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ON

PULMONARY CONSUMPTION;

AND ON

BRONCHIAL AND LARYNGEAL DISEASE:

WITH

REMARKS ON THE PLACES OF RESIDENCE

CHIEFLY RESORTED TO BY THE CONSUMPTIVE INVALID.

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## PREFACE.

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BEING induced to follow up my recommendation of Inhalation, as a valuable auxiliary in the treatment of Phthisis Pulmonalis, and some diseases of the air passages, I take advantage of the opportunity thus afforded, to offer the results of my further inquiries into the physiology and pathology of the several disorders of which I treat; and, with them, my enlarged experience of the general principles of practice.

In the outset, I would earnestly deprecate the possible suspicion, that, dwelling so much upon one remedy as I have done, I should place exclusive dependence on that one in the treatment of Phthisis. My conviction is entire, that this lamentable disease, although having its chief seat of development in the lungs, is, in its essential nature, an affection of the whole system, and requires a comprehensive constitutional treatment.

Such a mode of treatment embraces the use of internal medicines, of auxiliary external applications, the regulation of diet and regimen, the choice of air and climate, and the exercise of moral influence.

The issue of a confirmed case of consumption can seldom reflect more than a doubtful credit on the skill of the Physician; but humanity demands that we should not, on that account, relax our endeavours to relieve or heal. We may fail, greatly; for results are not at our command; yet, perseverance is our part and our duty; and it is only by perseverance that we can make a more certain approach, if ever, to the cure of Phthisis.

My own belief is strong, that the application of various medicines, containing volatile principles, in the way of inhalation, is capable of rendering more benefit in certain morbid conditions of the lungs than is generally allowed. It will be seen, from many cases related in the following pages, that a pure Iodine solution, combined with the saturated tincture of Conium, is the remedy in which I place most confidence.

The practice in question is one which requires nice management, patient observation, and oftentimes great perseverance. In slight affections, success may usually be obtained quickly; but, in graver cases, a great length of time may elapse before the appearance of any really satisfactory results.

It is now an undeniable fact, that the inhalation of pure æther so acts upon the sensorium and whole nervous system, as to render the patient insensible to the pain of the severest surgical operation; and this discovery may, I think, be cited as a full answer to those who distrust the effective power of a medicine acting through the medium of the lungs. It will no longer be disputed by any, that certain medicines may exert a powerful agency when so administered, and produce



effects distinct from those which ensue, when they are received into the stomach.

I trust that these pages will be thought to contain full and satisfactory evidence both of the power and perfect safety of Iodine Inhalation.

I have thought it desirable, for the most part, to choose cases of remote occurrence, as illustrative of my treatment, rather than more recent ones, as alone enabling me to state decisively the permanent results obtained.

The real and durable value of any remedy is scarcely to be decided upon in the lifetime of any one man, as we may suppose is intimated in that aphorism of the Father of our Science: "Life is short, while Art is long." Much care and thought must be expended in ascertaining the most efficacious or most judicious doses; to appreciate its *modus operandi*, in faithfully recording its effects on different persons; and, lastly, in observing and combating the effect of influences, which, in matters affecting health and life, should have no place,—as the caprice of fashion and the force of prejudice.

Louis, the most distinguished pathologist of the present day on the subject of Phthisis, points out in these strong terms the necessity of more lengthened and more laborious investigation: "Unless I am greatly mistaken, the associated efforts of a great number of medical men, placed in different circumstances, is absolutely required for the establishment of any grand or really useful results in respect of the cause and treatment of Phthisis."

It will readily be understood that it has not been

my object to attempt a *Treatise* on Consumption, which has been rendered unnecessary by the able work of Sir James Clark, and by the labors of more recent authors ; but to give a general sketch of the disease, with some new points and observations, which, I am willing to hope, may not be wholly devoid of use or interest.

On the subject of Climate, I have confined myself within narrow limits ; for it is one of immense extent ; and, if fully treated, would necessarily be a work of compilation : but I trust that the few suggestions which I offer, derived from my own personal observation and experience, with the occasional remarks of others, and the tabular views which I have selected, may convey some useful information, and evince my sense of the great importance of treating of air and climate, in any work on Consumption and Bronchitis.

No author is a good judge of his own performance ; but some satisfaction is pardonable, wherever pains have been taken ; and, were it not for this encouragement, few would persevere in the anxious labors of authorship.

I hope that such satisfaction as I may have felt, will not prove utterly unfounded ; but that I shall be found to have contributed some materials, however slight, towards the enlargement of the Temple of Science ; and some assistance towards the relief of suffering humanity : and if such should be the verdict of the thoughtful and unprejudiced, my labour will not be without an adequate reward.



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ON  
PULMONARY CONSUMPTION,  
&c. &c.

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INTRODUCTION.

OF all the important diseases which afflict humanity in civilised countries, Pulmonary Consumption is the earliest, the most universal, and the most fatal. Hippocrates, Aretæus, and others, the most distinguished of the ancient writers on medicine, treated of consumption; and up to the present time no complaint has received more consideration, while we have with deep regret to confess that its fatality remains almost unchecked. It is also a painful truism, that as mankind advance in refinement, and multiply their luxuries, so is the catalogue of diseases increased.

In regard to the prevalence of consumption in different countries, it is but comparative. None is exempt. We learn from travellers that it is very rare amongst the North American Indians; indeed, almost unknown. It most abounds in climates that are subject to the greatest variation of temperature, and least in the very hot and very cold.

The statistics of the disease give melancholy evidence of its fatality. In the Medical Gazette for January 1823, Dr. Gregory, in drawing up a report of the comparative mortality of twenty of the most destructive disorders in London, during a period of four years, offers the following statement:—for the year 1829, the total number 14931, and the proportion from consumption 5251; for 1830, the relative numbers were 13583, 4704; for 1831, 17560, 4807; and for 1832, 19285\*, 4499.

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\* In this year, the deaths from the Asiatic cholera were computed at 3200.

In a letter with which I am favoured by Mr. Farr, of the General Register Office, he states that the reported deaths from consumption in England and Wales were, in

1838,	59,025	From all causes specified,	330,559
1839,	59,559	—————	330,599
1840,	59,923	—————	351,757
1841,	59,592	—————	336,664
1842,	59,291	—————	342,774

He adds, consumption includes many cases of marasmus in children of tender years, the result probably of tubercular disease in other organs than the lungs. In the annual report for 1839, is the following statement:—

“38,522 deaths were attributed to diseases of the respiratory organs, or 27 per cent. of the total number of deaths. The mortality of males and females was the same\*, 5·5 per 1000 annually. Bronchitis, pleurisy, pneumonia, hydrothorax, and asthma, destroyed more males than females out of the same number living; consumption and decline more females than males, in the ratio of 4·155 to 3·771. Decline comprises a few cases of atrophy and organic diseases of the intestinal canal; but the majority were evidently cases of true consumption—tubercular phthisis; to which some of the cases under hæmorrhage, improperly designated rupture of a blood vessel, should also be referred. The deaths from this dreadful malady amounted to 27,754, or 20 per cent. of the total number of deaths; or nearly 4 annually out of 1000 living. Pneumonia, which, it must be recollected, includes inflammation of the chest, was next in fatality to phthisis; but young children furnished the majority of the cases. Of 379 fatal cases of pneumonia in the metropolis, and in some country districts, 228 were children under three years of age. Several of the cases were also evidently the sequelæ of hooping cough and measles.”

The increase of deaths from consumption in cities over the country districts is stated to be 39 per cent.

I am induced to believe that the proportionate mortality from phthisis pulmonalis, distinctly, may be rather more than

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\* Sydenham reckoned, that two-thirds died from acute diseases; one-third from chronic; and a third of the last number from consumption.

a fifth, but not so much as a fourth, which is the usual computation of authors. Yet whatever may be the real statistics\* of the disease, it must be viewed as the greatest scourge of the human race. The late Dr. Gregory, in his lectures, forcibly expressed himself that so great is the scourge of phthisis, that if an occasional visit of the plague might be had as a commutation, it would be preferable! No apology therefore need be offered for any attempt to mitigate the evils of this most destructive of all disorders; and, however small may be the contribution of each individual labourer, he will surely have more cause of satisfaction in his breast, than he who sits down in despondency and inaction, contented to acquiesce in the general opinion that for consumption there is no relief.

For the better comprehension of the diseased conditions of which I have to treat, I hope it may not be unacceptable, even to the professional reader, that I should give a summary of anatomical and physiological description of the organs and textures which are chiefly concerned.

The *Larynx* is that beautiful apparatus, the functions of which constitute the voice. It is a short tube, and forms the upper part of the avenue for the passage of air to and from the lungs. It is composed of cartilages, ligaments, muscles, nerves, and membrane of a mucous character; yet has on its surface a thin layer of fibres. The glottis, or aperture from the mouth into the larynx, has placed before it a fibro-cartilaginous valve†, which closes it completely, when the larynx is drawn up beneath the base of the tongue.

The cartilages which compose the larynx are connected to each other by an apparatus of muscles, so constructed that the aperture may have its form and dimensions very considerably varied; and if the air be forcibly expelled from the lungs through the glottis, according to the form and size of the aperture will the different vocal sounds be produced. The shrillness, or volume, or tone, of the voice, depend on the

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\* Much of valuable statistics and pathological details will be found in the reports, for different years, of Dr. Boyd, of the Marylebone Infirmary.

† If the voice be used during the immediate act of deglutition of a solid substance, it may by accident slip into the glottis, causing the sudden danger of asphyxia.



internal diameter of the glottis, its elasticity, mobility, and lubricity; and the force with which the air is protruded. Speech is the modification of the voice into distinct articulation in the cavity of the glottis itself, or in that of the mouth, or of the nostrils.

The base of the triangular opening of the larynx is short, and has a transverse direction. The opening is termed the *rima glottidis*. The two long edges which meet at the fore part, formed of a peculiar elastic substance, are termed the *chordæ vocales*. They extend from the front of each arytenoid cartilage to the thyroid; so that any movement given to the former, immediately affects the dimensions of the *rima glottidis*.

The *epi-glottis* is a thin flap of fibrous cartilage, held vertically by its elastic connections against the root of the tongue, but capable of being thrown down to cover the opening of the glottis. The ventricle of the larynx is the shallow fossa situated immediately above, and to the outer side of the *chordæ vocales*, which allows these parts to vibrate freely. An incision being made in a living dog, so as to expose the cavity of the larynx, the following are some of the phenomena produced. At each expiration the *rima glottidis* is narrowed, and the *chordæ vocales* are brought nearer to each other, so as to come into contact for part of their length. When the animal cries, the *chordæ vocales* appear to vibrate. When the tone uttered is grave, the *rima glottidis* is fully expanded, and the *chordæ vocales* seem to vibrate in their whole length. When the animal utters a shrill cry, the *rima glottidis* is observed to become much narrower, and the *chordæ vocales* being in contact at their fore part, the posterior portion only of each appears to vibrate.

The principal piece in the structure of the larynx is the cricoid cartilage, a thick ring, rising behind to the height of an inch. It is received between the two flat plates of which the thyroid cartilage consists; and upon its raised posterior margin, two little pyramids of fibrous cartilage, called the arytenoid cartilages, are loosely articulated, so as to move freely.

The small muscles which are appointed to the cartilages,



and which diversify the dimensions of the glottis, are supplied by the recurrent nerve, a branch of the nervus vagus. Upon its division, animals lose their voice.

The larynx restrains the entrance of noxious substances into the lungs. For this purpose its mucous surface is endowed with acute sensibility; and the instinctive action of its muscles is so prompt and powerful, as to oppose successfully every effort at inspiration, when an animal is immersed in any fluid or gas, the inhalation of which would be prejudicial. Thus, when an animal is placed in a vessel containing carbonic acid gas, the attempts to inspire are useless\*.

It has already been observed that the loudness of the tones of the voice results from the force with which the air is expelled from the chest. Thus persons in vigorous health speak in a firm, steady voice; whereas, in the weakness that illness occasions, the tones are scarcely produced above a whisper. The difference in the tones of the voice in the two sexes, and in the male sex before and after puberty, results from a difference in the size of the vocal organs. At the age of puberty in the latter instance, the larynx greatly enlarges, and the lengthened chordæ vocales become capable of producing the deep tones of manhood.

It has been a much-disputed point, and especially among the French physiologists of the last century, whether the musical tones of the voice depend upon the size of the aperture of the glottis, or upon the tension of the ligaments, the vocal chords.

Dr. Good observes, "To the attainment of a correct voice, it is necessary that there should be great accuracy of ear, a perfect symmetry of the vocal organs; equal tenseness in the ligaments of the larynx, which must be also nicely balanced by the power of the muscles on each side; the cartilages of the larynx must be delicately adjusted to each other; the lateral cavities equally deep, and the cornua of the os hyoides of a like length. With such an organisation, the voice is perfected for exact modulation in speaking or singing; and it is from different defects in this requisite mechanism, that some

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\* For most of this description, see Mayo's Human Physiology.

persons cannot speak, nor others sing in tune. Dr. Bostock (Physiology) states—"A good deal of discussion formerly took place respecting the effects of tying or cutting the nerves that are distributed over these muscles; but it is now generally admitted that when the nervous communication is entirely intercepted, the voice is destroyed. A part at least of the uncertainty which attached to the subject, depends upon the circumstance that it was thought necessary to operate upon the recurrent nerves alone, whereas these are not the only nerves that supply these parts. Haighton's experiments led him to conclude that the recurrent branches of the par vagum supply parts which are essentially necessary to the formation of the voice, while the laryngeal branches of it seem only to affect its modulation or tone."

In the fourth vol. of the Cambridge Transactions, will be found a very elaborate paper by Robert Willis, M.A. F.R.S. F.S.S. on the mechanism of the larynx.

This writer observes, "The vocal mechanism may be considered as consisting of lungs or bellows, capable of transmitting, by means of the connecting windpipe, a current of air through an apparatus contained in the upper part of the windpipe, which is termed the larynx. This apparatus is capable of producing various musical notes, which are heard after passing through a *variable cavity*, consisting of the pharynx, mouth, and nose." After describing the general anatomy of the larynx and the pharynx, he says, "the whole surface of the cavity we have been describing is lined with a soft mucous membrane similar to that which is seen on the inside of the mouth, soft palate, &c. with the exception of the edges of the glottis, where the lining assumes the form of a ligament, white, fibrous, and elastic, the outline of which is immediately below the opening of the ventricle. The edges of the pseudo glottis are formed merely by a kind of reduplication of the ordinary mucous membrane."

"The most generally received opinion, and that which appears to me to be borne out by a careful investigation of the structure of the larynx, is, that the current of air from the lungs excites these ligaments to vibration, and so produces the sounds of the voice. Hence they are denominated the

vocal ligaments." Assuming that the source of the notes of the voice is to be found in the vibration of a pair of membranous elastic edges, between which a current of air is allowed to pass, he proceeds to show under what condition such elastic edges must be presented to a current of air, in order that it may elicit from them the required vibrations.

The whole of the paper deserves the closest study from those who feel any interest in this beautiful subject of the human voice. I shall conclude with borrowing the following ingenious table of the author, to shew, according to his view, the functions of the muscles.

Antagonists.	{	CRICOTHYROÏDEI stretch the vocal ligaments.....	} Govern the pitch of the notes.
		THYROARYTENOÏDEI relax the vocal ligaments, and place them in the vocalising position.....	
Antagonists.	{	CRICOARYTENOÏDEI POSTICI.....open the glottis	} Govern the aperture of the glottis.
		CRICOARYTENOÏDEI LATERALES press together the front portion of the Arytenoids ..	
		ARYTENOÏDEI TRANSVERSI ET OBLIQUI press together the hinder portion of the Arytenoids.)	

A paper by John Bishop, Esq. F.R.S. was read at the Royal Society meeting, June 11, 1846. He states that the vocal organs are composed of tissues differing in thickness, density, and elasticity, and of which the tension is indeterminate; circumstances which present insuperable obstacles to the attainment of a mathematical theory of their vibrations.

Having examined the human voice as resulting from the vibration of membranous ligaments, in obedience, first, to the laws of musical strings; secondly, those of reeded instruments; and thirdly, to those of membranous pipes; he arrives at the conclusion, that the vocal organs combine, in reality, the actions of each of these instruments, and exhibit, in conjunction, the perfect type of every one of them\*.

The trachea, or windpipe as it is expressively called, divides into two branches called bronchi, the right of which is larger than the left, and passes off nearly at right angles to the upper

\* I have been insensibly drawn into too extended a view of this subject; and yet, in relation to its magnitude, it is but concisely treated.



part of the corresponding lung; the left descends obliquely, and passes beneath the arch of the aorta to reach the left lung.

The trachea is composed of fibro-cartilaginous rings, fibrous membranes, mucous membranes, longitudinal elastic fibres, muscular fibres, glands.

John Bell, in his *Anatomy*, observes, that the cartilaginous rings of the bronchi, which, near the trachea, resemble those of the trunk, become weaker, more oblique and irregular, and further removed from each other, until the extremities are little more than membranous tubes.

The bronchi ramify into the lungs; and it was the opinion of Reisseissen, the latest of the old inquirers into this subject, that each and every cell was the termination of a bronchial tube. This has been controverted by Mr. Addison, of Malvern, who sets forth his views in a paper presented to the Royal Society, and read April 2nd, 1842. He concludes, from his experiments and observations, "that the bronchial tubes, after dividing dichotomously into a multitude of minute branches, which pursue their course in the cellular interstices of the lobules of the lungs, terminate in their interior in branched air passages, and in air cells which freely communicate with one another," and have a closed termination at the boundary of the lobule. The apertures by which these air cells open into one another "are termed by the author *lobular passages*; but he states that the air cells have not an indiscriminate or general inter-communication throughout the interior of a lobule, and that no anastomoses occur between the interlobular ramifications of the bronchi themselves, each branch pursuing its own independent course to its termination in a closed extremity."

I know from Mr. Addison that he entertains the following opinion in regard to aeration: "that the air-bubbles which fill all the cells are seldom or never changed; that the column of air expired or inspired is not more than sufficient to occupy the *tubes*: that the *lobular passages and the air-cells* have their oxygen renewed by the imbibition of *air-bubbles*, which, in the minute structure of the lung, are so small, and adhere to the tissue so strongly, that they cannot be expelled by any force short of lacerating the cells, and therefore they are not likely to pass in and out during respiration."

This statement appears to me inconsistent with the fact of



the easy permeability of gases; the prompt passing or trans-  
fusion of one kind of air into another, or of one portion of  
the same kind of air into another; as, for example, in the lungs.

More lately, a view of the minute structure of the lungs  
has been given by Mr. Rainey, in a paper\* read before the  
Medico-Chir. Soc. March 24, 1845, in which he differs in  
several particulars from Mr. Addison, as from all the physio-  
logists who have preceded him. He observes—

“The bronchial tubes commence at the bifurcation of the  
trachea. They are composed of cartilaginous rings and a  
proper membrane. They ramify in the substance of the  
lungs, their cartilaginous rings gradually disappearing; and  
in the human lung, having arrived within about one-eighth  
of an inch of its surface, the membrane also terminates, but  
somewhat abruptly, after which the passages conducting the  
air continue in the same direction as the bronchial tubes, of  
which they are the continuation, but without having any per-  
ceptible membranous lining; their parietes being formed  
merely by the air-cells between which they pass, and by which  
they are surrounded.

“The membrane of the bronchial tubes retains its fibrous  
character as far as its termination, the fibres being arranged lon-  
gitudinally and circularly, and also its lining membrane.  
These are supplied by a distinct set of blood-vessels, which  
at the termination of the membrane anastomose with the  
vessels of the air-cells. The diameter of the ultimate bron-  
chial tubes is from  $\frac{1}{80}$  to  $\frac{1}{30}$  of an inch. They communicate  
with but few air-cells, and at these communications their  
membranous lining is not continued into these cells, but, on  
the contrary, the vessels of the cells pass into the bronchial  
tubes, and ramify very superficially on their inner surface,  
probably to allow the blood within them to be acted upon by  
the inspired air.”

“The bronchial intercellular passages are at first of a circu-  
lar form, and, like the bronchial tubes, do not communicate  
with many air-cells; but as they approach the surface of a

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\* On the minute Structure of the Lungs, and on the Formation of Pulmonary Tubercle.

lobule, the number keeps increasing, and at length these openings of communication are so numerous, and so near together, that the intercellular passage loses altogether its circular figure, and becomes reduced to an irregularly-shaped passage, running between the air-cells and communicating with them in all directions; lastly, having arrived close to the surface of a lobule, it terminates in an air-cell, which is not dilated as stated by Reisseissen, but has about the same diameter as the passage of which it is the continuation."

He is of opinion that the upper part only of the air passages is lined by mucous membrane, and that those parts in which the aeration of the blood takes place are lined only by a very thin fibrous membrane. He connects with this anatomical opinion, an explanation of the phenomena "presented by acute inflammation of these structures, inflammation of the bronchial membrane (bronchitis) being attended by the symptoms peculiar to inflammation of other mucous membranes; and inflammation of the membrane lining the air-cells (pneumonia) being accompanied by deposition of fibrine, as in inflammation of the common fibro-cellular tissue." Mr. Rainey contradicts the opinion of Mr. Addison, of the non-existence of air-cells in the foetal lung. The whole paper must be studied. I believe our conclusion should be, that several points of the minute anatomy of the lungs still require to be investigated.

