qualities for the treatment of phthisis, and especially for those conditions and constitutions which are either temporarily or permanently debarred from the benefits of the altitude climates; but I regret to say that, as yet, the arrangements are nowhere perfectly satisfactory. Even at the most favourite places, supplied with all the modern comforts, such as Cannes, and Mentone, and San Remo, the majority of invalids are in the habit of acting almost independently of their medical advisers, and many perish who, under strict guidance, might have been saved. The personal character and professional superiority of a Dr. Frank, or Bright, or Charles, or Siordet, or of one of the other physicians practising there, may in some, even in many cases, exercise so powerful an influence as to command willing obedience; but the whole system of this looseness of tie between medical man and consumptive patient is deplorable, and the results obtained are very inferior to those which might be obtained by judiciously arranged health-establishments, under strict medical guidance in every point of general and personal hygiene. This, however, is by many invalids not yet regarded as the principal sphere of the physician's work, but more or less as everybody's business, for which no medical man is required, and which each individual must find out for himself.

I also regret very much that I cannot properly discuss the climates of Great Britain and Ireland. These islands you know, contain, on the different coasts and in the interior of the land, a great variety of climates, which have been well described by Sir J. Clark, Thorowgood, C. T. Williams, Tripe, Buchan, and others, and I have likewise given short sketches of them. With all the differences, great as they are, between east and west, south-east and south-west coasts, and the different inland localities, there are certain traits of character more or less common to all of them, namely, a high degree of humidity; greater warmth than is due to the geographical latitude; comparative equability with regard to seasons and periods of the day; an analogous degree of sunlessness and dulness of atmosphere; and considerable movement of the air, almost amounting to windiness. All these localities, as a set off, possess hygienic arrangements which are superior to anything which is to be met with abroad, good food, and good accommodation; they are of easy access, and do not require a complete separation of the invalid from his family.

The physiological influence on the constitution compared with foreign localities of a similar elevation, may be designated as more or less tonic and health-giving, though not exhilarating, and as requiring a certain degree of energy and integrity of constitution. We possess in these islands good climates for preventive treatment, but we are not so well provided with localities assisting the treatment of developed phthisis, where the lungs and the constitution have partially lost their integrity and energy.

We ought, therefore, to do everything to mend the defects of these our climates, and to render the good qualities available, and concentrate them if possible. Is this done at our health-resorts for the treatment of phthisis? No, gentlemen, there are no such arrangements, or almost none, at the coasts of Devonshire, Hants, Sussex, and even the Isle of Wight, excepting the few sanatoria. Let us use our influence with our local professional brethren, who are neither deficient in knowledge nor in insight, and with the local proprietors and public, to obtain well placed and well arranged houses for the invalids, with suitable balconies, on which light couches and shelters for open-air treatment can be placed; good large verandahs, with movable glass doors; open and covered walks and winter-gardens, for exercise in windy and rainy weather; seats of different nature, with turnable shelter; quadripartite glass-covered seats, like those at Hastings and St. Leonard's, for which these places deserve commendation; walls for shelter from wind, and for reflection of the sun when it shines. We must induce our patients to place themselves under the entire control of their local medical men during their whole stay at one of our health-resorts, and to learn that the guidance of the medical man is as important as the climate, and in many cases more so. By judicious management, the medical man is often able to counteract the disadvantages of an indifferent climate, and to bring into action all its good points; while, without the guidance of an intelligent physician, the natural and social attractions, associated with a satisfactory climate, may become sources of failure. There is no doubt in my mind that it would be a very great advantage to many invalids, especially those who are not very rich, if there were well arranged health-establishments, under the supervision of good medical men, and that, through them, better results could be obtained from our home-climates.

And once more, gentlemen, let me plead for the multiplication of small hospitals for the consumptive poor in good situations, such as I have sketched in the second lecture. You have always treated me with so much kindness and consideration since you have, so to say, adopted me as one of yourselves, that I am hopeful that you will give

your countenance to the plans I have suggested, and that, through you, they may lead to some good. Then, gentlemen, the recollection of the hours which I have had the pleasure of spending with you, in these lectures, will belong to the brightest of my life.

THE LUMLEIAN LECTURES ON SOME POINTS IN THE NATURAL HISTORY OF PRIMITIVE DRY PLEURISIES.

Delivered at the Royal College of Physicians of London.

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LECTURE III.

IN the last lecture I arranged, for the sake of convenience, the pathological changes in the lung resulting from primitive dry pleuritis under four heads, and I intimated that for each of these there was to be found a corresponding clinical state or autonomy. I proceed now to consider these clinical states, to describe their chief characteristic signs, and to show in what manner they may be distinguished from other states resembling them, but having a different meaning and importance. The former, for descriptive purposes, I shall name the neoplastic pleural membrane state, the fibroid lung state, the bronchiectatic state, and the phthisical fibroid lung state.

