

THE LUMLEIAN LECTURES  
ON  
BRONCHITIS, PULMONARY EMPHYSEMA, AND  
ASTHMA.

Delivered before the Royal College of Physicians of London.

By SAMUEL GEE, M.D.LOND.,

Fellow of the College and Physician to St. Bartholomew's Hospital.

LECTURE I.\*

ON THE CAUSES AND FORMS OF BRONCHITIS.

MR. PRESIDENT AND GENTLEMEN,—The Royal College of Physicians of London has never forgotten the exhortation addressed by Harvey "to the Fellows and Members of the said College to search and study out the secrets of Nature by way of experiment." No doubt he used the word "experiment" in a wider sense than that which it bears at the present day, for in his time the terms "experiment" and "experience," originally synonymous, had not yet acquired the sharply distinguished meanings which we give to the words. My predecessors in this lectureship have usually drawn the material wherewith they have fulfilled their duty from their experience in the detection and treatment of disease, and the conditions of my life for many years past have put the necessity upon me of following in the same track to the best of my ability. How much more difficult a task this is than to compile lectures out of the unlimited data of that factitious experience which we distinguish as experiment is brought home to me when I recall the preparation of the Goulstonian Lectures which I gave in this room nearly 30 years ago. Experience cultivates a capricious soil, which too often yields a scanty harvest; the fruits of experience are those which Nature happens to afford and no more. Our hopes for the future lie in the fields of experiment where we can work under conditions of our own making and can, as it were, propose questions to Nature and compel her to answer them. Results so beneficial to mankind as those afforded by the antiseptic treatment of wounds and by the serum treatment of diphtheria make the followers of Hippocrates and Sydenham look with regret upon their methods, so slow when compared with those of experimental pathology.

DEFINITIONS.

Scattered through the Hippocratic treatises are frequent references to a doctrine that the brain resembles a gland and is the "metropolis" for separation or secretion (words which have almost the same meaning) of cold and viscid humours. When these humours have accumulated in excessive quantity the brain purges itself by discharging them upon the lower parts of the body—a process called catarrh, defluxion, or distillation of rheum, pituita, or phlegm. In the name of the pituitary body we find a survival of this doctrine. The diseases which result from defluxion of rheum have, says Plato, "many names, because the places subject to the flux are manifold." By the Hippocratic writers seven kinds of catarrh are enumerated; by the time of Celsus the number had been reduced to three. In the Salernitan verses these same three defluxions are enumerated, but the name "catarrh" is restricted to defluxion upon the lungs, *catarrhus ad pulmones*, pulmonary catarrh.

The change from ancient to modern doctrine is marked by a voluminous treatise in six volumes quarto, published between 1660 and 1664, and written by Schneider whose name has been given to the Schneiderian membrane. We must admire the divine leisure of the times which could allow any man to write such a book or any man to read it. This change in the doctrine of catarrh was brought about partly by the progress of anatomy and partly by Harvey's discovery which sapped the authority of the ancients.

Since Schneider's time catarrh has denoted excessive secretion of more or less altered mucus from a mucous membrane. Hence pulmonary catarrh signifies a disordered function of the pulmonary mucous membrane, the result being an excessive secretion. The corresponding lesion of structure—that is to say, inflammatory changes in the mucous membrane—is called bronchitis, a word which was invented

in 1814 by Dr. Charles Badham, a Fellow of this College, and which has to a great extent superseded the old phrase of "pulmonary catarrh." It is amusing to contrast the diminutive duodecimo of Badham with the gigantic work of Schneider. The use of the word "bronchitis" marks the predominant influence of morbid anatomy. Bronchitis and pulmonary catarrh, although for the most part they denote different aspects of the same disease, yet do not exactly tally; bronchitis is not always catarrhal; for instance, it may be attended, not by flux of mucus, but by formation of false membrane.

CAUSES.

Bronchitis is a disease of much interest for the English people, inasmuch as in our country a pulmonary catarrh is the commonest of disorders at all ages and in all ranks and conditions of life. In speaking thus of the frequency of bronchitis, it is worthy of note that this opinion is derived from clinical experience, and that bronchitis is not a condition which attracts much attention on the *post-mortem* table, where the severe forms only of the disease are recognised, or, indeed, one might almost say, can be recognised without much more minute examination of the bronchial tubes than they usually receive. When we ask why bronchitis should be so common, we are led to consider the causes of the malady. Let us begin with the simplest case possible, and seemingly the most intelligible.

