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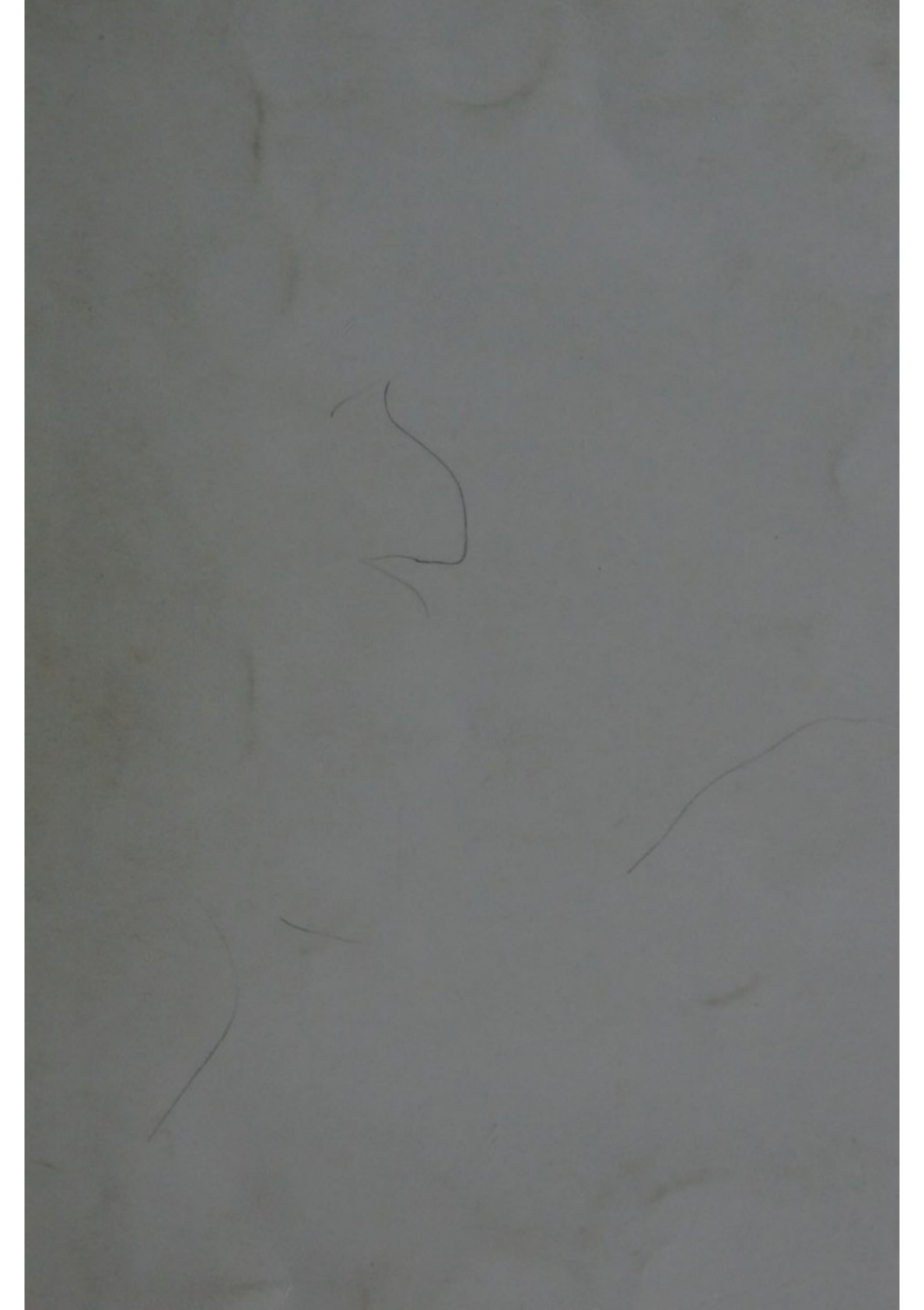
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ON TUBERCLE,

BY

HENRY M'CORMAC, M.D.