And, first of all, concerning the neogenetic pleural membrane state. The patient may have the aspect of health, and experience no subjective indications of the presence of disease. If any exist, they will be limited to uneasiness or pain in the affected side, an occasional dry cough, feverishness, and general *malaise*. On rare occasions, the patient may be conscious of the existence of pleural friction. The physical signs are a slight decrease, with some irregularity, of the thoracic movements of the affected side, some diminution of the tactile vocal fremitus,¹ just notable but unequal dulness to percussion, a shifting, rubbing, or grating friction, enfeebled breath-sounds, and an altered vocal resonance. In some cases, instead of pleural friction, there may be heard crepitation, crackling or clicking; and we shall know from the superficial characters of these sounds, from their resistance to respiratory efforts, and from their association with gratings or rubbings, that they are of pleural origin.

Having thus before us a dry pleurisy, we have to determine if it be a primitive or a secondary affection.

If there be signs of disease in the corresponding or in the opposite lung, it is probable that the pleurisy is secondary; and, if without such signs, there be grave constitutional disorder, it is equally probable that the pleural inflammation has arisen out of some pre-existing malady; and this pre-existing malady may exercise its causal influence either through some local growth, such as tubercle, lying beyond the range of physical detection, or through some constitutional state, such as adenoma or syphilis. On the other hand, if there exist no signs of local disease, and no serious symptoms of constitutional disturbance, it is presumable that the case is one of primitive dry pleurisy. This affection may arise from mechanical injury or from cold, and it may be a local expression of such non-malignant constitutional disorders as rheumatism and gout.

The future course of a case of primitive dry pleurisy depends upon causes seldom visible or calculable, and is therefore absolutely uncertain. The signs of the malady may subside in a few weeks, or they may continue for months, or they may come and go for two or three years, and then either entirely disappear or invade the lung. Sometimes, after a variable duration, the dry stage issues in serous effusion, which pursues its ordinary course, and ends eventually in a thickened pleura and a contracted lung. In one case, seen with Dr. Sedgwick, and in another, seen with Dr. Warrington, it appeared as if the structural elements of an old adventitious pleural membrane developed through metaplastic processes into malignant fibrous growths. This result, however, must be infinitely rare; and, when

¹ I do not forget that Dr. Walshe has spoken otherwise; and it is only after careful investigations, often repeated, that I venture to differ from one of the most accomplished auscultators of our time.

the health of the patient is good, and he can be placed under the conditions most favourable to the organism, clinical experience will warrant the expectation of complete recovery.

Nevertheless, it occasionally happens, in spite of apparent good health and skilful care, that the inflammatory process invades the lung, and brings about therein a more or less extended fibroid induration. This fibroid lung-state is of frequent occurrence, and, from the mistakes liable to be made concerning it, and the course which it commonly follows, it is a subject of great importance, as well as of great interest. It certainly demands, and will certainly repay, an extended and a critical study.

We have, in the first place, to make sure that we are dealing with a fibroid lung-state. What seems to be a simple fibroid induration² may be something quite different; or it may be that and something more. It may be essentially a tubercular consolidation with an unusually large amount of secondary fibroid growth; it may be a chronic caseous pneumonia; it may be a pleuritic effusion; it may be a malignant growth; and it may be several other things, which, for practical purposes, need not now be considered.

If the case have been followed from the beginning, no serious difficulties of diagnosis will be encountered; but if, as usually happens, the patient is not seen until the pulmonary consolidation is advanced, the greatest care will be required to avoid falling into serious error, and to succeed in framing a correct judgment.

If there be no serious symptoms of constitutional distress; if there be no elevation of temperature, and no hurry of circulation; if flesh, colour, and strength be little, if at all, affected; if in the consolidated lung there be no signs of disintegration, and in its fellow lung no indications of advancing and spreading disease, the question of tuberculosis may be settled in the negative. And it may be settled conclusively if, after repeated examination of any sputum which may be ejected, no tubercular bacilli be found therein.

