acid diluted with six thousand times its bulk of water, it will yield on evaporation a substance, like gelatine in appearance, which gives the reaction typically, and in a manner which forms a remarkable contrast to the effect of iodine upon unsophisticated fibrin. The action of an alkali will render it again insusceptible of the lardaceous tint, and restore its original status in this respect. The affinity of iodine for this acid modification of fibrine is further shown by its forming a precipitate with it, which it is needless to say it will not do with albumen.

Whether or not this substance deserves to be called "artificial amyloid matter" (the term which I once gave it), there is at least a close analogy between it and what is deposited in the organs as the result of disease; an analogy which has been further elaborated by Dr. Marcet in the report to which I have referred.

These observations point unmistakably to the conclusion that certain constituents of the blood, which are normally in alkaline combination, undergo when in acid solution a modification which renders them liable to the amyloid reaction, or, in other words, gives them an affinity for iodine which normally they are without.

This view of the reaction is consistent with what has been already shown regarding the paucity of potash in lardaceous organs; and these considerations, taken together with the solubility of the morbid deposit in alkalis, which would seem to prohibit its deposition from blood of normal alkalinity, cannot but suggest that a deficiency of the alkaline solvent, and a consequent separation from the blood of something for the solution of which the means no longer suffice, is a rude ideal of the morbid process.

The constant presence of potash in the healthy tissues, and its apparently essential bearing upon nutrition, would prepare us to expect marked pathological results from its deficiency. Putting off for the present any reference to the organic and constitutional changes produced by the infiltration, I will say a word upon its causes and the possible manner of their operation.]

[To be continued.]

THE GOULSTONIAN LECTURES

ON

THE NATURAL HISTORY OF PULMONARY CONSUMPTION.

Delivered at the Royal College of Physicians, London.

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LECTURE III.

MR. PRESIDENT, FELLOWS, AND GENTLEMEN,—Of the three forms of pulmonary consumption to which in my last lecture I drew your attention, the first is without doubt the most common; the second, mainly at the other end of life, compared with the first, succeeds it in frequency; the last is so sufficiently represented that, even omitting the distinction I have attempted to make between the syphilitic type and the other two subdivisions, it has long ceased to be a mere pathological curiosity, and claims for itself a separate clinical position.

Differing widely in their first—if I may use the word—histological origin, continuing to hold throughout their course a pathological distinction, here and there, perhaps, delicately shaded off to one type or another, the pre-eminently cheesy form is never without some fibroid induration; the bronchitic and the fibroid, perhaps, never without catarrhal products; but their result is, in the end, the same destruction of breathing surface, their clinical symptoms are almost necessarily consistent, and repeat the same portraiture of a disease which is mainly one of innutrition and increasingly imperfect assimilation. And through the web of this disease runs no longer, for us at least, the one thread of a "tubercular" product—the first generalisation of imperfect knowledge and observation. Even those who most wish to keep up its specific character are driven to allow its unspecific form, and to plead that, like products of a higher type, its appearance varies with its age; or even still, as in seeking the philosopher's stone, to search for some particular cell-form which is to be the characteristic of "tubercle".

But, however alike in their general symptoms and in the mode in which they lead to death, the three forms differ, not so much, perhaps, in their greater or less liability to catarrhal influence and catarrhal products, as in the qualities of hereditariness or acquirement. The

common judgment, not only of scientific men, has long accepted the law of hereditary predisposition to the first form of phthisis; and the hereditary character remains the same, whether it be a tendency to repeated catarrh and its results in the bronchi and alveoli, or to a supposed growth of some low destructive form called "tubercle". The *dispositio catarrhalis* of Morton (*op. cit.*, p. 77) was no empty name; the tendency even to catch cold, without any necessary phthisical process, is a matter of every-day occurrence. That very *dispositio catarrhalis* may be the only link between the two cases I quoted in my last lecture of a father dying probably of a slow bronchitic and emphysematous change in his lungs; the son, almost forty years younger, going in all likelihood more quickly to the grave with the cheesy degeneration of intra-alveolar and intrabronchial products, just as his grandfather before him had apparently gone. But, in the matter of hereditariness, the third form—that of fibroid change—can scarcely be said to agree with these two. Whatever be the poison, whether the more subtle one of alcohol or syphilis, or the rougher irritation of coal and grit, there is no evidence as yet to show that the tendency to fibroid change is one of hereditary character, although in some instances that character may be imitated by energies due to similarity of position or occupation. With the fibroid alteration found in the bodies of children affected with congenital syphilis, I have nothing to do here.

