the pleural cavity. Hectic and rapid emaciation supervened in a few days; and at last the man suffered dreadfully from diarrhoea, and also from aphthous ulceration about the mouth and pharynx, with loss of voice. A silver canula, bent at right angles, was placed in the opening, the outer half, pointing downwards, rested against the skin of the thorax. Finally, it was decided, if he remained any longer exposed to confined air, rendered highly putrid by the free discharge of a very fetid pus, that death must soon ensue. Accordingly he was carried down stairs, placed recumbent in a furniture wagon, and taken on board his boat, about to sail for home. Some three months having elapsed, he returned again to town, in the enjoyment of perfect health. He still continued to wear the canula, from which a small quantity of sero-pus was each day discharged; and whenever this tube became clogged, he was in the habit of removing it, and often pulled from the opening shreds, or rather ropes, of coagulated lymph. About twelve months more having elapsed, I again saw this man, when the puncture had closed, and he seemed to be in the most robust health.

The operation for thoracic empyema, originally limited in its meaning to the surgical evacuation of pus from the pleural cavities, is now understood conventionally to signify, the giving issue to serum or any other form of fluid contained in those cavities.

Whenever paracentesis has been performed for the purpose of evacuating true pus, which had formed as a result of simple idiopathic pleurisy, a very rare termination of this disease, the propriety of the operation has

never been doubted. Even in tubercular pleuritis, the giving issue to pus is advocated by the best authorities as a palliative, and may often be resorted to with benefit. In 1842, I witnessed the case of a mulatto boy, aged eighteen, who, presenting the strongly-marked facies of the strumous diathesis, labored under tubercular deposit, with softening at the summit of both lungs. Having suffered for months from hemorrhage, hectic, night-sweats, and extreme emaciation, a pleurisy set in on the left side, and, after a short time, the entire pleural cavity was filled with pus. The dulness was absolute over every region of the left side of the chest, except over a triangular space between the dorsal summit of the lung and the spinal column, where a crepitant ronchus was heard. At this stage of the case, he suffered, as a consequence of interrupted circulation, with ascites and excessive oedema of both lower extremities. Paracentesis thoracis was meditated, and finally abandoned as being, under the circumstances, an utterly useless expedient, even as a palliative; but nature provided for him more wisely than his physician. The pus found its way, by a spontaneous opening, either into the stomach or oesophagus; he vomited up at intervals the whole purulent contents of the pleural sac, and the lung, apparently not more damaged than before, resumed its original position. For weeks he continued to vomit a greater or less quantity of extremely fetid pus.

During the whole course of his disease, he took nothing except nutritive diet and a strong decoction of "life-everlasting," which was advised by his mother, a worthy and intelligent negress.

Finally, I saw this boy some twelve months afterwards, when he had regained his usual flesh and strength, and was employed as a house-servant. Careful inspection of his chest could detect no softening, but there was com-

parative dulness on percussion over the whole left side, besides prolonged expiration, with increased fremitus and vocal resonance at the summit of the left lung. He informed me that he had continued to use daily, and was still taking, the "life everlasting." I may add, that of late years I have used this plant very largely in the treatment of phthisis, with most excellent results. A pint of the tea daily, made as strong as possible from the stems, leaves, and flowers of the dried plant, should be taken cold, and continued for months. This plant (*Gnaphalium polycephalum*) grows in great abundance on waste soils in the temperate regions of both Europe and America. I had no other authority for its use, in the beginning, except the knowledge that it was a popular remedy amongst our negro population in all cases of chronic cough.

It may not seem out of place here to raise a feeble voice against the operation of paracentesis, as recommended and practised by M. Trousseau, of Paris, and lately advocated, in a very plausible article, by an able writer, in a late number of the *American Journal of the Medical Sciences*.

While for a series of years physician to the Baltimore Almshouse, an institution containing a large number of inmates, I was constantly on the lookout for some case in which the operation of paracentesis might be performed with benefit to the patient. In every instance the effusions resulting from acute idiopathic pleurisy were absorbed, except in the case of poor Phene, already reported, where the puncture of the side, for the reasons already assigned, had far better have been let alone.

Dr. Stokes reports twenty cases of pleuritic effusion cured by iodine inunction; but he might have said, with truth, as every one at all familiar with the subject must know, that at least nineteen of these cases would have

gotten well had they been left to the unassisted powers of nature.

Every observer must have noticed that pleuritic effusions, which resist for a season all known modes of medication, will often yield in a very short time to nutritive diet and exercise. It is also known that a very large majority of these effusions get perfectly well, where neither the individuals laboring under them nor their medical attendants are aware that the fluid in question exists.

Now, this work, which nature performs so well, so silently, and so thoroughly, two very eminent gentlemen have proposed to accomplish by art alone, more expeditiously, it is true, but, in most cases, it is believed, with far greater subsequent risks to the patients.

M. Trousseau performs the operation of paracentesis thoracis for the purpose of giving issue to very recent pleuritic effusions occurring in both sexes before the age of puberty. And Dr. Bowditch, of Boston, says:¹ "I believe that this operation will be used with advantage in *acute* disease, and may likewise shorten *its* course." Now, these gentlemen should first have shown that idiopathic pleurisy is a dangerous disease; next, that death often happens from asphyxia resulting from recent serous effusion; and thirdly, that paracentesis gives issue to the fluid with more security to the life and future health of the patient than where nature herself accomplishes the same result by absorption. All of which propositions are denied. Besides, these gentlemen, while advocating paracentesis as a more common procedure in recent effusions, have forgotten to state the most valid objections to the evacuation of the fluid. The effusion, by arresting the expansion of the lung, secures to the surfaces

¹ Amer. Journ. Med. Sci. for April, 1852, p. 345.

laboring under inflammation the most perfect rest; it not only prevents the chafing together of the walls of the pleura costalis and the capsule of the lung, but, at the same time, furnishes the best dressing for the inflamed membrane; the fluid separates the pleura of the lung from that of the ribs, and thereby prevents the adhesion and consequent structural alterations that would otherwise ensue; and, when no longer required for these objects, it passes off by absorption. Why, therefore, by artificial means interfere with a wise conservative provision of nature, set up for the express purpose of warding off the only accident likely to result from pleuritis? These considerations lead to the conclusion that paracentesis should never be resorted to where the pleural cavities contain only serum, unless, what is extremely rare, the unusual accumulation threatens death from suffocation. As far as my limited observation extends, serous effusion, threatening asphyxia, is far more apt to occur in traumatic than in any other form of pleurisy. I have seen two *post-mortem* examinations which, together with the previous history of the cases, showed conclusively that the individuals must have died asphyxiated by pleuritic effusion. In both instances, the pleurisy resulted from fractured ribs.

A very notable example in which death took place from serous effusion, is the case of Sir Robert Peel, whose valuable life would most likely have been saved by the timely introduction of a trocar. No one at all conversant with such matters can read the very minute account of the last hours and death of the great statesman without seeing that he died from asphyxia. The mode of death, and the nature of the injuries, which were not discovered until too late, go to show, as conclusively as possible, that he died from suffocation induced by excessive effusion into one or both of the pleural cavities.

Had Sir Robert been a drayman, carried into St. Bartholomew's Hospital with similar injuries, the same attendants would no doubt have detected not only the fractured ribs, but also the pleuritic effusion, and relief would have come even at the ninth hour. The miserable excuse for not detecting these accidents until after death is, that Sir Robert suffered such extreme pain when the least examination was attempted. Why could not his injuries be detected as easily as those of any other individual? Chloroform was known and in use at the time, and why was not this resorted to, if necessary, to produce the requisite degree of anæsthesia?

It may be thought by some that the case which furnished the subject of the foregoing remarks, was from the first one of acute phthisis, but a rigid analysis of all the phenomena will convince them that such was not the case, and that the tuberculous state of the left lung was not a primary, but a secondary lesion, growing out of the deterioration of the general health which induced, and the compressed lung which favored, the deposit of tuberculous matter. Acute phthisis would have run its course more rapidly, and the deposit would most likely have existed in both lungs; whereas, on the contrary, there was no evidence of softening on the left side until the 10th September, at which time the right lung was still intact.

CASE VII.

ACUTE ENDOCARDITIS AND FIBROUS BRONCHITIS ENGRAFTED
ON A CASE OF OLD VALVULAR ALTERATION AND HYPERTROPHY OF HEART.

January 4, 1852. J. F., a currier, of temperate habits, aged thirty-nine, under the care of his family physician, Dr. Stevenson, has been confined to bed for three weeks with cough and pain in the left side of the chest; the attack having been brought on by going repeatedly from a heated room into a cold and damp cellar, where he was often compelled to remain for some time for the purpose of weighing leather. His health has always been good, with the exception of an attack of acute articular rheumatism he suffered in the winter of 1843, since which time he has often been greatly troubled with palpitation of the heart and short breath.

He is propped up in bed, and labors under some dyspnoea. His countenance is anxious, and has the expression of a man beset by fears. He says that he has a feeling of constant alarm, and that he is all the while teased with an undefined apprehension of impending danger. He complains of pain in the left side, extending from the nipple to the base of the subaxillary region, and has suffered with several attacks of severe angina. He is annoyed, also, with fleeting pains in the left arm, and constant aching at the insertion of the deltoid muscle. The urine voided last night is about normal in quantity, but very turbid. Has constant cough, and expectorates nothing but a little mucus, mingled with frothy serum. Tongue clean, skin dry, bowels regular. Pulse ninety-eight, open, soft, but somewhat irregular. Palpation detects abnormal im-

pulse of heart, which is felt as high as the second rib. Auscultation recognizes a harsh and loud murmur, synchronous with the second sound of the heart. Moist crepitant râle of œdema at the base of both lungs; some sibilant râle over every part of the chest; and a subcrepitant râle over a disk the size of a dollar at the base of the subclavicular region on the right side. *Diagnosis*: rheumatic bronchitis, and endocarditis engrafted on old valvular alteration and hypertrophy of heart.