READ BEFORE THE EDINBURGH MEDICO-CHIRURGICAL SOCIETY

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"A general fault in professional men is that they study too little over and above what is directly necessary in their immediate walk. Hence, narrow professional prejudice, hence too, the rarity of great discoveries and new lights."—ANON.

1856.

Just Published, post 8vo, Price 3s. 6d., Cloth,

ON THE NATURE, TREATMENT, AND PREVENTION OF CONSUMPTION, and incidentally of SCROFULA, with a Demonstration of the Cause of the Disease. London: Longman, Brown, Green, and Longmans. Belfast: Shepherd and Aitchison.

BY HENRY M'CORMAC, M.D.,

Consulting Physician to the Belfast General Hospital. Author of the *Methodus Medendi*, *Moral Sanatory Economy*, *Treatise on Fever*, *Philosophy of Human Nature*.

"We have dwelt on the subject at some length, but not more than its great importance and the justly high position of the author demand."—*Dublin Medical Press*, Nov. 1856.

"Whatever may be the opinion entertained by the profession on the truth of the views on Pulmonary Consumption advanced by Dr. M'Cormac, there can be but one sentiment as to the learning and sagacity which this accomplished physician has brought to the task."—*Med. Times and Gaz.*, Oct. 20, 1855.

"Though we admire the extensive research which he (Dr. M'Cormac) has evidently bestowed on the subject, we must warn our readers against the enthusiastic advocacy with which he pleads his cause. We can recommend the book as containing much that is useful and practical."—*Brit. and For. Med. Chir. Review*, Jan. 20, 1856.

"Dr. M'Cormac is an eminent, scientific, and most learned physician, but we must protest against fresh air being raised in this way into a hobby and ridden to death!"—*Dublin Journal of Med. Science*, Feb. 1856.

No one can be more fully alive than we are to the very important parts played by in-door avocations and the breathing of foul air, among the many exciting causes which tend to the open manifestations of tuberculosis in those predisposed to it, through the scrofulous dyscrasia, but we are far from believing that no other conditions than the above are neither generally present or necessary.—*Lancet*, Nov. 17, 1855.

"The PRESIDENT remarked that he was much satisfied with the general tenor of this paper (*"On Tubercle"*).—*Med. Chirurg. Soc. of Edinburgh, Session XXXV. 1855-56; Edinb. Med. Journ.*, July, 1856.

"There was brought before the Society a treatise from the pen of Dr. M'Cormac, of Belfast, on the etiology of tubercle. Dr. M'Cormac perhaps too exclusively regarded the inhalation of vitiated air as the cause of tubercular deposits, nevertheless if the view which he desires to take be, that the tendency in the blood to deposit tubercular matter arises from the imperfect performance of the function of respiration, many facts are favourable to the hypothesis."—*Id. Ed. Med. Journ.* Aug. 1856.

By the same Author,

ON THE THEORY OF FINAL CAUSES: TWO LETTERS addressed to the Editor of the *Leader*.

BELFAST: SHEPHERD & AITCHISON.

On Tubercle^a. By H. M'CORMAC, M. D., Consulting Physician to the Belfast General Hospital.

"Nitor in adversum."

THE general prevalence of a given malady implies an equal persistency in the infraction of some vital organic law or laws. The causes of morbid conditions generally, when once appreciated, are of extreme simplicity. Few at the present day will contend that typhus, plague, scarlet fever, measles, whooping-cough, and cholera, severally, are not the results of a specific infection communicable from man to man. We find it impossible, indeed, to determine the primary source of syphilis, hydrophobia, and variola; but, like the diseases previously mentioned, we do know that, as it is, they spring from an infection, and, once introduced, that the virus in each instance is capable of renewing itself in the living organism. In all these cases the origin is simple. The symptoms respectively are referable to a poison. And when we describe the manner and the order of these symptoms, we have gone as far in respect of the natural history of the disease, as in the present state of our knowledge it seems possible to do. In diseases not springing from

^a Read before the Edinburgh Medico-Chirurgical Society, Session xxxv., 1855-6.