On the other hand, it is not sufficient to acknowledge the mere truth, in the ordinary form of phthisis, of a simple hereditary tendency. Not only are the writings of Sir Henry Holland, of Mr. Sedgwick and Mr. Darwin, but the every-day experience of life also, full of facts to prove that, as Mr. Sedgwick says (*Med.-Chir. Rev.*, July 1861, p. 213), "in a very large number of cases of hereditary disease, evidence is to be found of some uniformly acting and controlling influence, which is strikingly manifested in the cases..... where disease has been shown to have both its appointed sex and its appointed period to occur. So completely, indeed, has this latter fact forced itself upon the attention of the public, that we constantly find precautions being taken to guard individuals of a family prone to hereditary disease, such more particularly as phthisis, against what common observation has proved to be the dangerous period of their lives; for the friends in such cases hope that, if this period can be got over safely, the danger may be less." The aid to prognosis which may be gained from the family history may be largely increased by the knowledge of something beyond the mere existence of a certain tendency: by a knowledge of the age at which, as well as of the sex in which, this tendency had revealed itself in the ancestor.

But this very knowledge is difficult to obtain. Very often the first sign which has drawn a patient's attention to his chest has been a spitting of blood; though very often, I am compelled to admit, the hæmoptysis is absent, and the cough and dyspnoea and loss of weight have awakened him to a sense of impending mischief. My notes go to show that, in cases under the age of thirty—I had almost said twenty-five—the prognosis is better where the hæmoptysis occurs than in those in which it is absent; and the reason of this might be found in the statement of a fact (*Guy's Hospital Reports*, ser. i, vol. vi, p. 210) by my former teacher, the late Dr. Barlow, as to the almost constant occurrence of bronchitis immediately before or contemporaneously with the commencement of phthisis: "that, whether the bronchitis be the cause of the phthisis, or the phthisis of the bronchitis, the fact still remains the same, that there almost always exists a considerable hyperæmia of the bronchial mucous membrane at the commencement of phthisis"; and, to carry his assertion one step further, in some cases a considerable hyperæmia of the alveolar capillaries. And it is in these cases, very similar to, if not identical with, those classed by writers of different ages under "phthisis ab hæmoptoe", that the course of the disease is most favourable. It appears almost to stop short at the production, followed by resolution, of a local pneumonia, in which the escape of blood had something of the nature of a relief to over-distended blood-vessels; though of this local bleeding, in its further results, it would be, perhaps, too much to say simply with Cullen (*First Lines of the Practice of Physic*, Edinburgh, 1789, vol. ii, p. 372), "It is, indeed, easy to conceive that a rupture of the vessels of the lungs, like that of the vessels of the nose, may be often healed, as the surgeons speak, by the first intention." It is somewhat astonishing, at first sight, that the occurrence of hæmoptysis, supposed by the public to be very common at the commencement of true phthisis, is really not so. In most cases, the mischief has advanced some way before the bleeding, due probably to some degenerated blood-vessel, shows itself. And when we consider what really takes place in the catarrhal form of phthisis—that proliferation and caseation cause, or at any rate seem to cause, as the microscope shows us in such specimens as that diagram represents, impermeability and disappearance of the capillary vessels—the absence of any large amount of blood-spitting, I do not say

throughout, but through a long portion of the phthisical process, is not to be wondered at. Of the copious hæmorrhages which take rise from a small aneurism in the wall of a cavity, or through the continuous oozing into the latter of blood from a degenerated vessel, I do not speak now. These are obviously of a dangerous character; but of the kind I have described I do not take so positively unfavourable a view. I may err in judging only from out-patient experience, from which I find that in cases coming to me for the first time there is a history of spitting of blood in only about half.