With respect to caseous consolidations, they are of two sorts; one which is tubercular, and one which is not. From simple fibroid induration, the former may be distinguished by the presence of tubercular bacilli in the sputum. And, as to the latter, if there be no history of a feverish illness; if there be no elevation of temperature, or quickness of the pulse, or cough, or expectoration; if there be material retraction of chest, with diminution of tactile vocal fremitus; if no *râles* be heard within or around the consolidated lung; and if the vocal resonance be either diminished or not increased, then the hypothesis of any sort of caseous consolidation must be abandoned. Furthermore, if the patient have no cachectic appearance; if there be no irregular retraction of chest, no depression of shoulder and nipple, no pushing outwards of the lower part of the scapula; if, with extensive consolidation, there be no pains or signs of pressure, no extension of dullness beyond the normal limits of the lung, no displacement of heart, no distress of breathing with blood-stained expectoration, no rapidity of pulse without notable elevation of temperature, it may be said, with all but absolute certainty, that a malignant growth is not the cause of the consolidation. But in fibroid lung, the condition which by far the most frequently gives rise to mistakes in diagnosis and errors in practice is pleural effusion. To mistake an ordinary and considerable serous effusion for a fibroid lung, can happen only from want of competence or want of care; the fixed and rounded side, the tumid or even bulging intercostal spaces, the dullness varying with position, the feeble breath-sounds, except near the spine where they are bronchial, the diminished resonances, the displaced organs, if duly examined and considered, forbid peremptorily every interpretation but one. Happily, however, the danger of mistake does not lie in this, but in an opposite direction; it lies in supposing that a solid fibroid lung is a fluid effusion. And, here it must be confessed that, when the effusion is moderate in quantity and of long standing, when the dullness does not vary with position, and there is no displacement of organs, when the signs of local disease have descended from an acute pleurisy, and there is no account of pulmonary disease, the difficulties of diagnosis are great and not always, without exploratory operations, overcome. For in both conditions, in the moderate fluid effusion, and in the indurated lung, there are to be found diminished respiratory movements of the affected side, toneless dullness to percussion, decreased tactile vocal fremitus, feeble, hollow, or suppressed respiratory murmurs, and lowered as well as altered vocal resonances. Nor, indeed, do exploratory operations always overcome these difficulties. Fluid may be present, and none be withdrawn by the needle. It may not penetrate the thick and hard pleura; it may carry the membrane before it; or it may become blocked by *débris*.

But, notwithstanding this close similarity of physical signs between

² Or, to use another terminology, an interstitial pneumonic consolidation, cirrhosis, sclerosis, or iron-grey induration.

affections so widely different, grounds of distinction between them, if narrowly sought for, may be in most cases discovered. In the first place, the continuous history of an illness beginning with an unmistakable pleurisy, and passing straight into a basic dullness of doubtful nature, points strongly, but not necessarily, to fluid effusion; not necessarily because a fibroid induration, although it sometimes originates and advances unattended by inflammatory or other local or general symptoms, occasionally arises in, or immediately follows, a pleural inflammation; or is begotten by substitution out of an unabsorbed pneumonic exudation.

In the second place, if we are dealing with a fluid, and especially if that fluid be purulent, there will probably be present some degree of fever, and almost certainly some acceleration of pulse; in a fibroid consolidation, there need be neither the one nor the other.

In the third place, if fluid be present and confined to a portion of the pleural sac, the side, although generally flattened or retracted, will be swollen over the part where the fluid is collected; the intercostal spaces will be effaced or more or less bulged; the diminution of the tactile vocal fremitus will be uniform; the dullness to percussion will be more diminished in volume, raised in pitch, shortened in duration, and lessened in resistance, than when dealing with a fibroid induration; the breath-sounds will be feeble or suppressed, there will be no *râles*, and the vocal resonance, lowered and altered, may be ægophonic.

In the fourth place, we may conclude that we are dealing with a solid lung if, with the signs already described, we find that the affected side is everywhere and especially irregularly contracted; that the intercostal spaces are deepened; that the dullness is accompanied by great hardening and resistance; that the tactile vocal fremitus, much diminished, is unequal throughout the dull region; that there is rubbing or creaking; that there are *râles* of any description, superficial or deep; that the vocal resonance, increased or diminished, and, varying at different parts, has a metallic quality; and that there is some, however slight, displacement of organs to the affected side.

Having thus cleared away the various sources of error in diagnosis, and having made sure that we are dealing with a fibroid lung, I proceed to set forth its clinical characters and course.

I shall, in the first place, consider the local physical signs, and, in the second, the constitutional state. Among many descriptions drawn from life of the physical signs of fibroid lung, I possess in particular two, one of which was written in conjunction with Dr. Pollock in 1868, and one with Dr. Douglas Powell in 1885. As concrete examples will strengthen the general description, and as the authority of those justly distinguished physicians will stamp with accuracy the relation of the physical signs in the cases examined, I herewith reproduce them.

Dr. Pollock's Case, examined with Dr. Andrew Clark, October 21st 1868.—A farm-labourer, well nourished, rosy, and of healthy aspect aged 57 years, and of regular and temperate habits, complains of occasional cough, slight morning expectoration, and breathlessness on exertion. His father died at 60 from renal disease; the mother, at 86, is alive and well; two sisters are living, and in good health; two brothers and sisters died from causes unknown. In 1860, the patient had trouble, presumed to be pleuritic, in his left side, and, after some weeks, got well. In February, 1868, eight months before this examination, the patient caught cold, shivered, felt sharp pain in the left side, became feverish, had a little cough, and was confined to bed; had night-sweats some time in March; in April or May was well. The digestive organs are in fair condition; the urine is abundant, sedimentary, of low density, and contains a considerable amount of albumen. The left side of the chest is flattened from the clavicle to near the nipple, in the lower part of the axillary region, and about the posterior base. The impulse of the heart is felt immediately under the left nipple, and its action, unaccompanied by murmurs, is normal; the pulse is about 80.