infection or the operation of a specific poison, as those from cold, suddenly suppressed cutaneous transpiration, suppressed renalexcretion, transport of pus into the circulation, and others—the mode of action is also simple, and the accruing results in general extremely obvious. I do not at all mean to say that the phenomena of disease are invariably capable of being understood; I only mean to say that, when they *are* understood, the etiology is generally, indeed I might add, always, simple and intelligible. So much is this the case, that we may very safely infer that, when our pathology is laboured, ambiguous, complicated, it is in all probability by so much erroneous. In the successful investigation of disease, the course, as we find, is invariably from many particulars to few, from the complex to the simple. Every one who is in the habit of turning his attention to such subjects will be able to adduce examples, in illustration of the foregoing, for himself. Although I would not affirm that the simple must be always true, I unhesitatingly aver that *the true is always simple!* The invariable course of science, indeed, is from a multitude of details to a very few; from vague, unsatisfactory, and profuse hypotheses, to a single, perspicuous, and sufficing theory. Numerous factors are at first assigned. These are progressively reduced in number, till at length they amount to a very few, or perchance but one.

I am well aware of the ambiguity of *teleological* reasoning; still, I think that such reasoning has been too much excluded from the pale of medical science. Must it be ever deemed unbecoming, or at least undesirable, to try and determine what might be the intention of a beneficent, intelligent Providence? Teleological considerations, judiciously co-related with sound facts and a living theory, will, I conceive, in many cases throw a clearer light on the origin and progress of disease. Here, the Divinity stands forth, as it were, in aid of Medicine, and subserves at once our wisdom and our learning. It demands little reflection to show that the epidemics which have devastated Europe any time these two thousand years must have sprung from violent and sustained infractions of some hygienic law. In effect they did so! There was an infraction in the first instance, as in the last, of the laws of the living organism. The results were, an intensity of consuming disease, terrifying to humanity and subversive of calm reflection. These results, the black death among the rest, were but multiples of single instances of the violation of those conditions which are alone compatible with the persistence of vitality, organic regularity, and health. Multiplicity and magnitude

terrify the child, but they also appal the man. The few pustules of the discrete small-pox on a single individual, a carbuncle, a bubo, or a more than usually watery stool, alarms no one. Let these phenomena, however, instead of affecting a few individuals, extend to millions, and horror and confusion become coextensive. Yet it is only when we study and understand disease in the *individual*, that we appreciate it in the mass. *When we determine the manner of the production of tubercle in a single person, we determine it in a measure in the whole species.* Once we ascertain the source of tubercle—for it is of this morbid degeneration that I would speak—we shall be able to exercise that scientific prevision in respect of it, which is the characteristic and the criterion of all science. And in truly estimating the sources of tubercle, we shall be in a position one day *in posse*, if not always *in esse*, to anticipate, and even to prevent it.

The causes hitherto assigned for the production of tubercle evince all the vagueness and uncertainty which distinguish that state of medical science which antedates rational demonstration—the period when the unsatisfactory and perhaps delusive hypothesis has not given place to the well-based, conclusive, and simple theory. The number, the variety, and the uncertainty of past hypotheses render them for the most part reciprocally destructive. First, we shall say, tubercle, it matters not whether pulmonary, cutaneous, cerebral, osseous, spinal, arthritic, or mesenteric, has been said to be hereditary! Yet, there is not a shadow of reason for the hypothesis, except the frequency of tubercle itself, and of course the liability of the offspring of the tuberculous, in common with others, to the infliction. That the infant *in utero* should be sometimes tuberculous, affords no plea; for the infant *in utero* is exposed in a measure to the consequences of the unhealthy conditions under which the female parent herself laboured. Those who die tuberculous are *not* necessarily born so. A theory, to be valid, must suit *all* the cases; to say, then, that tubercle is hereditary, is merely to evade the question. The tuberculous man's father had, it will be said, tubercle. Very well, what made the father tuberculous? Why, *his* father was so; and thus the ball is driven along, much after the fashion of the story of Hindoo cosmogony. The world, quoth the Hindoo, rests on an elephant. And the elephant on what? Why, on a tortoise. And the tortoise on what? Here, however, the Hindoo is silent. Again, tubercle, we are told by some, is infectious! This, however, is even less satisfactory than the elephant and tortoise hypothesis. Did any animal ever contract tubercle by inoculation? The thing is impossible; we might as well try to