A number of men are working in a room when a large carboy of fuming nitric acid is broken. They all flee. After a time a healthy young man, having tied a wet towel round his mouth, goes back into the room and opens the windows. Symptoms of bronchitis immediately appear, painful soreness down the sternum and dyspnoea, his voice remaining natural. Next day he has a harsh dry cough and abundant small mucous *râles* all over both lungs; his temperature rises to 101.4° F., his pulse to 100, and his respirations to 56 in the minute. On the third day the temperature varies between 99° and 101°, the respirations fall to 44; the signs in the chest are much the same. On the fourth day the temperature falls from 100° in the morning to the normal in the afternoon; the *râles* have almost disappeared. On the sixth day he is quite well.

Bronchitis, being an inflammation, presumes irritation of the mucous membrane, and in this case there was no reason for supposing that the irritation was originally due to anything besides the nitrous fumes, even if we admit the possibility that microbes might afterwards come to play their part upon a soil thus prepared for them. But the cause of bronchitis is seldom so simple as this.

Breathing dust has long been recognised as a cause of pulmonary catarrh; for instance, Ramazzini two centuries ago devoted several chapters of his book *De Morbis Artificum* to the diseases, chiefly pulmonary, which attend dusty trades. At the outset it seems to be necessary to distinguish between dust which is alive and inanimate dust. Taking inanimate dust first as being the less complex topic, we must again distinguish between dust which contains soluble constituents and that which does not.

Insoluble dust is in most cases of mineral nature, yet the air of a cotton mill is smoky with vegetable dust. The bronchitis resulting from dusty trades is very chronic, insidious in onset and slow in progress. Insoluble dust is supposed to act as a merely mechanical irritant to the bronchial membranes, but can we say that any sort of dust is absolutely insoluble? And when we endeavour to look more deeply into the matter other doubts arise, as usual. We suspect that the tendency to bronchitis which prevails among working men in dusty trades is often aggravated by intemperate habits in respect of alcohol and tobacco. Probably in some workmen there is an original disposition to suffer in this way, such as we see in many asthmatics, who are very sensitive to dust. Moreover, the dust of unclean and ill-ventilated rooms will be very likely to contain morbid microbes and the irritation of the air passages set up by inanimate dust will favour the operations of the many bacteria which are potent to cause bronchitis. It obviously would be very improbable that these microbes should swarm in impure air and should not be found in the upper air passages of man. And thus, as a matter of fact, our mouths, noses, and throats harbour many morbid microbes in a latent

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state; they are there awaiting a favourable opportunity for becoming active and virulent, when, to quote the Virgilian phrase of which Sydenham was so fond, *qua data porta ruunt*.

Although it is probable that inanimate dust is sometimes noxious by reason of its soluble constituents, yet it is not easy to point to many instances of this kind. The dust of ipecacuanha, which is often referred to, produces asthma rather than catarrh, but it may be that this is a distinction without real difference.

The topic of living animated dust follows in natural order. The best instance of this kind of dust is afforded by the pollen of grass, which seems to have been proved capable of causing hay fever in some susceptible persons, though that in which the irritant power of pollen inheres is not known. And the question is complicated by the fact that in a few persons the mere odour of roses and some other flowers seems enough to provoke catarrh, although, since the famous experiment of Dr. J. Noland Mackenzie, with an artificial rose, we have learned how large a part in the production of such a catarrh can be played by the power of the imagination. Moreover, the particles which convey the smell of flowers must be far too minute to be rightly called dust, and therefore we will not pursue the subject here, but only remark that hay fever affords the best evidence of that idiosyncrasy which predisposes to catarrh.

The catarrh which is caused by the living dust thrown off by certain moulds and fungi is sometimes a much more serious affair. The best known of these fungi is the dry rot of deal wood—*merulius lacrimans*. The disease it sets up is sometimes fatal. Besides the catarrhal symptoms indicated by the epithet "*lacrimans*" there are signs of poisoning of the whole body. The fungus grows upon the mouth and fauces, whence we may assume that the morbid agent consists of living seeds which under favourable conditions will strike root in the human body, will increase and multiply—will become, in fact, true parasites, and will poison us with their secretions.