Prognosis.—Will resume the health he had antecedent to this attack. Treatment. R. Moschi gr. xvj; assafoetid. ʒss; sulph. ether dilut. ʒij. M. S. A teaspoonful every six hours, and oftener if the angina returns. Also, R. Phosph. ammoniæ ʒss; aquæ ʒvj. M. S. A tablespoonful every eight hours.

5th. He suffers less dyspnoea, and is able to rest in a more recumbent posture. Signs unchanged. A specimen of urine, voided yesterday, is found to contain an abundance of urates of soda and lime, and an excess of earthy phosphates. Continue treatment, and give, besides, the acid of one lemon in water, and a tablespoonful of vinegar thrice daily.

9th. He has acute rheumatism, which began yesterday in the articulations of the middle and ring fingers, with the corresponding metacarpal bones of the right hand; both of these joints being red, tumid, and extremely tender.

11th. He was seized last night, and still suffers with acute rheumatic inflammation in the right knee-joint. He has less pain in the chest, no dyspnoea, very little cough, is able to rest in a recumbent posture with comfort, and the subcrepitant râle, which has been constantly present at each observation until to-day, over a circumscribed spot on the anterior face of the right lung, is no longer heard. Continue treatment.

13th. At intervals, for the last two days, he has been sweating freely. The pain left the knee-joint last evening, and in the night the cough returned with increased dyspnoea. The subcrepitant râle is again present at the point before described on the anterior face of the right lung. The cough has disturbed his rest, and he complains of feeling very weak. Continue previous treatment, and R. Guaiac. contus. ʒj; Holland gin ʒj. M. S. A tablespoonful every four hours. R. Pulv. ipecacuanhæ comp. gr. xij at night.

17th. He has been seized again with severe pain in the right knee-joint. The cough and dyspnoea are greatly mitigated, and the subcrepitant râle has again disappeared. Continue treatment.

21st. General health improved. The white tissues about the right knee-joint are slightly thickened, and the joint is quite tumid, but free from pain. Some cough, with slight mucous sputa. Subcrepitant râle over the circumscribed spot on the face of the right lung. Faint sibilant râle, and less dyspnoea.

REMARKS.—Although the details of this case are incomplete, the above facts are given as they were noted at the time, on account of the remarkable metastasis of the rheumatic element. The writer did not see this case subsequently to the 24th of January, but Dr. Stevenson assures him, that the transfer of disease took place to the knee-joint a third time, with marked mitigation of the cough and dyspnoea. The rheumatic element being at last exhausted, he recovered slowly, and on the 20th of February returned to his accustomed occupation, in as good health as he had enjoyed antecedent to this attack.

CASE VIII.

SYMPTOMATIC FIBROUS BRONCHITIS OCCURRING IN AN OLD
CASE OF TUBERCULAR PHTHISIS.

H. C. J., a valetudinarian, aged fifty, of delicate figure and extremely feeble constitution, has been laboring for the last ten years under tubercular phthisis, which had been preceded for a long time by dyspepsia with its multiform symptoms. For the past two years, under the influence of cod-liver oil, acclimation, vegetable tonics, generous living, and great attention to health, his condition has been better, notwithstanding the existence of an anfractuous cavity at the top of the right lung, from which he has voided variable quantities of nummulated sputa. He has also some empyema on both sides, particularly the right. He made a visit to New York in November last. Two days before his return to Baltimore, having undergone unusual exposure to cold, besides being greatly fatigued, he went to his chamber, feeling badly, and was greatly annoyed at night by feverishness, loss of rest, and aching in every limb. The following morning, having a chilly sensation, he took a hot-bath, which he says did not make him feel warm, but had the effect of removing the general muscular soreness, and producing in the place of it a pain in the left knee-joint. The following day (December 6) he suffered from pain, but in spite of this inconvenience he resolved to come to Baltimore, which he did in twelve hours; experiencing all the while great increase of pain from the vibratory motion of the railroad cars, and having to be carried, at the different stopping-places, in the arms of his friends. He placed himself under my care on the morning of the 7th, when

he labored under considerable fever and great prostration. The left knee-joint hot, tumid, and extremely painful on the slightest pressure, presents a flush of redness on the inside, particularly over the space where the outer edge of the semilunar cartilage is attached to the capsule. Tongue covered with a white coat; much thirst; and total loss of appetite. His spittoon contains about half a gill of nummulated sputa, and some mucus. The urine, small in quantity, scalding when voided, and of a deep red tint, has deposited a pink precipitate on the bottom of the vessel. R. Unguent. hydrarg. mit.; emp. galbani comp.; ung. stramonii, āā ʒj; gum camphor ʒij. M. S. Spread on a rag and apply to the knee. Also a neutral solution of phosphate of ammonia, in doses of fifteen grains every six hours, and an anodyne at bedtime.

8th. The urine voided yesterday contains a considerable excess of uric acid, and some urate of soda.

The above treatment was continued until the 27th, when the knee-joint, together with the general condition of the patient, had so far improved, that all medication was laid aside, except the anodyne at bedtime.

January 7. The weather is so cold that he finds it impossible to preserve a proper temperature in his room, and still more the warmth of his extremities. Knee-joint more painful, with augmentation of thirst and fever. Resume the local and general remedies.

12th. The urine, which has been very red for some days past, is now of a pale straw color. The knee-joint is free from pain, but more puffed and swollen than it has been at any previous date.

13th. He is annoyed with a harassing and almost constant cough, which is unproductive, except in the morning, when he voids the usual amount of nummulated sputa.

16th. The cough continues unabated in violence; some sibilant râle on both sides of the chest; slight subcrepitant râle at the base of the left lung; cavernous signs unaltered. The cup contains about the usual amount of muco-purulent secretion, mingled with about a gill of albuminous serum. Continue previous treatment; take, besides, one drop of medicinal prussic acid every three hours, and double the anodyne at night.

There was slight return of pain in the knee on the 19th; and, on the morning of the 20th, he raised the usual quantity of nummulated sputa, but no serum, and the paroxysmal cough has almost entirely ceased.

No farther accident occurring, he continues steadily to improve, and is now, on the 20th day of March, much weaker, of course, but in other respects very much in the condition he was antecedent to the attack of rheumatism.

It would seem, in this case, that the sudden accessions of cough were due to a metastasis of rheumatism to the bronchial tubes, and again that the cessation of the paroxysms was owing entirely to a return of the morbid element to the knee-joint.

CASE IX.

IDIOPATHIC FIBROUS BRONCHITIS, AND SUPERVENING HYPERÆMIA INVOLVING A PART OF THE LEFT AND ALMOST THE ENTIRE RIGHT LUNG.

I saw this case of pneumonia with Dr. E. Thomas, to whom I am indebted for the following report:—

“G. K., a carpenter, of dissipated habits, some three or four days before being taken sick, had been exposed on a cold evening to rain for several hours. He com-

plained, when I first visited him, of severe pains in his breast, back, and shoulders, and of aching in all his limbs. His pulse was somewhat depressed, and as he labored under slight temulentia, I concluded that he had been drinking some days before, and that he had only to recover from the effects of a debauch. Ordered a stimulating liniment, and an anodyne to be given at bedtime. Two days having elapsed, I was again sent for, with a notice that he was very ill. Visited him, and still thought that he was not very sick. His family stated that he had been very uneasy the night previous, slightly delirious, and complaining of pains in the chest, with a hard, dry, hacking cough. Examined his lungs very carefully, but could find not the slightest trace of disease. I was convinced, from circumstances that had come to my knowledge, that his sickness was mere pretence; but, to satisfy him, ordered a mild purgative. Did not visit him again for three days, when his family sent me a statement that he was very bad. Found him with a hot, dry skin, flushed face, furred tongue, irritable pulse, and still complaining of severe pain in the chest. His cough was hard and hacking, but he raised nothing. Examined his chest, and was surprised to find what I believed to be signs of pneumonia at the top of the right lung. On account of his habits, did not like to bleed him. Gave antimony; called to see him on the evening of the same day, and found him worse. Took about six ounces of blood from the arm, applied a small blister to the chest, and gave him, besides the antimony, calomel and Dover's powder. The next morning he was no better; his pulse was frequent and feeble; his skin evacuating freely, copiously; his urine high-colored and scanty; his cough still continuing, but accompanied with very little rust-colored expectoration. The physical signs of pneumonia were now posi-

tive; he had fine, dry, crepitous rattle over a small space at the base of the left lung, behind. On the right side the same fine, dry crepitation was found, from the clavicle to the fourth rib, under the arm as high as my ear could reach, and over the scapula. I again bled him moderately from the arm, and prescribed a Dover's powder in addition to what he was already taking. In the evening, his condition was in no manner improved; considered him sinking, and called in Dr. —; we both looked upon his situation as almost hopeless; he lay on his back, with his mouth open, features sunken, pupils dilated, excessive hebetude, tongue coated and very dry, his surface cool and damp, respiration rapid, pulse frequent, some cough, but no expectoration, and scanty urine, of a deep reddish cast. We continued the previous treatment, omitting the antimony, and directed, besides, a small quantity of spirits, at intervals, in water. The next morning, if there was any change, his condition seemed worse. Reduced the dose of calomel and Dover's powder, and gave phosphate of ammonia, in twenty-grain doses, every four hours. He seemed to sink gradually, until evening, when I did not believe that he would live an hour. The following day I found him still alive, and in a better state. His sweating was less profuse, his urine more abundant, and his surface warmer. From this time, under the influence of phosphate of ammonia alone, his condition slowly, but very steadily improved; and if he does not owe his recovery to the alkaline treatment, my judgment is at fault."