inoculate a broken leg. Tubercle, in fact, is in nowise communicable. Some relative, after prolonged attendance on the sick, we shall suppose, contracts tubercle. But this result does not spring from contact, but only ensues *because the circumstances are otherwise provocative of tubercle*, and because tubercle, therefore, would be contracted were there no tubercle-infested person, in the first instance, in the case at all. Bad food, bad nutrition, dyspepsia, induce tubercle, say some; but dyspeptic people are only sometimes tuberculous. When they are so, it is because they have been exposed to the causes of tubercle, *which are not the causes of dyspepsia*. Dyspepsia *per se* never induces, never did induce, tubercle. During the unhappy Irish famine the victims perished of want, indeed, but not of tubercle! It is neither a vice of nutrition nor the want of nutrition that induces tubercle. Multitudes die every year of tubercle, who never experienced dyspepsia, nor suffered an ungratified material want in their lives. No, neither dyspepsia nor want has anything to do with the production of tubercle, more than have cold and moisture—causes yet more frequently alleged, and if possible yet more illusory. What multitudes are exposed to cold and hardship, and want and moisture, and yet perchance never evince a trace of tubercle! How common is tubercle among the many who never, so to speak, were exposed to cold, or hunger, or wet, at any time? How various, contradictory, and unsatisfactory are these pretended causes? How greatly do their issues clash with each other and with the facts? No, none of them, whether severally or collectively, in much or in little, are the sources of tubercle.

The conclusion to which my inquiries and my observations all lead is, that the cause, the *only* cause, of tubercle is a vice of respiration. If the respiratory functions be properly performed, if the conditions prove normal, there is, *there can be*, no tubercle. Under no other conditions whatsoever, the conditions of respiration being healthy conditions, shall tubercle ensue. These healthy conditions, however, being habitually violated, the eventual and inevitable result is tubercle deposit now in the lungs, now in the lymphatic (more especially the bronchial) glands, the larynx, bones, joints, spine, the mesentery, the meninges, liver, spleen, pancreas, ovaries, testes, one organ or more. There is a certain lesion of the function of respiration, hence tubercle. *For to suppress the function of an organism is to disturb the harmony and unity of its parts, and so bring about its destruction*^a. It is impossible for healthy respi-

^a Vera, "Philosophie de Hegel," p. 191.

ration, or healthy life, to take place in an unhealthy, stagnant atmosphere. If we respire an atmosphere that has been respired before, by ourselves or others (and the oftener it is respired the more unfit for respiration does it become), the proper interchange of the oxygen of the atmosphere with the carbonic acid of the blood is interfered with, the oxidation of the waste is more or less impeded, and the tissues which have undergone retrograde metamorphosis are no longer sufficiently eliminated; the animal detritus, no longer properly expelled by the outlet of the lungs, nor adequately by any vicarious outlet, is retained in the blood. Yet here it cannot stay. The dead and wholly unorganized waste cannot be re-employed afresh, and hence is cast aside, *dead and unorganized*, and, under the designation of tubercle, is deposited throughout the living tissues; wherein, as well as in the general economy, it is productive of the evils and disturbance, the torture and the distress, ending finally in death, such as any other dead and unorganized matter foisted to the same extent amid the tissues might be expected to superinduce. *For in this product there are neither vessels, nor canals, nor tissue, nor fibres, nor laminae, nothing, in short, which recalls the idea of organization, which is completely absent*^a. These conclusions are supported by physiological as well as pathological data, nor is there anything in the pages of Lehmann, or Valentine, either of the Simons, or Liebig, which contravenes, but on the contrary, much that sustains them. There are two great processes going on simultaneously in the animal economy, namely, the absorption of extraneous, and the elimination of *effete* matter, which, being foreign to the organism, cannot, without danger, be long retained^b. Histological inquiries, however important in their place, here lead only to negative results. They can only serve to determine that tubercle is amorphous and unorganized, so far, at least, as dead waste is so. It needs physiological investigation to determine the nature and conditions of the healthy vital processes, and pathological investigation to show how far these processes are invaded and interfered with. The result of this joint investigation, I submit, is the inference as to the formation of tubercles in the manner I contend for.