Examination of Left Side.—Above the clavicle the percussion-note is normal; from the second rib to anterior base, except near the sternum, there is absolute dullness, which nowhere passes the median line. In the lower half of the axillary region, and posteriorly from the spine of the scapula to the base of the lung, there is marked and increasing dullness; in front, from summit to nipple, in the upper half of the axillary region, and posteriorly in the supraspinous fossa, and for a little way below the spine of the scapula, the tactile vocal fremitus is increased; elsewhere, it is in different degrees at different parts demolished. Upon auscultation, the following signs are elicited. In the supraclavicular region there is normal vesicular breathing, but an occasional wheeze is heard at the close of inspiration, and the expiration is prolonged. From the clavicle to the second rib, the inspiration is rustling, the expiration prolonged and blowing. Between the

second rib and the nipple, the respiration is bronchial, and the vocal resonance is altered and increased. From the nipple to the anterior base, the respiratory sounds and the vocal resonance are suppressed; only a faint creaking, crackling, or rumbling is heard. In the upper part of the axilla, there are heard pleural creaking, bronchial breathing, and a modified bronchophony; in the lower part, all sounds are suppressed. In the supraspinous fossa, the respiratory sounds are loud, harsh, and accompanied by crepitation, which, on coughing, becomes a crackle; there is no increase of vocal resonance. From the spine of the scapula, where they are weak and hollow, the respiratory sounds become fainter towards the base, and are there wholly suppressed. In no part of the right lung can any sign of disease be discovered. In 1878, the patient was reported to be in the same condition; but, since then, he has not been seen.

Dr. Douglas Powell's Case, examined with Sir Andrew Clark on the 7th January, 1885.—The patient is a dark, stout, florid, healthy looking man aged 54, and has no complaint, except that he is breathless on exertion, and that he gets a little cough and expectoration in cold and damp weather. He has been slowly gaining flesh and strength for the last six years.

In 1863 or 1864, the patient had some serious trouble in his left side, and was ill for seven weeks. In 1866, he had a fresh illness, with pains in his left side, and "a feeling as if there were two holes in his lung when he took deep breaths." He was first seen in November, 1867, by Dr. Andrew Clark, who reported the case to be one of chronic dry pleurisy, with secondary fibroid induration of the lung. About this time, he was for six months an inmate of the Brompton Hospital, where he was repeatedly examined by Dr. Douglas Powell. The left side of the thorax is flattened and irregularly retracted, rises imperfectly and unequally on inspiration, and measures on the level of the nipple sixteen and a half inches, being one inch and a half less than the measurement of the opposite side at the same place. The left shoulder is depressed and angular; the left nipple corresponds to the fifth rib. The lower part of the axillary region is protuberant, and the upper retracted. The inferior angle of the scapula juts outwards from the ribs. The impulse of the heart is felt under the left nipple, and its action is slow and normal; the pulse is full, soft and compressible. The percussion-note, slightly tubular in the supraclavicular space, and normal just below the clavicle, becomes increasingly dull to the base, where the dullness is absolute. In the axillary region, there is dullness throughout, slight above, moderate in the middle, absolute at the base. Posteriorly, dullness begins below the spine of the scapula, and increases to the base. The tactile vocal fremitus, normal at the summit, and increased at the middle of the axillary region, is everywhere else either greatly diminished or entirely suppressed. About the summit of the lung, the respiratory sounds are harsh, but of the vesicular type, and the expiration is prolonged; there are, however, no *râles*. About the middle of the axilla, there are heard superficial creaking or rubbing, with occasional coarse crepitation and dry rhonchi; elsewhere, the respiratory sounds are feeble, hollow, distant. The vocal resonance, loud in the supraclavicular region and just below the clavicle, is bronchophonic in the middle and upper part of the axilla; at the base it is suppressed, and in other parts diminished. The right side of the thorax, full and rounded, rises freely on inspiration, and yields to examination no evidence of disease. The digestive organs are in excellent order. The urine, with less than an average discharge, has a specific gravity of 1014, is acid, clear, and contains no trace of albumen or of sugar.³

From these two cases, average specimens of their class, a tolerably complete account may be obtained of the physical signs characteristic of the fibroid lung; and, from the records of Dr. Douglas Powell's case, one will now see how one may reasonably demur to the propriety of designating by the term chronic interstitial pneumonia a state of lung which has been quiescent for years, develops no general symptoms, and is compatible with more than average health. In these circumstances, the term sclerosis or fibroid ought, I think, to be preferred, inasmuch as they indicate with sufficient accuracy the physical characters of the pathological change, involve no hypothesis, and may, whilst hypotheses change, remain unchanged.

The local physical signs of pulmonary fibroid induration, of moderate extent, may be now formally enumerated, and they are as follows. The disease is commonly unilateral; the affected side is irregularly flattened or retracted; the shoulder is depressed, the lower angle of the scapula is tilted outwards, the spine is sometimes a little twisted, and the respiratory movements—especially the movement of expansion—are defective and irregular. The tactile vocal fremitus is diminished; there is more or less dullness to percussion; pleural rust-

lings, crepitations, cracklings, creakings, or frictions, are, in all cases, at some time audible; the respiratory sounds are usually feeble, hollow, distant; from time to time, there are crepitations, which are often of metallic quality, with moist or dry mucous rhonchi.