REMARKS.—The points of interest in this case are, that the patient suffered at first with unmistakable signs of muscular rheumatism; and, at the same time, he labored under distressing cough, without expectoration, or any other general or local sign of catarrh. Had a pneumonia existed in this case prior to the sixth day

of the attack, Dr. Thomas, who has much skill as an auscultator, could not have failed to detect it. The negative auscultatory signs prior to that period, together with the general symptoms, go to show that this was no local central pneumonia, which had extended little by little to the periphery of the lung; but that it was at first a fibrous bronchitis, which gradually traversed by continuity to the terminal tubes, and, finally, by contiguity to the air-cells, developing active hyperæmia, and causing the pouring out of plastic lymph, and all the other phenomena of pneumonia.

The appearances furnished by the urine showed very clearly that uric acid was the element at work, and the correctness of this opinion is confirmed by the decidedly beneficial and permanently useful effects of phosphate of ammonia. I visited this case with Dr. T., on the 14th of February, 1851, and on that day, the eighth from the date of seizure, the pneumonia was still in the first, verging towards the second stage of red engorgement.

CASE X.

FIBROUS BRONCHITIS AND RHEUMATIC PNEUMONIA.

S. L., born of healthy parents, and aged six years, has never been the subject of any attack incident to childhood. About fifteen years since, his mother suffered for more than four months under severe articular rheumatism, but finally recovered, without mischief about the heart or other structural lesion.

On the 6th of November, 1852, this little boy, while returning from school in Boston, fell into a puddle, and got the clothes covering his chest very wet. The following day he had cough, but no fever, and did not seem

sick. On the 8th, the cough being about the same, he left home under the care of his aunt, and, undergoing no particular exposure, came to Baltimore, where he arrived on the evening of the 9th. To-day (the 10th) he seemed drooping, and, the cough growing more distressing, I was asked to see him. He has some heat of skin and a pained expression of countenance, which wears a frown, and a deep, irregular, and diffused flush on both cheeks. The cough is not violent, but dry, and so very constant that he has hardly sufficient command of his breath to utter two consecutive words. No pain about the chest, or post-sternal soreness. Tongue white; anorexia; some thirst; bowels healthy. Pulse one hundred and twelve; respiration frequent, and not easily counted. Careful examination of the chest, both by auscultation and the hand, can detect no single trace of anything wrong about the lungs, but a marked murmur is distinctly heard with the first sound of the heart. Palate and pharynx healthy. R. *Magnesiae ustae* ʒj, at one dose. R. *Pulv. ipecacuanhæ* gr. x; water, six spoonfuls. S. A spoonful every three hours. A hot foot-bath, demulcent drinks, and some paregoric to lull the cough.

11th. Condition unchanged; flushing of the cheeks transient and irregular, often leaving the face quite pale. R. *Tart. antim. et potass.* gr. iij; *aquæ* ʒi. M. S. From ten to fifty drops in water; increase the dose until nausea is produced, and lessen the quantity if it excites vomiting. R. *Pulv. ipecacuanhæ comp.* ʒj. In chart. x divid. S. One every three hours, as long as the cough is troublesome.

12th. Has passed a restless night, and had, during the short intervals of sleep, a good deal of jerking and catching in both the upper and lower extremities, but no subsultus or twitching. Much sweating; cough very annoying. No other sign about the chest except a very

frequent respiration. Pulse one hundred and ten. One small stool. Continue previous remedies, and give ten drops of wine of colchicum every six hours.

13th. Condition and signs unchanged, except that a faint sibilant râle is heard at the summit of the right lung. Continue treatment.

14th. Flushing of the cheeks very variable, both as to degree and situation. Pulse one hundred and twenty-five, respiration forty. Cough less incessant, deeper, and more paroxysmal; no expectoration; vomited twice during the night, but the fluid voided contains no mucus; two stools; urine of a pale straw color, and deposits, on cooling, a white precipitate. Continue treatment, and give, in addition, the acid of one lemon daily.

15th. Much sweating; cough less frequent; flushing of the cheeks deeper and more persistent. Pulse one hundred and thirty, respiration fifty-five. The fine dry râle of commencing pneumonia is heard from the clavicle as low as the third rib, and above the spine of the scapula on the right side. Murmur with the first sound of the heart less marked. Venesection to four ounces, failing to get more because of the smallness of the superficial brachial veins. Continue previous remedies, increasing the dose of antimony. R. Submur. hydr., pulv. ipecacuanhæ, āā ʒj. M. in chart. x divid. S. One powder every six hours, alternating its exhibition with the antimony.

16th. Lies constantly on the right side. Blood drawn yesterday slightly buffed; dulness on percussion; tubal respiration; increased vocal resonance and thrill on palpation for three inches below the clavicle on the right side, where some moist bubbles are also heard. Increased bronchial respiration and dulness on percussion over the supra-spinal fossa. Below these regions, both over the anterior and posterior surfaces of the right lung, the vesicular murmur is pure but feeble. On the left side,

there is everywhere intensified puerile respiration. The stomach tolerates fifty-five drops of the antimonial solution, while every powder has produced vomiting. Continue treatment, reducing the quantity of each powder until it produces only nausea.

17th. Has had three stools, preceded by slight tormina. Stop the colchicum, and continue the other remedies.

18th. Has passed comparatively a quiet night. Tongue cleaning; cough broken and loose; murmur with the first sound of the heart no longer distinguishable; resolvent rattle of convalescent pneumonia over the anterior and posterior face of the right lung at its top. Continue treatment.

20th. Countenance more cheerful, and face less flushed; respiration and pulse reduced in frequency; vocal thrill, tubal blowing, and dulness on percussion less marked; bowels torpid. Continue remedies, and resume the colchicum.

21st. Condition much improved; tongue clean and smooth. Pulse eighty-six, respiration twenty-seven. Some coarse crepitant ronchi below the clavicle on the right side, and the fine subcrepitant râle of capillary bronchitis over the base of the infra-axillary region, where, until this time, the lung has been perfectly free. With these exceptions, the signs are alike healthy on both sides. Continue treatment.

22d. Condition improved; local signs unchanged. Stop all the previous remedies. R. Ext. actæa rac. ℥iij; bicarb. sodæ ℥ss; syr. prunus Virginianæ ℥vj. M. S. A dessert-spoonful every three or four hours, in water.

24th. This morning, the little fellow was seized with pain in the left shoulder and arm, so severe that it caused him to cry out, and since then his cough has ceased.

26th. The pain in the arm is relieved, and he has

neither cough nor other unhealthy signs about the chest. He is therefore pronounced fairly convalescent, and recommended to be kept for a few days on mild diet.

CASE XI.

ACUTE IDIOPATHIC FIBROUS BRONCHITIS, WITH SYMPTOMATIC ENDOCARDITIS, OTITIS, SLIGHT GENERAL RHEUMATISM, AND FINALLY PNEUMONIA.

N. T., a little girl born of healthy parents, aged four years, and possessing a remarkably vigorous constitution; has never suffered any of the diseases peculiar to childhood. At two years of age she labored under a grave form of typhoid fever, followed by purpura hæmorrhagica, which latter accident had nearly proved fatal; but after a prolonged attack and a tedious convalescence, she recovered perfectly.

On the 9th February, 1853, having been in a heated room for many days, and exposed at night to a cold draught from a flue communicating with the open air, she was attacked with slight chilliness, followed for several days by moderate fever, irregular and diffused flushing of the cheeks, much sweating, considerable prostration, and cough, without auscultatory signs. These symptoms remaining unchecked by the use of mild febrifuge means, she was seized on the 18th with violent otalgia on the left side; so severe at times as to cause her to scream with pain. Three leeches were applied directly at the base of the tragus, and, after the loss of several ounces of blood, warm fomentations were kept over the ear, and full anodynes given without procuring sleep or affording any relief to the pain, which, however, gradually abated, and passed away entirely on

the third day. During the existence of the otalgia, the cough subsided altogether, but returned again as the earache ceased. On the 26th, she was again seized with excruciating pain in the right ear, when the leeching and other remedies previously used on the opposite side, were resorted to anew without relief; the pain augmenting for twenty-four hours, and apparently made worse by noise, finally subsided of itself on the 29th; after which time, there was a slight otorrhoea of a watery and ceruminous character. The cough having ceased as before, when the earache commenced, returned with renewed violence as the pain subsided. In the ear last affected, there was marked deafness for many days.

30th. Profuse sweating; manifests great sensibility to cold; pulse one hundred and forty-five; respiration from sixteen to twenty. The cough generally short, constant, and worrying, but occasionally loud and paroxysmal; is uniformly dry and unproductive. Slight murmur with the heart's second sound. Respiration healthy, with the exception of slight rudeness on the right side.

March 3. Complains much of pain in the legs, particularly about the right knee-joint; excessive sweating; less cough; increased roughness with the second sound of heart; much prostration.

12th. She complained yesterday of slight chilliness, and desired to be covered up, at which time there was marked blueness of the lips and nails. This was followed by fever, which continued through the night, producing great restlessness, with thirst, sharp heat, and dryness of skin, which latter symptoms were relieved at irregular intervals by profuse but transient sweats; prostration very great; pulse one hundred and sixty; respiration forty-five; fine, dry crepitant râle of pneumonia from the summit of the right lung to the middle of the sca-

pula. Took about six ounces of blood from the arm, and directed the compound nitrous powder, antimony, to the extent of toleration, every three hours, and wine of colchicum.

16th. Respiration twenty-eight; pulse one hundred and twelve; the redux rattle of convalescent pneumonia over the posterior face of the right lung; murmur with the second sound of the heart less marked. Finally, this child recovered perfectly with the exception of a faint roughness, which may still be heard with the second sound of the heart.