*The lungs* are two organs situated on each side of the chest, and separated from each other by a membranous partition, the mediastinum. Their colour is pinkish grey, mottled, and variously marked with black. Each lung is divided into lobes; the right having three, the left only two; space being thus given for the heart\*. The lungs are composed of the ramification of the bronchial tubes and air-cells; the ramifications of the pulmonary artery and veins; bronchial arteries and veins, lymphatics and nerves; the whole of these structures being held together by cellular tissue, which constitutes the parenchyma. The lymphatics on the surface and in the substance of the lungs terminate in the bronchial glands,

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\* Cruveilhier observes, "Three lobes are not unfrequently found in the left lung, or four in the right. There were four lobes in the lung of a negro, lately presented to the Anatomical Society."

which are very numerous, and are placed at the roots of the lungs, around the bronchi, and at the bifurcation of the trachea.

Each lung is enclosed, and its structure maintained by a serous membrane, the pleura, which invests it as far as the root, and is thence reflected upon the parietes of the chest. That portion of the membrane which is in relation with the lung, is called pleura pulmonalis; that which is in contact with the parietes, pleura costalis. That part of the pleura which extends from the sternum to the spine, constitutes the septum or mediastinum of the chest; between the two layers of which the heart is situated.

Respiration is almost another term for life, so immediately vital is this process. It embraces the mechanical operation of renewing the air within the lungs, and the changes to which its presence there contributes.

The diaphragm is a strong muscular expansion, possessed of a great degree of contractility, which separates the principal cavities of the trunk of the body, the thorax and the abdomen. In its natural state, it assumes an arched form, convex with respect to the thorax, but, when it contracts, the curvature is necessarily diminished, and the thorax is of course increased in its capacity. The parietes of the thorax are composed partly of bone, and partly of cartilage. The ribs which form its sides are arched bones, articulated at their extremities, and with spaces between each of them that are occupied with muscles called intercostals.

When we wish to make a full inspiration, besides the diaphragm and intercostals, we call into action the external muscles of the breast, shoulders, and other neighbouring parts, which, by elevating the ribs and the sternum, still further increase the capacity of the thorax. When, on the contrary, we wish to produce a full expiration, the abdominal muscles are contracted, the viscera are thus pushed against the diaphragm, and its convexity towards the thorax is increased.

From this outline only of description, the complicated nature of the merely mechanical part of respiration will be readily seen; the theory of which has in many points been the subject of disputation, even up to the present time.



The principal use of the lungs is to produce an important change in the blood, through the medium of the air. I will briefly notice a few of the particulars of this interesting part of physiology. The air cells of the lungs, from their minuteness and their arrangement, present in the small space occupied by this viscera so extended a surface, that Hales, representing the size of each vesicle at the 100th part of an inch in diameter, estimates the amount of surface furnished by them collectively at 20,000 square inches. According to Dr. Monro, it is thirty times the surface of the human body. Alluding to these and other experiments of the Physiologists of the last century, Dr. Bostock remarked, "There is reason to suppose that the results are in a great measure imaginary; nor do we appear to have any data from which we can form a more correct conclusion."

The mucous membrane which lines the bronchial tubes ceases at the air cells; which are membranous, thin, and delicate, and, in their healthy state, almost as transparent as glass.

The pulmonary artery, dividing into two branches, one for each lung, ramifies along the whole course of the bronchial tubes, and, spreading into the finest vessels, called capillary, are distributed over the whole surface of the air cells, forming a net-work so complex, that the anatomist, Malpighi, who first observed it, named it the *Rete mirabile*, the wonderful net-work.

The pulmonary artery is functionally a vein, since it contains venous blood, which it has brought from the right side of the heart—the return blood, namely, of the general circulation; while, on the other hand, the pulmonary veins, in reality containing the new arterial blood, convey to the left side of the heart the blood which has received, through the delicate membrane forming the structure of the air cells, the influence of the air; and the process is called aeration; by which the blood is freed from its carbon, and becomes fitted for nutrition and all the great purposes of the system; and in which process the animal heat is produced. The chemical action in question may be briefly stated as consisting in the reception by inspiration of oxygen, as one of the



constituents of atmospherical air, which unites with the carbon of the venous blood, and passes away from the lungs in expiration as carbonic acid gas.

If the blood did not undergo its appropriate changes from aeration, the muscles would lose their contractile power; the heart would no longer be able to contract; and the circulation would cease. If, as proved by experiments, the brain receive venous instead of arterial blood, asphyxia is the consequence; its functions are suspended, and consciousness is lost. It must also be very obvious that not only should sanguification, or the making of fresh blood, be fully performed, but also that it should be of healthy character, constituting a perfect material for the re-construction or maintenance of the various structures and tissues of the body. Upon this is founded the whole doctrine of the humoral pathology, formerly held in almost exclusive regard, but subsequently much sacrificed to the principle of solidism, or the theory which refers all consequences to the action and the condition of the solid parts of the body—the living actions. Neither extreme view can be correct. In its original formation, and subsequent changes in reproduction (metamorphosis), every part must be in a fluid state before it becomes solid; in the state of blood\*, or its plastic component part, fibrine, commonly called coagulable lymph.

I have now to enter on my immediate subject.

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\* In Mr. Hunter's well-known work on the blood, the *life* of the blood, and the blood *alive*, are terms in common use; and its coagulation was considered by that great physiologist as one of its conditions of life. I found† that neither the free addition of hydrocyanic acid to the fresh drawn blood; nor the most powerful shock from an electric battery, sufficient to kill a large dog, prevented the usual firm coagulation. For my own part, therefore, I prefer to speak of the vital properties of the blood; by which term I mean that it is the pabulum of living matter, rather than itself alive. In order to the organisation of the blood, or rather its component part, the coagulable lymph, the action of the living vessels is required; in itself being only the material with which they reconstruct the new tissues. Can it be really shown that the blood possesses any inherent principle of independent vital action—self-moving? I think that chemical actions and conditions have not been sufficiently considered.

† See my Essay on the Blood, 1824,

# PHTHISIS PULMONALIS,

OR

## PULMONARY CONSUMPTION.

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THIS disease, of which I am about to treat, is to be regarded as arising from the presence of tubercles in the lungs. In its forms, it may be divided into the *Acute*, *Sub-Acute*, and *Chronic*. In the first, all the symptoms are of the most active character; and hectic fever so predominates, that, although there are distinct intervals, often much prolonged, between the accessions, the sufferer scarcely perceives exemption from some degree of feverish disturbance. Hæmoptysis attends this more than any other form of the complaint, and very often is the first notable occurrence to mark the invasion of the disease. This may take place in one sudden loss of a large quantity of blood, and not return; or in small quantity, and of frequent recurrence. The blood is of bright scarlet colour, and frothy. The exacerbations of hectic are usually two in the twenty-four hours: at noon and late in the evening. The cold fit, hot fit, and the sweating stage, do not bear a regular proportion to each other, as in intermittent fever; and sometimes the occurrence of one or the other will be almost solitary: but, in general, this set of symptoms is in successive order. The pulse is very frequent, and hurried by the slightest circumstances; and so is the breathing. A distressing, irritable cough prevails, and the sputum, when not coloured, is in whitish lumps. When hectic is present, the cheek is lighted up with vermilion hue; when absent, there is deadly paleness. The eye is, in the same relative

manner, unnaturally bright, or dull. The appetite is variable, as are also the digestive functions. The urine of digestion usually deposits pink or lateritious sediment; but sometimes it resembles magnesia. The mind is cheered by hope of recovery in a remarkable degree, up to the last moment of existence. So rapid is the progress of the disorder in wasting and loss of strength, that it receives the vulgar appellation of "galloping consumption." Within a few weeks, the fatal event sometimes takes place, and is rarely protracted beyond five or six months from the period of its declared invasion: but it must be considered that the real existence of the disease is always of earlier date than it appears. Acute consumption attacks mostly between fourteen and eighteen years of age; and those most admired for beauty of features and delicacy of complexion are the ordinary victims.

In the sub-acute form, all the symptoms just recited occur in an abated degree; and the duration of the disease is longer. The terms acute and sub-acute may be considered as relating to the degree of fever and attendant activity of the symptoms. Consumption the most frequently takes place as a chronic disease, either as a sequel to the sub-acute form, or commencing in the most insidious manner; and it not unfrequently happens that even danger is established before the presence of the evil is suspected. Loss of flesh and strength, with the appetite little or not at all impaired, and therefore no obvious cause for such change, should excite apprehension; but more especially when, as a new occurrence, the breathing is easily rendered short on a quick movement, and on any ascent; when the pulse has become increased from the patient's natural number by ten or twenty beats; and the animal heat is considerably beyond the usual standard. In proportion as cough shews itself, reality takes the place of suspicion; and when it becomes permanent, with characteristic expectoration, consumption is fairly arrived. But no single picture would be sufficient to convey the portrait of this proteiform disease, which may have many complications; the most common of which, however, are pneumonia; pleurisy; dyspepsia; and a morbid state of the intestinal mucous membrane, with its distressing consequences; and with manifestations of scrofula.



Dyspeptic complaint is sometimes so much the first symptom of consumption, that the latter may be overlooked for a considerable period. On the other hand especially, when the liver is in any degree affected with chronic inflammation, existing too in combination with dyspepsia, and especially if there be also some bronchitis and cough, the disorder may be deceptive, and may falsely be called incipient Phthisis.

It is never so insidious as when unattended with cough; but, in truth, it may have made considerable progress before any cough has appeared. And the cough, when attending the first invasion of the disorder, is often of that character which does not create much, if any, alarm to the patient or the friends; being occasional, rather than constant; dry—that is, unattended with any expectoration, except a salivary froth; not causing any pain, but distressing sometimes from its suddenness and violence, when it is hard, and ringing in the sound which it produces. Latent consumption is a term applied to that state of the disease which is the most insidious, slow to develop itself, and scarcely attended with any well-marked symptoms. Auscultation is of slight comparative value towards the diagnosis of such cases; and the spirometer of Mr. Hutchinson, of which I shall have to speak, is more instructive. But while the phthisis may exist only as a taint in the blood, an assumption which I entertain, it is latent beyond our power of detection.

The most frequent period of life at which consumption prevails, probably may be stated at from fifteen to thirty-five years of age; but I have met with examples as early as two and four months, stamped with the full characters of the disease; and as late as sixty-five and seventy\*. Even the fœtus in utero has been found to exhibit tubercles in the lungs.

The duration of chronic consumption, when it has manifestly declared itself, commonly ranges from eight months to two years; but now and then it lasts for a much longer period. I have seen instances of five, ten, fifteen, and even twenty years, in which the existence of true phthisis was evident, and

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\* The late Dr. Gregory, of Edinburgh, mentioned to me a case of rapid phthisis, beginning at the age of 88.



rendered so both by the general signs, and by the revelations of auscultation and percussion. But the preservation of life, under such fearful circumstances, must greatly depend on the favorable position in which the patient may be placed, of ease and comfort, and care of every kind, and choice of climate and place of residence; obtaining all the *juvantia*, and shunning all the *lædencia*.

Not unfrequently, during the chief progress of phthisis, ending fatally, the disease shall appear so distinctly local in the lungs, that the patient expresses himself to be in good general health, and that he should do quite well, if he could get rid of his cough, and acquire more strength.

#### OF THE MOST REMARKABLE SYMPTOMS OF PHTHISIS.

*Cough* is one of the most distressing symptoms of phthisis, and its character varies according to the stage of the disease, and the state of the bronchial membrane. In the beginning, the cough is of a short and hacking kind, with scarcely any expectoration, and that of a simple nature; white, mucous, and salivary. When the bronchial mucous membrane takes on much irritation, then the sputum changes, and indeed chronic bronchitis soon constitutes a large part of the disease.

Cough is of two kinds, one of spasmodic irritation from the morbid sensibility of the larynx; the other, from the necessity of expelling the vitiated mucous secretion; and, if the disease be so advanced, the softened tuberculous matter. The difficulty of such expulsion will be according to the density, and more especially the tenacity, of the mucus; and the depth from which it proceeds. I remember the case of a gentleman who suffered from the most violent spasmodic cough I ever witnessed. It exceeded the worst fits of whooping cough. After one of these attacks, a sudden swelling of the face appeared, which quickly extended over the neck and chest, and this proved to be emphysematous. He died shortly after. On examination, a small abscess was found at the root of the right lung, and a perforation of the pleura. This was the consequence of a most violent, tearing cough.

In the progress of phthisis, the deep and peculiar hollowness of the cough is in its nature very characteristic. The subject of the *expectoration* here demands an especial consideration.

Viewed as a symptom, the attentive examination of the sputa is very highly instructive ; as other excretions—for example, the urinary and alvine—affords us great information of the functional condition of the respective organs ; but I believe that erroneous conclusions are often drawn from the appearance of what is expectorated, from want of true knowledge on the subject on the part of the practitioner. Some place too much, some too little value on the signs of the sputa.

I shall attempt a general description of the different kinds of sputum which occur in phthisis.

1. Thick, opaque, straw-colored or whitish matter, in lumps ; received into a glass of water, appearing nodulated and flaky, very tenacious, portions sometimes colored with blood, variously described by the patient to have a sweet, saltish, or sharp, sourish taste, sometimes nauseous, of a faint or fleshy smell, more or less mixed with frothy saliva and a mucilaginous fluid, always abundant, attendant on chronic bronchitis simply ; or, upon irritation of the bronchial membrane dependant on tubercles.

2. A mixture of curdy matter of a yellowish color, with white or whitish masses like boiled vermicelli, moulded in the smaller bronchial tubes, of a faintish or fleshy smell, strongly indicative of the existence of tubercles ; and, when accompanied with creamy sputum, occasionally also streaked with blood, the whole of such sputa having a more or less offensive odor. Hence the strongest suspicion may be entertained that the tubercles are softened, and that there is a purulent secreting cavity.

3. Heavy sputa, viscid, in round lumps, or of ragged appearance, rusty, or yellowish white or greenish, frequently colored with blood, sometimes mixed with creamy, pus-like matter, or with curdy fluid, streaky, of more or less offensive odor, less abundant than the preceding kind, and expectorated with much more difficulty. When in the worst form, this expectoration is strongly indicative of softened tubercles, or of membranous ulceration.

4. A highly puriform mass suddenly discharged from vomicae (large tubercles suddenly softened, and their contents poured forth at once), or, unhealthy looking pus, from an

abscess of the lungs resulting from inflammation, and unconnected with tubercles.

5. A mixed mass of yellowish, or partly greenish, puriform matter; cheesy looking substance, and small particles having the look of tubercles; probably the debris of a tuberculous cavity mixed with the general morbid secretion of the bronchial membrane, attended with bad odor according to the degeneracy of the case.

6. I have lastly to notice an excretion of blood, more or less mixed with consistent yellowish matter, excreted without cough, occasionally of florid blood, frothy from its mixture with air and saliva, sweetish in taste, without smell, evidently proceeding from the mucous membrane of the larynx or trachea.

Great anxiety is usually entertained as to whether the matter expectorated in pulmonary disease is simply mucous, or containing also a larger or smaller proportion of pus. The popular notion is, that when the sputum sinks in water, it is purulent, and vice versâ. This is wholly an error. It is true that pure pus instantly sinks in water; but mucus also precipitates with equal certainty, when divested of the air-bubbles with which the expectoration is always more or less mixed. No such importance, therefore, need be attached to the swimming or sinking of the expectoration.

It was stated by the late Dr. Charles Darwin, that the three following criteria distinguish pus from mucus: "1. Sulphuric acid dissolves it. When the solution is diluted, the pus precipitates; but mucus, treated in the same manner, swims. 2. Pus is diffusible through diluted sulphuric acid, and through water; but mucus is not. 3. Alkaline leys dissolve pus; water precipitates pus thus dissolved, but not mucus."

1. I found that sulphuric acid dissolved both pus and mucus; the latter the least readily; but in contradiction to the results just quoted, it appeared that, on dilution with water, the liquor in which the mucus was contained afforded an abundant precipitation, although not so immediately as the mixture containing the pus.

2. The second experiment is correctly stated; but the re-



sult is not of the supposed value in the examination of a muco-purulent expectoration; for in all instances of chronic pulmonary disease, however aggravated, as I shall have occasion to shew, the general secretion is not a mixture of pus and mucus in varying proportions, but an altered secretion of the mucous bronchial membrane, changed from its simply mucous character, and making more or less an approach to that of a purulent nature.

3. I find these results not to agree with my experiments. Neither is the solution of pus or mucus, by means of pure liquor potassæ, disturbed by the addition of water, so as to cause a precipitation.

Mr. Hunter observed that the muriate of ammonia coagulated pus and not mucus, and hence appeared satisfied with the criterion. Dr. Pearson pointed out that it was not an example of coagulation, but of inspissation; the alkali attracting the water from the pus, the effect of the seeming coagulation disappearing on the addition of water.

I found that a saturated solution of muriate of ammonia acted very similarly on pus, and on mucus expectorated in bronchitis, producing with each a glairy fluid, which, on being heated, gave a curdy deposit. With pus, certainly, the mixture was more dense and more readily produced; but, by means of a brisk agitation, the mucous sputum became almost dissolved, and the mixed fluid assumed the consistence of thick mucilage. Even between pus and mucus this experiment does not furnish a characteristic difference of result; and I pronounce it to be of no value in the examination of a muco-purulent sputum. The difference of effect was not sufficiently remarkable. Grasmeyer has proposed the following method, which he considers as complete. "Triturate the substance to be tried with an equal quantity of warm water; then add to it an equal portion of a saturated solution of carbonate of potash, and set the mixture aside. If it contain pus, a transparent jelly subsides in a few hours; but this does not happen, if mucus only be present." Operating upon pure pus, I found the jelly-like coagulum produced in a few minutes; while, with mucous expectoration, a mucilaginous kind of inspissation only resulted.

The differences between pure pus, and mucus secreted



from the bronchial membrane, are too remarkable and obvious to require these experiments to set forth the distinction. It must always be borne in mind, that such total expectoration as makes the nearest approach to the nature of purulent secretion is still, for the most part, of a mucous character. Secretion is infinitely modified by the nature of the constitutional disease, and by the nature of the tissue, as well as by the local condition of parts. The general term pus, which is defined by chemists to be a fluid, of the consistency of cream, of yellowish color, and exhibiting, under a microscope, the appearance of globules diffused through a fluid, does not designate one specific quality of secretion.

Dr. Pearson distinguished four different kinds: "1. The cream-like and equally consistent. 2. The curdy, of unequal consistence. 3. The serous or thin kind. 4. The thick, viscid, or slimy." I apprehend that this last variety belongs more to mucus than to pus. In a very degenerate state of the health, the purulent secretion may undergo the putrefactive fermentation, and be converted into ichor.

The pus derived from a tubercular cavity is never cream-like, and what is commonly called pure. It is more or less curdy; it is sometimes thin, from the secreting action of the general cavity, sometimes grumous, from the debris of the tubercles, with which may be occasionally mixed broken-down portions of the air-cells.

I shall here make reference to the experiments of Brande and Pearson on the chemical constitution of healthy and morbid mucous secretion.

Healthy mucus from the trachea scarcely, if at all, affords any evidence of albumen, when tested by acids, heat, or alcohol; but pus, although extremely diluted, gives this evidence to the test abundantly. Mr. Brande found, however, that the mucus of the trachea afforded abundance of albumen by means of electric decomposition; and further observes, that alkaline matter was always evolved at the negative, and acid at the positive wire. Minute researches, made with a view of ascertaining the nature of the alkaline and acid matter thus evolved, showed the former to consist of soda, with traces of lime; the latter of muriatic acid, with traces of phosphoric acid.

Dr. Pearson, in describing the saline composition of expectorated matter, states "that the impregnating substances are muriate of soda, varying commonly between one and a half to two and a half per thousand of the whole matter; potash, varying between one and a half and three fourths of a part per thousand; phosphate of lime, about half a part of a thousand; ammonia, united probably to the phosphoric acid; phosphate, perhaps of magnesia; carbonate of lime.\*"

When the expectoration in bronchitis is thin and copious, the patient describes that he feels it to be hot, with a saltish taste, owing, doubtless, to the large proportion of saline ingredients. When it gains a thicker consistence, it becomes more albuminous and less saline, and is also less irritating to the air-passages.†

With a view to ascertain some further particulars respecting the constitution of pus and mucus, I washed repeatedly with distilled water separate portions of creamy pus, and puriform expectoration, and poured them on filters of fine linen rag. The whole of the pus passed through the filter: the washed sputum left behind much flaky material. I next evaporated in warm air (not exceeding 120°) respective portions of the same substances down to dryness. The pus exhibited evidently two kinds of substance; one dark and closely resembling the dried fibrine of the blood, elastic; the other lighter in colour, and resembling the dried white of egg (albumen), brittle in texture. Under the microscope, the dark material appeared full of fibres; the lighter, transparent and leafy.

The sputum exhibited the transparent, leafy appearance, with here and there the same fibrous appearance as the pus, but only in a very slight degree.

It is evident, therefore, that, when blood becomes converted into pus by the action of the vessels under inflammation, the fibrine undergoes a remarkable change of condition.

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\* Phil. Trans. 1809, part II.

† Dr. Pearson observes that the saline ingredients in pus are dissolved in the serous fluid, and that the quantity of these is less than in equal quantity of expectorated matter, but more than in an equal quantity of serum of blood.

It is in so fine a state of division, that it cannot be insulated, as from the blood, by washing and filtration. May not this alteration in the state of the fibrine, and the removal of the coloring matter, be the principal changes which take place in the blood, in the formation of pus?

I should also imagine that these two conditions of the fibrine are necessarily connected with the two kinds of inflammation, the adhesive and the suppurative; in the former case, as we well know, the fibrine in its healthy condition being the bond of union, and the medium of new organization.

From the foregoing experiments it would appear, that true pus and puriform secretion differ materially in the following particulars: the former consists of a much larger proportion of fibrine than of albumen; the latter, of almost all albumen, and little fibrine.

Of the nature of healthy and puriform mucus, and of pus, as respects the question of the globules, I wish to make some observations.

I have examined the healthy mucus of the trachea, and that coughed up in slight catarrhal cough, under the compound microscope, without being able to discover any globular structure.