Such are the physical signs in favourable cases of fibroid lung, where the elasticity of the parenchyma is but moderately diminished, and its nutritive conditions are not seriously disturbed. When, however, the base of the lung, surrounded and invaded by indurated lymph, has lost a great part of its elasticity, and the bronchial mucous membrane, stimulated by undue supplies of altered blood, secretes a more or less viscid mucus which cannot be expelled, bubbling rhonchi of metallic quality are heard in the affected region, and there arise recurring paroxysms of cough, which succeed, only by the help of retching, in emptying the bronchial tubes. Although this condition invades the comfort of the patient, it does not, unless greatly aggravated, seriously injure the health, or obviously limit the duration of life. But when the lung becomes more and more rigid, and the bronchial tubes fill more easily with secretion, which is with increasing difficulty expectorated, the patient begins to suffer, and, through secondary congestions, consolidations, emphysemata, and, perhaps, bronchial dilatations, both health and life are placed in peril.

The constitutional symptoms accompanying fibroid lung vary according to the state of the induration. When this is not advanced enough to destroy the pulmonary elasticity, when the bronchial secretion is not in excess of what can be easily expectorated, and when the patient is kept under favourable physiological conditions, the general health is little, if at all, affected. It is true that he becomes breathless on exertion, that his general power of resistance to disturbing causes is lowered, and that, from small provocation, he falls into bronchial, gastric, or vesical catarrhs. Nevertheless, with just guidance and loyal obedience to it, the patient may continue beyond the average duration of life to live and work.

On the other hand, when the induration has destroyed the elasticity of the pulmonary parenchyma, and the bronchi are filled for hours with sputa which cannot be discharged, and, perhaps, undergo septic change, the constitution suffers; sometimes there is gastric, hepatic, and enteric catarrh; sometimes the urine falls in density, and becomes more decidedly albuminous; sometimes the face and neck become swollen, and the veins of the affected side enlarged; sometimes the feet become cedematous, and always, even with increased frequency of pulse, the temperature falls below the normal standard. But, even in these conditions, with his comfort invaded and his capacity for work narrowed, the patient may return to the favourable stage of his malady, or, without doing so, may reach the longest term of life.

The albuminous urine existing in the great majority of cases of fibroid lung, seems to be of small importance in its earlier stages; but in its later and more unfavourable stages, when the bronchi are almost always loaded, and the lung becomes increasingly hard and congested, and the circulation is hurried and feeble, and the skin cold and harsh and dry, the condition of the kidneys becomes greatly aggravated, and at last puts an end to life. Indeed, in the greater number of cases, it is the renal and not the pulmonary affection which puts an end to life.

Proceeding now to the bronchiectatic lung-state, I have to observe that its clinical characters have been elsewhere so admirably and exhaustively described, that I do not feel justified in occupying the time of the College by giving another description, which I could not execute so well, and to which I could add but little.

Nevertheless, I desire to notice some points in the clinical history of bronchiectasis, either because they have not been dwelt upon before, or because they have been inadequately or erroneously described.

In the first place, the general condition of the bronchiectatic patient differs materially from the subject of tubercular phthisis, on the one hand, and of fibroid lung, on the other. Pale or cyanosed, for the most part thin and stooping, distressed by paroxysms of cough, and drained by discharges of purulent and sometimes fetid expectoration, the subject of bronchiectasis displays a combination of mental and bodily energy, not to be met with in any other disease.

In the second place, whilst in fibroid lung the disease is for the most part unilateral, and in tuberculosis bilateral, in bronchiectasis both forms occur in nearly equal numbers.

In the third place, whilst bronchiectasis resembles fibroid, for which it could not well be mistaken, in temperature, circulation, forms of cough, kinds of expectoration, conditions of breathing, absence of *malaise*, and slowness of general progress, it differs in almost all these points from tubercular phthisis, with which it is frequently confused, and has nevertheless little in common.

In the fourth place, whilst the excavations of fibroid occur at any

³ Since the delivery of this lecture, Dr. Douglas Powell has reminded me that on more than one occasion the urine of this patient has been slightly albuminous.

part of the lung, and the excavations of tubercular disease at its summit, and whilst the excavations of both, when they are multiple, appear in groups without definite form or order, the dilatations of bronchial tubes, found more frequently at first in the middle and lower than in the upper lobes, are arranged in order along the bronchial ramifications.

In the fifth place, whilst the excavations of fibroid and tubercular disease arise in the midst of consolidations, the bronchial dilatations have no necessary relations to them, and, although commonly surrounded by fibroid induration, may be often found in the midst of apparently unaltered lung.

In the sixth place, although bronchial dilatations may be unsurrounded by peribronchial thickenings, or by pulmonary induration, chronic pleuritic neoplastic membranes are never absent.