And this leads me to speak of the analysis I have made of my notes of 849 cases of phthisis among out-patients at the Victoria Park Hospital, not only as to its occurrence at various ages, but also as to sex, and to the seat, so far as shown, on their presenting themselves, by the physical signs.

The table of ages before you only illustrates once more the doctrine laid down by the Father of Medicine, "*Φθίσις γίνεταί μάλιστα ἡλικίῃσι τῇσιν ἀπὸ δεκακαίδεκα ἐτέων μέχρι πέντε καὶ τριήκοντα ἐτέων*" (*Aph.*, v, 9), and exactly reproduced by Sydenham (*Proc. Integ.*, cap. lviii), "*Phthisis autem invadit ab ætatis anno decimo octavo ad trigesimum quintum*". I have omitted altogether those cases which, presenting only dyspeptic symptoms, had no signs of mischief in the lungs. The large majority of cases, as you may see, were between the ages of fifteen and forty.

There is one other fact illustrated by this table which has some bearing on a rule laid down by some insurance-offices as to the possibility of phthisis of the hereditary type being extinct after the age of forty-five. In this table, there are fifty-six males and twenty-nine females, making a total of eighty-six persons, or 61 per cent., attacked with a pulmonary disease, whether it be the ordinary cheesy form first revealing itself at this later age, or that form of chronic bronchitis which, leaving its own type of winter-cough, has taken on the form of a continuously emaciating phthisis.

As to the seat of change in these patients, the result of analysis does not differ very much from those obtained by, at any rate, later writers on the subject. Laennec believed that the right lung was more frequently affected than the left; while Louis found the disease confined in five instances to the left lung, and in two only to the right; and, as he observed the advance of the disease from above downwards especially marked in twenty-eight cases on the left side, and in ten only on the right, he concluded that the left lung was by preference the seat of change. Dr. Hughes, in a paper in the *Guy's Hospital Reports* for 1842, is probably very near the truth when, in giving his own results of 116 cases on the left side, against 89 cases on the right, he declares his conviction (p. 249) that this difference is so trifling as to be altogether unworthy of notice in reference to diagnosis; and I think he might have gone further, and added "prognosis". Dr. Cotton (*On Consumption*, etc., 1858, p. 21), finding the same preference of the left over the right lung, comes to the same conclusion in almost the same words: the difference "is so small as to render it a subject of curiosity only, and not of the slightest value either in the diagnosis or treatment of consumption". My own numbers give the following results. Of 424 cases, 77 males and 74 females, the affection was present in both in 151 cases, confined to the right lung in 120, and to the left in 153. The difference in numbers between left and right was more marked in men than in women: in 104 cases in which both lungs were affected, the right was most so in 48, the left in 55. As to sex, the larger number of men affected, as compared with women, points probably to the changes of temperature and weather, and to some extent to other risks of occupation, to which men are more exposed. At the same time, there is a larger fatality from the disease among men whose work compels day-long confinement indoors. In a table published among others relating mainly to conclusions drawn up for an insurance-office by Mr. Alfred Smee, jun., there is one which shows the influence of occupation in the cases of 291 men who died in the Victoria Park Hospital of pulmonary disease. The occupation was in 150 cases indoor, in 41 mixed, and in 100 outdoor.

I had drawn up, sir, a large number of tables based on the records of cases enumerated in that one list, not only with respect to age, sex, and occupation, and the so-called different stages of the disease, on which last I am disposed to lay no great stress, but also in reference to the supposed influence of various concomitant affections, and the influences of temperature and weather; but, in going over them for the last time before I brought them here, I found them of such unchanging dulness, that I decided, with your permission, and with a view to relieve the tedium which those who do me the honour to listen to me cannot but feel, that it would be better to embody such results as I could offer in the general matter of this lecture, and omit the statistics on which they were founded, even though such a course of proceeding would necessarily cause a shortening of the time prescribed for me.