The importance of a pure atmosphere has been more or less conceded by medical and other inquirers for at least the last two hundred years. The admission, however, was made, as indeed it too generally still is, on grounds at once vague and

^a Andral, "Clinique," tome ii. p. 12; "Pathologie," tome i p. 430.

^b Comte, "Philosophie Positive," §. Philosophie Anatomique.

unsatisfactory. It is no easy matter, observes Mayow, to determine the use of the respiratory act^a. A still more remarkable man, however, went nearer to the matter than any of his predecessors—nearer, indeed, than most of those who have come after him. Servetus pointed out, long ago, how the blood came in contact with the atmosphere, *was purged of its impurities*, and assumed a scarlet hue^b. It was admitted that pure air was desirable, nay, the senses bore testimony to the admission. But beyond this immediate testimony of the senses, few cared to go. *How* or *why* exactly pure air was requisite, few ventured, and fewer still were competent, to inquire. Even at the present day, misconceptions the most singular subsist, not only on the part of the general public, but on the part of medical men themselves. Of these misconceptions striking illustrations, were it not invidious to do so, might be adduced. The evidence of a very great number of inquirers, as I have conclusively shown in my Treatise on Consumption, is on record as to the production of tubercle from the habitual respiration of a foul, indoor, and previously respired atmosphere^c. This I, for the first time, assert is not merely the occasional, but *the one constant factor*, the agency, in short, the *causa sine qua non*, without which there can be no tubercle, but which, being present sufficiently often and sufficiently long, *invariably* induces tubercle in one or more of its forms. We continually witness the production of tubercles *thus* in our own species. Thus, too, that is, by subjecting them to the conditions aforesaid, can we induce tubercles, at any time, in the lower animals, and by inference arrive at the means of preventing them in man. The evidence in favour of these conclusions, as I conceive, is of the most varied, demonstrative character, and goes far to show that the atmospheric deterioration is consummated *within* doors, and very particularly, if not exclusively, in the sleeping apartments, wherein so large a portion of our lives is passed. In short, air previously respired and imperfectly, if at all, renewed, is *the* ever active, necessary precursor of tubercle.

My experience of tubercular phthisis, like that of most practitioners, has been very extensive. It is only during the more recent portion of that experience, however, that my attention has been directed to the production of tubercle from the *habitual* respiration of an ill-renewed, previously respired atmosphere. During these latter years I have met *no* instance of phthisis, *no* instance of scrofula, *no* instance of tubercle, in

^a "De Respiratione," p. 36.

^b "Restitutio Christianismi."

^c On the Nature, Treatment, and Prevention of Consumption.

short, which, upon investigation, when the opportunity was afforded me, did not turn out, to the best of my belief, to have the antecedents already insisted on. A dwelling may be comfortably, nay, luxuriously furnished; cleanliness, the most perfect; taste the most exquisite may reign within; the apartments may be at once spacious and numerous; yet, unless pure air be of the appointments, the rest will be of no avail. There is no substitute, as I must emphatically declare, for a frequently renewed atmosphere. I see and hear it frequently stated that, as consumption occurs on the greatest elevations, and in houses where the surrounding atmosphere is most salubrious, the condition of the air, therefore, has nothing to say to it. This, however, involves a *non sequitur*, and, consequently, a misstatement. The genesis or the non-genesis of tubercle has nothing in the world directly, and hardly indirectly, to do with elevation. Tubercle may occur at any elevation, and its absence may be secured at any elevation. It is of little avail, in respect of the production of tubercle, what sort of air subsists outside the dwelling, when the air *inside* is impure and unrenewed. Does it signify to the famished prisoner that the richest viands lie spread *outside* the dungeon wall? And of what avail is it to the panting lungs when barriers of brick and stone exclude the life-bestowing element?