In the seventh place, when several cylindrically dilated bronchi lie near to each other, the physical signs are sometimes such as to suggest the existence of a large cavity with rigid walls; but a careful and often repeated study of those signs will prove that they vary with the amount and time of the expectoration; and that sometimes the signs of a cavity are often wanting, and that at other times they are present only in isolated parts.

In the eighth place, in opposition to Traube and others, I contend that the sputum in bronchiectasis, similar in characters to that of advanced and regressive fibroid, frequently contains fragments of elastic tissue in two forms; first, in the form of bands, consisting of fibres running in straight lines parallel to each other; and, second, in the form of elastic areolæ and thickened intersecting trabeculae. The former are exfoliated from the bronchial mucous membrane; the latter come from the pulmonary alveoli disintegrated by ulceration proceeding outwards from the bronchial dilatations.

In the ninth place, the sputum in uncomplicated cases of bronchiectasis, accompanied or unaccompanied by fibroid indurations and excavations, does not, as far as my present experience extends, contain tubercular bacilli.

In the tenth place, the only certain means of distinguishing a tubercular from a bronchiectatic cavity, or of knowing when a tubercular has supervened upon a fibroid or bronchiectatic process, is the presence in the sputum of tubercular bacilli.

Leaving now the bronchiectatic lung-state, I proceed to consider the chief points in the clinical history of the phthisical fibroid lung. As before, I will discuss first the local and physical signs, and thereafter the constitutional or general symptoms. The physical signs of the phthisical fibroid lung are the same as those of the simple fibroid lung, with certain alterations and additions. The disease is for the most part unilateral; and when we inspect the chest, we observe the same flattening or retraction of the affected side, the same depression of the shoulder and nipple, the same leaning of the body to the affected side, the same approximation of the ribs and hollowing of the intercostal spaces, the same displacement of the cardiac impulse, and throbbing at the root of the pulmonary artery,⁴ the same projection of the lower angle of the scapula and twisting of the spine, the same restricted movements of inspiration, and the same rounded fulness and compensatory expansion of the unaffected side.

By palpation and percussion, we elicit results resembling those elicited by examination of the fibroid lung; diminution in varying degrees of tactile vocal fremitus, sometimes friction-fremitus, and dulness to percussion seldom over the upper, usually over the lower, lobes, and most frequently at the posterior base. Upon auscultation, we hear over the summit a harsh and jerking respiratory murmur, prolonged expiration, perhaps some uedum crepitation or dry rhonchus, and increased vocal resonance. Over the dull regions there will be heard feeble breath-sounds, coarse crepitations, and bubbling rhonchi, usually metallic in character; at some parts, the vocal resonance will be diminished, and at others increased. At one or two spots, in the base or middle of the lung, very rarely at its summit, there will be found a tubular percussion-note, increased fremitus, cavernous breathing, bubbling, or smaller gurgling *râles* and piercing bronchophonic voice-resonance.

Throughout the lung opposite the affected one, the respiratory murmur, penetrating everywhere, will be found loud, harsh, and accompanied by a few rhonchi, or by scattered moist crepitations, which come and go.

The patient has paroxysms of cough, making the face swollen and livid, and ending sometimes in dry retching, sometimes in the expulsion of several ounces of expectoration. This expectoration, sometimes gelatinous or muco-purulent, sometimes in discrete opaque masses like softened cheese, sometimes watery, sanguinolent, or

fetid, contains, in a mucoid or granular matrix, pus-globules, granule-cells, blood-discs, epithelial cells, bands and areolæ of elastic tissue, and the *debris* of decaying structures swarming with micrococci. The breathing, quiet when at rest, becomes, on moving about or on coughing, shallow, laboured, and quick. The heart, drawn to the affected side, may be acting vigorously and with moderate frequency; there will be, probably, a systolic *bruit* in the pulmonary area; the pulse will be of moderate volume, and the superficial cervical veins will be distended. If the disease be much advanced, the face and neck will be swollen, and the integument over the side of the affected lung may become œdematous; the pulse will increase in frequency and diminish in volume, and the extremities will become cold and damp. The digestive organs are more or less deranged through hepatic and gastro-enteric catarrh; the liver is enlarged, there are often hemorrhoids, and the bowels are confined. Almost invariably the urine falls in density and contains albumen; and this condition of the renal secretion is one of the features, which, with others to be mentioned, make so striking the difference between fibroid and tubercular phthisis.

The patient is often fairly nourished, sometimes corpulent, and, unless there be much bronchiectatic disease, seldom thin. In a few cases, he becomes cachectic looking and anasarctous.

The nervous system, except towards the close of the disease, is seldom seriously disturbed. Only one symptom occurs sufficiently often to be regarded as characteristic; this is pain about the base of the affected lung. Present in many cases, sometimes slight, sometimes severe, occasionally occurring in paroxysms, which play around the attachments of the diaphragm and pass downwards into the abdominal walls, this pain, regarded as a neuralgia, is considered by the patient to be the essential part of his malady, and causes him, in fact, his chief, if not sole, complaint.