Grass pollen is morbid, dry rot is morbid and parasitic, but they are only accidentally so; it is not the purpose of their life to cause disease in man. But there are certain living particles called "microbes" which are essentially morbid and parasitic, which to the best of our knowledge are that and nothing else, which continue to exist by causing disease and for that sole purpose, as it seems to us—which are morbid or nothing at all, because, being merely parasitic in animals, it follows that if these animals ceased to exist the microbes also would become extinct. Some of these microbes are found almost everywhere; they pursue the steps of men and are apt to attack us at all times and places. But some microbes thrive only under certain circumstances; the best known of these causes of bronchitis are typhoid fever and influenza. In some forms of bronchitis the disease is local, and expends itself upon the mucous membrane; the catarrh is protopathic. But in typhoid fever and influenza the case is different; the catarrh is deuteropathic and secondary to infection of the whole system. These two diseases are members of the great class of specific fevers, and we are compelled by analogical reasoning to believe that other members of that class which are still more powerful causes of bronchitis are also microbial in nature—for example, measles and whooping-cough. How they cause bronchitis is a question not yet ripe for answer, meanwhile we assume that some irritant is conveyed to the mucous membrane by the blood.

We have now passed from the simplest to the most complex causes of bronchitis, so far as our knowledge will allow, and yet by far the greater number of actual cases of bronchial catarrh remain unexplained. What is the explanation of a common cold? We can hardly doubt that chill by exposure of the body has often something to do with it, but how? Let us note that colds are seldom caught, as we say, in pure air—at sea, for instance—no matter how great the exposure. Let us note also that common colds are often contagious, with an incubation period of about three days. You will remember the deeply interesting experience of the St. Kilda cold, a fact which seems to be well proven notwithstanding the incredulity of Dr. Samuel Johnson, and which seems to show that persons who are not themselves suffering from catarrh may yet convey the disease to others, and that a cold past and gone confers temporary immunity. We have heard of late that

upon some of the small islands in the Torres Strait the natives, until they took to wear clothes, were exempt from coughs and colds; but it is difficult to understand how the mere fact of clothing pure and simple can have been the cause of those disorders. It would seem to be more probable that the inhabitants have been infected by their clothes or other means, and that the catarrhs have been really due to the intruding foreigner, who brought along with him his civilisation and his diseases.

#### THE CATARRH.

Of the signs which make bronchitis manifest in the living body, the most important is the catarrh, the excessive secretion of mucus. We might expect that physicians would pay great attention to the sputa, and such has been the fact from the earliest times. A sharp distinction has been drawn, since Hippocrates at least, between transparent sputa and opaque sputa; chiefly for prognostic reasons based upon the old doctrine of the concoction of humours, opacity being the sign of maturity and a stage which the secretion must pass through before the catarrh can end in recovery. This distinction being of such prime importance in the opinion of ancient physicians, it is remarkable that they had no words in use to correspond with their ideas. "Phlegma," "blenna," "pituita," "mucus," all these words were used haphazard to signify matter constituting the sputa, whether transparent or opaque. In truth, the distinction is not of great value; however true it may be of acute coryzal secretions that the mucous discharge becomes muco-purulent on the way to recovery, we do not always mark these stages in bronchitis even when acute, while in chronic bronchitis the distinction is of small importance, either prognostic or diagnostic. How common it is to see mucous and purulent sputa in the same spitting-pot; to see purulent sputa floating or lying in thin, transparent, colourless mucus; probably the different secretions come from different parts of the bronchial tract. How common it is to observe that sputa expectorated at different times of the day are different in character, the secretion being, for example, nearly pure mucus throughout the day, but much more purulent the first thing in the morning, after sleep.

#### PITUITOUS CATARRH.

To the general rule that the distinction between crude and concocted sputa is unimportant there is one exception worthy of special note. Laennec, in his chapter upon pulmonary catarrh, has much to say concerning a form of catarrh which he calls "pituitous." He uses the word "pituita" in a sense of his own; he makes it signify colourless, transparent, stringy sputum, frothy at the top, and which when the froth has been removed resembles water stirred up with white of egg. We must all recognise the truthfulness of this description. Louis compared the sputum to gum-water, Borsieri to soapsuds. It is to be wished that the word "pituita" be used to denote this kind of sputum only, because there is no doubt that the catarrh which Laennec calls pituitous does present peculiar characters.

He remarks that pituitous catarrh is symptomatic of other pulmonary disease besides mere bronchitis, especially oedema of the lungs and miliary tuberculosis. With respect to oedema of the lungs, let us note that the albuminous or serous expectoration which occasionally ensues upon paracentesis for pleural effusion, and which depends upon acute oedema of the lungs, and which always brings danger and often death, has to the eye all the characters of pituitous flux. Testing the sputa can alone distinguish the two: serous expectoration is highly albuminous; pituita is not albuminous at all.