In pus, the globules appeared more or less equable and well defined, accordingly as the pus was dense and creamy, or thin and serous.

In puriform expectoration, the globules were numerous and appeared swimming in the fluid; but neither so numerous nor so large, nor so well defined, as in any example of pus.

In neither of these substances did the globules appear so perfectly arranged and equable as in the blood itself.

Between pure pus, and mucus, or even puriform expectoration, the mechanical distinction is sufficiently obvious. A drop of pus may be taken up on the probe; but the puriform expectoration is so tenacious that it can be drawn out into the finest threads.

Pus readily diffuses itself through water, rendering it instantly milky; but healthy mucus, mixed with water, subsides without impairing its transparency; and by agitation is broken up into small flakes.



In desiring to satisfy ourselves, in medical practice, as to the true nature of expectorated matters, it is important that the methods adopted should possess as much simplicity as possible, and not require much difficulty of manipulation. The following appear to me well adapted to the purpose.

Let fall a portion of the expectorated matter into a glass of transparent water: if, after remaining a few minutes, the transparency of the fluid be not disturbed, it is rendered probable that the sputum is of a healthy mucous character, however it may be increased in quantity; and this is quite proved, if no milkiness of the water be produced by free agitation. If, however, it become milky, filter the fluid; and to a small portion of this add two or three drops of nitric acid; when, if an immediate whitish precipitate be produced, we have the evidence that the sputum is albuminous, and indicating an altered, morbid secretion. We judge of the proportion of albumen according to the quantity of the precipitate\*. Put another portion into a test-tube, and heat it by means of a spirit-lamp. It is rendered milky, and, after subsidence, furnishes more or less of a coagulum, according to the degree in which it is albuminous.

This, then, is one of the conditions of a puriform secretion; but we cannot with any correctness call this expectoration purulent. I consider it to be a state intermediate between pus and mucus. In a specimen of homogeneous expectoration, like that now under consideration, any portion of it may be drawn out into threads, which is so characteristic a property of mucus.

I am of opinion that the appearances of the sputa are much more indicative of the nature of the morbid condition of the bronchial membrane, and of the lungs, than is commonly supposed; and that our clinical observations are very inaccurate and defective on this point.

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\* In a comparative experiment with a filtered solution of pus in distilled water, and of puriform expectoration similarly treated, I used, as tests, nitric acid and subacetate of lead, which is, according to Dr. Bostock, the best test of mucus. The purulent solution appeared to be much the most albuminous, the other solution much the most mucous, by these tests.



M. Laennec expresses his opinion "that tuberculous softened matter combines so intimately with the puriform mucus secreted by the bronchia, that it is impossible to distinguish the one from the other." This is the case upon a superficial observation of the mass of the expectoration; for, undoubtedly, the purulent secretion forms only a small component part of the whole, and we may suppose that the puriform mucus which is of so viscid a nature when expectorated, is thin when first secreted; and allows of some combination with the purulent secretion; but not, as I believe, so intimate as to be undistinguishable when very carefully examined. I am persuaded that, in well-marked cases of breach of surface, or of tubercular excavation, there will be distinct appearances in the expectoration. One common appearance of the purulent secretion is fine striæ, of a lighter color than the puriform mucus, and imbedded in it. For the purpose of an accurate inspection, the sputa should be received in a shallow vessel.

It has been pointed out by Laennec that the yellowish matter, of a soft, cheesy consistence, occasionally excreted from the follicles of the tonsils, should be distinguished from the matter of a tubercular cavity. He adds, "It differs from this, however, in two striking characters: it emits a fetid odor when squeezed, and it greases paper when heated on it."

In certain circumstances, the membrane of the urethra and that of the eye-lid secrete very well-marked pus without breach of surface; but not so completely the mucous membrane of the bronchial tubes.

Thus far we are, I think, led to some clearer notion of the muco-puriform expectoration; but the information obtained by the means which I have mentioned, although instructive, is not complete.

The globular nature of pus, and the absence of this character in healthy mucus, are means of distinction more clear and positive than what can be derived from chemical experiments. The use of the microscope would be too inconvenient in daily practice. The ingenious method suggested by the late Dr. Young, whose views were always highly philosophical, may be adopted by every practitioner without trouble.

After noticing the failure of chemical processes to discriminate between pus and mucus with accuracy, he observes as follows: "There is, however, a very simple and certain optical criterion dependent on the presence of globules, while the color indicates that there is no mixture of blood. If we put a small quantity of the substance to be examined between two pieces of plate glass, which may be carried in the pocket for the purpose, and, holding it near the eye, look through a distant candle, we shall observe the appearance, even in the daytime, of a bright circular corona of colors, of which the candle is the centre; a red area surrounded by a circle of green, and this again by another of red, the colors being so much the brighter as the globules are more numerous and more equable. If the substance be simply mucous, there will be no rings of colors, although sometimes there is a sufficient mixture of heterogeneous particles, even in mucus, to cause the appearance of a reddish area only about the candle."

In performing this little experiment, the smallest quantity of material should be interposed between the glasses, for, otherwise, the rays of light will not penetrate; and it is better to use the clear flame of a wax taper.

I may state the following general account of my results, derived from numerous experiments:

When pure creamy pus is examined, a beautiful ring of colors appears; a field of green or violet, surrounded by different shades of orange, of which the outer layer and deepest may be called red. Sometimes a double circle is produced. With the puriform sputum I have never seen the green or violet produced, and only shades of orange, more defined, and the circle more or less perfect, in correspondence with the degree of globularity exhibited under the microscope; and exactly agreeing also with the results of the chemical examination, by means of water, nitric acid, and heat, already detailed.

I carefully mixed in a watch glass, by means of a probe, one part of pure pus with twenty-five parts of mucous expectoration, and, in this optical examination, saw only an irregular reddish area, without any of the green or violet color; but the field of green color appeared surrounded by shades of

orange when the proportions were increased to one part of pus with three parts of mucus. I tested the thin curdy contents of a tubercular cavity in a post-mortem examination, and saw only the orange-colored circle. Healthy mucous expectoration does not produce the slightest appearance of color; and as the colored circle is produced in a degree corresponding to the number and size of the globules in the sputum, being also accordingly more or less well defined as a circle, with the various shades of orange, we have an easy and simple mode of proving how nearly the suspected expectoration approaches to the nature of purulent secretion. When a faint and imperfect ring appears, with scarcely any variety of the orange color, we may infer that the globules are too few to produce much refraction of the luminous rays.

I should apologise for the length of this dissertation, if I could enter into the opinion of those who profess to view it as of little importance whether or not the expectoration be puriform or purulent, because they argue that a mucous membrane may secrete pus without the necessity of a breach of surface. This certainly happens, as already observed, with the tunica conjunctiva, as seen in cases of purulent ophthalmia: I have also obtained as good an evidence of the prismatic colors from the gonorrhœal discharge, as from any pure pus that I ever examined. But I do not consider that the mucous membrane of the bronchial tubes ever takes on this high degree of morbid action, so similar to suppuration; unless in instances of ulceration, and which is very limited as compared with the whole extent of the membrane. In all the examinations that I have made, I have not found an example. I am disposed to believe that, when there is a breach of surface, or when purulent matter is discharged from a tubercular cavity, the expectorated matter will not be homogeneous, but will exhibit distinctive portions of a different color from the rest, and which, examined by the optical criterion, will shew its purulent character. I mixed a very small portion of pus with a vial of fresh mucous expectoration, and endeavoured to blend the two substances very intimately by agitation. On examination, I detected the pus by its difference of color, partially mixed with the mucus, but by no means rendered so



tenacious as the rest of the expectoration: I could easily detach it by a probe. By the optical experiment, a clear distinction from the rest of the sputum was manifested; and, indeed, the results agreed exactly in all respects with what I have found in cases, where subsequent proof by post-mortem examination has been afforded of the existence of an ulcerated surface, or of softened tubercles. I have been surprised at the remarkable uniformity of character of the expectoration, from day to day, or from week to week, in every individual case.

Dr. Pearson, when treating of the puriform expectoration, observes, "It is most frequently excreted in the latter stage of pulmonary phthisis, for many weeks successively. It is taken for granted that this matter is from a breach of surface or ulceration; but, on examination after death, such a state was not found in many instances under my observation, although the lungs were, as usual, full of tubercles." And further—"A man labored under a cough, with spitting of matter, which all who saw it called pus; and, as usual, it was considered to proceed from ulceration, or suppurated tubercles; but, on examination after death, the disease was ascertained to be condensation of the lungs to the consistence of liver, with water in the cavities of the chest, and nothing more\*."

We derive information of the state of the air passages and lungs, from the several circumstances of the quantity and the quality of the expectoration; from the duration of the morbid secretion; from its color; its odor; its consistence. And when we desire to form our opinion more accurately and on the best grounds, we have recourse to the aid of the microscope. Mr. Rainey expresses the following opinion.

"As regards the expectoration, this will occur most frequently from the bronchial membrane, and, most probably, is not to be distinguished from that in ordinary bronchitis. It will be only during the breaking up of a tubercle that matter truly tuberculous will be expectorated; and this, I believe, can be recognized, with certainty, by no other character than its containing fragments of the membrane of the air cells."

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\* Phil. Trans. 1839, Part II.



In conclusion, I am persuaded, that, in proportion as we are well acquainted with the nature of the expectorated matters, we shall be much assisted in our diagnosis, and in our practical indications.

*Hectic Fever.*—This is truly one of a symptomatic character. Although it sometimes happens, as already noticed, that the lungs are slow to take on active irritation and disease; in other instances it is quite the reverse, and the progress is even quickly fatal. It occurs in the highest degree in acute phthisis, affecting young persons, when the disease is making rapid progress. I have described it at p. 14. How is it to be explained?

One obvious mode in which tubercles produce injury, is by the occupation and compression of the air cells, and the capillaries; which must interfere, more or less, with that most highly important function, the aeration of the blood.

It is a curious pathological fact, as I have found in a very extensive examination to be verified without a single exception, that in every case of tubercular phthisis the animal heat is more or less raised beyond the healthy standard. This may be stated as a mean at 96·5. It is always found highest in the morning at the time of rising from bed, with all persons. In the course of the day it is influenced by certain circumstances, and is raised by exercise; particularly in the fresh air of the country. In phthisis, I have found it range from 99° to 105°. I consider that the examination\* of the animal heat assists our diagnosis as to the existence of tubercles. In a doubtful case, I am pleased to find the animal heat not higher than 98°.

It would be foreign to my present purpose to enter into the interesting, beautiful, yet difficult subject of animal heat; or attempt the consideration how far this function is to be referred to chemical action taking place in the lungs, how far to vital influence, and how far to the nervous system; but I believe it is on all hands agreed that the most immediate and

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\* The thermometer must be especially constructed for the purpose. I have employed the instrument made by Newman, Regent Street. The bulb is to be lodged in the hollow formed by the tongue, when raised, close to the frænum. Desire the patient to close the lips, and wait in your observation till the mercury becomes quite stationary.

influential cause of the production of animal heat is the combustion of carbon, brought in the venous blood to the ramifying capillaries, in order to receive aeration and the all-important influence of oxygen introduced by the air passages.

In this chemical view of the subject, and to which I now confine myself, it appears, I think, surprising, when we consider how much of tuberculated lungs is excluded from the aerating process, either from the compression of the air cells by the tubercles, or their actual occupation by these foreign bodies, that the animal heat, instead of being lower, as we might imagine, as a consequence of the surface for aeration of the blood being greatly lessened, is actually found to be higher than in the natural healthy state of the lungs.

In the hope of throwing some light on the subject, I instituted the following experiments, in order to determine generally, although not with attempted accuracy, the comparative quantity of carbonic acid exhaled from the lungs by a person labouring under tubercular phthisis, and one in health, in relation to the combustion of carbon in the lungs, and its immediate result, the production of animal heat.

*Experiments.*—Clear glass-stoppered bottles were nearly filled with fresh-made lime-water. The invalid and the healthy person were instructed to breathe forcibly through a glass tube into the lime water for a given space, each beginning and ending at the same moment; there being always some lime remaining in the water not acted upon. The precipitate was carefully collected, dried, and weighed in a delicate balance. All circumstances were made equal in the usual mode of experiment.

Ex. 1.—A. B. ætat. 53, in the advanced stage of phthisis, although quite at rest, breathing with much embarrassment, the inspirations 38 in the minute, pulse 108, animal heat  $101.5^{\circ}$ . The experiment continued for four minutes. Carbonate of lime produced  $3\frac{1}{2}$  grains. In the counter experiment, R. S. ætat. 60, animal heat  $96.5^{\circ}$ , pulse 60, inspirations in the minute 16; carbonate of lime produced, 3 grains.

Ex. 2.—D. L. ætat. 18, in the last stage of phthisis, pulse 120, inspiration 32, animal heat  $102^{\circ}$ . Carbonate of lime produced in five minutes, four grains. In the counter experi-

ment, the individual in health, pulse 72, inspirations 16, animal heat 97°, carbonate of lime 3 grains.

Ex. 3.—S. T. ætat. 34, both lungs universally tuberculated the inspirations 30, and distressingly increased by quick movements; pulse 104, animal heat 102°. He breathed very forcibly into the lime water, and unavoidably so. From five minutes' exhalation, carbonate of lime produced, five grains. In the counter experiment, the individual in health, pulse 68, inspirations 14, animal heat 97°; the carbonate of lime, three grains.

Ex. 4.—B. T. ætat. 34, in the very last stage of phthisis, both lungs with cavities, and abounding with tubercles; ulceration of larynx, extremely debilitated, and respiratory power so difficult that he could not well perform the experiment; pulse 120, animal heat 103°. From five minutes, carbonate of lime produced, three grains. In the counter-experiment, individual in health, animal heat 97°, pulse 72, inspirations 16; carbonate of lime,  $3\frac{1}{4}$  grains.

Ex. 5.—J. B. ætat. 38, dyspnœa from emphysematous lungs, the most marked case of the kind I ever saw; unable to receive more than twenty-five cubic inches of air in the most prolonged inspiration; the system highly irritable; his flesh abundant but flabby, with a bloated look; his disease brought on by lifting immense weights in his business of porter, and having often engaged in foot races; pulse 84; animal heat 98°. After four minutes, produced  $2\frac{1}{2}$  grains of carbonate of lime. In the counter-experiment, the individual in health, pulse 72, inspirations 16, animal heat 97°; the carbonate of lime produced was three grains.

I repeated these experiments with persons labouring under tubercular phthisis, and always with the same result, of a larger proportion of carbonate of lime being produced than in the counter-experiments with healthy persons.

Experiment 4 may appear to contradict my position; but it is to be observed the patient was feeble, and, from the state of the larynx, and also from his great debility, respired very feebly.

In Experiment 5, with a patient still more embarrassed in his respiration than in any of the other cases, but the lungs



not showing the presence of any tubercles, the proportionate exhalation of carbonic acid was less than in the counter-experiment.

The degree of the animal heat is not raised by dyspnoea only, as by the tubercular state of the lungs. A female, having rheumatic disease of the heart, was examined after a long walk; pulse 138, inspirations 38, animal heat 98°.

A man, affected with chronic bronchitis, but also the subject of spasmodic asthma, was examined when under a paroxysm; pulse 96, inspirations 60, animal heat 99°. Here it was raised beyond the healthy standard, but not, as might be expected, from the greatly accelerated breathing; and also the bronchial mucous membrane was much affected.

T. S. in health, after active exercise, by which he was much heated, but, resting five minutes, gave for the animal heat 98°, his pulse 64, inspirations 16; he walked very quickly to the top of a lofty building, by which exertion the pulse became 132, the inspirations 60, but the animal heat was not in the least altered from the degree 98.

It appears to me that, in the relation of these experiments, I have offered strong evidence that in tubercular phthisis, notwithstanding the organic limitation of the function of the lungs, from the obstruction of the air cells by tubercles, the important process of the decarbonisation of the blood, the combustion of carbon, and increased animal heat beyond the healthy standard, go on with more rapidity than in sound lungs. An increase of the animal heat does not ensue from merely quickened respiration, as is shown in the examples of running up to the top of a lofty building; nor even more than a degree in the paroxysm of spasmodic asthma. I consider indeed, that in some cases of this kind, where almost asphyxia takes place, the reverse would happen, and the animal heat be found below the natural standard.

There is in tuberculated lungs an increased activity of function; and hence the hectic fever, so urgent in acute phthisis, and the hectic irritation, although often hardly amounting to evident fever, in the chronic form of the disease. The actions of the animal economy, when unnaturally hurried, are not so healthily performed. We may suppose that the



oxidation of the blood being effected in so rapid a manner, cannot be so favorably accomplished; and also a morbid excitement prevails in the whole system. The nervous system is morbidly sensitive. Although the appetite may be good, and abundance of food be taken, yet nutrition is imperfect, and the body wastes—a consequence much to be referred to the imperfect and unhealthy performance of assimilation and sanguification; at the same time that the absorbents generally are probably thrown into a state of morbid activity.

Further to shew the relation of the animal heat to different circumstances in which the body is placed, I examined it in twenty-five individuals, twenty of whom were affected with chronic rheumatism, and the remaining five laboured under some disorder of the digestive organs. I subjoin a statement of the patient's age, the pulse, and the animal heat.

AGE.	PULSE.	ANIMAL HEAT.
23.....	76.....	97
25.....	72.....	97
21.....	50.....	96.5
26.....	72.....	97
30.....	84.....	98
30.....	92.....	98
30.....	66.....	95
34.....	88.....	96
36.....	88.....	98
38.....	96.....	96
38.....	80.....	97
40.....	76.....	97
42.....	96.....	95
44.....	81.....	96
46.....	88.....	98
50.....	80.....	98
53.....	80.....	97.5
54.....	76.....	97
56.....	80.....	98
57.....	82.....	97
60.....	78.....	57.5
60.....	76.....	97
68.....	76.....	97

An examination of the animal heat of twelve persons, all in perfect health, afforded the following results :—

AGE.	PULSE.	ANIMAL HEAT.
11.....	76.....	95
14.....	72.....	96
16.....	76.....	97
17.....	96.....	97
18.....	88.....	97
40.....	80.....	95·5
40.....	72.....	96
40.....	68.....	97
49.....	70.....	96
50.....	72.....	96
51.....	68.....	96
52.....	72.....	95

I state it as a fact, that, in the preceding list of invalids, all those whose animal heat gave the indication of 98 degrees by the thermometer, were suffering in some way from the state of the chest, as from cough or short breathing, or chronic pleuritic pains. I have not extended my examination much to those who have been affected with disease, either acute or chronic, of other organs; but I can certainly assert, that, when the lungs, or mucous membrane of the air passages, are in a state of irritation from disease, the animal heat is always more or less raised beyond the natural standard. The examples chosen of persons in full health serve to shew that 96·5 may be considered as the mean of the healthy standard.

*Hæmoptysis*, commonly called spitting of blood.—This symptom is of importance, in proportion to its degree and the circumstances connected with it. Active hæmorrhage, occurring suddenly and to a great extent, is full of immediate danger, and has received the appellation of apoplexy of the lungs. I was called to a gentleman who had been much subject to large bleedings from the nose. He was of full habit, and had for many years been gouty. He was not temperate. The first effusion of blood was to the amount of two quarts; and, in spite of the most active treatment, large hæmorrhage recurred,

and he died in forty-eight hours. An examination was made; there were no tubercles in the lungs. Indeed, I had not this suspicion; for he was corpulent and had not been troubled with cough more than a few days.

Hæmoptysis, as a chronic disease, occurs more with females than males, and may be vicarious with the catamenia. I knew a woman, in the condition of a servant, who had periodical hæmorrhage from the lungs; usually about half a pint in quantity; scarlet and frothy, and she lived under the complaint fifteen years. Also a gentleman who lived twenty, having hæmorrhage, from four to twelve ounces, about twice a year. Both died evidently consumptive at last. In these cases, the blood most probably issues from ruptured bronchial arteries. For the most part, hæmoptysis announces the commencement of phthisis; in some instances, in no way recurring, except in giving occasional colored sputum; in others, however, it is frequent, and hurries the case to a fatal issue. Alarm must be raised in our minds when other circumstances occur to make us suspect phthisis; as frequency of pulse, troublesome cough—not the result of catarrh; shortness of breath, oppression of the chest, loss of flesh and strength. We must suspect the existence of tubercles, and consider that they are the real cause of the hæmorrhage, by compressing the capillaries ramifying over the air cells, whence congestion ensues; and, debility being a prominent attendant on every increased morbid action in the consumptive, we may readily conceive why hæmoptysis should occur. The coats of the fine blood-vessels are weak; and in the progress of the disease they frequently yield, so as to cause the slow oozing which constitutes the spitting of blood.

It was anciently remarked, by Hippocrates, that hæmoptysis generally occurs in persons between the age of fifteen and that of thirty-five. It happens mostly to those whose circulation is very excitable, whose balance of circulation is easily disturbed, and who, with liability to congestions, have corresponding debility in the coats of the pulmonary and bronchial vessels.

*Pleurisy.*—In the course of phthisis, little occasional pleurics are of common occurrence, and may be considered to

exist when the patient complains of shooting pains in the chest, rendering the breathing more than ordinarily difficult, and sometimes very painful, in proportion as the inflammation of the pleura may approach to an acute character; for a full acute pleurisy is very rare in phthisis.

Adhesion, with thickening of the membrane, becomes the consequence of the chronic inflammation, or of the transient sharper attacks. In its natural state, the pleura is less than 1000th of an inch in thickness; sometimes, as a consequence of high inflammation, it acquires a density, from fibrinous effusion, of half an inch or more.

In the cases related by Dr. Boyd (Pathological Contributions), pleuritic adhesions, more or less extensive, were almost constantly found. They will doubtless be met with most frequently in the lower class of consumptive patients, on account of their greater exposure to the exciting cause of this painful disorder, atmospherical cold.