REMARKS.—Throughout this prolonged attack, the urine exhibited now and then only the usual febrile excess of the opaque granular lithates of soda, lime, and magnesia, with some extractive matters; but the renal secretions at no time furnished any special indications for treatment. It is especially worthy of note in this case, that without any renewed exposure, the child having been kept in bed and closely watched from the first day of its seizure, a pneumonia sprung up thirty-four days from the date of the attack, there being not the slightest assignable cause for the engorgement, except a transfer of the inflammatory process from the fibrous tissues of the bronchi to the surrounding parenchyma.

The occurrence of otalgia, first in one and then in the other ear, with contemporaneous subsidence on both occasions of the annoying cough, as well as the return of the bronchial irritation when the earache ceased, can only be satisfactorily accounted for by supposing a metastasis of the rheumatic principle from the fibrous tissues of the bronchi to the fibro-cartilaginous structures of the internal ear.



ANALYSIS OF CASES.

IN nine out of twenty-seven cases of fibrous bronchitis, the individuals had labored under rheumatism at some former periods of their lives; but the remainder, as far as could be ascertained, had never suffered from this disease in any form. Of the whole number of cases, thirteen happened in the winter, six in the spring, seven in the autumn, one in June, and none in July and August. At the time of seizure, one patient labored under phthisis of ten years' standing, two under old valvular alteration of the heart, and three had slight emphysema.

The bronchitis was idiopathic in seventeen cases, while in ten examples it was preceded by rheumatic inflammation in some one of the white or fibrous tissues.

There was more or less endocardial murmur in eleven cases. Pleuritis supervened in five, and pericarditis was observed in four. In six examples of idiopathic bronchitis complicated with cardiac lesion, the murmur was with the second sound alone in three, and with the first sound alone in one, while in two others both sounds were either prolonged or otherwise altered in character. But out of five cases in which the bronchitis was symptomatic of general rheumatism, there was a murmur with the first sound of the heart in three, with the second sound in one, and with both sounds in one. It

is therefore probable, although the number of cases is insufficient to draw any positive inference, that in general rheumatism the mitral valve is most frequently implicated, while in fibrous bronchitis the rheumatic element is more apt to attack the semilunar valves.

In two out of six cases of idiopathic bronchitis, associated with cardiac lesion, the murmurs were recognized during the first week; in two during the second week; in one during the third week, and in one on the thirty-second day of the disease.

In three out of the five symptomatic cases, the bronchitis took precedence of the cardiac lesion, which latter was in each example symptomatic also of foregone rheumatism in other white tissues. It may be remarked, that many of these cases were selected because the cardiac lesions bore incontestable evidence of the rheumatic character of the bronchitis. The examples, therefore, furnish no evidence of the mean frequency of cardiac complication, which does not occur oftener, probably, than in one out of four or five cases.

Pneumonia complicated the bronchitis in twelve cases. In seven of these the engorgement was limited, being confined to a few lobules, and not exceeding in any instance the space which a large orange might have occupied. In five cases, the engorgement was largely diffused throughout one or more lobes.

In eight cases, the pneumonia was recognized both by auscultation and the signs furnished by the sputa. In two, the ear detected the engorgement, other signs failing; and, in one, the sputa were rust-colored when other signs gave no evidence of vascular lesion.

The pneumonia commenced during the first week of the bronchitis in eight cases; within the second week in two; in one on the twentieth, and in one other on the thirty-fourth day of the disease.

Five of the individuals treated for fibrous bronchitis suffered, on different occasions, with rheumatic inflammation of the white tunic of the eyes; but only two of these ever labored under articular or general rheumatism. It is, therefore, probable that persons prone to rheumatic sclerotitis, are also peculiarly subject to fibrous inflammation of the bronchi.

In three examples, one of which is noted amongst the foregoing cases, the cough ceased at various intervals during the course of the bronchitis, and the individuals, all children under seven years of age, were attacked with severe earache. In one example, during an attack of six weeks' duration, there was a transfer of the rheumatism to one or the other ear on four distinct occasions. The cough ceased entirely as soon as the otitis commenced, and returned again, in every instance, on the cessation of the earache. In one of these cases, the otalgia seemed to be aggravated by sound; in two, the earache was followed by marked deafness, lasting for several days only; and, in one, there was a slight sero-ceruminous discharge; but in no instance was the inflammation followed by true otorrhoea. These cases of otalgia depended, probably, on rheumatism seated in one or more of the articulations uniting the malleus, incus, orbicularis, and stapes, or at the point of union between the first and last-named bones with the external and internal drum membranes. May not neglected cases of this sort lead, in some instances, to permanent deafness?

A very large proportion of the cases were induced by exposure of the body to wet or dampness at a low temperature.

The symptoms most strikingly characteristic of the acute variety of rheumatic bronchitis are profuse, irregular sweats, inordinate sensibility to cold, transient flushings of

the face, and either a constant or a paroxysmal and unproductive cough.

In fibro-bronchitis, simple or complicated with pneumonia, the sweats are symptomatic, and differ widely from the critical perspirations which, happening either as cause or effect, announce so frequently the favorable termination of simple inflammatory engorgement. And both of these sweats are again easily distinguishable from the night-sweats of phthisis.

In ordinary pneumonia, the flushing of the cheeks is generally deep, circumscribed, and constant; but in rheumatic bronchitis, on the contrary, the redness of the face is generally faint, transient, and irregular. When, however, extensive pneumonia supervenes in these cases, the capillary congestion about the face is both deep and persistent, and generally proportionate to the degree of engorgement.

In subacute fibro-bronchitis, the pulse and respiration are usually not more frequent than in health, and generally there is neither pain in the chest, nor the post-sternal soreness, which so frequently accompanies the dry stage of ordinary mucous catarrh; but often, during the act of coughing, more or less pain is felt, accompanied with a sense of soreness, as if the bronchi were suddenly scraped by some rough instrument. The acute variety of the disease is attended by a more or less frequent and corded pulse. The frequency of the respiration is generally governed by the amount of supervening engorgement, and, as the pneumonia is usually limited, the average respiration, in a given number of cases, is less than in ordinary congestive pneumonia. There is usually no fixed pain or soreness about the chest, but both are sometimes felt during the act of coughing.

The rapid evaporation from the surface occasions, in the disease under consideration, the most acute sensi-

bility to cold; the reverse is the case in ordinary pneumonia.

Mucous catarrh, like coryza, is generally extremely limited in its duration; but fibro-bronchitis, degenerating into a chronic disease, may last for months, or even years. In muco-bronchitis, the follicles pour out an abundant mucous secretion; but in fibro-bronchitis, on the contrary, the cough is either dry, or the matter expectorated is serum, highly charged with albumen. A highly aerated sputa, resembling the white of egg when beaten into whips, occurs in some few extremely acute cases of rheumatic bronchitis. This results from much cough and a rapid respiration, whereby the albuminoid serum is subjected to a sort of churning process.

In two cases of subacute rheumatic bronchitis, the paroxysmal cough ceased entirely, in one example for two, and in the other for more than three days, owing to an eruption on the surface of roseola. In one of these cases, the cough returned on the cessation of the exanthema. In one instance, the disease was associated with urticaria, and, in one other, with simple erythema.

The auscultatory signs, with the exception of an occasional sibilant râle, are entirely negative; so that, so far as these are concerned, the disease has to be made out, in most cases, solely by the method of exclusion. Where, however, pneumonia sets in, it becomes a most important sign of the pre-existing bronchitis, since it can generally be recognized either by the sputa furnished, or by the ear; and thus, indirectly only, auscultation becomes an important mode of determining the parent disease. The supervention of cardiac lesion is also of great value in pointing out the true character of the bronchitis. Moreover, rheumatic inflammation has probably a large share in the production of both narrowing and dilatation of the bronchi, particularly the

globular form of expansion, the fibrous and cartilaginous structures of these tubes undergoing, during the inflammatory process, the same plastic transformation which is observed to take place in the white tissues of the body generally. Dr. Williams, as the reader is aware, has traced the origin of dilated bronchi to the influence of pleuro-pneumonia. Now, we believe, that pleuro-pneumonia cannot, of itself, induce dilated bronchi; but that a pleuritic effusion compressing a lung, *the fibrous and cartilaginous tissues of which are softened and rendered plastic by pre-existing rheumatic inflammation*, may, and does aid in the production of dilated bronchi, we are not disposed to doubt. And we are, moreover, induced to think that the structural alterations of the bronchi, observed by Dr. W., were the result of fibro-bronchitis, associated, as it so often is, with rheumatic pneumonia and pleuritis.

Fibrous bronchitis serves also to explain the formation of the plugs or concretions of amorphous semiorganized matters, which, occasionally blocking up the bronchial tubes, are sometimes, though very rarely, expectorated in cylindrical or columniform masses. Where a lung labors under muco and fibro-bronchitis, occurring contemporaneously, with or without symptomatic pneumonia, the products of these associated conditions are serum, exudation matter or lymph, mucus, and albumen, the commingling of which go to form the concretions in question.

As to the frequency of fibro-bronchitis, it is believed that as catarrh occurs sporadically, the rheumatic variety will be found in about five out of twelve cases, but that during epidemics of influenza, the rheumatic element will be recognized in a smaller proportion of cases. It is believed, also, that the cartilaginous and fibrous structures

of the bronchi are more frequently the seats of rheumatic inflammation than any other white tissues of the body.

In acute fibro-bronchitis, the exacerbations of cough occur usually during the night, while in the subacute variety of this affection this symptom is generally most troublesome during the day. In the subacute and chronic forms of the disease, the skin is usually preternaturally dry; but if an acute attack supervene on the chronic affection, it is generally attended by mild perspirations. In acute broncho-pneumonia, the blood was uniformly found more highly buffed than in simple inflammatory engorgement, but not more largely charged with fibrin than it occasionally is in some severe cases of pleuro-pneumonia.