With respect to tubercle, let us note that not only miliary tuberculosis but also massive grey tuberculous infiltration may be attended by pituitous expectoration. A man, 35 years old, had a shivering fit on September 6th. On the 8th he felt sudden pain in the right side of his chest; he coughed, and was feverish. On the 16th he was admitted to the hospital, being the eleventh day of his disease. Consolidation of the upper part of the left lung was found, and the previous symptoms having been those which most usually attend pneumonia it was thought that the lung was hepatised. But the consolidation did not clear up as was expected; on the con-

trary, the physical signs of disease increased, and by October 10th (the end of the fifth week of illness) the breathing about the left nipple was cavernous. All this time the sputa were pituitous—a fact which seemed contrary to the notion of ulcerating tubercle; moreover, the expectoration was examined twice for tubercle bacilli, probably with insufficient care, and I am speaking of a time, seven or eight years ago, when there was less skill in this method of examination than at present; but, at any rate, tubercle bacilli were not found. Soon afterwards the pituitous sputum became mingled with muco-purulent masses; the physical signs were much more extensive; finally, all the expectoration was muco-purulent and nummular, and the man died on December 25th, after an illness of between three and four months. *Post mortem* the left lung was found to be solid with grey tubercle from apex to base; there were only two cavities, and these of small size.

Besides pulmonary oedema and tubercle there are two other diseases of the lung which are often attended by pituitous expectoration—namely, the congestion which is consequent upon a dilated heart and contracting cancer.

Pituitous catarrh is sometimes “idiopathic”—a word which we need not be afraid to use provided we attach a definite meaning to it. The original and etymological meaning of the word is its true meaning, and pituitous catarrh is idiopathic when it constitutes the whole of the disease. It is sometimes acute, sometimes chronic, and in either case is a very serious condition. The acute catarrh occurs at all ages, and often in persons perfectly healthy, who have shown no previous tendency to pulmonary disease. The secretion rapidly becomes so profuse that it puts life in jeopardy, and will sometimes even kill by suffocation in a day or two. Yet for the first few hours the attack resembles a common cold with cough, and there are no peculiar symptoms attending the earliest stage which enable us to foresee that we have to do with the beginning of so formidable a disease. It does not always kill; sometimes it runs the course of ordinary severe bronchitis and ends in recovery.

Chronic pituitous catarrh is more common. It is serious on account of its obstinacy. To Laennec's admirable description of this disease there is nothing to add unless it be to say that it does sometimes attack persons in the prime of life. A Japanese, aged 25, came over as a ship's steward to England, and immediately upon his arrival began to suffer from shortness of breath and cough—a new thing for him. After these symptoms had lasted for fourteen weeks he was admitted to the hospital. There were much dyspnoea and most abundant expectoration of pituita. Tubercle bacilli were not found. The physical signs were those of severe bronchitis. For days together he seemed about to die from suffocation, but under very careful treatment he improved until, without any obvious cause, the symptoms recurred in full severity. Another improvement was followed by another relapse, and more than four months had passed away since his admission ere he could be discharged fairly convalescent. This was on May 8th, but on June 16th he was readmitted with all his former symptoms; he went out on July 16th. On December 5th he was admitted once more, and the time of the year was probably the reason why we could not get rid of him till February 25th. He had now been a patient on and off for more than a year, and as there seemed no end to this sort of thing, the sister of the ward got up a small subscription and shipped him off to the Antipodes.

#### PECULIAR KIND OF BRONCHITIS.

There is a form of disease which may justly claim to be called catarrhal if we use that word in its strict etymological sense. Graves, speaking of the condition referred to, says: “When an old person reduced by some previous disease catches cold and gets in consequence a sudden and remarkable hoarseness so that he can only speak in whispers; when in addition to this he has cough, stridulous breathing, and copious muco-purulent expectoration, you may be sure that the case is a bad one and the patient in most imminent danger.” He goes on to say that the disease is accompanied by considerable fever, and that he did not recollect that he had ever seen an attack of this kind that did not terminate fatally. He narrates the case of an eminent country practitioner who “had got an attack of cold followed by hoarseness, which went on for two or three days without being

attended to, until one evening he suddenly became alarmingly ill. He was found to be labouring under hoarse breathing, constant laryngeal cough, prostration of strength, and enormous muco-purulent expectoration. His pulse was very rapid, he complained much of oppression of the chest, and he died on the following night, more with symptoms of exhaustion than of asphyxia.” Graves tells of another similar case in which the “breath became exceedingly foetid. The expectoration also exhibited a very remarkable change; it was greenish, ichorous, and had a most intolerable fœtor. He now began to manifest symptoms of awful prostration; his distress of respiration became intense, his eyes fixed, his extremities cold, and he expired in about forty hours from the commencement of the attack.”