*Diarrhœa.*—It frequently happens, in phthisis, that the intestinal mucous membrane becomes painfully disordered, and distressing diarrhœa is the consequence. The discharges are not in general thin and watery, but rather what is called bilious—of a dark color and very fœculent; they vary much in appearance, and consistence, and odor; an uneasy or painful state of the colon, experienced chiefly at and after the action of the bowels, is an attendant. There may be tenderness of the abdomen on pressure, or not. The form of the abdominal muscles is distinctly felt, when the patient is much reduced in flesh. The most distressing sensation of the patient is that of remarkable sinking and debility; and, in proportion as the bowels act with frequency, so is the depression felt; and sometimes, indeed, in an alarming degree. In the worst cases, it may be apprehended that ulceration of the mucous membrane has taken place. Diarrhœa, under such circumstances especially, materially accelerates the fatal progress of the disease, and, from it, even death may sometimes take place in a very sudden manner.

In many instances, diarrhœa prevails throughout the whole course of the disease; in others, only towards the last. In



the case of a gentleman, aged 47, of robust frame and well-formed chest, a loss of appetite and an irritable state of bowels marked the first invasion of his disease. I attended him only about a month before his death. His despondency was extreme, and diarrhœa the most harassing symptom; the evacuations never watery, and for the most part highly bilious; there was no abdominal tenderness on pressure, and rarely pain of the bowels; but when they acted, the sense of sinking was such, as to approach to fainting; a strong feeling sometimes as if his bowels were leaving him, attended with extreme nervousness and agitation, a palpitation of the heart, the breathing nervously quickened, and a conviction that he must die from such intestinal disorder, unless it could be restrained. At this time the lungs were in the worst possible state. He had not appetite, yet he took abundance of very supporting nourishment.

Whence is it that a diarrhœa of this description should prove so debilitating? There are several explanations:—The digestive power is weak, and so hurried, that lacteal absorption is very imperfect; the system is not only robbed of much carbonaceous matter which is wanted for ulterior purposes, but much alimentary matter is carried away\*; there is the want of that necessary degree of distension which is opposed to the feeling of emptiness and inanition; the mucous membrane in these cases is most commonly in a state of softening, too often of ulceration; for it is not uncommon to find some ulcers in the colon or ileum, or both. In the watery diarrhœa, the exhalants of the intestines pour out thin serous fluid, which more or less depletes the blood, and much saline matter; also producing debility. I apprehend that tubercles in the coats of the intestines is another occasional cause of diarrhœa. I attended a lady, whom I had been so fortunate, many years before, to restore from tubercular phtthisis, under circumstances apparently hopeless, who had diarrhœa in so very inveterate a

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\* In the first volume of the *Annals of Medicine and Surgery*, in a valuable paper, by Dr. Prout, on "The Origin and Properties of the Blood," an analysis is given of the intestinal contents. Not only in the colon he found a combination of alimentary matter with biliary principle, mucus, and salts, but also in the rectum; there, however, more changed.

degree, and which was so little amenable to the use of ordinary astringents, and the wasting and loss of strength was so rapid, as to force the conclusion of tubercular influence: all pulmonary symptoms were absent. At length she recovered, and has since remained well; now several years. Blisters to the abdomen; injections of pomegranate decoction with opium and starch; internally, chalk with cordial confection and opium; and occasionally small doses of sulphate of copper, constituted the chief means of treatment.

In some instances, on the other hand, the intestines are torpid; and the frequent use of aperient medicine is necessary.

*Perspirations.*—The idea is very commonly entertained that this and the last symptom are supplementary of each other; and I do not doubt that this may occasionally happen in some degree; but they are more commonly co-existent, both in a great measure springing from relative irritation rather than simple debility, and both causing a great increase of weakness.

Night perspirations, and in some cases they are not confined to the night, constitute a very distressing symptom; the patient taking alarm from the idea of debility, and really being weakened by the occurrence, when extreme in degree. They are the effect of high hectic irritation, joined with debility, and take place most profusely towards morning; when the patient, having struggled through the night with restlessness, sinks into sleep. They prevail most when there is extensive tubercular development, softening not having yet taken place. This perspiration may chiefly be viewed as Nature's effort to relieve fever and irritation.

It is usually during the night that this symptom proves the most distressing, and often have I known the suffering patient to rise as early as five and six, when, from his weakness he would gladly continue to seek repose, in order to check the profuse flow from the skin. In urgent cases, it is indispensable to change all the linen once, or even twice, in the night.

Notwithstanding, therefore, that the whole course of phthisis is now and then unattended with pain, the distress from the several symptoms which I have recited is

so great—so subversive of all comfort—so entirely opposed to tranquillity, that it must be viewed as a disorder of great suffering.

In the case of strong hectic fever, copious sweating may be expected to follow the previous stage of burning skin, and is welcomed by the patient as giving a termination to it; but sweating also occurs as an attendant on rapid formation of tubercles, without hectic fever, or scarcely any that is very perceptible; and, as already remarked, I have often had occasion to consider its occurrence in chronic phthisis as a sign that the tubercular formation was going on rapidly.

The night sweats sometimes take place in such great excess, as quickly and seriously to increase the debility of the patient; and his mind is alarmed at the feeling that they are striking at the root of his powers. This symptom is always an indication that great irritation in the system exists; and which, in the present description, is to be referred to tubercles. When the perspirations are excessive, they are very watery, and have little or no effect on litmus paper.

The most remarkable example of copious sweating, both by day and night, which I ever saw—only occasionally accompanied by previous heat of skin, was in a lady nearly fifty years of age, who lost flesh daily and had some cough, with a rapid pulse and much debility. I apprehended that there were disseminated tubercles in the lungs, and feared for her safety; but she recovered, and has remained well till the present time, now several years. She derived remarkable benefit from the inhalation of iodine and conium, in conjunction with other treatment.

*Emaciation.*—In all cases of indisposition in which loss of flesh takes place, attention is awakened to it both on the part of the patient and his friends. When there is loss of appetite, and especially when there is at the same time notable indigestion, an explanation is at once offered why there should be some wasting; because there is defective nutrition: and when there is neither quickening of the patient's natural pulse, nor of his natural breathing, we do not turn with any suspicion to the lungs. But when the appetite is natural, or nearly so, and the digestive functions not apparently impaired, and



yet gradual wasting appears, with equal loss of strength; and when, moreover, there is cough, and shortness of breath on slight exertion, and greatly so on making any ascent, and the pulse at the same time has become one of frequency much beyond the patient's natural standard\*, we must view the loss of flesh as indicative of pulmonary disease. It may seem surprising that emaciation should sometimes proceed steadily and fearfully, even when abundant support of diet is taken, with an apparently able digestion. We have to reflect that irritation is set up; there is a hectic condition, even although it may not be shown by the presence of fever; the nervous system is much disturbed; an excitement is communicated to the circulation and to every function, certainly to the absorbent system generally; while perhaps there may be obstruction of the mesenteric glands, and the proper supply of chyle prevented admission to the common duct.

My object in the following concise narrative of cases, is to afford some illustration of the operation of the remote causes, presently to be stated. I shall mostly speak of them in the present tense, although they happened many years ago, for convenience of description; and under false initials, for greater privacy.

These cases therefore, and the account of the remote causes, must be read in connexion.

*Portraiture of Phthisis.—Females.*—Example 1. A. B. æt. 29, the mother of six children, living, and has had several miscarriages. Never could succeed in her anxious trials as a nurse. Six or seven years ago, was in danger, during her confinement, from phlegmasia dolens (white swelling); and also the other limb became affected, less severely, three years after. Consumption first shewed itself two years ago, when recovering from her confinement. She got better for a time, but in a few months relapsed, with a quick, short cough, having only frothy expectoration; loss of flesh and strength; so weak, that she required four days for a journey of sixty-four miles; but when she returned from Torquay, where she passed some months, she travelled seventy-four miles in one day, without particular difficulty. A bad lying-in led to her

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\* It is always desirable to know what may have been the patient's natural pulse in health.

present hopeless state of consumption. The pulse is from 120 to 130; animal heat, 100 to 103; much irritation of intestinal mucous membrane; cough of two kinds, one required for expectoration, the other is distressingly spasmodic. The sputum yellowish white, nodulated, of unpleasant odor, copious; hectic fever; night-sweats abundant; pectoriloquism; cough urgent. Chills and heats about seven vesp.; cold night perspirations; breathing quick on the least exertion. Has rapidly lost flesh and strength. Pectoriloquism. Under all these circumstances, the catamenia regular as to period, but deficient.

*Observation.*—Consumption had been in her family. There was the taint; and the case shews the certain unfavorable influence of debilitating causes to bring forth the disease; in this instance, miscarriages and child-bearing.

Ex. 2.—C. D. æt. 26. Had small pox severely seventeen months ago, and continued influenza a year ago; since which, constantly affected with a short cough and quickened breathing. Subject to palpitation; frequent attacks of chilliness, followed by heat and perspirations. Loses flesh, although appetite and digestion are almost natural. Has lost strength greatly in the last month.

*Obs.*—Small-pox severely first disordered and weakened the system; and next, violent influenza became the exciting cause of phthisis; and there has been no cause more fruitful than this epidemic to promote the disposition to consumption. How fallacious in this case the good appetite and digestion.

Ex. 3.—F. G. æt. 28. Has had four miscarriages, which weakened her constitution. Speaks of having been asthmatic some years past. Had severe influenza at the time of the epidemic. Four months ago, caught cold, and has never been well since. Has the full characters of phthisis. Pulse, 128; animal heat, 102°. Sputum, copious, yellowish white, cheesy.

*Obs.*—Same instruction as from Example 1. The regularity of the catamenia, although always a favorable circumstance, must not be relied upon as giving any assurance of a probable recovery. It is only a good indication *pro tanto*.

Ex. 4.—H. J. æt. 37. Pulse, 112; animal heat, 100°. Subject to inflammatory attacks of the chest for ten years past;

treated by leeches, never venesection; eighteen months ago, hæmoptysis, a tea-cupful of scarlet frothy blood, and colored expectoration for six weeks. Has very troublesome cough, and the breathing so short that she has great difficulty in ascending slowly one flight of stairs. After dinner, becomes very feverish; cold water sensations down the back; feet cold, while the hands burn. Towards five a. m., falls into violent perspirations universally; appetite and digestion weak. There are cavities in the lungs.

*Obs.*—Here we see much sign of congestion in the capillaries of the bronchial artery; and hectic fever is urgent.

*Ex. 5.*—J. K. æt 32. Married; no family; tall and slight. pulse, 84; animal heat, 99°. Ten years ago, contracted cough with hoarseness, so as wholly to lose her singing voice, which she has never regained, from London dissipation in the season. Has occasional pain of chest, and is always short-breathed on exertion; cough occasionally, and is very delicate; yet, by passing the winter in Italy, and taking great care, she keeps free from alarming symptoms.

*Obs.*—This is chronic consumption, an example in which life may be indefinitely prolonged, with care and the advantages of favorable climate.

*Ex. 6.*—L. M. æt. 38. Mother of seven children; has a well-formed chest, and, till this illness, was robust. Ten years ago, on coming from the West Indies, had a severe cough, recovered, and remained well till a year ago, when she took cold, and cough and hoarseness ensued, which have been permanent and increasing, with gradual loss of flesh and strength. In the first instance, very lowering treatment was used, as general and local bleeding, with low diet, and certainly with great injury. Now there is serious laryngeal disease, with also dangerous affection of the lungs. Cannot speak without difficulty, and, in swallowing, is almost threatened with suffocation; pulse, 90; animal heat, 100°. Appetite and digestion almost natural.

*Obs.*—A case of great suffering. The large loss of blood and the low diet, although not to be accused of producing the disease, were undoubtedly very injurious and highly improper.



Ex. 7.—N. O. æt. 23. Single lady; seven months ago, was exposed, in gazing at a fire from an open window, in the middle of the night, slightly clothed. Next day, affected with cold and cough, and from which has never since been free. In the last three months has lost flesh rapidly; pulse, 120; animal heat, 100°. Has hectic flushings and night perspirations. Sputum, yellowish white; not in much quantity. Great nausea. Phthisis has established itself.

*Obs.*—Here was a strong innate disposition to the disease, wanting only an exciting cause; further proved by the high degree of the animal heat.

Ex. 8.—P. Q. æt. 28. Married, no family; tall, slight; very pale; eyes and hair black. Three years ago had slight hæmoptysis, which has not recurred, although has occasionally colored sputum. Six months ago, had a pleurisy, for which 40 leeches were applied, with relief to the pain, but was much weakened by the treatment. At a later period, took cold at an archery meeting; was advised to go to Italy, but could not. Intestinal mucous membrane much disordered, so as to render the bowels very irritable; pulse quick; and animal heat 101. She could not breathe the air of the metropolis; but, with every advantage of frequent change, she got rapidly worse.

*Obs* —The hæmoptysis, so long ago, was the first warning of phthisis, and certainly one that should have been more attentively regarded. The constitution required the most tender and judicious care, and a climate such as Madeira should have been one of the first objects of solicitude.

Ex. 9.—R. S. A young lady of 17; fair, with blue eyes; evidently of strumous constitution. Highly nervous; pulse, 112 to 120; animal heat, 101° to 103°; illness began, with cough and pain of the side, three months ago; the pain removed by leeches. A month ago, chills and heats, with scarcely any night perspirations; but now they are urgent, with high hectic fever during the day; much cough, with creamy sputum, sometimes colored; faint and languid; coated red tongue; almost under constant nausea; urgent and painful diarrhœa. In this case of acute phthisis, instead of the usual buoyancy of hope, there was entire despair. I attribute this

very much to the irritable state of the stomach, which precluded the necessary support.

*Obs.*—I may further notice the acute nature of the disease in this case, as shewn in the quick pulse, and the high degree of the animal heat.

*Ex. 10.*—T. A. æt. 29. Married, has a child 18 months old. Was weakened by this confinement, and, very improperly, she suckled for a long time. Ill six months, with cough, shortness of breath, and all consumptive symptoms. She ascribes her attack to the epidemic influenza. Her chills occasionally amount to rigors, so that for some minutes her teeth chatter, and her fingers are cold, and almost black at the ends. Not much heat follows; at night, profuse perspiration. Is rapidly losing flesh and strength; cough especially severe at night, and in the first of the morning; the sputum ragged, with disagreeable odor, occasionally colored; pulse, from 108 to 120; animal heat, 101°. Takes nourishment abundantly, but seldom with appetite; spirits depressed, and she is despondent of recovery.

*Obs.*—Child-bearing, long nursing, and influenza, were sufficient causes to bring on phthisis in one predisposed, and teach an instructive lesson. The urgent rigors appear to indicate the nervous temperament.

*Ex. 11.*—S. M., aged twenty-four, of fair thin skin, blue eyes, of the nervous temperament, not having shewn any tendency to pulmonary complaint, was seized with inflammation of the bowels, from an accidental exposure to wet and cold. The symptoms were urgent; she was promptly bled from the arm, and the blood was allowed to flow till the pain of the abdomen should cease, and its tenderness much abate. This did not happen till twenty ounces of blood were lost. The treatment was successful; but she never recovered from the debility produced; three months after, consumption set in, under new circumstances of great mental anxiety, and a despondent conviction that she should never recover. Her mother had died from consumption.

*Obs.*—In this case of hereditary taint, the large bleeding, though apparently called for at the time, was at least unfortunate. Whenever we have any ground, however slight, to

suspect the tendency to consumption, we should husband the vital powers. The state of mind operated much here. It is truly adverse to the best exertions of the physician, always, when his patient is self-convinced of the impossibility of recovery—determined, as it were, to die!

*Males.*—Ex. 12.—A. B. æt 35, tall and slight; has been many years in a consumptive state, and had repeated attacks of hæmoptysis, never losing more than half a tea-cupful of blood, but always succeeded for about a week by colored sputa, appearing at one time as dark coagula, at another as scarlet and frothy expectoration with much air; then yellowish white in nodules; always a troublesome cough; pulse seldom more than 90; animal heat, 99° to 100°; appetite and digestion for the most part regular. This gentleman is truly a consumptive invalid, requiring the greatest care and management to keep off immediate danger.

*Obs.*—In this case, favorable climate, regulated diet, and the avoidance, as much as possible, of excitement, moral and physical, constitute the great regimenal plan of treatment.

Ex. 13.—C. D. æt. 27, very tall and thin; four months ago had pneumonia; treated with large bleedings, which were followed in a few weeks by the well-marked symptoms of phthisis. Twice has had influenza; in the first attack, cough and soreness of chest the chief symptoms; in the last, painful diarrhœa. Has now sufficient appetite, but very weak digestion; often cold on each side of the body, not followed by much heat, but has great perspirations at night. Cough urgent; sputum occasionally rusty and ragged; loses flesh and strength; pulse frequent; animal heat, 100° to 102°. Bowels disturbed with diarrhœa from slight causes; yet the patient has cheerful hopes of recovery.

*Obs.*—Although no management would in this case have opposed the inroad of consumption, it was unfortunate that the pneumonia was treated with such large venesections.

Ex. 14.—E. F. æt. 23, tall and slight; much subject to slight hæmoptysis, attended with soreness of the larynx; also to sore throat, and had enlarged tonsils. On one occasion was bled to twelve ounces and put on low diet; much weakened in consequence, and he soon appeared to be very consumptive.



Occasional irritable cough, with shortness of breath ; wasting ; hectic ; high state of the animal heat. After treatment, which removed the tendency to hæmoptysis, received material benefit from the inhalation of iodine and conium, from which also the tonsils became reduced to the natural size ; health returned, and he has remained well for years.

*Obs.*—A happy instance of the advantages from inhaling iodine and conium ; notwithstanding that the early symptoms of the case were attended with hæmoptysis, which I doubt not was dependent on tubercles.

*Ex. 15.*—A. D. æt. 23. A young man, in a very advanced stage of phthisis when I first saw him ; having combined with all the worst pulmonary symptoms the clear indications of scrofula : fair, thin skin ; high cheek bones ; thick lips, wide apart, the cervical glands on each side much enlarged ; remarkably hooked nails ; all the excretions very acid ; and in the progress of the illness there was such painful diarrhœa, the discharge often of blood and mucus, with tender abdomen, as to indicate intestinal ulceration. Eventually there was ascites ; and it need not be said that death ensued. In a post-mortem examination, ulcers were found in the ileum ; the liver was fatty ; the mesenteric glands were much enlarged, and there were large cavities in each lung.

*Obs.*—I introduce this case as a striking example of the combination of scrofula with phthisis. In the history of the case, I learnt that pneumonia, for which bleeding was freely used, was the immediate forerunner of the consumptive symptoms.

*Ex. 16.*—As an example of the decided, I may say specific, character of tubercular phthisis, I will mention the case of a gentleman, aged 35, who, a year previously to his being attacked with consumption, bore the stamp of general health and strength. He had a circular chest ; had not been subject to cough ; and had, at the period just mentioned, walked 45 miles in one day without inconvenience. He was subject to indigestion. He took cold from exposure outside a coach, and first suffered in the trachea. Consumption made a rapid progress. Two aunts had been the victims of this disease ; not nearer in family. This individual had resided in a healthy part of the

country, under circumstances the most favorable that could seem possible for health; having all the indulgences of life, and no cares.

Ex. 17.—A young man, of the same age as the last, in a humble walk of life; consumption not known in his family; had been laboring under the chronic form of the disease for five years; always subject to cough, except in the settled weather of summer. At last, taking a severe cold from accidental exposure at night, the full symptoms of tubercular phthisis set in, and the disease ran a rapid course to its fatal termination, cavities forming in a very short time. In this instance, great care had prolonged life for some years; and an unfortunate act of exposure to wet and cold led to the destructive activity of the slumbering disease.

Ex. 18.—C. M. *ætat* 24, tall and slight, but of active habits, and unfortunately addicted to dissipation in every way that could be mentioned, even to the drinking of ardent spirits, was exposed after a night's debauch to wet and cold, and was attacked with acute pleurisy. He was bled and blistered severely. He recovered slowly, and for a time reformed in his mode of living; but had not the firmness to continue prudence; and, relapsing into every error, became the subject and the victim of rapid phthisis.

*Obs.*—This gentleman was born to rank and wealth, and much was expected from him. Doubtless the low and destructive habit of drinking spirits much assisted the inroad of phthisis, which in this instance was entirely created, there being no hereditary disposition.

Ex. 19.—A young man, living in a small town, in a healthy part of the country, was attacked with chills and heats after taking a severe cold, and for four months had much hectic fever, short breathing, and wasting, without cough. Improved rather in the summer, but relapsed at the end of autumn, when phthisis made rapid progress. Consumption was not known in his family. Inquiring into the causes which brought on the disease, I could only learn that he was extremely anxious in an unprosperous business, which confined him within doors; and that he slept in a small bed-room; his lungs could not, in such circumstances, have healthy aeration.

Ex. 20.—A gentleman, aged 26 ; of highly scholastic mind, an ardent student, and engaged in the labor and anxiety of teaching, apparently of a structure fitted for the best health, was affected with influenza, the symptoms of which never quitted him. I never witnessed a cough in phthisis so severely spasmodic ; and, as a possible explanation, it was mentioned that asthma had prevailed much in his family.

His life was much prolonged by care and treatment ; but he fell a victim at last.

Ex. 21.—A young man, of 39, had been laboring under phthisis for a year and a half, the fatal symptoms taking place rapidly at last. In the commencement, he had been affected with shortness of breath, and some loss of flesh and strength, but without any cough or hectic fever ; yet he had night sweats. The appetite was good till towards the last. From the absence of cough for so long a period, his friends imagined he could not be in a consumption. It shews how much scrutiny is required.