With such serious signs of disease, and with such an assemblage of symptoms depending thereon, it might well be thought that the patient was in constant suffering and in imminent peril; and yet, strange to say, it is sometimes quite otherwise. The symptoms which seem the most distressing cause him either little suffering, or suffering which is immediately forgotten; and soon after a paroxysm of coughing, in which death from mechanical violence, or suffocation, or exhaustion seems inevitable, the patient may be found full of business, sparkling with humour, and confident of life.

Here is another of those features of fibroid which serve to distinguish it from tubercular phthisis; the frequent concurrence of extensive disease with an abounding vivacity and abiding life. For, although often it seems as if the patient must succumb, yet as often he rallies, and, renewing his conflicts and repeating his victories, he continues, in the fervour of self-reliant hope, to live and fight and to enjoy work.

Here, then, is the eventual outcome of a primitive dry pleurisy, which, after lasting for an uncertain time, has invaded the lung, altered or destroyed some of its structural constituents, consolidated portions of its parenchyma, and brought about ulcerous excavations therein. Here are well defined pathological, corresponding with well defined clinical, conditions, moving forward together with constantly re-adjusted relations towards a definite issue. Here are an assemblage and progression of symptoms associated with, or dependent upon, an ulcerative destruction of more or less circumscribed, non-malignant deposits in the lung. What is the name whereby we make known to each other the existence of this complex state? We call it pulmonary phthisis; and the term has so penetrated every department of thought and work in medicine that it can no more be rooted out. This final outcome of pulmonary fibroid invasion is therefore a pulmonary phthisis. And, if nothing more could be said, here at last would be an end of the whole matter. But, for my own part, I believe that on this subject there is more to be said; and in those who have sufficient experience and settled convictions, I regard it as a duty to say it. Such saying may clash with established opinion, assume the aspect of a retrograde movement, and be even inaccurate. Nevertheless, it ought to be welcomed; for genuine thought, born of genuine work, must always, in science, have its place and use. What then, if under the term pulmonary phthisis, there are included several states which, although corresponding to the generic definition, are different in their characters, course, duration, and issues? If they exist, ought not such states to be named, and so named that the ideas which they express, and the distinctions which they embody, shall be preserved for future study and use? It cannot be a worthless knowledge, which will enable one in a given case to predict with accuracy its future course, and say whether the subject of it is to live for five or for fifty years. And, furthermore, if such states have vindicated their right to be named, upon what principles shall the names be bestowed? Surely, if we

⁴ This throbbing at the root of the pulmonary artery is sometimes mistaken for the systolic impulse of the left auricle.

wish to avoid confusion of thought and speech, surely, if we wish to repress that needless ever-changing nomenclature, that substitution of words for ideas, that reproduction of old thoughts disguised under freshly furnished raiment, which in knowledge so often begets movement without progress, we shall make sure that the name given shall be based on some physical characteristic of the thing named; so that, whilst theories of its nature may change, the name bestowed upon it, and by which it becomes everywhere and by everyone understood, remains unchanged.

Now, my contention is, that our answers to all these questions should be in the affirmative. I contend that there is a general assemblage of pathological conditions upon which we may bestow the generic term phthisis; that included in this term are subsidiary groups of states, which, differing each from the other in some essential points of their pathological and clinical history, demand separate recognition; and that, in naming them, we should have exclusive regard, not to the ephemeral theories of their nature, but to the abiding facts of their physical constitution.

Guided by these considerations, I regard the ultimate condition of the lung invaded, altered, consolidated, and excavated by fibroid material, as a phthisis; and, seeing that the most obvious and unvarying fact in its physical constitution is the presence and action of this very fibroid substance, I am bold enough to call it fibroid phthisis. This boldness will doubtless call down upon me a storm of reprobation and denial. Be it so. Confident that there is at least some just foundation for the position which I have taken, I must be content to endure and wait.

In reply to this contention, it will be said that the subject is no longer open to discussion; that experimental, pathological, and clinical inquiries concur to prove that there is but one phthisis, the sole originator of which is the tubercular bacillus; that there is neither room nor need for subsidiary classifications; and that their advocacy can be accounted for only by the ignorance or incompetence of the advocates.

But these arguments, couched in such courtesies of modern controversy, are not so conclusive as they sound and seem. Many answers may be made to them; but on the present occasion I shall confine myself to two, which, as I venture to think, are neither light nor irrelevant.

In the first place, assuming the absolute unity of phthisis under the exclusive causation of the tubercular bacillus, this unity does not do away with the fact that there are included in it subsidiary groups, which, for reasons already given, and not refuted by the bacillary presence, require separate and permanent recognition. At present, the bacillary hypothesis, although supreme in the domain of pathology, continues to be of but small account, or even barren, in the field of practical medicine. We cannot prevent the entrance of the bacillus into the organism; we cannot follow it into the secret places where it dwells and works; we cannot reach it by drugs, nor put an end to its multiplication by taking refuge among the mountain-tops. But, although we cannot eradicate the bacillus, nor arrest its action upon the organism, we may, perhaps, succeed in helping the tissues to resist, more or less successfully, the attacks which it makes upon them, and the destruction which follows in their wake.