But this form of bronchitis sometimes occurs in old people whose health has certainly not been “reduced by some previous disease.” I saw a lawyer, 74 years old, with Dr. T. Robinson. He was in good health when one April, while waiting for a train at Wimbledon, he was exposed to a chilling east wind. Next day (April 8th) he lost his voice. On the 9th his breathing became a little affected, and swallowing was very painful. His voice was not much more than a whisper. Seen by the laryngoscope the epiglottis was very red but not much swollen; the ary-epiglottic folds were not swollen; the glottis was widely open, and through it there welled up much muco-pus. On the 10th he seemed better in all respects. He expectorated much brownish muco-pus which, both in colour and smell, reminded one of the sputum of gangrene; this phlegm came up with the least possible effort, hardly amounting to cough. The laryngoscope showed that the redness of the epiglottis was less, and that there was no swelling whatever. The voice was much louder. But during the night he became worse; fever appeared for the first time, and he complained of pain in the left side. The laryngeal symptoms were gone and his voice was natural, but his breathing became very frequent, and he died at evening on the 11th. The foetid expectoration calls for remark. Graves assumes that in his case the lung had mortified, but he gives no proof of this, and in my case the fœtor occurred within forty-eight hours from the beginning of the illness in a man previously healthy. Gangrene would hardly set in so rapidly as this. To suppose, in the absence of *post-mortem* examinations, that the smell is due to decomposition of the secretions—to the foetid bronchitis, in short—would seem more probable.

Disease of this kind is not peculiar to the old. Some years ago I saw a boy, aged 7 years, with Dr. Bland. The patient had been seized a day or two before with laryngeal symptoms which, when I saw him, deserved the name of croup, and the dyspnoea became so urgent that tracheotomy was demanded and performed. We could see that the epiglottis was not swollen, but we could make out nothing more, for examination by the laryngoscope brought on vomiting. The dyspnoea was somewhat relieved, but the boy died a few hours after the operation with all the signs of pulmonary dyspnoea. The only part which we were permitted to examine *post mortem* was the larynx; its mucous membrane was exceedingly red, but there were no false membranes and no oedema, nor were false membranes expectorated or seen during life. The laryngitis was a part (but at first the most obtrusive part) of more widely diffused inflammation. When tracheotomy set the laryngeal symptoms aside the bronchitis became manifest. Moreover in this case there was no reason for suspecting measles. The analogy of the early laryngitis stridula of that disease will occur to your minds at once.

It is likely that the disease in question is essentially of the same nature as oedema glottidis—that is to say, a specific inflammation spreading rapidly, like erysipelas. Hippocrates uses this very word, and in several places speaks of erysipelas in the lung, but to identify the disease thus designated by him is not easy.

#### DYSPNOEA.

To breathing with conscious effort we give the name of dyspnoea. It arises from a peculiar sensation which is not always of the same kind. Two sensations at least can be distinguished. One is sensation of want of breath and impels to inspiration; another sensation impels to expiration. The feeling of want of breath arises within the chest and seems to involve all the thoracic organs. The feeling which

impels to expiration seems to arise from the windpipe—that is to say, a patient suffering from expiratory dyspnoea will refer this feeling to the manubrium sterni and region of the trachea. This tracheal sensation closely resembles the feeling which impels to cough, and it is the cause of that expiratory groaning which is so common during the uneasy sleep of patients suffering from bronchitis, emphysema, or heart disease. I do not refer to snoring or stertor, which are inspiratory noises. Thus, medical physiology requires two respiratory centres, one for inspiration and one for expiration.