*Remote Causes.*—Whatever the most tends to morbid sanguification, and to produce debility of the system, will favor the inroads of phthisis. For example, much loss of blood, whether artificially or from spontaneous hæmorrhage, by epistaxis, menorrhagia, or from the rectum long-continued. In women, too frequent child-bearing, bad miscarriages, inveterate leucorrhœa, long-continued fatigue of body, prolonged anxiety of mind, the depressing passions, and either source of evil, in proportion to privations of comforts and unfavorable exposure ; in a word, whatever causes tend greatly to reduce the vital powers ; will serve as a remote cause for the production of this disease. This lamentable disorder may, in the greatest number of instances, be created de novo, without any known influence of hereditary taint ; and no causes can be more influential than the combined operation of bad air, insufficient ventilation of apartments, want of due exposure to the sun, deficient exercise, too slight clothing ; wet, and more particularly if also cold place of residence, with clay or other soil very retentive of wet and moisture ; bad food of innutritious quality and scanty quantity ; the miseries of poverty ! But, even with all the luxuries and conveniences which



wealth can bestow, mismanagement in the nursery may engender scrofula and consumption. I have known some melancholy examples of this kind; the children always being kept very hot, both by night and day, and never permitted to be in the open air, except on a chosen fine day. In one family, I saw three children thus sacrificed; two having scrofulous enlargement of joints, and suppuration of glands of the neck; and the third was the victim of phthisis pulmonalis distinctly. That climate which is the most variable, is more unfavorable than either extreme of heat or cold. Hence consumption is more prevalent in Great Britain than in Russia.

In the same climate, in any part of the world, healthy localities, and the very opposite, malaria, may be found. Especial place of residence, therefore, should always be well considered.

*Careless exposure to wet and cold*, especially to east winds and a cold fog, readily induces catarrh and further bad consequences, according to predisposition.

*Many disorders* tend to call a predisposition to phthisis into activity; as, for example, measles and scarlatina; the first particularly; but both by the disorder of the mucous membrane of the fauces and bronchi which they produce. Bronchitis and pneumonia, occurring to those predisposed to phthisis, are frequently introductory to it. Immense numbers fell victims to the disease, after the destructive reign of the great epidemic influenza\*.

*Intemperance*, and especially in the abuse (and rarely are they admissible with utility—any proper use is very rare) of spirituous liquors, by deteriorating the blood, and causing chronic inflammation, and its slow consequences, of the stomach and the liver, serves to aggravate very materially any predisposition to phthisis, and may even be the foundation for the creation of the disease.

In proportion as the remote causes exist in an intense degree, they become *exciting* to the onset of phthisis.

A remote cause, of great importance to be considered, is

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\* Influenza, which is an expression for epidemic, is the name now generally given, but very improperly, to every severe catarrh affecting individuals.

the *hereditary transmission, or influence*. The existence of a taint is always matter of more or less anxious apprehension in the offspring of a consumptive parent; chiefly, according to my observation, if the mother, but especially if both father and mother, should have had the disease. The terms used to signify this hereditary tendency are commonly, predisposition or disposition; but they do not convey any definite idea. Now, if I may be permitted the *hypothesis* of a tuberculous virus in the blood, existing in different degrees of intensity, and say that, as in the instance of gout, *nomine mutato* it may have been transmitted from either parent, or be acquired *de novo*, I at least make myself intelligible. The occasional latency of the hereditary germ is not of more difficult explanation than other examples of morbid impregnation of the blood. Even hydrophobia will exist in the system for many months before shewing any of its dreadful power. After the extirpation of a cancerous mamma—two, or three, or more years of tolerable health may be enjoyed, and then the disease break out again.

*Hereditary disease*, or more properly the transmission from the parent of the elements or germ of disease, is not attended with more difficulty of comprehension than the stamp of personal resemblance; which is often such a truly speaking evidence. We can only refer, I believe, to the impregnated ovum, and next to the physiological condition of the fœtus in utero. Let it then be admitted that some diseases are derived hereditarily, and yet may also be wholly acquired. In this manner, and in no other, we meet the facts which occur to our observation every day. Happily, the germ of disease, or taint of blood, whichever term may be chosen, may be so weak, or circumstances of vigorous constitution may be so favorable, that no disease shall ever take place. I mean, it does not necessarily follow, that the offspring of the consumptive shall become affected with the disease, even if tainted.

The mysteries and curiosities of diseased actions would furnish a volume.

M. Lugol, who considers tubercular phthisis to be truly a scrofulous disease, extends the consideration of hereditary cause far beyond any other author. He forcibly observes, "There is no fact in the whole range of pathology, in which the relation between the cause and effect has been more satisfactorily made

out, than in that of the intimate connexion between the health of the parent and the child." The following declaration is very strong, and on many occasions demands the most serious consideration. "Marriage is the common cause of the propagation of scrofulous diseases."

He pronounces tubercles to be hereditary. He says, "Whenever they exist in one of the ascending parents, the descendants are more or less under the influence of tubercular diathesis, even before the state of the œconomy has revealed itself by any external symptoms. He notices the tendency to relapse in the consumptive, by observing, that "in nearly every case a fresh crop of tubercles will be generated in the pulmonary tissue." Undoubtedly he strains the hereditary influence, as a cause, too far; and considers general agencies too little.

In some cases, there is family disposition to the disease, two or more children dying from it; and, in such cases, very probably one of the parents has been a preceding victim; but this is not invariable. Neither of the parents may have been affected. But I have known where one, or perhaps both parents, have died from the disease many years after the children have been cut off by it.

Sir James Clarke expatiates on the tuberculous cachexia, as dependent on dyspepsia and morbid assimilation and nutrition; but this is only a general condition, on which any other disorder may be grafted, and no precise idea is conveyed by it towards the explanation of a specific disease.

It serves equally for gout as for consumption. Nor is tubercular phthisis so necessarily preceded by dyspepsia as some contend for. Thousands have indigestion in its most aggravated forms, without any sign of consumption; and not unfrequently we see phthisis proceeding through a long march to its fatal termination, without any of the troublesome symptoms of dyspepsia, till towards the last, when extreme debility prevails. They do not stand in the necessary relation of cause and effect. I altogether protest against the idea of tubercles being formed in the process of sanguification, travelling the round of circulation, and then deposited in the lungs, or other parts.



*Age.*—I do not purpose entering into any extensive statistical views ; on which Dr. Good and Sir James Clark, still later Louis, may be consulted. The period of life fixed upon by Hippocrates and other Greek authorities for the greatest ravage of consumption, was between 15 and 35 ; and this view has always appeared to me nearest to the truth. Dr. Good, after enumerating different tables, came to the conclusion that “ the age from 15 to 30 is most exempt from consumption, while that above 30, or even 40, to the close of life, is most distinguished by fatality from this disease, though the period below 15 is also seriously invaded by it.”

Dr. Hasse, of the Leipsic Hospital, observes, “ In children, the lungs are less prone to become the predominant seat of tubercles than other parts ; for example, the lymphatic glands and the bones ; that the lungs of scrofulous children who have died of some other maladies are often found to contain tubercles in the shape of greyish, very transparent, semi-fluid granules ; not, as in the adult, chiefly confined to the apex, but occurring equally to the inferior lobes. The bronchial glands are at the same time highly tuberculous.

Dr. Hennis Green (Med. and Chir. Tr.) states, that “ tuberculous matter is more extensively and more rapidly formed in the child than in the adult. Hence children often sink under the disease before it has arrived at its more advanced stage. Cavities appear to be found more frequently situated in the lower lobes of the lung than the upper, especially under five years of age. The bronchial glands are implicated in a great majority of cases of infantile consumption : in 100 out of 112 cases. In a few of these cases only were the glands sufficiently enlarged to give rise to symptoms through their mechanical effects, or by communicating with caverns in the lungs or bronchi. To such cases only should the term bronchial phthisis be applied. Thus understood, this form of phthisis is peculiar to children, but is not so common an occurrence as has been supposed.”

The great prevalence of tuberculous disease in very early life is clearly demonstrated, and forms a subject of the most serious consideration.

There have been several examples afforded of pulmonary tubercles in the fœtal state.

*Site of the disease.*—Louis has found that tubercles appear to affect a kind of preference for the apices of the lungs. He says, “I have indeed often found the entire upper lobe studded with cavities transformed into grey or tuberculous matter, and throughout impermeable to air, while parts of the lower lobe on the same level were but rarely excavated, and constantly contained some amount of tissue capable of sustaining respiration. He found also a greater frequency of the development of tubercles on the left than on the right side; in the proportion of 28 to 10.”

Is this superior frequency of tubercles in the upper lobes due to their greater exposure?—to their having more of constant communication with the atmosphere? The formation of tubercles must be closely associated with aeration. Hence the influence of change of air; and the highly deleterious one of the air of crowded apartments, and especially in bad, unwholesome situations. In quiet respiration, the lower bronchi perhaps scarcely act. Dr. Boyd informs me, “I have frequently found, in new-born children, when the lungs were not fully distended, that the upper lobes, especially the anterior thin portion, was the part most distended with air.”

*Sex.*—Bayle was of opinion that consumption destroys about the same number of individuals belonging to each sex. Louis thinks differently, and says, “Of 123 cases analysed in the 1st edition of this work, and collected in wards containing 48 beds, equally divided between individuals of both sexes, 70 were furnished by females, and 57 by males.” Conclusively, he believes that phthisis is more frequent in females than males.

*Station of life, and occupation.*—This consideration appears to me very relative to that of the disease being hereditary, or generated de novo. I express it thus strongly by way of distinction, having already examined the general question. If there be in the constitution a tendency to any particular disease, privation of the comforts of life, distress of mind, and all offences against hygienic rules, must be a cause of promoting its development, and of phthisis in common with other diseases; but probably not more, with the exception of con-

finement in bad air, an unfavorable influence much increased by poor diet, and mental depression. Dr. Baly, in his valuable statistical paper (Med. Ch. Tr. vol. 28), speaking of the Millbank Prison, states thus: "Comparing the large number of these prisoners in whom tubercular disease of the lungs first showed itself while they were in the Penitentiary, with the small number who were affected with it at the time of their reception, we cannot, I think, hesitate to admit that imprisonment exerted here a very powerful influence in causing the development of the disease."

I have every reason to believe that consumption is a very rare disease amongst Gipsies, who live almost entirely in the open air; and, being very unmindful of the *meum* and *tuum*, seldom, probably, suffer from the want of nourishing and even good food.

*All occupations which are sedentary*, and in proportion as numbers may be collected in the same apartment, especially if not well ventilated, must greatly tend to promote a disposition to phthisis, whether the complaint be idiopathic or hereditary, and in proportion to the errors in living; but there are certain employments which have a peculiarly deleterious influence, as remarked by Clark and others: "Stone masons, miners, coal heavers, flax dressers, brass and steel polishers, metal grinders, needle pointers, and many others who are exposed during their labour to the inhalation of an atmosphere charged with irritating particles."

It is unquestionable that in this category will be found a large exciting cause of phthisis, where the tendency exists; but for the most part the bronchial membrane and the other tissues of the lungs are the parts to take on disease, without the tuberculous formation. From hence indeed much other disease of the lungs of a fatal character arises, besides tubercles. Dr. Addison, in a paper in the Oct. No. of Guy's Hospital Reports, has called our attention usefully to this fact. Andral observes: "I think that the formation of tubercles in the lungs has been too generally regarded as the principal phenomenon in the morbid alterations of these organs; as if all the other changes of texture were of subsequent formation, and of secondary importance."

*Temperament.*—Louis is induced to think that persons of the



lymphatic temperament are the most prone to phthisis. I do not consider that our ideas on the subject of temperament are very philosophical and correct. It demands elucidation. In the present instance, I conceive that the term lymphatic applies to those who are more or less delicate in their general formation: in the skin, the muscles, the blood vessels, and nerves; and that they are not very liable to true active inflammation.

*Proximate Cause, and Theory of the Symptoms.*—Tubercles in the lungs being the acknowledged true cause of phthisis pulmonalis, the consideration of their intimate nature, and of the pathological results which they produce, must engage a lengthened attention. The admirable researches of Laennec led to a more correct pathology of phthisis than had previously existed. Bayle, a French author of great celebrity on this disease, considered that there were several species of it. Laennec first, and all the writers since, have admitted only one, the tubercular.

I adopt the opinion that tubercular phthisis is a specific blood disease, that there exists a tuberculous condition of the blood, and which, in the strongly marked examples of hereditary phthisis, is born with the individual as a germ. We cannot demonstrate this by chemical analysis; because the science of chemistry does not in any case of morbid impregnation, whatever be the poison, enable us to make the detection. In some instances, the taint may be latent for many years. In others, as in the examples of tubercles being found in the fœtus in utero, or in the youngest infants, the effects are immediate. Of the existence of tubercles in the fœtus, we find two examples related by Mr. Langstaff, one by Hussen, two by Ohler, and one by Chaussier. I examined the body of an infant which died in a state of extreme emaciation at the age of four months, the mother having been in the last stage of tubercular phthisis when she gave birth to it: I never witnessed so remarkable and extensive a display of tubercles, both miliary and of a larger size, the former semi-transparent, the latter grey in colour. The lungs on each side, both upper and lower lobes, the liver, the spleen, the mesentery, and peri-

toneum, were universally studded with tubercles. I cannot relate a more striking instance than this of the tubercular disease in its highest activity, or more favourable to my hypothesis, that a specific state of the blood, and which I call the tubercular, is the proximate cause of the formation of tubercles—the proximate cause of pulmonary consumption.

If I make use of the term virus to denote the tuberculous condition of the blood, it is only for convenience; and it may be objected that I ought to shew the fact of its being communicable, by inoculation\*, so as to produce phthisis.

Experiments of this nature must be very equivocal. The dog is the animal usually chosen, but would not be the most fit one for the present test, as he is not prone to consumption.

Andral, in his "Treatise on Pathological Anatomy," after noticing the fact of tubercles being found in various animals, carnivorous and herbivorous, adds, that, according to his knowledge, they have never been discovered in the canine species; and he puts these questions—"Is this because the dog lives in freedom in a climate that agrees with him, and where he can enjoy exercise proportioned to his strength? And is it because the lion happens to be in opposite circumstances that he dies affected with tubercles? Observe, that most of the animals in which we have just now proved the existence of this affection, are either transported from a hot to a cold climate, where they are deprived of liberty and exercise (as is the case with monkeys and parrots), or confined in damp places without sun and almost without air (cows, pigs, house-rabbits), or exposed either to continual alternations of cold and heat, or to constrained and violent exercise, as the horse."

The term is very commonly used, of DEPOSIT of tubercles

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\* I made two experiments with dogs, inserting, in a wound purposely made in the thigh, tubercular matter fresh from a tubercular cavity; and the health of the animals was watched for three or four months. It did not appear to be disturbed, except that the dog, in whose leg the largest quantity of matter was introduced, was languid and without appetite for two days. Mr. Phillips, in his recent valuable work on Serofula, speaks (p. 145) of many experiments of the inoculation of animals, and even the human subject, with serofulous matter, no disease ensuing.

in the lungs, or elsewhere. To this I object; for it implies that the tuberculous matter is precipitated from the circulating blood; whereas, I conceive that a tubercle is formed by certain secreting vessels supplying the identical part where the tubercle is found; that, instead of secreting healthy mucus, or other tissue, as it may be, they form tubercles.

In every stage of tubercle, the surrounding pulmonary tissue may wear a healthy appearance. We are sure that the cancerous virus exists in the blood. How little may serve to taint the mass. How very minute a portion of variolous virus is capable of producing, in certain constitutions, a confluent eruption on the skin.

The tubercular virus may exist in different degrees of intensity in different persons; in one individual, leading to slight indications of consumption, what is called a tendency to it; in a second subject, to the disease well-marked, in the chronic form; in a third, the acute disease, running a most rapid course.

Has the tubercular cell been found by aid of the microscope in the blood in the general circulation?—I believe not. Is this delicate instrument to be perfectly relied upon to decide this point?—The most frequent situations of tubercle appear to be the interior of the air cell, and the cellular tissue of the lungs; it is also found in the bronchial glands; and in the bronchi themselves, as an infiltration. I believe that the miliary semi-transparent tubercle, widely disseminated or closely aggregated, will be mostly found in very young consumptive persons; the grey kind, at succeeding different ages; the yellowish white, mostly, but not at all exclusively, in the older subjects.

Dr. Carswell, in his interesting article on tubercle, defines it as follows:—"Tuberculous matter is a pale yellow, or yellowish grey, opaque, unorganised substance; the form, consistence, and composition of which vary with the nature of the part in which it is formed, and the period at which it is examined." He adds, "the prevailing opinion among pathologists is, that the seat of tuberculous matter is the cellular tissue of organs; that it may, however, be formed on secreting surfaces, as in the mucous follicles of the intestines, perhaps in the air-cells and bronchi, the surface of the pleura,



peritoneum, and likewise in false membranes, or accidental and new products, and in the blood itself." He states it "to be very rare that tuberculous matter can be detected in the blood contained within its proper vessels; but that it is frequently met with in this fluid in the vessels of the spleen." He observes: "As a morbid constituent of the blood, we can take no cognisance of the existence of tuberculous matter, otherwise than through the medium of the secretions, or until this fluid has ceased to circulate. Then it is seen to separate from the other constituents, the serum, fibrine, and colouring matter of the blood, and is distinguished by the peculiarity of its physical characters." He is of opinion that the external configuration or form of tuberculous matter depends on the particular organ, tissue, and situation in which it is produced.

Bayle, Laennec, and Louis, are the chief foreign pathologists to whose opinions I shall principally and briefly refer.

Bayle had the merit of throwing much new light on the nature of tubercular phthisis, but yet embarrassed the subject by introducing too many varieties of the disease. The granular tubercles, or miliary granulations, were first described by him, and, as Laennec observes, were erroneously considered as different from tubercles.

Laennec himself treated of tubercles under two principal forms—that of insulated bodies, and interstitial injection or infiltration; the insulated tubercles presenting four chief varieties; the miliary, crude, granular, and encysted; the interstitial injection offering three varieties, the irregular, the grey, and the yellow. He adds: "Whatever be the form under which the tuberculous matter is developed, it presents at first the appearance of a grey semi-transparent substance, which gradually becomes yellow, opaque, and very dense."

Andral appears to have entertained views of the nature of tubercle peculiar to himself. He observes: "In some parts we observe, on the surface of the lobules, or in their substance only, some white very small points, almost microscopic; in other places they are multiplied and united; and, lastly, it sometimes happens that entire lobules seem formed merely of these points crowded together. Then the result is

a large whitish mass, called *tubercle*, which is nothing but a lobule successively attacked and occupied by white points. He speaks of the tuberculous matter as being a simple product of secretion, and appearing to be primarily in a liquid state, then becomes solid, as if by a sort of crystallisation, according as its more fluid particles become absorbed." More than any other author, with the exception of Broussais, he considers tubercle to be of inflammatory origin.

Louis, commenting on the artificial divisions of Bayle, concurs with Laennec in his general views, and in the opinion that there exists but one species of phthisis, the tuberculous. He describes tubercles "as tumors of a dull, yellowish-white aspect, of variable consistence, which soften after a certain time, empty themselves into the bronchial tubes, and give rise to excavations more or less considerable." The semi-transparent granulations, and grey matter existing either in the form of granulations, or in irregular masses, he does not designate as tuberculous, until it has passed into the yellowish-white condition. He observes: "Thus, whether the grey matter assumed the form of granulations or of irregular masses, more or less considerable, it became sooner or later transformed into tubercles\*."

I am familiar with the following several forms of tubercle:—

First. The minute (miliary) granulation, appearing either semi-transparent, or almost wholly transparent, always more or less in clusters, lying immediately under the pleura, and in different parts of the parenchymatous structure.

2ndly. Granulations of rather larger size than the last, opaque, of a grey colour, usually very abundant, and disseminated throughout the lungs, and much disposed to aggregate in clusters.

Both of these kinds of tubercle often become aggregated into close masses, and the second especially; the grey miliary

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\* In opposition to this opinion, I consider that all the different forms of this foreign matter are equally to be considered tuberculous. In the last twelve examples of tuberculated lungs which I have examined at the Marylebone Infirmary, I have found the grey granular tubercles alone pervading the organ, chiefly in the upper lobes, but sometimes in the lower also.

so coalesce, that, from this cause and from the albuminous part of their composition becoming more dense, they acquire a yellowish-white appearance. The miliary, which I have first described, sometimes passes into this, the second.

3rdly. The yellowish fibrinous-looking tubercle, of a size varying from a seed of pearl-barley to a small almond, variously located in and about the lung, usually not so numerous as the other kind, sometimes even solitary.

4thly. Infiltration of softened tuberculous matter in the air cells of the lung, and in the bronchial tubes.

The influence of situation on the external character of the tubercle is shown in the following example. In the lung of a child that died from phthisis, at six years of age, the size of the tubercles did not exceed that of a pin's head; and the principal formation of the tuberculous matter was in the neighbourhood of the trachea and bronchi, in oval masses, exceeding an inch in length, and firm in consistence, with here and there a tendency to soften in the centre.

It is very common to meet with distinct small masses of black substance, which in a hasty view may be mistaken for tubercles; and especially when viewed in a preparation in spirits. Now and then it really happens that the granular tubercles are coated with this black substance (charcoal), and even occasionally have a bright shining appearance.

To this form and appearance of tubercles, Bayle, I presume, alluded, when speaking of "miliary, shining, transparent granulations, sometimes marked with brilliant black points or lines."