In the acute variety, uric acid and urate of soda are found in excess in the urine, unless the kidneys refuse to secrete them, and then the absence of these salts in the urine is generally an index of their superabundance in the blood.

In the subacute and chronic forms of the disease in question, urates of soda and lime are almost constantly found in the urine in very great excess. Earthy phosphates exist occasionally under all forms of this disease.

In simple uncomplicated pneumonia, there is generally no antecedent cough, and the auscultatory signs of engorgement are amongst the earliest evidences of pulmonary mischief; but the variety symptomatic of fibro-bronchitis is usually preceded for some time by the dry characteristic cough already described. Not unfrequently, however, the bronchitis and engorgement happen contemporaneously.

Individuals laboring under simple inflammatory engorgement recover generally in four, eight, twelve, or, at most, twenty days, according to the extent of the pneumonia and the time at which it comes under care; but

where this affection is complicated with or depends on pre-existing bronchitis, the engorgement, if it does not result in death, may continue for thirty-five days or more, and occasionally, though very rarely, degenerate into chronic pneumonia.

Now, it seems very clear that before symptomatic pneumonia can recover, the bronchitis on which it depends, and to which it owes its origin, must be relieved. And this suggests the inquiry: If the bronchitis were suitably treated before the pneumonia sets in, might not the engorgement which complicates these cases so sadly, and adds so materially to their danger, be prevented effectually? It is believed that future inquiries must answer this question in the affirmative, if indeed it is not answered already.

Grisolle, the faithful and indefatigable recorder of morbid phenomena, tells us¹ that of two hundred and one patients from whom he was enabled to procure a satisfactory antecedent history, seventy-six had coughed, for a greater or less length of time, before the development of symptoms clearly characteristic of pneumonia. Of these seventy-six, twenty-three had labored under the chronic form of bronchitis for years; in the remaining fifty-three, the bronchitis had existed three or four weeks at the time of pneumonic seizure. The proportion of these cases seemed to M. Grisolle somewhat greater in males than in females, doubtless because the former were most exposed during inclement seasons. Excluding the twenty-three chronic cases, Grisolle's observations show that fifty-three, or more than one-fourth of his two hundred and one cases of pneumonia, were preceded by acute bronchitis. Now, from all that we have seen, no reasonable doubt can be entertained that these were

¹ *Traité Pratique de la Pneumonie*, p. 182.

nearly all cases of fibro-bronchitis, and that a large number of the supervening attacks of pneumonia might have been prevented by ordinary care of, suitable attention to, or appropriate treatment directed to the primary bronchitic lesion. Again, Grisolle says (p. 183): "Les mois de juillet, d'août, de septembre et d'octobre ont été les seuls pendant lesquels je n'ai pas vu la bronchite précéder l'inflammation du poumon; dans tous les autres mois la proportion est restée à peu près la même pour chacune d'eux." This goes to show that, during the hot and dry months, the pneumonias were not preceded by bronchitis, but that, in the cold and wet seasons, bronchitic lesions were common antecedents. The statement therefore renders it extremely probable that the catarrhs observed by him were rheumatic in their character, it having already been shown that the cases which form the basis of our remarks were, in nearly every instance, produced by exposure to cold and dampness. Under this view of the subject, it is not well to fall in with the received opinion, and to believe, with Walshe and others, "that, in the adult, idiopathic inflammation of the tubes does not pass on to the parenchyma;" but rather, taking the facts of the case in their correlative signification, entertain a hope that more accurate diagnosis may yet enable us, in many cases, by timely advice, to prevent a disease which numbers so many victims, and one which, under the best directed management, must so often prove fatal.

These things teach us a practical rule—that patients laboring under ordinary mucous catarrh, may be permitted to go about and do as they like; while others, having even the mildest form of fibrous bronchitis, should be counselled to avoid all the causes likely to induce a secondary lesion about the heart or lungs.

It is remembered by all that the eminent observers

Laennec and Andral differed very widely on one or two points connected with the pathology and symptomatology of chest diseases. These differences arose out of the 30th, 31st, 32d, 33d, 34th, and 35th cases of Andral, and certain other examples given by him, of pulmonary engorgement without auscultatory signs. Laennec thought that the ear could detect a pneumonia, in whatever part of the lung it might be seated; he had seen but one instance to the contrary, and in that, he says, the engorgement might have been detected, had he listened at the right time. Andral entertained a different opinion, and has given cases where neither auscultation, percussion, nor the expectoration, gave any clue to the disease. Indeed, whenever pneumonia starts up late and unexpectedly in other acute chest affections, it is generally assumed, even when auscultation and percussion have failed in detecting it, that a latent or central engorgement must have previously existed.

Now, with the view of reconciling these discrepancies, it may be asked, where, in most cases, is the necessity for such an assumption, when it is shown by the previous cases that inflammation may extend, at any time during the course of a fibro-bronchitis, directly to the parenchyma of the lung?

Amongst faithfully recorded observations of others, it is easy to recognize cases of fibro-bronchitis associated with pneumonia; but the authors, so far from explaining the etiology of these cases, have failed even to refer them to their true anatomical seat, or to throw out the remotest hint that they owe their origin to a rheumatic law. In Andral's *Clinique*, under the head of Pneumonia, we may refer for example to observations 2, 5, 7, 20, 23, 28, and 37, all of which must unquestionably have been cases of rheumatic bronchitis, associated with pneumonia.

Fibro-bronchitis is often, without doubt, the most insidious disease under which a patient can possibly labor. It may last, in a subacute form, for days, weeks, or months, without giving rise to any greater annoyance than that which is produced by a dry cough, attended occasionally with slight pain and soreness. The individuals laboring under it feeling no indisposition, having a good appetite, and sleeping well, go about attending to their occupations as usual. With ordinary care, and an avoidance of exposure at night and during wet weather, the disease, unaided, frequently ends in recovery; but a very slight exciting cause, fatigue, over-indulgence in food and wine—particularly when these are taken at night—exposure to dampness, or some other trivial causes, often at once convert this mild affection into an acute bronchitis. On this pneumonia frequently supervenes, giving rise to one of the most dangerous complications under which an individual can labor. But still more frequently acute bronchitis, with contemporaneous or subsequent engorgement, happens suddenly, without being announced by the cough, and other antecedents which mark the subacute form of this affection.

TREATMENT OF FIBRO-BRONCHITIS AND RHEUMATIC PNEUMONIA.

First of all, it is of leading importance, as before explained, to adopt such means as are likely to alter and control the particular condition of the fluids, which, having given rise to, may serve, without correction, to perpetuate the morbid action. In all cases of this affection, and especially those attended by profuse sweating, it is very indispensable to see that the drinks and diet of the patient are well supplied with common salt—

muriate of soda. In long-continued attacks of most acute diseases, sugar is too often used as a condiment in place of table-salt. Many object to the use of chemical remedies for rheumatism, on the ground that, if they did any good, they ought to cure in all cases, without the aid of other remedial agents. It would be just as philosophical to announce, that it is useless to give the appropriate antidote for oxalic acid, or any other poison taken into the stomach, because when this has been done, a resort to bleeding, cups, leeches, and demulcents, is still required to relieve the gastric inflammation.

The next indications are: 1st. To reduce plethora, whereby congestions are removed, the injecting force of the heart and arteries restrained, and the circulation, or rather the complex series of elastic pouches, through which it is carried on, are enabled, by a series of siphonic acts, to take up and remove the transfused serum which may occupy the cellular tissue surrounding the points of congestion. 2d. To use such catalytic agents as are best calculated to relieve the inflammatory conditions of blood, and, by their antiplastic effects, prevent the organization of coagulable lymph. 3d. By the use of anodynes to calm the irritability of the nervous system, quiet the cough, and thereby give partial rest to the inflamed bronchi and engorged parenchyma.

Depletion.—Most writers agreeing as to the signal advantage from loss of blood in pneumonia, only differ in regard to the quantity to be taken, and the time and mode of its abstraction. In simple, uncomplicated congestive pneumonia, it is often difficult, owing to the supervention of syncope, even when the patient is recumbent, to take blood in sufficient quantity, by one or two bleedings, to make any decided impression on the disease. In order, therefore, to relieve the congestive inflammation under which the lung labors,

the bleedings, in this form of the disease, have to be frequently repeated, or the blood has to be taken by leeches, so that from its gradual withdrawal the brain may be, as it were, insensible to its loss. The danger here is not from taking too much blood, but from the difficulty often experienced in procuring a sufficient quantity in time to afford relief; this difficulty may be overcome, in many cases, by the use of brandy and other stimuli; and where the patient has labored under remittent fever the previous autumn, or has his system impressed at the time by marsh-poison, the conjoint free use of quinia is indispensable, and will, under these circumstances, in most cases, relieve the engorgement without a resort to the lancet. Being satisfied of the existence of pneumonia by auscultation, the frequency of the respiration, or the character of the sputa, we bleed in this variety of the disease because, from want of sufficient nervous energy, the circulation has lost its reactive force, is incapable of moving the normal amount of blood from the central to the peripheral vessels; and still less has it the power to hurry on and remove the blood from the seats of congestion. To enable it to do either, it is necessary to diminish the quantity of the circulating current, and give tone to the nervous system. Those who are governed in these cases by the state of the pulse alone, are apt to delay bleeding until, on the last day of the attack, pain in the side, and increased force in the pulse, announce a pleuritic or bronchitic complication, for the relief of which bleeding can no longer be adopted with any certainty of success. This form of pneumonia is most apt to occur during the prevalence of epidemic influenza, when the attacks are less likely to be complicated with other inflammations, but are more generally associated with greater or less adynamia, rendering it impossible for us

to bleed at all, in many cases, without a previous resort to stimulants. In this condition, where the early loss of blood is found so salutary, the plan of bleeding advised by Bouillaud is the best, simply because, in many cases, none other is practicable, it being rarely possible, during the prolonged stage of congestion, to get any more blood at the first or second attempts, than he advises should be taken; and hence the necessity for moderate bloodletting, often repeated. When, however, blood can be procured, it is much better to take it in large quantities as early as possible in the disease. One or two bloodlettings, to the extent of twenty or thirty ounces, practised within twelve or twenty-four hours from the date of seizure, not only establishes a speedier convalescence, but accomplishes the purpose much better than a loss of twice or thrice as much blood, taken by small and often-repeated bleedings.