It has been said that in bronchitis attended with laborious breathing the chief difficulty is in inspiration; that the expiratory act, on the contrary, is always accomplished with comparative ease; and that these phenomena of laborious breathing, particularly the long-drawn, exhausting, inadequate inspiration, are probably quite peculiar to obstructive bronchitis. But surely these propositions are far from being universally true. Even in slight bronchitis occurring in a man who never had bronchitis before the expiration may be much more forced than the inspiration in consequence of the provoking tracheal sensation spoken of before. In chronic bronchitis when the patient raises phlegm with difficulty, the most obvious thing about the respiratory movements in many cases is the forced expiration. If we would see inspiratory dyspnoea in its highest degree and purity, it is not to bronchitis, but to laryngitis, that we must look; to angina laryngea, not angina bronchialis. In mere bronchitis we seldom see anything like the inspiratory dyspnoea of croup.

#### LIVIDITY.

Lividity is not a marked symptom of bronchitis except in the worst cases. When we see a patient whose dyspnoea amounts to orthopnoea, and whose lips are purple or almost black, we suspect at first sight disease of the heart rather than disease of the lungs. Again, if we see great lividity in a case of bronchitis, we suspect some complication—for instance, pulmonary emphysema, extensive collapse, broncho-pneumonia, scattered tubercle, or distended heart.

The phrase "suffocating catarrh" has been used in senses so varied that some persons have suggested that it should be wholly discarded. Even apoplexy and croup have borne that name. We can continue to use it only on condition that suffocating catarrh shall signify bronchitis in which the patient is in danger of being stifled by bronchial secretion thrown out more rapidly than it can be expectorated. The metaphorical phrase "paralysis of the lungs" has been applied to these cases of catarrhal infarctus. We meet with suffocating bronchitis under three conditions. First, in infants; and a main cause of their liability to suffocating catarrh is to be found in the shape of their thorax, which being almost circular on horizontal section is incapable of more than small lateral expansion. The only extraordinary enlargement which their chest can undergo is by vertical elongation, upwards by means of the accessory inspiratory muscles and downwards by excessive diaphragmatic contraction. Moreover, their ribs are often soft and rickety. Next we meet with suffocating bronchitis in adults when they are attacked by pituitous catarrh in a severe degree. And, thirdly, suffocating bronchitis is common as an exacerbation of chronic bronchitis in persons who are for the most part advanced in life.

In these cases, *post mortem*, we often find that form of pneumonia which bears no name adopted universally. Our own *Nomenclature* gives us the choice of three names. We may use the name "lobular pneumonia," in contradistinction from lobar pneumonia; or "broncho-pneumonia" in contradistinction from pleuro-pneumonia; or catarrhal pneumonia in contradistinction from what has been called "croupous pneumonia." The name of broncho-pneumonia is to be preferred. Croupous pneumonia is what Polonius would have called a very vile phrase. It is amusing to note how the Lowland Scotch word "croup" (the cognate English word is "roup"), which signifies a certain kind of noise, has come to be applied to a morbid exudation—a perversion due to foreign pathologists who could not have known the meaning of the word which they were using or abusing. And thus croup, having undergone this strange metamorphosis in the course of his travels abroad, comes back disguised to his native land and we receive him with open arms. Such are English ways.

Broncho-pneumonia is the last stage of inflammation extending downwards along the air passages into the pulmonary lobules. Catarrh implies a mucous membrane; but the bronchioli which feed the pulmonary lobules with air possess no mucous membrane; in these parts, therefore, lobular hepatisation takes the place of bronchial catarrh. The difference in the products of exudation depends more upon the situation of the disease than upon any difference in its cause. The microbes found in lobular pneumonia are the same as those found in bronchitis, although the relative frequency with which they are found is not the same in the two diseases. To the last volume of *St. Bartholomew's Hospital Reports* Dr. Horton Smith has contributed a valuable paper upon the bacteriology of acute broncho-pneumonia. He finds that the microbe most frequently present is pneumococcus, less frequently streptococcus, and still less frequently staphylococcus. He finds that the broncho-pneumonia of typhoid fever is due to these common microbes, and not to the special typhoid bacillus. But he thinks that the broncho-pneumonia of diphtheria and influenza most frequently depends upon their several proper and peculiar microbes; and yet that in a few cases the pneumonia is not specific—that is to say, none but the common pyogenic microbes are found. One very practical truth has been well established—namely, that in measles the frequency with which broncho-pneumonia occurs is dependent upon the degree of impurity in the air breathed. The main cause of death in measles is broncho-pneumonia, and the mortality in some epidemics has been as high as 50 per cent. Thus any mysterious change of type or epidemic constitution seems to be resolved, so far as concerns measles, into the condition of the air breathed by the patients. Hence the necessity for isolation, for ventilation, and for cleanliness.