The carbonaceous matter of the lungs has recently been the subject of especial investigation by M. Guillot, at the Hospitals for aged men and women at Paris. He comes to the conclusion, "that this black deposit is united with the tuberculous matter in very remarkable modifications, and that the changes produced in the quality of this matter are such, that if the tubercular malady be not cured, yet its progress has at least been so much abated, that such individuals have lived on, and sometimes for a very long time. He determined that this deposit was for the most part quite independent of any inhalation of carbon from without. This opinion of the tuber-



culous disease being arrested by the black deposit is a very important one, and requires an especial notice. Andral remarks, "I have frequently observed this same black pulmonary induration in persons who have not reached their 30th year. However, I may safely assert, that it is in old persons that chronic pneumonia is most frequently accompanied with this black tinge, as if the disposition to the formation of tubercles, so marked in youth, was subsequently replaced by a disposition to the secretion of melanic matter.

I believe that the secretion of carbonate of lime, alone, or with the addition of charcoal, may modify the tuberculous formation; but I am not sanguine in expecting that the latter will commonly be thus arrested; yet, as an apparent example of the conversion of the formation of tubercle into the secretion of the lime compound, I will offer the account of a post-mortem examination with which I am just made acquainted. "A lady, aged 35, died very suddenly, in half-an-hour after the seizure, which was that of faintness, and universal coldness, being previously in good health and spirits, and having only recently breakfasted; the heart was found to be twice its natural size, quite empty, while the lungs were full of blood. The lungs on one side were adhering to the ribs. There were signs of tubercular disease, but the tubercles had healed, and were changed into chalky concretions."

I was well acquainted with this individual. She was always thin, but was considered to be enjoying general good health. I cannot learn that she ever complained of symptoms which were indicative of disorder either of the heart or lungs.

According to M. Barruel, melanosis is chiefly composed of a deposit of the colouring matter of the blood, combined with some fibrine, both in a particular state. There are also found in it three distinct fatty substances: the first soluble in alcohol, and not crystallizable; the third liquid at the ordinary temperature. M. Barruel has besides discovered in it a good deal of phosphate of lime and iron\*.

From a review of the whole of this question, I am led to

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\* For much information and many references on the subject, see Laennec (by Forbes), p. 388, &c.

think that the black pigment—the melanotic matter—is due to two sources: the inhalation of carbon from without; the deposit from venous blood in the lungs, or elsewhere, surcharged with carbon which does not meet with sufficient oxygen for its conversion into carbonic acid. As the same deposit is found in different tissues in various parts of the body, may the same theory serve to explain it—want of healthy oxidation of the circulating blood?

After the statement of Louis, especially as to the coexistence of the different kinds of tubercle in the same lung, and the declaration of Laennec, that sooner or later a transformation takes place, it has surprised me to find how frequently one description of tubercle only possesses the lung. I have just now spoken of the prevalence of the examples of the grey granular tubercle which I met with at the Marylebone Infirmary\*. I have also seen, in several instances, the semi-transparent miliary, unattended by another kind. The third kind I have frequently found without the presence of others.

In support of my observation, that there is a much greater disposition in tubercular formation to assume distinct groups in the lungs than we should be led to suppose from the statements of Laennec and Louis, I may refer the reader to the cases so fully detailed by Bayle, in his *Researches on Phthisis*. I consider that much further inquiry is necessary into the morbid anatomy of tubercle, before we can claim an exact knowledge of the subject; and I conceive that it would be interesting to study the connection which the different kinds of pulmonary tubercle may possibly be found to have maintained with the symptoms in the respective cases; namely, whether the character of the phthisical symptoms may have been modified or not; the disease been relatively rapid or slow in its progress, or in any way materially influenced by the particular kind of tubercle infesting the lungs? It is not to be supposed that during life we can discriminate on this point, or even form a satisfactory conjecture as to the

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\* I have to acknowledge my great obligation to Dr. Boyd, for the ready and kind manner in which he has rendered me opportunities of pursuing my inquiry into the morbid anatomy of the lungs.

particular kind of tubercle which may have formed in the lung, by means of auscultation or percussion. Nor do I imagine that we could improve our treatment of the case, even if we could possess this diagnosis of the varieties of tubercle in the living subject. But such conclusions ought not to check our zeal in improving our knowledge of every circumstance of the disease; for it is possible that, by an attentive study of the case, in connexion with the appearances exhibited in the post-mortem examination, we may be conducted by the symptoms to a more faithful diagnosis in our future practice, to a more accurate treatment, and, at all events, to a more scientific acquaintance with the disease.

I have now to inquire into the nature of tubercle, as revealed to us by means of chemical experiments, of the microscope, and the labours of the dissecting-room. I have made very numerous chemical examinations of tubercle, and have found that all the varieties present one general result, of showing them to be composed always of albumen, occasionally with slight evidence of fibrine, always of lime in abundant proportion, and in varying degrees of combination with carbonic and phosphoric acids, more rarely with muriatic; and in some specimens I have detected the slight presence of magnesia.

The more hard the tubercle, the larger proportion of phosphate of lime does it contain; and when of less firmness, the proportion is greater of the carbonate, and the albumen is not so dense. I have not discovered any gelatine in tubercle. In proportion as it may possess transparency, the albumen which it contains is thinner, and of the least specific gravity; and, on the contrary, when opaque, it is more dense, possessing more of the albuminous principle and less water. Hence, then, the external characters of tubercle depend chiefly on its chemical composition, and on the particular tissue in which it is formed.

I examined a pearly-looking tubercle, commonly called the crude-yellow one, found under the peritoneal covering of the liver, about the size of half an almond, and of moderate firmness. It consisted of albumen, carbonate of lime, and a small proportion of phosphate. On the surface and through-



out the substance of the liver and spleen, there were harder tubercles, varying from the size of hemp-seed to that of a pea; and there were also small tubercles on the diaphragm and peritoneum. Not one was found in the lungs; but at the apex of the right lung there was a small cavity, capable of holding a pea, from which evidently a tubercle had been removed after softening. There were pleuritic adhesions on both sides. The lower lobe of the right lung was much congested, and its structure somewhat softened. In the history of this case (at the Marylebone Infirmary), it is stated that the patient, aged sixty-four, "had little or no symptom of pulmonary disease, and appeared to sink from debility."

I have met with many examples of calculous concretion, varying in size from a hemp-seed to that of a kidney-bean, in tuberculated lungs, and chiefly when the tubercles have been of the grey granular kind, opaque, and of the appearance of very fine threads, matted together. I have occasionally found the calculus firmly encysted, without having produced any signs of irritation in the surrounding tissue. Sometimes the phosphate of lime has predominated in the calculus, at others the carbonate.

I attend a lady who has during the last seven years expectorated from time to time, and never been free for more than six months, small pieces of calculus, which I found to consist wholly of carbonate of lime and animal matter. A few days before she gets rid of them, she has a troublesome cough, with quicker respiration than usual, and pricking sensations at the pit of the stomach.

I knew another lady who has occasionally coughed up calculi during the last thirty years. I was satisfied that in neither of these instances did the calculi come from the tonsils. It would appear, therefore, that calculi are occasionally formed in the lungs without the accompaniment of tubercles, and without producing serious irritation in the lungs. In one case under my care, this calculous formation, after prevailing for many years without creating any alarming symptom, was superseded by the formation of tubercles, producing fatal phthisis.

It may interest some of my readers that I should present

some examples of the *chemical method* employed in my examination of tubercles.

Ex. 1.—Yellowish-white crude tubercles, taken from the same lung in which a calculus was found about the size of a pea, and which consisted almost wholly of carbonate of lime, there being only a trace of phosphate, and neither potash nor magnesia present. These tubercles were digested in distilled water, at a gentle heat, for several hours. To a portion of this liquid filtered oxalate of ammonia was added, and a slightly milky appearance was produced, indicating the presence of lime. A solution of nitrate of silver caused a slight white precipitate, perfectly soluble in ammonia, which in two or three hours darkened by exposure to light, and by transmitted light appeared, after long standing, as dark as port wine become tawny. Hence was shown the presence of muriatic acid. By the addition of bicarbonate of ammonia and the phosphate of soda, at first a milkiness appeared, which afterwards resolved itself into the well-known granular appearance, showing the triple phosphate, and thereby indicating the slight presence of magnesia. The same tubercle which had been acted on by water was digested in muriatic acid diluted with ten proportions of water. By oxalate of ammonia scarcely any disturbance. From pure ammonia a considerable precipitate, showing the phosphate to be the chief salt.

The watery solution was heated, and as it approached the boiling point coagulation took place, the evidence of albumen.

To a portion of the filtered liquor employed in the last process a solution was added, with a view to the discovery of gelatine; but, this test not being conclusive, another portion of the solution was concentrated by applying very gentle heat, and, no gelatinisation appearing, it was inferred that gelatine was absent.

The residual matter, after the use of the several reagents as described, when dried, had a fibrous appearance, and might be supposed to be fibrine.

Ex. 2.—A solid tubercle, yellowish-white in color, was treated in a similar manner, and gave as the result the evidence of phosphate, carbonate, and muriate of lime, and most

of the latter. The contents of a cavity obtained from the same lung furnished similar results, but in smaller proportion of precipitate, there being more water present in the material.

Ex. 3.—A firmer tubercle than the last yielded phosphate of lime in larger proportion than the other combinations of lime.

In whatever kind of tubercle that was chosen for a trial of the action of the liquor potassæ, a pulpy mass was produced, not a solution of the material, although the digestion was assisted by long-continued gentle heat.

The black carbonaceous matter of the lungs, whether found hard or soft, was consumed before the flame of the spirit-lamp, and was evidently charcoal. It was not acted upon by water, acids, or alkali.

I have greatly extended my examination of the composition of tubercle, but with no difference in the general results from the statement I have given.

Gerber, in his "Elements of General Anatomy," has several divisions of tubercles, which are justly considered exceptionable by his translator, Mr. Gulliver.

#### *Examination by the Microscope.*

Assisted very kindly by a friend, most experienced and skilful in the use of the microscope, I have made numerous examinations of tubercle with his superior instrument; and the results which we obtained may be summed up in the following description.

Tubercle, when examined microscopically, is found to consist of an assemblage of corpuscles of variable size and shape, sometimes containing granular matter of exceedingly minute granules; and in some of the smaller kinds of tubercles, as in the grey miliary, besides the constituents above mentioned, there are cells of a more regular form and size, and larger than the corpuscles. In the crude or firm tubercles, the corpuscles are closely packed together, and the granular matter scanty; whereas, on the contrary, in the larger and softer kinds, the corpuscles are easily separable, and the granular matter in great abundance. The form of the corpuscles is for the most part globular or oval; but in the softened tubercles they are very irregular as to their shape, being often



elongated and fusiform. They vary in diameter from about 1-3000th to 1-2000th of an inch. The granules, also, are very variable as to their size. Mixed with them are found myriads of minute globular bodies, scarcely capable of being measured by our ordinary micrometers, being much less in diameter than 1-25,000th of an inch. These are most abundant in the soft tubercles, which, in fact, appear to consist of little or nothing else but granules and broken-down corpuscles. The cells are more constant in size and shape than any other constituents, and average in diameter about 1-1500th of an inch. Nuclei are sometimes apparent; but as the tubercle increases in size, the cells become disintegrated, and finally disappear.

We examined the lungs of a child who died from consumption at the age of six years.

The principal deposit of tuberculous matter was found in the neighbourhood of the trachea and bronchi, and in oval masses sometimes more than an inch in length, firm in consistence, and here and there with a tendency to soften in the centre. In the lungs, the tubercles were all scanty and very soft, the semi-fluid being of a dirty yellow color. Many, not much larger than the head of a pin, were seen quite soft. Under the microscope, both the kinds of tubercle presented the same structure; viz. cells full of granules. The pulmonary tissue in the neighbourhood of the tubercles was healthy.

The following is the only very good example I have seen of the black shining-looking tubercles spoken of by Bayle. The lung exhibited throughout, closely set together, black shining granulations, of cartilaginous hardness, and here and there, in smaller proportion, the grey miliary granulations. In the midst of the black granulations there was a small cavity, containing a rather thin puriform fluid, which, examined under the microscope, represented cells of irregular form, appearing to be invested with the black granular matter. The black matter coating the tubercles was hard and gritty, having the appearance of charcoal, which I afterwards ascertained to be this substance. The tuberculous matter exhibited cells of irregular form, containing dark nuclei and some detached nucleous matter which had escaped the cells. The subject of the disease in this case was a young man.

The yellowish-white tubercle from the liver of the rabbit, which I examined at the same time, exhibited the usual appearance of cells and granules as found in the human subject.

Mr. Gulliver offers the following observations on tubercle. (Appendix to Gerber.)

“It would seem, then, that the following parts most commonly compose the minute texture of tubercle. They may either occur separately, or be mixed together in various proportions. The granular matter is seldom or never absent.

“1. *Granular Matter*.—This is composed of infinitely minute particles, as seen in the matrix containing the corpuscles and cells in figs. 252—255; and of minute spherules fig. 271, remarkably variable in magnitude, generally from 1-30,000th to 1-80,000th of an inch in diameter. Granular matter is the most prevalent ingredient of tubercle, almost always mixed with the other constituents, and frequently forming the entire mass of caseous tubercle.

“2. *Corpuscles*—These are generally more or less globular or oval (figs. 252—254), but often either very irregular in form, or shapeless (fig. 270). They usually vary from 1-6000th to 1-2000th of an inch in diameter. They are probably imperfect, degenerating, or blighted cells and nuclei. The corpuscles may be seen in crude or mature tuberculous matter; also, commonly, in the smallest caseous tubercles, especially of the serous membranes. The granular matter preponderates as the tuberculous mass increases.

“3. *Cells*.—The most common size of these is from 1-26000th to 1-1140th of an inch in diameter. They may be frequently recognised in greyish miliary tubercles, either of the lungs or serous membranes; but, as the tubercles increase in magnitude, the well-marked and complete cells (fig. 255) disappear, probably degenerating into the corpuscles and granular matter above-mentioned.

“From the preceding observations it appears highly probable that tubercle, like the most highly organised tissues, has its origin in cells, but generally mixed at a very early period with granular matter. Tubercle, however, seems to differ essentially from the matter of plastic exudations, inasmuch as the cells of the latter not only grow into a higher organisation,

but increase also in number towards the centre; in other words, plastic matter has an inherent power of multiplying and evolving organic germs. But tubercle has no such power; for it would appear that its primitive cells can only retrograde and degenerate, since they are only destitute, from the beginning, of the plastic force. G. G."

Dr. Carpenter, in his "Principles of Human Physiology," makes the following observation:—"The difference between the deposit of tubercle and that of healthy organisable material would appear to be this—that the former is composed of the albuminous constituents of the blood, a mere chemical compound which is not prepared to undergo organisation until it has passed through the condition of fibrine; whilst the latter is a portion of the vitalised fibrine, which possesses within itself the tendency to organisation, and only requires the contact of living membrane to enable it to pass into a regular structure."

This allusion to the chemical character of tubercle does not at all relate to the more important part of its constitution, the cells and granules.

#### *Of the Vascularity or Non-vascularity of Tubercles.*

It has occasionally been contended that minute blood-vessels enter into the structure of tubercle, although for a long time past all the best authorities, foreign and English, have entertained the conviction that a tubercle is free from vascularity.

I saw at the College of Surgeons the lung of a monkey tuberculated throughout, very beautifully injected, in which the tubercular matter appeared most distinct, and perfectly free from the least particle of injection. Also, the lungs of a boa constrictor, the vessels of which were minutely injected. In one lung there were two small tubercles, neither of which had received a particle of injection.

At my request, Mr. Quekett very obligingly injected a human tuberculated lung. The injection was completely successful, and in the same manner proved that not a single blood-vessel had entered the tuberculous matter.

It results, therefore, I think, from the different investiga-



tions, that the following conclusions may be drawn, in regard to the nature of pulmonary tubercle.

That it is an organised substance, compound, and bearing different external characters, according to the varying proportions of its several ingredients.

That, whether formed and nourished secondarily by cells, in the same manner with the non-vascular textures as shown by Mr. Toynbee\*, or in a direct manner by the capillary vessels, it is to be distinctly regarded as the product of local secretion, and not formed in the blood of the circulating system.

That it is non-vascular, and although not wholly extravital, yet can only possess the lowest degree of vitality.

That the softening process is to be ascribed to three causes: the loss of its low degree of vitality; the consequent integrant chemical changes; the mixture of secretion derived from the irritated surrounding tissues.

#### *Of the Diagnosis.*

Although the existence of tubercles in the lungs is not the only serious, and even dangerous, condition which befalls this vital organ, yet it is always the most interesting and anxious point of inquiry; we desire to know whether the patient is in a true consumption?

The four first different forms of *marasmus*, in Dr. Good's Nosology, are:—1, Atrophy; 2, Anhæmia, ex-sanguinity; 3, Climactericus, decay of Nature; 4, Tabes, decline; and the fifth and last is Phthisis. Each of the four species of this genus may occasionally present appearances which raise alarm, from the loss of flesh and strength, and more especially when accompanied by accidental catarrhal cough, and an increased pulse. Before the discovery of the means of exploring the chest by percussion and auscultation, the difficulty of judging of its integrity was much greater than since that important æra in our knowledge of thoracic disease; as, in some instances,

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\* In the fifteenth volume of the Transactions of the Royal Society of Edinburgh, will be found a very interesting paper by Mr. Goodsir, on the ultimate secreting structure, who concludes it in the following words:—"1st, That all the true secretions are formed or selected by a vital action of the nucleated cell, and that they are first contained in the cavity of that cell; 2ndly, That growth and secretion are identical—the same vital process under different circumstances."

a dry irritable cough, with occasional flying pains of the chest, and some slight disturbance of the breathing, without emaciation, may be the deceptive commencement of phthisis; so it happens, in other cases, that loss of flesh and strength, and some degree of hectic fever, shall take place without cough; and, from the absence of this important symptom, for a more or less considerable period: the hope, perhaps delusive, is entertained, that pulmonary consumption is not threatened.

But even the method of exploration just now alluded to is not always the sure and infallible test to clear away our doubts. Minute tubercles may be so scattered in the lung as to prevent a certain diagnosis; the obstruction to the air not being sufficient to render the sound dull and flat on percussion, or characteristically imperfect on the use of the stethoscope; and, when such indications are partially found, they may arise from the influence of some consolidation of the lung from previous inflammation. Has the patient ever had pneumonia, acute or chronic? Has an old pleurisy occasioned contraction on either side of the chest, or any organic change? Is there any emphysematous state of the lungs?

No form of disease resembles phthisis so much as aggravated bronchitis, and those who choose to think that phthisis is invariably a fatal disease, pronounce any case of recovery from consumption to have been necessarily bronchitis only, upon this ground\*.

There are many points of difference which are familiar to the physician of experience, and many also of agreement; the

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\* Dr. Gerhard expresses himself very much to the following effect, in his work on the Diagnosis of Diseases of the Chest: "The remarkable fact that the respiration is always somewhat blowing at the apex of the right lung, and not at that of the left, had been known to me several years, when I recently dissected a number of lungs for the purpose of ascertaining if the fact were explicable by any anatomical peculiarity. I found that the bronchi distributed to the upper lobe of the right lung issue from the trachea almost at a right angle, while those of the left make a much longer transit, in consequence of the curve described by the left bronchus, as it passes under the aorta: to such a degree that the length of the primary bronchus on the left side is two inches and a half, on the right one inch and a half. Again, the calibre of the bronchi going to the right lung is almost double that of the bronchi of the left side. Hence it follows that these circumstances render the respiration more blowing on the right than the left side: 1, The vicinity of the bronchi to the trachea: 2, the straightness of their course: 3, their greater width."

leading question always being—are there tubercles? The whole history of the case must be studied; the mode of origin of the illness; any hereditary tendency to phthisis; the revelations of percussion and auscultation, from first to last; the progress and degree of emaciation; the pulse; the hectic fever and perspirations; the respiration, and kind of pain, if any, affecting the chest; the nature of the sputa; and the kind of cough? Has the form of the chest undergone any change during the illness? \* Mr. Hutchinson does not consider that the original size of the chest is to be taken as a guide to the aeration or healthiness of the lungs. It is truly remarkable how small a portion of capable lung will in some instances serve for a great prolongation of life. I was intimate with an estimable physician whom I had seen to labor under the signs of consumption for upwards of fifteen years, and who, till within six weeks of his death, was assiduous in the performance of his duties at an infirmary. The following were the appearances found in a post-mortem examination.

Left lung so broken up, above and below, by cavities, as to have been necessarily wholly unfit for use; close and strong adhesions of the pleura pulmonalis to the pleura costalis. Probably about half of the right lung might have been mostly effective for respiration; the lower portion was the least tuberculated. On the right side also there was much of strong pleural adhesion. The heart was small (about five ounces) and flaccid. Each kidney had a few small cysts. The liver was rather fatty. Mr. Reynaud, describing a broken-up lung from phthisis, observes: “The vitality of a mass so completely disorganised, might naturally be questioned; the lung in such a condition as this may in truth be regarded as little more than dead matter—a mere foreign body destined to be eliminated, were there sufficient vigor in the system to effect its removal.”

In any instance of troublesome symptoms, imitative of the threatenings of phthisis, it is pleasing when we can find an

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\* For some interesting observations on the relative positions of the diaphragm and some of the abdominal viscera, to those of the chest, by the late much esteemed Dr. Edwin Harrison, see *Medical Gazette*, vol. xix, p. 369.



explanation of them which may serve to relieve us from all apprehensions of danger as to the real nature of the case. I will quote from Laennec his observations on neuralgia or nervous pains in the lungs.