The remedies next most useful in this form of the disease, are the stimulating expectorants and diaphoretics, mild purgatives, and ipecacuanha. Calomel is seldom required, and, unless in this condition it be given with great care, its exhibition is apt to be followed by ptyalism, which should be carefully avoided. Antimony may also be used to the extent of producing, at each dose, slight nausea, except in malarious districts, where the nervous systems of the individuals are depressed by the action of marsh-poison. Under these circumstances, the administration of antimony is little less than murderous.

Congestive pneumonia has merely been referred to, in order to establish points of comparison between engorgement having its origin in the depurative capillaries, and the more acute, or rheumatic variety of the disease, in which the bronchial or nutritious arteries are primarily concerned. In the one case, the congestion precedes

the inflammation, while, in the other, the reverse is the case, the inflammatory lesion preceding the engorgement.

When either lesion supervenes on the other, it is well-nigh too late, in many cases, to resort to bleeding with an expectation of the great advantage which might have resulted from its earlier employment. For, while the timely loss of blood may, in every instance with certainty, cut short the primary mischief singly, the potency of depletion to relieve the original disease, and at the same time control the secondary inflammation in the one case, and the supervening engorgement in the other, is far less absolute. While, however, loss of blood is often powerless in combating the double lesion, as it might have done either singly, a resort to free depletion is not only justifiable but proper here, as it is at all other stages of the disease.

As intermediate between congestive engorgement and rheumatic or broncho-pneumonia, we might speak in this place of simple, frank, inflammatory pneumonia, where the capillary vessels of the depurative circulation, and the terminal nutritious arteries feeding the air-cells, are both probably equally concerned from the beginning; but as it is not our purpose to furnish a treatise on pneumonia, but simply to call attention to one form of the disease, the force of what we have to say would only be weakened by allusion to other varieties.

In uncomplicated acute idiopathic fibro-bronchitis, there is generally an active play of the pulse and much sweating; the symptoms, with the exception of cough, not differing very materially from those which accompany acute rheumatic inflammation in other white tissues. But the disease under consideration affecting organs essential to life, the demands for efficient treat-

ment are proportionate in importance to the value of the structures involved. Moreover, it is liable to be beset by dangerous complications, pneumonia, endocarditis, pericarditis and pleuritis. Nay, more, it sometimes involves the fibro-serous tissues covering the brain and spinal cord. It numbers probably as many victims as any other affection, and, where life is not directly endangered by an attack, it often leads to serious structural alterations both of the heart and lungs.

Bleeding in this affection is of prime importance, not for the object assigned when speaking of congestive pneumonia—that of unloading the over-distended capillaries of the depurative circulation—but to control the propulsive force of the heart and arteries, and thereby overcome the inflammatory process going on in the white tissues of the bronchi, which are directly fed by the nutritious vessels. When, however, a sympathetic remora of blood taking place in the depurative circulation, gives rise to engorgement in the surrounding parenchyma, bleeding exerts the double effect of relieving congestion and controlling inflammation at one and the same time. Loss of blood is, therefore, of the first consequence both in preventing and relieving the morbid catenation, and it is all important that one or two free bleedings be performed early in the disease. If earlier and freer depletion had been practised in Cases II., V., VI., and XII., there is hardly a doubt that they would have been attended by better results.

Where there is no reason to apprehend the contemporaneous occurrence of rheumatic bronchitis and extensive engorgement in the same lung, it is still more important, in view of the sympathetic and reciprocal morbid action of these two conditions on each other, that the freest depletion be practised at the very outset of the conjoined affections. Under these circumstances,

the patient, if too weak to sit up, should be placed in a semi-recumbent posture and bled to syncope. If the quantity of blood obtained be too small, the operation should be soon repeated; diffusible stimulants, if necessary, being given to rouse the circulation, so that a sufficient quantity of blood may be had to remove congestion and control inflammation.

Mercury.—The remedial agent which comes next to the lancet, in fibro-bronchitis, associated or not with symptomatic or contemporaneous idiopathic engorgement, is calomel. It should be given in full doses of ten or twelve grains once in the twenty-four hours, for the three or four first days of the seizure, or in doses of two or three grains every three or four hours, associated with about the same quantity of ipecacuanha. From five to fifteen grains of nitrate of potassa may often be added with advantage to each dose. If the cough is troublesome, repose should be given to the lungs by a full dose of Dover's powder, black drop, opium, or some other anodyne, at night. If a joint labors under inflammation, it can be placed in a state of absolute quiet, and the doctrine of rest, as advocated particularly by the late Dr. Physick in the treatment of disease, can be carried out to the letter. But with the heart and lungs the case is quite different; these organs, being constantly required to work, can never be kept in a state of rest (unless from the supervention of pleuritic effusion on inflammation of the lungs), and this constitutes one of the chief obstacles to the successful management of acute affections in these structures; nevertheless, partial or comparative repose may be procured in the diseases of both, by anodyne, sedative, and antispasmodic agents. Colchicum may be used here as in the treatment of other forms of rheumatism; but in this affection its exhibitions are seldom followed by the marked beneficial results which are

obtained from its use in gout. Digitalis is of great value in controlling the action of the heart and arteries, and often saves the necessity for large and repeated losses of blood. The tincture prepared from the European fox-glove is the best, and may be given in doses of ten drops every six hours, so long as the rate of pulse is above eighty; if, however, the ratio of its beats falls below this standard, the digitalis should be pretermitted for a time, and resumed again as occasion may require.

In uncomplicated fibro-bronchitis, antimony is of no value whatever, and its use is to be as little thought of as in the treatment of articular or any other form of rheumatism. Where, however, extensive engorgement supervenes, this agent may be given so long as moderate doses produce nausea; but when the stomach tolerates it, ipecacuanha alone, or combined with calomel, may be advantageously substituted.

Having referred to the use of calomel, antimony, and opium, in two distinct forms of pneumonia, it may be well to say a word or two as to the action of these remedies, and, at the same time, notice the conditions which often, under their employment, proved advantageous or otherwise.

Successful management of disease must ever depend on accurate diagnosis, not only of the pathological lesion, but also of the conditions which accompany it. This knowledge and familiarity with the action of remedies, are the only guides by which the physician can, with any degree of certainty, prescribe particular agents for the relief of special morbid actions or conditions.

The calomel and opium treatment for pneumonia, of British practitioners, and the almost exclusive use of antimony by the French, seem to stand where they originally did; each class abjuring the practice of the other, still doggedly adheres to its own favorite methods.

But the treatment of pneumonia is a grave question, and it is to be hoped, for humanity's sake, that no atom of prejudice will ever be permitted to interfere with well-directed efforts to discover, establish, and make universal the best mode of management.

Grisolle, who, differing from most French writers, devotes nearly one-third of his work to treatment, does not appear to have prescribed calomel in a single case, since he says that he has no personal experience of the calomel and opium treatment of the English physicians, and calls upon them for evidence in its favor. It would be better for the advocates of each method to try the plan of the other; but, in order that their patients may not die from nervous prostration induced by antimony on the one hand, nor suffer from the much-dreaded effects of calomel on the other, let them both see, in making the trial, that they select suitable cases for the application of each method.

As exclusive modes of treatment for all forms of pneumonia, and as applied to the various conditions of the patients in whom this disease may occur; whether associated with anæmia, plethora, or adynamia, &c., it would be difficult to say which of the two methods is the best, or rather which is most objectionable. As exclusive modes, neither is better, probably, than homœopathic treatment, or M. Biett's "let alone" system; but as applied to particular but distinct classes of suitable cases, in relation to special and like conditions of the individuals in whom they occur, both methods are perhaps unexceptionable.

Of the conjoined employment of ipecacuanha and calomel we might say much, but as to the combined and continued use of calomel and opium in pneumonia we can say nothing. Each of the latter is useful, in its way, in controlling certain symptoms and as applicable to certain conditions, but both ought rarely to be united in the

same formula, unless with the direct intention of producing salivation. Where, however, there are indications for each to fulfil; they may be given at the same time, guarding their combined effects by the use of ipecacuanha or antimony, which latter very materially diminishes the liability to ptyalism.

Crude opium should not be given in pneumonia, where a depressing effect is desired, because it contains narcotine, which is proved to be a tonic like quinia; and also thebaia, an alkaloid said to have the properties of strychnia.

Opium and its preparations should be dispensed with as general remedies for pulmonary engorgement, because their immediate effects are to quicken respiration, besides adding force and frequency to the heart's action. They are farther objectionable; for, while they produce sweating, all other secretions are arrested, particularly those from the alimentary canal, and thus effete matters are retained, an evil not compensated for by their diaphoretic properties. They should be altogether avoided where there is much fever and heat of skin, with dryness of tongue. They produce congestion of brain, and should not therefore be given when, from engorgement of the pulmonary parenchyma, the vessels of the head are already replete with blood.

They may be given, after suitable evacuation of blood, to relieve the violent pain of pleurisy, and to control the distressing cough so often attendant on fibro-bronchitis; but where these diseases are associated with any degree of engorgement, it is often well to use hydrocyanic acid combined with some other narcotic or sedative, which will not arrest the secretions.

In fibro-bronchitis, attended with fever and sweating, opium may be united with calomel without the risk of ptyalism; but in congestive pneumonia, where the pulse

is often depressed, the conjoined use of these remedies will often produce salivation.