The pneumonic part of broncho-pneumonia is a *post-mortem* disease or, in other words, it can seldom be detected with certainty during life. In severe progressive capillary or suffocating bronchitis which threatens the patient with death we may assume that lobular pneumonia is present, inasmuch as it is the last stage of the disease. Neither symptoms nor physical signs help us much; the patient is too ill to bear prolonged examination; nor does it matter in the least whether we detect the pneumonia or not, for our treatment is the same in both cases.

#### CHRONIC BRONCHITIS.

Chronic bronchitis associated with emphysema, and in all respects like the disease common in old people, is by no means very uncommon in the young, that is to say, in patients under 20 years of age. But this is the case, especially among the lower classes of the people; among the well-to-do, chronic bronchitis is uncommon in the young. When we bear in mind that with asthma it is quite the reverse—that juvenile asthma is common among the well-to-do and uncommon among the lower classes—the suspicion arises that we have to do with what is essentially the same disease assuming different forms under different conditions of life. The poor are very careless with regard to their health, and it is probable that through neglect what would otherwise be asthma becomes a chronic pulmonary catarrh.

The heart is dilated more easily in children than in adults, and thus cases of juvenile chronic bronchitis gradually pass into a state wherein the symptoms of dilated heart predominate over those of the original disease. Some years ago I examined the body of a boy, aged 13 years old, who had suffered from chronic bronchitis since 18 months of age, when he had measles and whooping-cough. He was so deeply cyanotic that the question of malformed heart arose; his fingers were much clubbed, and there was universal dropsy. The *post-mortem* examination showed emphysema of the lungs, especially of their anterior parts. The right side of the heart was much dilated and hypertrophied, but there was no valvular disease nor was there any malformation. The liver was nutmeg.

That predisposition which tends to make bronchitis chronic is often hereditary, and is often acquired. In many persons a powerful assistant cause of the chronic bronchitis is alcohol. Sydenham alludes to this fact when speaking of "peri-pneumonia notha," which no doubt for the most part consisted of febrile exacerbations of chronic bronchitis. He says that the

disease "affects those who are of virile age, or, what oftener happens, those who are older and have been too much given to spirituous liquors, especially to brandy." The evil effect of alcohol is sometimes seen in persons who cannot be justly called intemperate, and a marked diminution of the tendency to bronchitis will sometimes occur in patients who become total abstainers after having been in the habit of drinking not more than a usual quantity of wine. The swollen, deeply red, and irritated soft palate of many hard drinkers probably affords a clue to the nature of alcoholic bronchitis.

*Post-mortem* examination of the bodies of persons past middle life reveals the fact that their chronic bronchitis is seldom unassociated with chronic nephritis, arterio-capillary sclerosis, chronic endocarditis or pericarditis or myocarditis, and atheroma of the aorta, not to speak of pulmonary emphysema—lesions which constitute an important part of the condition which we designate "old age."

That a tendency to chronic bronchitis and a tendency to gout concur in many patients is a frequent experience, and there can be no objection to our expressing this fact by calling the bronchitis gouty, provided the evidence of gout be sufficient. But I fear that gouty bronchitis is often talked about when the evidence of gout is small. Before the term "gouty" is predicated of any disease the reasons for the affirmation ought to be carefully examined. To define the word "gout" is not possible; the essential nature of gout we do not know. Doubtless there are satisfactory criteria or notes of gout, such as regular attacks in the hand or foot, tophi, and the discovery of uric acid in the blood. But medical men are often content with much lower probability than this when they pronounce a patient to be gouty, and I am far from saying that they are wrong. Howbeit the name of "gout" has been extended in meaning so as to include a vast number of diseases, but whether these speculations are as sound as they are ingenious, whether they are solid structures grounded on truth or no more than the phantoms of a lively imagination, I will not take upon myself to determine. Time will show. "*Medicina non ingenii humani partus est sed temporis filia.*"