“ Although the lungs receive a great many filaments from the pneumo-gastric nerve, their sensibility of relation is very slight, even in a state of disease. In the most acute pneumonia and hæmoptysis, the pain is slight, and frequently altogether wanting, unless the pleura be at the same time affected; and we have shewn that in the case of phthisis and catarrh, the patients can rarely point out the spot from which the expectoration proceeds. On the other hand, however, it is by no means rare to meet with individuals who, without any physical or rational sign of organic disease, and even while enjoying the most perfect health in other respects, suffer acute pain, sometimes even extremely acute pain, in the interior of the chest. This pain may be momentary or of long duration, intermittent or continued, confined to one spot or diffused, fixed or moveable; and sometimes it shoots by fits along the walls of the chest and neighbouring parts, in the course of the intercostal and anterior thoracic nerve, or the brachial plexus and its branches. It is frequently deep between the spine and scapula, and shoots from thence in such directions as lead to the belief that it is situated in the great sympathetic. I have been consulted by persons who had suffered some pains of this kind for several years; and in cases where they were of recent occurrence, I have known physicians, otherwise well informed, mistake them as indications of incipient peripneumony or tubercles, and prescribe bloodletting, with the effect of weakening but not relieving their patients. It appears to me evident that these disorders are of the kind to which we give the name *neuralgia*; a class of affections which unquestionably have their site in the nerves, since the pains follow the course of these, but of the precise nature of which we are ignorant.”

It is a question, not without interest, whether we should consider phthisis pulmonalis one of the manifestations of *scrofula*, or distinct in its nature from that disease. Sydenham pronounced phthisis to be “*scrofula in the lungs* ;” and a similar opinion has been entertained by Laennec, Lugol,

Louis, and other foreign writers; and by Sir James Clarke and others in this country. Now, if the assertion be true, the modification of the disease is very remarkable in its signs and results. We see phthisis exist in its worst forms without a single attendant symptom of scrofula, as usually indicated; and vice versâ, the most characteristic and also the most urgent evidences and symptoms of scrofula, without any apparent tendency to phthisis.

I know many grown-up persons whom I remember to have seen laboring under severe scrofula in their childhood, and bearing scars in the neck from suppuration of the cervical glands. They have never shown the least tendency to phthisis. I have seen children in the Marylebone Infirmary in full bulk and strong, yet very highly scrofulous. One of them had undergone amputation of the arm for diseased elbow joint; he was a stout, growing boy. When, therefore, we have familiar examples of the two forms of disease so widely different and distinct, we can scarcely avoid, I think, assigning to each a difference of proximate cause; which however, if, according to my hypothesis of a virus, it exist, can only be demonstrated in the striking contrast of effects. But it is not less true that phthisis and well-marked external scrofula sometimes exist in combination in the same individual; phthisis, with variation in different cases as to its activity and fatal progress, supervening on the scrofula which may have been existing for a long period, and which, while spending its violence on some joint or bone, may have opposed, by antagonism, the approach of phthisis. But this last disease, in the examples to which I allude, coming forward with urgent symptoms, has predominated over the scrofula, so that *it* has ceased in its turn to be troublesome. In the same family, I have seen one child, of the age of 12, die of phthisis, not having a sign of scrofula; and her brother, of the age of 15, having diseased ankle joint, scrofulous—to the degree of requiring amputation, but since, growing up to manhood, without ever having had any pulmonary symptoms.

Conclusively, we may consider that there is much alliance between the two diseases, but yet much difference in their development and manifestations.

In the recent valuable work of Mr. Phillips, full of research and of important statements, very interesting statistical details will be found, upon all of which the ingenious author pronounces an able judgment, as well as upon the whole character and nature of this distressing disorder, and on the principles of its treatment.

He enters at length into the question, whether phthisis and scrofula are to be considered identical? He quotes the opinion of *Roche* that they are so; differing only in the seat of the morbid deposit. And of *Rcid*, who regarded the difference between the two affections as one of degree only; phthisis being the highest stage in the development of scrofula. The highly-vaunted powers of the microscope seem at fault in deciding the identity or difference of the matter of pulmonary tubercle, and a scrofulous gland; opposite results being obtained by different microscopic observers. Mr. Gulliver (see Phillips, p. 64) says: "In the human subject it appears to me, that crude tubercular matter, from whatever organ obtained, differs as little in its microscopical, as in its general and chemical characters." Mr. Dalrymple thinks "that oil globules are more predominant in scrofulous than in tuberculous matter; but, with that exception, he knows no difference in the microscopical character of the two products."

Mr. Phillips observes, that "Mortality tables prove that the generally received opinion is correct, that the ravages of scrofula, when it destroys life, are most severely felt before, those of consumption after, the period of puberty."

The distinction between the two diseases, in point of fatality, is very great. According to the tables of Mr. Farr, in the town population selected by him, including four years, the number was 3,759,186. The deaths from consumption are to the population as 1 to 235; while those from scrofula are as 1 to 20,000. The population of his counties was 3,446,501, "The deaths from consumption amount to 1 in 286; those from scrofula to 1 per 10,000, or 100 per million; the deaths from consumption being 19 per cent. greater in the town than in the country district; while those from scrofula are 100 per cent. less." In conclusion, upon the whole inquiry, Mr. Phillips sums up as follows: "It seems to me, therefore,



that these facts constitute so clearly marked a difference between the two affections, that it will be most convenient, most conducive to scientific correctness, to consider them as affections possessing a certain general similarity of character, but no identity. It may be that they belong to the same family as do pleurisy and pneumonia; but every one deems it desirable to make as clear a demarcation as possible between those diseases. I say the same of tubercular disease generally, and scrofula, between which the points of resemblance are strong, in so far as concerns the deposit; but in all else they are weak\*.”

*Of Auscultation and Percussion.*—In the exercise of diagnosis, every impartial person must admit the great value of auscultation and percussion, upon which many treatises have now been written; and who does not cherish the memory of Laennec, and own a large debt of obligation to that original observer and acute pathologist.† I trust it will not be inconsistent with these observations, if I venture to express my opinion, that the claims and pretensions of the Stethoscopist of the present day have frequently been too extreme; a nicety of auscultation has been assumed; and such a delicacy of perception of the finest shades of difference, as can only be reached by the favored few, if in real truth by them. It is certainly always desirable to unite the use of percussion and auscultation with the careful study and observation of all the general symptoms, as in the old time; and which study must never be sacrificed to the mechanical method, if it may so be called in distinction‡. I will beg leave to quote, from the humble Essay on the subject which I published in the year 1826, the following observations, which I was then led to make:

“Some of the diseases of the chest are attended with such obscurity, that the detection of their precise nature bids de-

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\* In his Appendix there is a seriatim statement of the difference between scrofula and tubercles, by Professor Albers, of Bonn.

† When staying in Paris, in the spring of 1826, I had the pleasure of his intimate acquaintance, and received much kind and valuable instruction from him in the use of the stethoscope, &c.

‡ Commonly distinguished as the physical and rational symptoms; terms which I do not think are happily chosen.

fiance to the most acute penetration. What prudent physician, then, will disdain to avail himself of the means which this simple but philosophical instrument affords, of obtaining a more faithful diagnosis ;” and “it appears to me, whoever adopts the use of the stethoscope must study it for himself, and consider that all which is offered to his attention by the industry and observations of others is calculated to serve his purpose only as an introductory lesson. The skilful employment of this instrument must be the result of practice. Every case which occurs presents new and distinct matter for investigation. It is peculiarly necessary to be accurate in marking with nicety the nature of the impressions which are made upon the ear, and to reflect upon the phenomena with all the skill and care of the physiologist, the anatomist, and the physician.

“Nothing must be left to the imagination ; for, if this creative faculty be exercised, the judgment may be misled, rather than informed and assisted.”

The new instrument for ascertaining the vital capacity of the lungs, and the healthy or altered state of the respiratory functions, the Spirometer, most ingeniously contrived by Mr. Hutchinson, is well worthy of medical attention. Although under many circumstances it may be found useful, it is more especially important for determining the first inroads of disease : for example, that commencement of the formation of tubercles in the lungs of which no cognizance can be taken by means of the stethoscope : and of its comparative superiority in establishing this difficult and delicate diagnosis, Mr. Hutchinson relates examples of the most interesting description. He has recently published tables of instruction for the use of the instrument, which appear to afford a very clear guidance ; and to these, and to the important paper read by Mr. Hutchinson to the Medico-Chirurgical Society, April 28th, 1846, I refer the reader : but I will pursue the subject a little further.

The value of the instrument in assisting the first diagnosis,\* and especially as that may be difficult, must be generally acknowledged. But it remains, I think, to be

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\* I believe that it is found highly useful in testing the state of the lungs in recruits for the army ; and, for the same purpose, at insurance offices.

seen how far it may be available to the physician in his daily practice, according to the rules laid down by the author. Perhaps but little so, and some may choose to ask the following questions:—Can there be occasion for it, when, in the confirmed state of phthisis, the diagnosis is sufficiently fulfilled by means of percussion and auscultation, and by the various evident symptoms? When disease is advanced, and we have to consider that the bronchial and pulmonary vessels are both debilitated and congested, is the very forcible expiration required in using the spirometer, as a test of the vital capacity, quite a safe proceeding?

The following is an instructive table of the comparative respiratory function in phthisis, and in health: which, with the subsequent remarks, I extract from Mr. Hutchinson's paper:

PHTHISIS PULMONALIS.			
EARLY STAGE.		ADVANCED STAGE.	
Vital Capacity. Diseased.	Vital Capacity. Healthy.	Vital Capacity. Diseased	Vital Capacity. Healthy.
Cubic inches.	Cubic inches.	Cubic inches.	Cubic inches.
113	220	59	135
115	173	89	224
105	173	108	254
130	204	72	135
128	220	80	229
120	229	75	254
100	193	34	246
140	246	171	270
100	204	60	237
110	220		
136	229		
135	204		
192	230		
225	300		
145	220		
200	240		
185	230		
218	240		
129	220		
344	434		
220	260		
196	254		



“These cases were not from my own diagnosis, but individuals sent to me by others, well skilled in auscultation. One class is said to be in the early stage of that disease, and the other in the advanced stage; consequently there will be seen two ranges of figures under each division, one higher than another. The figures under the *early stage*, on the left, mark the vital capacity of the men as they *were*; those opposite, the vital capacity as they would have been if healthy; the same arrangement is maintained under the words *advanced stage*.

“The healthy range, with the exception of the highest, is taken from men of the same physical development, being the mean of some hundreds of observations, the standard of health. The highest case is Freeman, the American, as compared with himself at different times.

“It will be seen by this Table, under *early stage*, the men measured a mean vital capacity of 149 cubic inches, instead of 224, an average difference of 72 cubic inches; and, in the more advanced stage, the mean of the diseased 83, instead of 220 cubic inches, a difference of 137. It will be observed there is one case, in the advanced stage, where a man could only breathe 34, instead of 246 cubic inches, a deficiency of 212 cubic inches. The most interesting case is that of Freeman, the “American Giant.”

“This man came over to England in 1842, and, in the November of that year, trained for a prize-fight; I examined him immediately before his *professional engagement*, when he might be considered in the “best condition.” His powers were as follows:—vital capacity, 434 cubic inches; height, 6 feet 11¼ in.; weight, 19 st. 5 lb.; circumference of his chest, 47 inches; inspiratory power, 5.0 inches; expiratory power, 6.5 inches. In November, 1844, exactly two years afterwards, he came to town in ill-health. I then examined him in the same way as before, twenty times at various intervals, during which his vital capacity varied from 390 down to 340, and the mean of all the observations was 344 cubic inches, a decrease of 90, or more than 20 per cent.; his respiratory power had decreased one-fifth, and his weight 2 stone. At this time I took him to two physicians well-skilled in

auscultation, and they both affirmed that they could *not detect* any organic disease. After January 1845, I lost sight of Freeman, and, in the October following, I was kindly favored with the following account of him from Mr. Paul, Surgeon to the County Hospital, Winchester.

“ ‘Freeman was admitted into this hospital on the 8th of October, in an extreme state of debility and exhaustion; he was reduced almost to a skeleton, complained of cough, and was expectorating pus in large quantities. Percussion, on the anterior part of the chest, *under the clavicles*, gave, on the right side, a very dull sound; on the left, one much clearer, but still I think less resonant than natural; I made but one attempt at auscultation, but could come to no conclusion, from a rather singular reason,—the ribs were so large, the intercostal spaces so wide, and so sunk in from the extreme state of emaciation to which Freeman was reduced, that I could not find a level space large enough to receive the end of the stethoscope; could not, in short, bring its whole surface into contact with the chest. Freeman’s great debility, and the clearness of the diagnosis from other sources, prevented my repeating the attempt. Freeman, after-death, measured 6 ft. 7½ inches, and weighed 10 st. 1 lb. On opening the chest, the lungs on both sides were found adhering by their apices to the superior boundaries of the thorax, and studded throughout their substance with tubercles. The tubercles, on the whole, were much less numerous in the right lung than in the left; both lungs were nearly healthy at their base; the tubercular matter gradually increased in quantity towards their upper parts, and the apices of both lungs were almost completely occupied by large cavities partly filled with pus, and capable of containing two or three ounces of fluid each. The heart was remarkably small. The rest of the viscera appeared healthy.’

“ It is very remarkable to see that Freeman lost so much weight; in his prime, he never appeared stout, but strong and muscular. I have been informed, when he first came to England, his weight was 22 stone; he died 10 stone; his natural height was nearly 7 feet, and he died 6 ft. 7½ inches.

“ The Spirometer was useful to me in this case, by indicating

the commencement of the disease which ultimately caused his death, and that *before* the usual means availed.

Mr. Hutchinson's case of Freeman, the giant, is remarkably interesting. By means of the Spirometer he detected incipient phthisis, when two physicians, well-skilled in auscultation, both affirmed that they could not detect any organic disease. In eleven months after, the man died in the last stage of consumption. But the converse sometimes happily occurs in the results of the examination by the Spirometer; and Mr. Hutchinson relates several instances in which incipient consumption was apprehended, but, finding that the vital capacity of breathing was true to the healthy standard, he gave a cheerful diagnosis, and had the satisfaction of finding himself perfectly correct. He states that the individuals in question recovered their health.

I will briefly advert to the case of a gentleman who was much subject to sharp attacks of bronchitis, and was at all times disposed to asthmatic breathing. He became anxious to know whether he might be suspected to have pulmonary tubercles? I submitted him to Mr. Hutchinson's examination; and he, finding that his full expiration amounted to 220 cubic inches, the height being 5 feet 10 $\frac{1}{4}$  inches; the weight, 13 stone 12 lb.; gave him a confident assurance that the lungs were perfectly free from tubercular obstruction; and this served to set his mind at ease. On one occasion, Mr. Hutchinson took the cast of the chest of a man (who had been executed) soon after death, whom he had examined during life a very short period before, and found his vital capacity to be 251 cubic inches at 98°. To this account he adds the following:

“I may here introduce the statement of a curious circumstance, in connection with this last case, which will be found to militate against a generally received opinion.

“It will be recollected that the vital capacity is obtained by a maximum movement of the boundaries of the chest, and it is believed that this thoracic movement is impeded by adhesions between the pleura. In this case, I can affirm, that though the mobility of his chest exceeded the whole space or cubic contents of that cavity, there was not one square inch of the pleura but what was *firmly united*. His lungs, in other



respects, were perfectly healthy in structure, and his vital capacity scarcely diminished.

“From this, it would appear that adhesions of the pleura do *not* prevent the freedom of the respiratory movement; and I think we may here generalise from a single case. I believe the movement of the ribs in respiration is so closely followed by the lungs, that a perfect union between the two does not interfere with this function.”

This is confirmatory of the opinion entertained by *Morgagni*, who stated that “the lungs are found to be sometimes connected not only all around to the ribs very closely, but also to the diaphragm and mediastinum, without any previous difficulty of breathing;” and he quoted an example “of the whole lobes of the lungs very tenaciously adhering to the ribs all round, although, in the individual in question, there had been no difficulty of respiration\*.”

I would still ask the question: whether such adhesions may not restrain the freedom of respiration in fast running, or in ascending a high mountain?

#### *Of the Prognosis.*

This delicate consideration, this touchstone of the opinion entertained by the medical attendant in urgent cases, may be divided under two heads, medical and moral.

There is a very common unwillingness in parents to admit the probability of the first threatening symptoms being of a consumptive nature; and too frequently does it happen, from this mistaken tenderness, that the important moment of meeting the coming evil by timely care and treatment is for ever lost.

But when we have full reason to believe that the first period of consumption (before the softening of tubercles) has arrived, and that tubercles in the lungs are formed, the question which we anxiously propose to ourselves, is, what encouraging circumstances can we find in the case? It would be relatively favorable if the invasion of the disease be not attended with active symptoms; if we have reason to believe

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\* See also Laennec on Contraction of the Chest, consequent to certain pleurisies.

that the tubercles are not in mass so as greatly to impede aeration and function, more especially if they have infested only one lung; if there should be absence of pleuritic pains, and of hectic fever; if the animal heat do not exceed 98·5 or 99°; if the pulse be not very quick; the respiration on exertion only moderately hurried; the loss of flesh and strength not very great, and proceeding only slowly; the digestive organs in a healthy condition so far as shewn by the usual indications; and I may add, the absence of the hereditary tendency, and the age of the patient advanced beyond thirty. When the attack begins between the fourteenth and twentieth year, and when both lungs are tuberculated, and most of the symptoms have an active character, although short of the acute form of the disease, we have too much reason to be full of apprehension for the safety of the patient.

In the second period of the disease (tubercles having softened), its danger has become too manifest for doubt; and yet hope on the part of the physician should not be extinguished, and he may adopt a systematic method of practice, always, of course, with the hope, sometimes with the expectation, of doing good, but never, alas! with the confidence of satisfactory success. It becomes cheerfully encouraging, when we have reason to think that the tuberculous formation is arrested, and the irritating influence of the tubercles existing, whether crude or softened, is lessened, and decidedly controlled; when the several symptoms just now recited regularly abate; when there is a steady reduction of the animal heat; and, above all, when the respiration decidedly improves, the strength increases, and flesh is gained. If any one evidence be more encouraging than another, it is the last, and rendered the more unequivocal when the test of weighing has been used.

But we are too often placed in a situation of despair, when our knowledge teaches us, that, from the extreme urgency of the case, we cannot feel authorised to entertain the smallest rational expectation of recovery. It is in this extreme situation of the patient that our moral prognosis, if I may so express it, is to be delivered. In no one period of the disease should the opinion of the physician ever be falsely stated to the friends of the patient. There are different ways of telling

the truth ; and I need not argue, that language the most considerate and tender should be used in a painful communication ; but positive deception is unwarrantable, even though the motives spring from humanity.

It is impossible to lay down an exact rule of conduct on this point towards the poor invalid. The physician must not appear despondent ; for if he depress the mind of his patient, he could no longer be medically useful. While a hope remains, he should be kindly encouraging ; and yet, at the same time, not make a total concealment of the hazard. Death sometimes occurs in the most sudden and unexpected manner ; and how painful the reflection that no care should have been taken to prepare the mind for the awful event. It is for the most part better that the friends should perform this tender, delicate task than the physician, unless he be directly appealed to by the patient. It also has always appeared to me that the chance of recovery has been improved, instead of the contrary, when that holy calmness has filled the mind, which can only be derived from prayer and religious meditation. The love of life is the first instinct of our nature, and is most properly to be cherished ; besides that we are attached to it by our tender ties, more or less numerous and strong. Thus, then, the mind should be in the double state of being fully prepared for death ; and yet, entertaining the wish for life and recovery of health.

I have before alluded to the buoyancy of hope, which, under the most urgent circumstances, the consumptive invalid, more than any other, entertains. I remember attending, in conjunction with the late *Dr. Baillie*, a physician, himself of the highest talent and erudition, when in the last stage of consumption. He was told of the hopelessness of his case, and sometimes expressed himself, in terms of proper religious resignation, to be convinced of it ; and yet that hope and that belief of recovery, which so much belong to the disease, would occasionally influence the mind in the most extraordinary manner : for instance, on the very morning of his death, he talked of his arrangements for a new publication on which he had been intent in the beginning of his illness, and of some lectures which he meant to deliver when he should get better !



*Of the Treatment.*

Very interesting and important as the pathology of phthisis must be considered, and essential indeed to the arriving at such knowledge of the disease as may enable the physician to engage in its treatment, no part of the labors of an author can be looked for with so much hope of novelty and usefulness, as the practice which he may have to recommend; and in comparison with which, all statistics and all theory can hold only a second place in general estimation and regard. A volume that should stop short of practical views and details, might be admired for its science, and for its marks of diligent investigation, but would possess a very abridged value for the daily practitioner of physic, and still less for the public at large.

What have been the prevailing statements of the various authors on phthisis, at home and abroad! I will endeavour to sketch the views which appear to have been adopted by the majority of those, who have been regarded as authorities the most worthy of respect and attention.

The researches of *Bayle*, published more than 30 years ago, were of much value when the pathology of phthisis was but little known and understood; and although many errors of the author have been shewn by subsequent writers, it is a work still deserving of reference and study. He was of opinion "that phthisis is almost always incurable and fatal; yet for all his varieties of the disease he prescribed treatment, I cannot say of any interesting character; and he remarks, from his premises, "that physicians may form a just idea of the probabilities of cure which a pulmonary phthisis presents in its different periods. But whatever opinion we adopt on the possibility of curing the disease, it is certain that we ought not always to despair of the life of phthisical persons, since some arrive at a very advanced age, though affected with the disease from the time of puberty, or even from their infancy." This last is surely too extreme an opinion, and not applicable to true tubercular phthisis.

*Laennec* entertained the opinion that the first period of phthisis is not really amenable to treatment; and he thought

that he had sufficiently proved "the idea of the cure of consumption in its early stage to be illusive. Crude tubercles tend essentially to increase in size and to become soft. Nature and art may retard or even arrest their progress; but neither can reverse it. But then he states, "while I admit the incurability of consumption in its early stages, I am convinced, from a great number of facts, that in some cases the disease is curable in the latter stages: that is, after the softening of the tubercles and the formation of an ulcerous excavation." It is evident that he considers the curative attempt of nature to consist in the expulsion of these foreign bodies by softening and subsequent expectoration; and he pronounces it to be the most rational indication to act upon; and adds, "that we should endeavour to prevent the secondary eruption of tubercles; as in this case, if the primary tubercular masses were not extremely large or numerous, which they very seldom are, a cure would necessarily take place after they are softened and evacuated.