And, although, in addressing ourselves to the furtherance of this object, we must have regard, in the first place, to the general well-being of the organism, we must not be unmindful of the different structural effects which arise from the unitary action of the bacillus. We must remember that sometimes these structural effects appear under the form of tubercles, sometimes under the form of caseous masses, sometimes under the form of fibroid consolidations, and sometimes as combinations of these forms; in which, however, one form is always predominant. Now, it can scarcely be denied that there is some difference of meaning in these differences of structural effects; that they pursue different courses; and that they react in different ways to the influences of climate, food, alcohol, and drugs. And, if this be so, I can discover no valid reason why those different groups should not be recognised by distinctive names; nor can I understand how we are to preserve a complete loyalty to the uses of knowledge, if we continue to refuse them recognition. It can be no invasion of the rights and privileges of the bacillary suzerainty to grant subordinate autonomies to the several groups of states which, arising under its influence, and continuing through its presence, pursue independent courses and create widely different histories. Why, under the generic name bacillary phthisis, should we not recognise the subordinate independence of tubercular bacillary phthisis, caseous bacillary phthisis, and fibroid bacillary phthisis? Surely every just differentiation is a substantial gain, and every confounding of things fructively distinct a material loss.

In the second place, I hold that the assertion that all ulcerations of non-malignant deposits in the lungs are bacillary, remains unproven, and is opposed to the results of inquiries made by several competent observers. I contend, on the contrary, that there exist cases of ulcerative bronchiectasis, and of fibroid lung with excavations, in which, after repeated search by processes successful in veritable tuberculosis, no tubercular bacilli could be found. It is to such cases that I give the name of non-bacillary fibroid phthisis.

It may be now justly asked, would anything be gained by establishing this distinction? I think much, in many ways. It is, however, of the clinical gain alone that I shall at present speak. By adopting and carefully studying the proposed distinction, we should learn that the history of non-bacillary fibroid phthisis is quite different from that of bacillary tubercular phthisis, and that the treatment which would prove useful in the one might prove both useless and injurious in the other; for example, alcohol, which is usually helpful in caseous, is usually hurtful in fibroid, phthisis. If any one will critically compare the broad facts making up the history of tubercular, with the broad facts making up the history of fibroid phthisis, I think he will become disposed to admit that the distinction now contended for is both real and considerable.

Let me bring to your remembrance a very few of the contrasting facts which are found in the two forms of phthisis now under consideration.⁵ Tubercular phthisis is primarily of constitutional origin, and appears for the most part in the young; it is bilateral; its course is accompanied by elevation of temperature and rapidity of circulation, by progressive loss of flesh, strength, and colour, sometimes by laryngeal ulceration, and sometimes by sensations of painful exhaustion and *malaise*; it is usually rapid in its progress; the majority die within three years; and the few who, in consequence of fibroid complications, live for several years, enlarge the average duration of the disease to four or five.

On the other hand, fibroid phthisis is usually of local origin, and appears for the most part in the middle-aged; it is in the main unilateral; it is unaccompanied by elevation of temperature or hurry of circulation; flesh, colour, and strength may remain but slightly affected for years; it is not incompatible with great bodily and mental energy; the urine almost always contains a little albumen; the progress of the malady is slow; oedema is never absent throughout; and death, which seldom occurs within five years, is often delayed for thirty.

Here, I must bring these lectures to an end. Acutely sensible of their shortcomings, I regret that they have not been worthier of the occasion, of the place, and of you. Nevertheless, I take courage of heart in the thought that those who have worked the most, and have thought the deepest, and can judge the best, will not be ready to forget, or to despise when remembered, the small but sometimes perfect uses of imperfect work.

REGARDING THE EFFECT OF THE SALINE INGREDIENTS OF THE BLOOD ON THE CONTRACTION OF THE HEART.

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BEFORE we can hope to attain to a scientific treatment of disease, it is obvious we must possess an exact knowledge of the action of drugs on each tissue; moreover, we must ascertain whether the effect of a drug is due to its direct action on the tissue, or through the agency of the nervous system, or by affecting the activity of the circulation. This exact knowledge we can best acquire by testing the effect of a drug on the tissue actually separate from the rest of the body, or, as far as possible, isolated from the other tissues.

Now, the heart offers exceptional opportunities for this mode of investigation. If blood, or an artificial circulating fluid, be made to circulate through the cavities of a frog's heart, detached entirely from the body, this organ will continue to beat spontaneously, or will respond to stimulation for many hours. This statement holds good, too, with portions of the heart, as the lower third of the ventricle, a part supposed to be free from nervous ganglia. Here, then, we have the means of testing, with facility, the immediate action of a drug on the whole heart, on the ventricle, or on a portion of the ventricle.

In this communication, I propose to describe the behaviour, in physiological doses, of the natural salts of the circulation—the salts proper to the blood itself—on the frog's ventricle.

⁵ That is, there exist in the organism certain peculiarities of soil which enable the bacilli to grow and multiply.