#### PHTHINOID BRONCHITIS.

There is a form of chronic bronchitis which bears a close resemblance to tuberculous pulmonary consumption; the disease is nothing but bronchitis, yet the symptoms are those of phthisis pulmonalis. The interest of this topic is mainly antiquarian for us, because it throws an important light upon the progress of pathology. Before the invention of auscultation the patients alluded to were necessarily believed to be suffering from pulmonary consumption, and, indeed, they were so suffering in the original sense of the phrase. For the epithet, "consumption" or "phthisis," related to the condition of the whole body, to the progressive emaciation in fact, while the word "pulmonary" indicated that the disease, whatever it was, which caused the emaciation, was seated in the lungs. This was the sense in which our eminent Fellow, Richard Morton, used the phrase in his admirable book entitled *Phthisiologia*. In the phthinoid or consumptive form of bronchitis there is an abundant expectoration of purulent sputa. The early physicians knew of no source of pus but an ulcer, and hence they inferred that the lungs were ulcerated. The first man to discover that this was not the case was that singularly accurate observer Antony de Haen; but even after he had shown that the lungs, examined *post mortem*, were to all appearance sound, free from all ulceration, and yielding not a drop of pus on section, yet matters were not much advanced for practical medicine because the diagnosis could not be made during life. And here the subject stood until the time of Laennec. Perhaps you remember that Sir Thomas Watson confessed in his lectures that he once made this mistake, and pronounced a young woman to be in the last stage of consumption who soon afterwards made a rapid and complete recovery, he having omitted to auscultate her chest. Even auscultation does not always enable us to distinguish these cases with perfect certainty, but since Robert Koch's discovery of the tubercle bacillus we have a potent auxiliary to diagnosis in the microscopic examination of the sputa.

#### CONCLUSION.

In conclusion, we will revert to the results of our search into the causes of bronchitis. We found it to be highly

probable that most catarrhs are due to a specific infection, and they often depend upon contagion spreading from man to man. This doctrine has very important bearings upon medical practice. It leads us to believe that the means by which we may prevent catarrh are to be found in ventilation and cleanliness, if, indeed, ventilation be not a kind of cleanliness. Experience confirms this belief. When epidemic catarrh prevails, where do we find most of our patients? In those houses which are obviously the worst ventilated, even though they be the spacious houses of the rich. And where do our patients catch their catarrh? Either in houses of the kind which I have mentioned or in buildings where men most do congregate, especially in offices, shops, and churches. Large shops and stores, public museums and libraries, are ventilated as little as possible for fear of their contents being spoilt by smoke and dust. Many churches both in town and country are never properly aired for another reason—namely, because their architecture does not admit of it. Those "rich windows which exclude the light" do worse than this—they exclude fresh air. The revival of Gothic architecture has been, from the sanitary point of view, a great mistake. Our despised forefathers of the eighteenth century erected plain and simple buildings which could at least be well aired, well lighted, and kept warm and comfortable; nay, even the much-ridiculed churchwarden, with his brush and pail of white-wash, was a praiseworthy minister of health. Modern dwellings are no better than the churches. In the matter of domestic sanitation people have fixed their attention too exclusively upon the drainage and the water supply; light and air are not reckoned. Many of the large red-brick houses which have been built in great numbers at the West End of London and elsewhere during the last twenty-five years cannot be properly ventilated. The well of the staircase ought in every house to be a reservoir of pure air, and to have an independent supply from without. But in many houses the staircase cannot be ventilated except through the rooms, and, in fact, it never is ventilated. Nor are the rooms themselves much better off; their heavily mullioned windows are designed with small regard to the transmission of light and air. The subsidiary and merely ornamental arts, which do no more than please the eye, are studied to the neglect of that far greater art which promotes the happiness and welfare of the whole man—the art of preserving health.

## THE GOULSTONIAN LECTURES

ON THE

### PATHOLOGY OF THE THYROID GLAND.\*

*Delivered before the Royal College of Physicians of London.*

By GEORGE R. MURRAY, M.A., M.D. CAMB., F.R.C.P.,  
Heath Professor of Comparative Pathology in the University of Durham;  
Physician to the Royal Infirmary, Newcastle-upon-Tyne.

#### LECTURE II.

[ABSTRACT.]

RESULTS OF LOSS OF THYROID SECRETION IN THE YOUNG. In commencing his second lecture Dr. Murray referred to the effects the result of loss of thyroid secretion in the young, and quoted evidence to show that in young animals and children, in addition to other symptoms, there was arrest of development. If the arrest of development or destructive disease of the thyroid occurred early in life, symptoms of primary cretinism, which are the same in the sporadic as in the endemic form, soon began to appear.

As in myxœdema in the adult so in cretinism were found different degrees of severity. As the success of treatment depended so much upon an early start being made with it, he urged the importance of carefully considering the possibility of cretinism in all cases where some arrest of development was noticed early in life, they find various intermediate types between the extreme form of which he had given an example and ordinary myxœdema dependent upon the age at which

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