But to my mind the majority of these statistical tables are merely curiosities. They have no bearing in the case of some individual patient who comes to us for advice; they might not have on him the same evil effect, perhaps, which the result of calculations as to the mean duration of phthisis by different observers might have. In giving a list of averages of duration, in which the shortest time, according to Louis and Bayle, is twenty-three, and the longest, according to Dr. Williams,* forty-eight months, Dr. Pollock (*Elements of Prognosis in Consumption*, 1865, p. 56) is much more hopeful in the statement that Portal considered phthisis might last "from eleven days to forty years, and he is certainly nearer the mark than any other authority". On this point, Morton himself observes: "*Hinc fit, quod phthisis vulgo tam male audiat, ac si esset morbus naturâ suâ prorsus incurabilis, quum (quantum ego longâ experientiâ edoctus scio) æquè certam curationem, atque alii morbi, admittat, modo debitâ methodo, satis tempestivè tractetur.*" (*Op. cit.*, p. 171.) It is an odd thing that one of the upholders of the inflammatory origin of phthisis should have held also the possibility of its cure—that is to say, that it was not absolutely hopeless; just as Niemeyer, writing in these later times, and holding the same theory, has as strongly asserted; while the champions of the "tubercular" theory held and hold with Laennec that "the tubercular affection is, like cancerous affections, absolutely incurable" (*op. cit.*, vol. i, p. 581); or, in the stronger language of the next paragraph, "that the observations of Bayle and myself show that the idea of the possibility of curing phthisis is an illusion". I dare not yet speak of my own experience. I do but see from time to time cases of the chronic form of cheesy phthisis, holding on the almost even tenor of their way, with but little, if indeed any, change in physical signs; and in these cases I cannot but suppose that, as in other chronic forms of disease, the body or the constitution—call it as you will—becomes as it were habituated to the changed circumstances of life, which make up for it, as a living whole, its normal standard.

Holding, therefore, almost the contradictory of Cullen (*op. cit.*, p. 100), that "phthisis in consequence of pneumonic inflammation is that which occurs most rarely in this climate", I am able, with Morton and Broussais and Niemeyer, to have a larger hope; and though, with Cullen (*op. cit.*, p. 381), I am ready to say that "nothing should allow us to neglect any appearance of catarrh, as is too frequently done, for it may be the beginning of a phthisis, which is mistaken for a genuine catarrh, or that, even as a catarrh continuing long, it may produce a phthisis"; and though, with Hippocrates (*Aph.*, iii, 10), "*τὸ φθίσιον αὐτοῖσι φθίσιον κακόν*", I am compelled to say, from my experience at Victoria Park Hospital, that while, in the warmth and even heat of summer, all my bronchitic patients are better, those who are suffering from phthisis are very much worse, partly because the heat calls for more work from the injured respiratory organ; partly because, as even in the healthiest of us, it throws the power of assimilation, and therefore of nutrition, somewhat into abeyance. The advice recorded in Wepfer's observations (*op. cit.*, p. 435), though difficult to follow, because its conditions are difficult to obtain, is probably true in regard to the temperature best suited for phthisical patients: "*Ægro nobilissimo aër convenit temperatissimus, id est, nec calidior, nec frigidior, nec siccior, nec humidior, ideo et æstum solis nimium et aerem vespertinum et pluviam vitet*".†

[To be continued.]

CURIOUS CASE OF SEXUAL DEFORMITY.

LAST December, I was called in by Mrs. W., to determine the sex of her child, an infant three weeks old, and at the same time to settle a domestic dispute; for, while the father and mother were quite undecided to which sex their child belonged (though it had been christened as a boy), an aunt of large experience, who lived with them, had suggested, much to their annoyance, that the child combined in its single person the peculiarities of both sexes—in fact, that a condition vulgarly termed "hermaphroditism" existed. On examination, I found the following state of things. The penis was small, and slightly curved or bent downwards; there was no urethral orifice in the glans; and backward from the glans the corpus spongiosum seemed altogether absent. The urethra terminated in a slit-like orifice near the root of the penis and in front of the scrotum, which was puckered in to a considerable depth. The left testis was absent, the right being fully developed. The child in other respects was well formed.

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* This average has been more recently (Williams, *Pulmonary Consumption*, 1871, p. 366) raised to, roughly, eight years.

† This opinion of the consultant, amusing and full of common sense throughout, concludes with words equally difficult, but equally true for the consumptive patient to take to heart, were it only possible: "*Vitet mororem atque quemvis alium animi affectum gravem*". ‡ Broussais.