The effects of calomel are, first, its action on the stomach, producing slight nausea and sweating. Secondly, through its action on the alimentary canal and secreting organs related therewith, it is at the same time revulsive, depletive, derivative, and sedative. Thirdly, it acts as an antiplastic on the blood, impoverishing it, and preventing the elaboration of coagulable lymph. Fourthly, it has the catalytic property of softening and slowly disorganizing structures of low vitality, as recently organized lymph, or the gums, producing ptyalism. Now, it is highly advantageous in many cases to procure the primary, secondary, and tertiary effects of calomel, and at the same time avoid its quaternary and distinctive effects. On the other hand, it is often desirable to induce the disorganizing action of mercury in breaking down recently-formed and slightly organized indurations, or the adhesions resulting from recently-vitalized coagulable lymph; and this can be done without subjecting the patient to the annoyance and depression which would result from the primary effects of the remedy. And, moreover, by properly estimating the condition of the patient, regulating the dose, and giving it with or without opium, the primary effects may generally be brought about at pleasure, without danger of inducing its disorganizing action. By uniting opium with calomel, its salivary effects may generally be induced, but by combining with it ipecacuanha, ptyalism may usually be obviated. In broncho-pneumonia, attended by a frequent pulse and free perspiration, calomel may be given freely, and continued for days without danger of producing ptyalism, especially if the patient be enjoined not to depress the action of his gums by taking cold

drinks, and his bed be so placed that a draught of cold air cannot pass over his face.

The well-known influence of cold in acting as the exciting cause of ptyalism, induced the writer to experiment, with the view of ascertaining how far extremes of temperature might be made available in causing the action of mercury to impinge on a particular part. Thus far he has only applied it to the treatment of the cartilaginous-like buttons which often form about the prepuce and corona glandis, as a result of neglected primary syphilitic ulcers, and to open chancres with indurated bases. These morbid productions have only a parasitical existence, and it appears to be owing to the feebleness of their vital endowments that the catalytic power of mercury and iodine exerts a control over them. So long as these indurations remain, they are never-failing sources of syphilitic infection to the whole system, giving rise, under modifying circumstances, to the varied forms of secondary eruptions; but let them be cut out or destroyed, and the disease is sometimes cured, and farther infection of the system prevented.

In a number of instances I have directed patients, whose systems have been previously mildly impressed by mercury, to cover or surround the induration with ice and salt, for a period sufficient to give the parts adjacent a sense of numbness. When this had acted sufficiently, they were directed to let the part resume its natural temperature, and then place it in a warm poultice. This process was sometimes repeated every second or third day. Thus far the trials have been attended with happy results, but how far these were owing to changes of temperature alone, or to the local action of mercury supposed to be thus induced, it is difficult to say.

There is something in the highly fibrinous condition

of the blood attending acute, serous, arthritic, and fibrous inflammations, which seems to antagonize almost completely the ptyalizing action of mercury; while in normal, ataxic, and asthenic states, and in patients laboring under congestion, the reverse is the case. In the former conditions mercury will seldom salivate, whether united with opium or not; and where the latter medicine has been given with ipecacuanha, in the form of Dover's powder, I have never, under the circumstances, met with an instance of ptyalism.

Antimony.—The treatment with antimony applies particularly to cases of pneumonia in which there are heat and dryness of skin, a parched tongue, persistent and circumscribed flushing of the face, and considerable force of pulse. It does not apply to cases in which there are redness of the tongue, a languid pulse, much sweating, with coolness of skin, transient and diffused flushings of the face, and adynamia, the existence of which last condition is generally better characterized by unusual size of the pupils when compared with those of other individuals exposed to the same degree of light. Still less ought this agent to be given when, from the shock inflicted on the nervous system by the occurrence of engorgement, or other causes, the patient labors under any degree of nervous prostration. And where individuals attacked with pneumonia have suffered from intermittent or remittent fever within a year or two, or have their nervous energies depressed by having resided in a malarious region without laboring under fever, antimony ought never to be given for the cure of pneumonia, or any other affection. And as to the plan of Mr. Marryatt, and the contra-stimulant doctrine: where there is perfect toleration to antimony in large doses, its continuance should be persisted in with great caution; for while in many cases, under these circum-

stances, tartar emetic exerts no influence over the disease, it will sap the powers of the nervous system, and, sooner or later, superinduce fatal nervous prostration.

In the case of a man of good constitution, aged thirty-one, and laboring under fibro-bronchitis associated with engorgement of nearly the whole of the right lung, there was perfect toleration of antimony, in doses of four grains, repeated every three hours. After having continued these doses for several days, they seemed not to make the slightest impression on the disease; but it was manifest, from his extreme exhaustion, tremulous, feeble voice, dilated pupils, relaxed expression of the muscles about the face, and great apathy of mind, that the antimony had produced the worst degree of nervous exhaustion, and, if persisted in, must cause death in a short time. The antimony was withheld, a little wine was given, and, after some hours, calomel and ipecacuanha were given, of each five grains every four hours. Each dose produced slight nausea, little by little the patient's strength rallied, resolution of the engorgement commenced on the third day from the date of the new prescription, which was continued for about a week, and finally he recovered perfectly.

There is not a doubt that many patients die from sedation produced by antimony, before the engorgement has time to be removed.

The trials made by M. Louis show that in patients who were bled, and subsequently treated with tartarized antimony, the mean date of convalescence was about two days later than in those who only underwent venesection. A result similar to this has been obtained by M. Grisolle, who found that out of seventy cases of recovery, treated by bleeding and tartar emetic, convalescence was established on the fourteenth day, being two days later than the average date of recovery in

patients who convalesced under bleeding only. But these results neither prove that the medicine exercised a happy or a prejudicial influence on the progress of the disease, for in all these cases several bleedings had been practised without benefit, the disease progressing in spite of them; moreover, M. Grisolle had bled one day later, and M. Louis two days later, in patients treated with antimony, than in those who took none of this medicine. Besides, M. Grisolle's seventy examples of recovery happened out of a series of eighty cases, out of which he lost only ten; a favorable result, which he has the candor to attribute in great measure to the youth of his patients, their mean age being under thirty-six years.

In another series of cases, thirty patients, of the average age of forty-nine, treated by M. Grisolle, had been so largely bled that all possibility of farther depletion was out of the question; they all labored under great prostration, the pulse was soft and easily compressed, and the condition of one-half of them hopeless, when the use of tartarized antimony (the most improper agent which could, under the circumstances, have been given) was commenced. Eighteen, or nearly two-thirds of these thirty patients, died, more than one-half of the fatal cases terminating during the first two days; a conclusive proof that antimony is injurious in cases attended by adynamia and nervous exhaustion, and that its exhibition can only add to the prostration which is the threatened mode of death. But, according to M. Grisolle's mode of reasoning, this result goes, he says, to show the inefficacy of bleeding much more than of tartar emetic, the former having been employed extensively at an early period (the fourth day on an average), and yet it had failed in arresting the progress of the disease. He ought rather to have come to the conclusion that there must have been some element in these cases which depletion could

not control, for all that bleeding can do is to remove plethora and diminish vascular tension, and these it had accomplished as effectually here as in his cases of recovery, when the use of tartar emetic was commenced. And as venesection and antimony combined had failed comparatively in these cases, while in another series they had proved of such signal advantage, he might have come to a conclusion somewhat similar to that of Laennec in regard to catarrh, that there must probably have been some marked but unexplained difference between the cases themselves. Nay, before coming to any conclusion as to the inutility of venesection, he should (in the progressive spirit of philosophical doubt, in spite of his own senses and the positive evidence furnished by physical signs) have been led to suspect that the series of cases in question might prove, when rigidly analyzed and accurately compared, to be made up of widely distinct and separate affections.

But suppose that to some of the fatal eighteen out of the thirty cases, in place of tartar emetic he had exhibited calomel and ipecacuanha—these agents would have produced the requisite degree of sedation, and, while they depressed, would have been far less likely than antimony to exhaust the nervous centres; and suppose that in others of these cases there may have been true rheumatism, which had extended from the bronchi to the parenchyma, and that the appropriate treatment for this disease by alkaline or other remedies, according to the indications pointed out at another place, had been instituted, might not the result have been very different? But in these cases, the exhausting effects of antimony were brought to bear on the nervous centres at the very time when, from large abstraction of blood, they were already greatly weakened.

It may be useful here to inquire what are the effects

of tartar emetic, and the causes of what is understood by *toleration* to its use. The physiological effects of antimony may be brought about alike either by introducing it into the stomach, or by injecting it into a vein. Its action, therefore, is first on the nervous system: by depressing its energies the force of the heart is also depressed, and less blood being sent to the nervous centres, nausea and syncope occur very much as they do where the stimulus of blood is taken from the brain by venesection. Indirectly, through the nervous system, it exerts also a catalytic influence on the blood. Depletion depresses nervous energy, and produces nausea, vomiting, and syncope, by lowering the action of the heart, and thus depriving the brain of its accustomed supply of blood. Antimony induces the same symptoms by its directly depressing action on the nervous system, and indirectly through its action on the heart, thereby withdrawing from the brain its normal stimulus. Hence it is that nausea, resulting from loss of blood, is generally more transient than that which is produced by the action of antimony. And hence, also, it is that a patient, however weak, will generally, after having fainted, rally from loss of blood. But where syncope results from the large or continued use of antimony (one of the modes of death in pneumonia), it is generally fatal, because nervous energy, and with it vital irritability, has been worn out and exhausted by the previous use of the remedy.