Of cases such as the following I have witnessed very many. I visited S. last week, at the instance of his ordinary attendant. There was excessive dulness over the left lung, just three finger-breadths below the clavicle. The right lung was also tuberculous, but much less so than the left. The signs and symptoms otherwise, "the cough and the spit," the hectic, emaciation, and distress were those of tubercle of the lungs. S. was just fourteen years of age. I asked him, among other inquiries, to show me the room wherein he spent his nights. He led me to a small apartment, where the chimney was bricked up! The lower part of the window was a little open, but only on and after the hour of rising; for the upper part, as commonly happens, would not open; the door, also, was ajar; and, although air had been oozing in from the time of S.'s getting up, the odour, or rather stench, resulting from the occupation of the night, was but very partially dissipated. Upon being further questioned, S. informed me that he had only occupied this room, along with a little brother, for seven nights. "Show me, then," I said, "your previous apartment;" whereupon S. took me to a yet more elevated chamber, with a low and eaved ceiling, and a window that did not open above, and that was never, during sleeping hours at least, opened

below. The chimney was carefully plugged with a truss of hay, round which some coarse linen had been wrapped; while the bed-curtains were drawn, as in the room below! *Here I found that poor S. had slept for the preceding twelvemonth; and here, amid the foul and again and again respired atmosphere, was formed that deposit of waste in the lungs which, in all seeming, will bring his career, as it has already brought that of so many others, to an untimely close.*

If, as I affirm, it be determinable that *every* form of tubercle results from the habitual respiration of an ill-renewed, previously respired atmosphere, leading to the *retention* instead of insuring the expulsion of the dead and waste detritus of the organism, then it necessarily follows, by reversing this unhealthy condition, that the prevention of tubercle lies completely at our disposal. So long as the emunctories, and very especially the lungs, are in a position satisfactorily to perform their several duties, there will be no retention of the dead waste, and consequently tubercle, which, as I assert, consists of this accumulated waste, will *not* be deposited. This result, after all, is not more surprising than others which take place every day in the animal economy. Once we come to familiarize ourselves with the conception of the fact, it will no longer seem abnormal; *misconceptions* will be rectified, and the new doctrine, as I trust, will take its stand among other older and equally accredited views.

Under all circumstances, the one thing, especially needful, is, by every means at our disposal, to stop, stay, and prevent the tubercular degeneration altogether. I need not here insist on a sufficient dietary, abundant clothing, exercise, tonics, and remedial measures in their place; I shall simply confine myself to the question of atmospheric supply. Here the problem we have to resolve is, day and night, how to furnish air pure as the organism demands it, pure as the great body of the atmosphere. There are but two ways of doing this. One is by admitting pure air into our houses, and the other is by living daily a good deal in the open ocean of the atmosphere. People are as yet undecided, and indeed it is still matter of uncertainty, as to the best means of effectively securing house ventilation by day. At night, however, there is no difficulty whatever about the matter; it is only necessary, more or less according to the state of the wind, to pull down the window freely, and, except while dressing and undressing, to keep it so, winter and summer. *With warm, abundant night-coverings*, there is not a shadow of risk—there is no risk of rheumatism, none of bronchitis, in short, no risk whatever. We spend so

much of life in our bed-rooms, that with a pure bed-room atmosphere—*pure and fresh, in short, as the outer atmosphere itself*, for here nothing less will suffice—there would, I believe, with reasonable care and attention otherwise, be *no* tubercle, and consequently *no* consumption whatever! I am of opinion that, with this due care and attention, consumption and scrofula—in other words, tubercle—are, reasonably speaking, just as preventible as broken limbs, burns, inflammation, in short, any casualty. But nothing short of this care and attention will suffice—nothing, indeed, short of the arrangement of our dwellings and our habits so as at least to realize the one indispensable requirement of an unadulterated and constantly renewed atmosphere. This so desirable, and, in truth, indispensable hygienic revolution being once consummated, it would free our hands of tubercle in all its protean aspects, and leave us at comparative liberty to deal with the remaining and, unhappily, all too numerous forms of organic and functional disease.