Direct sedation, depressed action of heart, and consequent cerebral depletion, indicated by nausea and vomiting, are the leading physiological effects of antimony, which, being antagonized by certain pathological conditions, do not so readily occur (unless from the long-continued and exhausting effects of the medicine), and then the patient is said to tolerate the remedy. The

states which antagonize and thereby prevent the direct effects of antimony, are an acute, articular, fibrous or serous inflammation, which, adding increased force to the heart's action, render it not less difficult, in some cases, to bleed an individual to syncope than to sicken him by nauseants, which act in virtue of their depressing effects on the nervous system. The increased force with which, under these circumstances, the blood is sent to the brain, antagonizes directly the depressing effects of antimony. Thus, an acute fibro-bronchitis or pleuritis often gives to the action of the heart a force not easily counterbalanced by the sedative effects of tartarized antimony; and the brain continuing to receive its normal supply of blood, no nausea is produced.

But the condition which antagonizes more perfectly the action of tartarized antimony, is engorgement of one or both lungs, whereby the return circulation from the head is obstructed, and the brain is kept supplied, as long as the engorgement lasts, with more than its normal share of the circulating current. The hebetude of mind, and congestion of the capillaries about the face, so frequently accompanying these cases, are proofs that such is really the state of the cerebral circulation, and it will generally be found that toleration to tartarized antimony is proportionate to the degree of pulmonary engorgement.

It will now be seen that the absolute barriers to the emetic action of antimony are the contemporaneous occurrence of pulmonary engorgement and acute fibrous or serous inflammation; the one adding to the force of the heart, while the other at the same time interferes with the return of blood from the head.

But while the more immediate effects of antimony are thus overcome by pathological conditions, there are others of its more remote effects which still go on; the

exhaustion of the vital energies, the impoverishment of the blood, and often the induction of irremediable prostration. Mr. Headland* is of opinion that tartar-emetic exerts a special action on the vagus nerve; but were such the case, it is not easy to see how its effects in this particular could be overcome, as just explained, by certain morbid conditions.

Venesection depresses vitality by taking from the nervous centres their accustomed support. Ipecacuanha depresses also by calming excitability of the nervous system; but antimony exhausts and finally extinguishes nervous energy. When, in the course of acute disease, a patient dies from loss of blood, the muscular fibre will still respond to the stimulus of galvanism; but when, on the contrary, he dies from the combined effects of disease and antimony, vital irritability ceases at the moment of death.

A knowledge of fibrous bronchitis explains to us how it was that the humoral writers observed a fancied resemblance between catarrh and rheumatism, and why it was that Sarcone and Morgagni derived advantage from the use of bicarbonate of potash and other alkaline remedies which they recommend both in bronchitis and in inflammatory infarctus of the lung. They administered these remedies with the idea that they diminished the viscosity of the humors, and thereby produced a more abundant evacuation of fluids from the lungs. Mascagni revived this treatment towards the close of the last century. He entertained the more philosophical idea, that they were useful in all stages of pneumonia, because of their action on the kidneys, skin, and intestines, thereby rendering the expectoration from the bronchi less viscid and more copious and fluid. Now,

* Essay on the Action of Medicines, p. 310.

were all pneumonias rheumatic in their character, and were the rheumatism giving rise to them invariably produced by uric acid and its compounds, there is hardly a doubt that experience would have established the alkaline treatment for pneumonia, and that, instead of being abandoned, it would have become universal. But we have shown, that rheumatism of the lungs, as well as of other fibrous structures, often depends on the presence of earthy phosphate, where acetic acid is the best remedy, and where alkalies, instead of improving, would, on the contrary, only aggravate the disease.

The pneumonias which so frequently terminate cases of Bright's disease, often furnish striking examples of the rheumatic variety of this affection. The reader is aware that, under these circumstances, engorgement of the lungs rarely sets in until, from long-continued albuminuria, suppression of urine, and the supervention of dropsy, it is evident that the blood has lost its plasticity, and that vascular lesions and congestions, superadded to the granular disease, have entirely obstructed the functions of the kidneys. Under these circumstances, all the effete materials which it is the province of the kidneys to secrete are retained, giving rise to bronchitis, on which generally engorgement of the parenchyma rapidly supervenes.

That the experience of British practitioners has led them to prefer calomel and opium in the treatment of pneumonia, while the French entertain a partiality for antimony, may perhaps be explained by the fact that the climate of England being much more humid than that of France, the probability is that the rheumatic variety of the disease is much more frequent on the north than it is on the south side of the Channel, and, accordingly, that in the comparatively dry and sunny climate of France the congestive form of the disease may

be the most frequent. For that calomel and opium is a much better general treatment for rheumatic bronchitis and pneumonia than antimony is, there can be little doubt; and just as little doubt, on the other hand, that antimony is far better suited as an exclusive treatment than calomel and opium are for the congestive and simple inflammatory varieties of pneumonia.

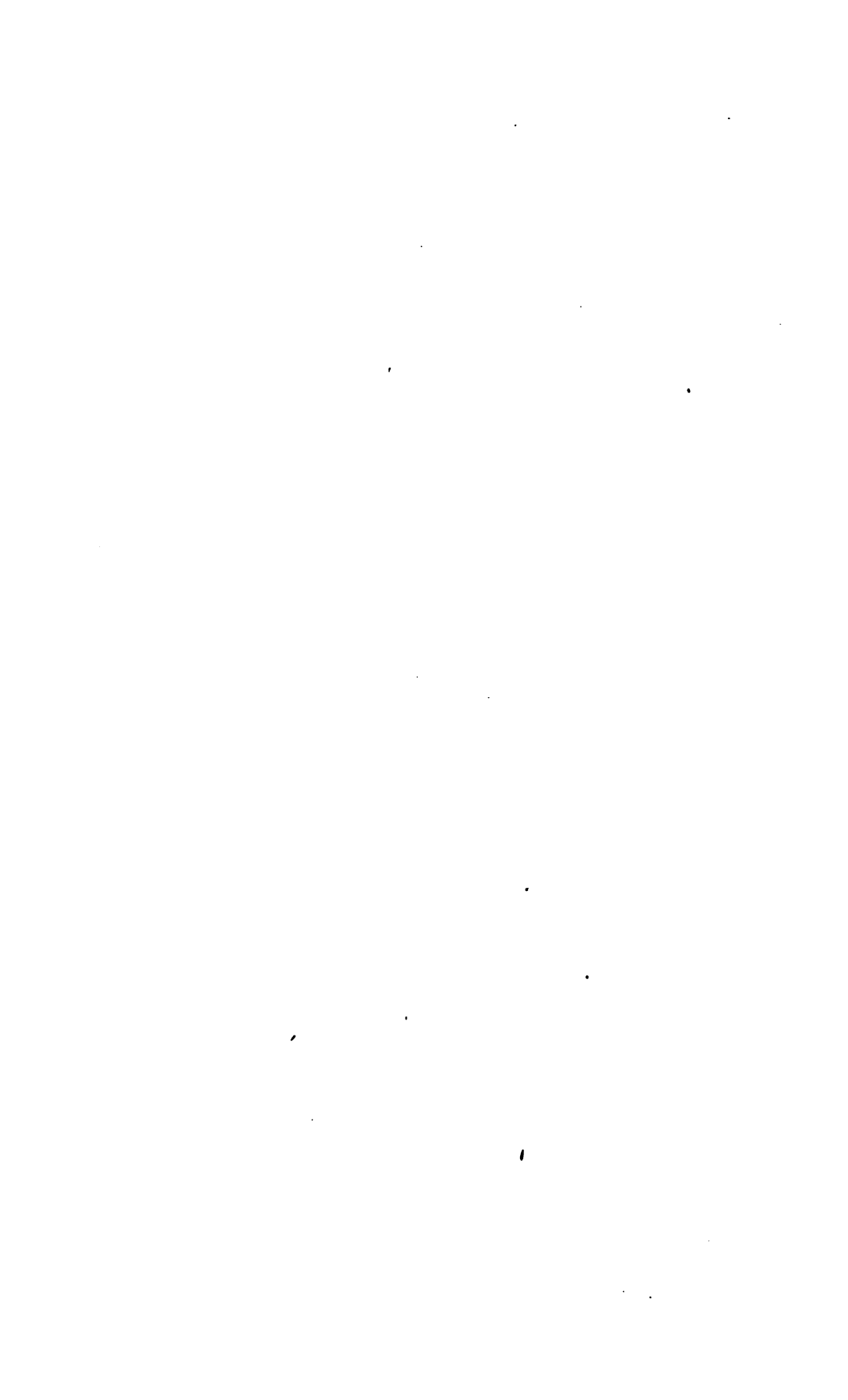
In examining healthy individuals for life assurance, the writer has frequently observed murmurs about the hearts of many, particularly with the second sound, who had never in their lives suffered with general rheumatism; and where these were asked whether they had ever been troubled with a worrying, long-continued dry cough, they generally answered in the affirmative.

It is not insisted that the division or classification of the different varieties of rheumatism according to the states of the fluids, uric acid, phosphatic, soda-uric, and that form depending on the presence of insoluble extractive matters, is the best arrangement. It is only contended that it has been found useful as a therapeutical guide.

Neither is it insisted that the treatment adopted for the relief of rheumatic bronchitis is the best; on the contrary, it is believed that as this disease, whether simple or complicated, comes to be better understood, its treatment, in the hands of good observers, will be rendered more certain and successful. It is believed, also, that the special and differential symptomatology of this affection will become far more complete.

The writer is prepared only to contend for the etiology and pathological semeiology of this disease, and the absolute importance of making it an independent and distinct entity. The position assumed can be doubted by no one who believes that certainty in medicine is based solely on accurate diagnosis.

The therapeutic portion of this essay proposes no new remedies, but, while it advises the application of particular known agents to special pathological states, it, at the same time, advocates the abandonment of other established modes of treatment, as not only useless, but often, under given conditions, highly prejudicial.



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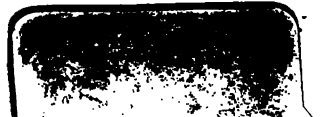
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