These, and other observations of the kind, do not appear, I think, perfectly consistent with each other; for he argues as much for the curability as the incurability of phthisis. He denies the power of art towards the cure, yet recommends art to be used. These are his words: "I think that the cure of consumption, where the lungs are not completely disorganised, ought not to be looked at as at all impossible, in reference either to the nature of the disease or of the organ affected." And he prosecutes this argument. He finally observes, "In order to make a direct attack on the disease, we ought probably to be able to correct an unknown alteration in the assimilation or nutrition; that is, an alteration in the state of the fluids of the body." He relates many examples of cure, some of which appear to have been nature's own work; others, assisted by art. The post-mortem examination in these cases, at periods long after, displayed to view cicatrices, more or less perfect, "with bands composed of a condensed cellular substance, intermixed sometimes with fibrous, or fibro-cartilaginous portions; which, by their whiteness, form a striking contrast with the natural tissue of the lungs."

*Andral* has given a very extensive, and doubtless a very able pathological view of phthisis, and has added much to the

history of the disease ; but his practice is slender and little satisfactory. Impressed more than any other author, *Broussais* excepted, with the idea of an inflammatory character belonging to tubercles, he has a corresponding partiality to the use of general bleeding and leeches, any signs of pneumonia, pleurisy, or hæmoptysis appearing ; and the latter he directs, on the French system of treatment, to distant parts as derivatives ; using also such derivative and counter-irritant treatment by other means—chiefly the application of blisters. On the other hand, he sometimes uses emollient and narcotic poultices. Ptisans appear to constitute a principal part of the medical treatment, the details of which are as sparing as those of the pathology and morbid anatomy of the disease are copious.

*Lugol* treats of all the forms of scrofula, and now and then alludes to the complication of pulmonary tubercles ; but an inference may be drawn that most commonly his scrofulous cases were not combined with phthisis.

*Louis*, the most important of modern authorities on phthisis, has treated the subject in details of the highest interest and value. From the great facilities which French physicians possess of making post-mortem examinations, they excel much in the knowledge of morbid anatomy ; and respecting the pathology of the disease now under consideration, the second edition of the work of *Louis*, translated by *Dr. Walshe*, should be studied by all medical persons in every part of the world.

After the recital of the general results of various remedies and methods of treatment, he delivers the following sentiments :

“ I have endeavoured in the preceding chapter to appreciate at the fair value, the various means which have of late risen into notice, as possessed of the greatest power of effectually influencing the course of phthisis, or even of effecting its cure ; and, as we have seen, the best founded hopes in appearance have, one after another, vanished before scrutiny. This is, however, no reason that we should despair for the future, or adopt the opinion that we shall never succeed in discovering some agent or other capable of effectually opposing the onward course of phthisis once developed. All that can be said at present is, that redoubled vigour is called for, that greater



accuracy in investigation is needed, and that medical men should undertake those joint labours of which I have spoken, and without which, the study of phthisis, especially of its causes and its treatment, cannot make any great or solid progress for the future. Meanwhile, in expectation of these systematic labours, the commencement of which medical men and the friends of humanity generally should anxiously wish for, I shall lay before the reader what experience (unfortunately of a kind but too deficient in precision, as must not for a moment be forgotten) allows me to state as the most plausible views concerning the prophylactic and palliative treatment of phthisis."

In the English language, the Treatise of *Sir James Clark* ranks before all others in its interest and value, and contains copious information on the whole history of phthisis, its statistics and pathology, with many sensible practical observations on the treatment of the most important symptoms of the disease.

With that candor and love of truth which do him honor, it must be confessed that he is remarkably discouraging regarding the cure of phthisis; and, in the following sentence, would almost check any attempt of the kind.

"No physician, acquainted with the morbid anatomy of tuberculous consumption, can for a moment indulge the hope that we shall ever be able to cure what is usually termed 'confirmed consumption,' if we except the small proportion of cases in which the tuberculous deposit is confined to a very limited portion of the lung. We might as reasonably expect to restore vision when the organization of the eye is destroyed, or the functions of the brain, when the substance of that organ is reduced by disease to a pulsatious mass, as to cure a patient whose lungs are extensively disorganized by tuberculous disease."

Afterwards he pronounces a milder sentence. "It not unfrequently happens that young persons are attacked with symptoms of phthisis, which, under proper treatment, cease, and years elapse before there is any renewal of the disease;" and to prevent this, he very properly states that our utmost endeavours should be directed to correct the constitutional

disorder, as the only sure means of effecting such an object. This morbid condition of the constitution he designates as tuberculous cachexia, and evidently considers phthisis as one of the forms of scrofula. Speaking of the chronic variety of consumption, he says that it "deserves the particular attention of the physician; first, because it is liable to be overlooked till it has made considerable progress, and the opportunity of arresting it may be lost; and secondly, because medicine often accomplishes much more in this form than in those which are more rapid in their course." If I comprehend the meaning of the author, he appears directly opposed to the views of Laennec, who regarded all interference of art in the first period (before the softening of tubercles) of phthisis as unavailing, and thought that instances of cure (natural, or chiefly so) were only to be met with at the second period, when softening and excavation had taken place.

The published lectures of *Dr. Watson* contain much valuable information on phthisis, as upon every disease of which he has treated, and constitute an excellent compendium of what is known essentially on the subject. He begins with remarking, that it would be an error to suppose that consumption should mean a restriction of the disease to the lungs; and quotes the expressive words of *Dr. Latham* (another high authority, and whose book should be studied), "that *pulmonary* consumption is no more than a *fragment* of a great constitutional malady." "Its local ravages (says Watson) are most obvious indeed in the thorax; but it leaves in the abdomen, also, traces of its destructive agency not less definite, and scarcely less constant."

He evidently considers phthisis as a form of scrofula, and shapes his theory and treatment of the disease accordingly. He refers to the description of an inflamed and scrofulous gland in the neck going on to suppuration, and which we have the privilege of seeing and watching, as being judiciously chosen by *Dr. Latham* for an elucidation of the nature of a tubercular softening in the lungs, where one cannot be a spectator. I do not think the illustration happily chosen. Inflammation is an essential part in the suppurating process of the gland; not so in the tubercular softening in the lungs.

Inflammatory action in the surrounding pulmonary tissue may co-exist; but it is accidental, and not necessary either to the generation or resolution of the tubercles: and this, I think, may be considered as another evidence of the distinction of character between the pulmonary tubercle, and the scrofulous gland.

*Dr. Charles J. B. Williams*, in his *Pathology and Diagnosis of the Diseases of the Chest*, has entered profoundly into the pathology of phthisis. Probably I may not have understood his opinions on the nature of tubercle, when he says that “lymph, pus, and tubercle, pass by imperceptible gradations into each other, that the fibrinous portions of the blood are liable to be converted into tubercle, independently of any action of the vessels. If tubercle be, as we suppose, a degraded condition of the fibrine or nutrient principle of the blood, we may expect it to be deposited wherever the nutritive or secreting process is carried on—wherever lymph or pus is occasionally found—wherever, in short, blood vessels run.”

He leans to the opinion of *Broussais*, “that the upper lobes are the first and most extensive seat of tuberculous change; because the bronchial tubes there are shorter, and inflammation more readily passes along them to the cells.” He adds, “but I apprehend the real reason of their peculiar liability is, in the greater abundance of interstitial tissue in them, than in the lower lobes.” He offers further views on the subject, some of which I cannot subscribe to, or, indeed, quite comprehend. The following statement is clear and satisfactory:—“Destructive as phthisical lesions are, both by their own tendencies, and by the manner in which they affect the system, it is nevertheless now well ascertained that they do occasionally admit of cure. I think we are warranted in supposing that this may take place at any stage; but the mode of cure which has been most completely traced, is that by the expectoration of the tuberculous matter, and the lining of the cavity with a complete false membrane, which commonly is of a fibro-cellular, or fibro-cartilaginous texture, tending to contract and ultimately to obliterate the cavity, but is sometimes thin and more like mucous membrane, without



any obvious tendency to such a contraction. It is not uncommon to find, in the lungs of those who have long laboured under symptoms of pulmonary consumption, some of the cavities with a lining more or less perfect, and at the apex of the lung especially there may be now and then found a cavity contracted almost to obliteration; and sometimes a mere cicatrix, perhaps enclosing a little friable caseous matter. All these instances evince a natural effort towards the healing of ulcerous cavities in the lungs; and where the disease is very limited in extent, and fresh tuberculous deposits do not take place in other parts, this healing of the cavities may amount to a cure of the consumption. The symptoms which may lead us to hope for such an unusual event, are a gradual diminution of the cough and purulent expectoration, a cessation of the fever and quickness of pulse, and a decided improvement in flesh and strength. The signs that countenance this expectation are, the diminution of the pectoriloquy and cavernous respiration, and the restoration of some vesicular respiration, and a better sound on percussio in the part; whilst in the rest of the lungs the sounds are natural.

“I cannot bring morbid anatomy to prove the possibility of a cure in the earlier stages of phthisis; but I have the history of several cases in which the signs render it extremely probable that some of the depositions which form the first stage of consumption of the lungs, had been removed by absorption.”

Of the *treatment* of phthisis, I find no mention. The work is chiefly pathological and physiological. I have already alluded to the paper of Dr. Addison, in Guy's Hospital Reports, criticising the too sweeping reference to tubercles in the morbid anatomy of the lungs; and I find that in the second series he has pursued the subject of the pathology of phthisis. It is a paper of considerable interest, containing much statement of new opinion that deserves to be studied and considered.

*Dr. Gelderstedt's* recent work on Tubercular Phthisis, and that of *Dr. Glover* on Scrofula, have a warranty of high merit, from the approbation so freely bestowed upon them by that able Medical Review, the British and Foreign.

But whatever may be the opinions of the eminent authors

whom I have quoted as to any expected material benefit from the treatment of consumption, no one is so distrustful of his art as to withhold the employment of medicinal means, with the desire of palliating symptoms, and mitigating suffering, even although his mind may enjoy but little cheering ray of hope as to the prospect of cure.

I shall follow the general example of treating (concisely) the remedies which have been considered the most worthy of regard in the treatment of the disease.

If we had no other proofs than we unfortunately often derive from our failures, that the medical art is more conjectural than we could desire it to be, sufficient would appear from the contradictory methods of physicians in the treatment of the same disease, often indeed in the most complete contrast; and we always see that every proposed remedy and every plan of treatment challenge the confidence of the profession and the public, with a strong representation of alleged facts to exemplify the success which is said to have been obtained.

*Of blood-letting.*—*Sir James Clark* quotes, on this point, the testimony of several physicians and authors in favor of small abstractions of blood at certain intervals, as a principle of treatment. His own opinion is thus expressed:—"After pulmonary congestion has been diminished by general bleeding, the abstraction of blood by means of cupping or leeches, when further depletion is necessary, has a very beneficial effect."

As I have already stated, it is to be kept in view that tubercular phthisis, in its immediate and essential nature, is in no respect an inflammatory disease, but one attended essentially with wasting and loss of strength. An inflammatory action affecting the pulmonary and bronchial tissues, when it may happen, is wholly secondary. If there be pneumonia, or pleurisy in accidental complication with the tubercles, an appropriate treatment, most probably detraction of blood, must be adopted; but we should, I conceive, be extremely cautious in persuading ourselves that pulmonary congestion exists of a nature to call for the loss of blood, a mistake which, I think, is very easily committed.

Local depletion from the chest, either by means of small

cupping, or by leeches, as being less debilitating to the system, is less objectionable than the lancet, and may sometimes be used with much relief and benefit. *Light dry cupping* is occasionally useful, when the debility of the patient will not allow of the taking away of blood.

*Laennec* thus strongly expresses himself:—"Bleeding can neither prevent the formation of tubercles, nor cure them when formed. It ought never to be employed in the treatment of consumption, except to remove inflammation, or active determination of blood with which it may be complicated: beyond this, it can only tend to an useless loss of strength."

*Louis* recommends caution in taking away blood, but not with so much emphasis as *Laennec*.

I have seen several cases treated systematically by small bleedings from the arm at stated intervals; and although in some instances partial relief may have followed, no eventual benefit has been obtained; but, on the contrary, the patient has been robbed of his too little power, and the disease hurried to its fatal issue. Even in hæmoptysis, the greatest circumspection should be used with the lancet. Its agency in a consumptive case, whatever may be the complications of disease calling for its employment, is one so mixed with eventual evil in the present good results which it may seem to produce, that it must come under the denomination of *anceps remedium*.

*Emetics*.—I have also known many instances of this systematic treatment—the administration, every morning, of a dry emetic, as it is called, of antimony or ipecacuanha; and the results were never such as to give me the least favorable opinion of the practice; on the contrary, very often the stomach has been kept in a state of nausea through the day, and has almost invariably been rendered weaker in its digestive power. It is far more desirable, in my opinion, to study to improve its powers, to favor appetite and digestion, and in that way gain an antagonism to the exhaustion and debility which the disease every day—almost every hour, so much tends to create. It may now and then occur that the extraordinary accumulation of viscid bronchial secretion may so oppress the breathing as to render an emetic expedient; but this is upon



a different principle from that just stated. That vomiting should "prevent the deposition, or at least the retention of tuberculous matter in the bronchial ramifications and air-cells, thus preventing the *localization* of the disease, is a theory, as I conceive, not even plausible\*."

*Purgatives* are manifestly improper: first, as tending to debilitate, and secondly to create irritation of the mucous membrane of the intestines, which, in the form of chronic diarrhœa, is one of the serious evils we have so often to combat in the disease. Aperient medicines, when required by a torpid state of the bowels, should be of a mild character, varied and suited to the individual case.

*Mercury*, distinctly considered in its alterative powers, to be regularly employed against tubercular phthisis, is, in my experience and observation, full of objection; since, by its free continuance, it becomes a sure source of debility, and has not that favorable influence towards the absorption or reduction of the tubercles, which theory might perhaps lead us to expect. I must, however, here observe, that when chronic bronchitis has been the most conspicuous part of the disease, predominating, as it were, over the tubercular irritation, I have seen a mild mercurial process, carried on for two or three weeks, really prove beneficial. Such advantage has been more evident when the functions of the liver have been in error. I have seen a few instances of the accidental over-effects of mercury in phthisis—active salivation, in which all the pulmonary symptoms were fearfully increased, with an acceleration of the fatal event.

*Digitalis*. — This powerful medicine, so extravagantly praised by *Beddoes* as a remedy in consumption, has been fully tried by others without success; and often, as I have witnessed, with great prejudice to the tone of the stomach, and to the general strength. It is only proper, and in small and cautious doses, under great excitement of the heart's action; or, to restrain the circulation when the hæmorrhagic diathesis is present.

*Hydrocyanic Acid* is a very valuable sedative, employed with care and judgment, and equally hazardous if given in

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\* See Clark, p. 347.

doses of magnitude, or even in medium doses frequently repeated, where the constitution is weak and delicate. Its use in the treatment of phthisis was first strongly recommended by Magendie, and afterwards by Dr. Granville. It by no means deserves the high praise which it received, and indeed should be rejected from the list of remedies in consumption, except as an occasional sedative in doses of from one to three drops, for the alleviation of urgent active fever, or of frequent and harassing cough. I remember the case of a youth about twelve years of age, who had a dangerous acute pleurisy. When the inflammation was conquered, cough remained, attended with hectic fever, with two violent exacerbations in the day. He was in great danger for several weeks, but recovered, and is now living, a fine young man. The benefit which he received from the hydrocyanic acid, administered in medium doses, three times a-day, was very remarkable, and perfectly satisfactory; and the more so, as various other medicines had failed to afford any relief.

*Opium*, in some of its forms, to assist sleep, to restrain diarrhœa, and to abate the spasm and irritation of cough, is often a valuable source of relief in phthisis; but care should be used not to give too sudden a check to the secretion of the bronchial membrane, the freedom of which is important when any inflammatory action of it is present; and, also, if viscid mucus accumulate in the bronchi, its free expectoration must be promoted as a first consideration.

I have found the following mixture very useful to my consumptive patients. Of a solution of acetate of morphia, in the proportion of 10 grains to a drachm, 12 to 18 drops; of hydrocyanic acid, 12 to 18 drops; of the syrup of tolu, 12 drachms; of diluted sulphuric acid, a drachm: of this, a teaspoonful in water at bed-time, and half this quantity in an hour or more, if sleep be absent. Similar doses for troublesome cough. Sometimes I add to this mixture a little of Batteley's sedative. Frequently I omit the hydrocyanic acid.

*Alkalies*.—Louis, under his head of treatment, quotes the recommendation, by different authorities, of carbonate of potash, chloride of sodium, chloride of lime, hydrochlorate of ammonia;

but he also points out the narrow grounds on which the encomiums on their agency really rest.

In a work, by *Dr. Campbell*, published some time since, "On the Nature, Pathology, and Cure of Consumption," the use of the pure alkalies is recommended with great confidence, on the following theory:—that from strumous dyspepsia the blood becomes charged with particles derived from the materials of nutrition, which, being carried forward to the lungs, are capable, in some organisations, of passing through their extreme vessels; and hence, producing no effect; but which in other cases are retained by the capillaries; and thus by gradual accumulation form masses apparently homogeneous, to which we supply conventionally the name of tubercle." He expatiates on this doctrine, and appears to consider that the materials forming the tubercle, the offspring of dyspepsia, travel through the general circulation, and may be so chemically acted upon by the solvent power of the pure alkalies, as to be prevented from accumulating in the lungs, and making an addition to the existing tubercles. I fear that this theory is too unsound, and the practice too superficial, for any claim to the praise of curing phthisis.

*Tonics.*—As a principle of treatment in chronic phthisis, I am a great advocate for the use of this class of medicines. In the practice of physic, we are in general more disposed to be satisfied with empirical results than to exercise a theory; in other words, to be indifferent about the *modus operandi* of medicines, which indeed it is not always easy to explain, so that we obtain our object by their use. But even by experience we are often misled. Seeming facts, apparently clear and unquestionable, may turn out to be delusions; and many remedies, when invested with the charm of novelty, and so captivate the fancy, reign but for awhile, disappoint our hopes, and again make way for a new favorite: hence much of the instability of medical practice. I have no doubt that in these quick changes of the popular favor, many useful medicines, which ought to be retained, pass into neglect and unmerited oblivion.

In a very few of the diseases which afflict mankind, there are certain medicines which exercise a specific power over the symptoms; some to palliate in a prompt and remarkable



manner, others absolutely to cure. A great desideratum, in the treatment of phthisis, is, by medical and other means to change the whole blood, or, to use a favorite chemical phrase, to bring about a change of matter. It is not impossible that a medicine may yet be discovered, capable of acting successfully against the tubercular diathesis; but, until that can be found, we can only employ the best means in our possession; and, as rationally as possible, study to meet the indications which in every case are presented to us; so far assisting Nature, that she may be enabled to exert her *vis medicatrix*; and, disencumbering herself (I say by our help) of the clogs and impediments of disease, regain the privileges of health.

I will not repeat my arguments that debility is one of the most invariable effects of phthisis; and that if one indication deserve attention more than another, it is the support of the vital powers. In regard to the use of tonic medicines, the way must be prepared: the digestive mucous membrane should be free from inflammatory irritation; the internal secreting functions favorably healthy. On such foundation, we choose the particular tonic according to the circumstances of individual constitution; and the nature of the case.

*Louis* quotes from M. Dupasquier his enthusiastic recommendation of the protioduret of iron, who describes its mode of action as follows:—"It diminishes and eventually causes suppression of suppuration from the ulcerated walls of cavities; cicatrization may then be effected, and if there be but one cavity, or but a few, the cure may be permanent. Should unsoftened tubercles remain after the cicatrization of the cavities, the absorbent action of the protioduret of iron may cause their removal by absorption, and, under these circumstances also, the cure may possibly prove a permanent one."

*Louis* states that he was wholly disappointed in the effects of this agent. For myself, I have mostly been satisfied with combining the influence of iodine with iron, in the use of the inhalation of it with conium, as I shall have to mention and dwell upon at large. I have sometimes given with advantage a mixture of *vinum ferri* with infusion *gentianæ C* and a small dose of iodine. Otherwise, of the forms of iron, I employ the sulphate, the citrate, the *mistura ferri composita*, the double

salt in small doses of the citrate of iron and quinine, as circumstances may direct. I much esteem the use of the di-sulphate of quinine, and direct it sometimes with bi-carbonate of potash, and lemon-juice added at the moment, making an agreeable tonic effervescent draught; at others, I omit the salt, and substitute diluted sulphuric acid, the vehicle for each draught being water, with tincture and syrup of orange peel.

The cortical part of sarsaparilla, infused in lime water, is an excellent vehicle for ingredients which may be called alterative, as iodide of potassium, alkaline liquor, &c.

*Counter-irritants.*—The use of this class of external remedies is often problematical. Those who are much debilitated, and of very irritable constitution, usually experience more injury from the nervous disturbance which they occasion, than can be compensated for by the partial good effects.

Severe means of counter-irritation they certainly cannot endure; and it is a question whether, in opposite constitutions, such shall be employed; and if so, what kind shall be made choice of; and lastly, in the first or the last period (before or after the softening of tubercles), or in both?

For those flying pains over the chest which are not so deep-seated as the pleura, tartar emetic made into ointment, or added to the volatile liniment, not used in its greatest severity, sometimes proves useful, and is a very safe application. Pleuritic pain is more advantageously treated by a blister, and it should be as small as can be expected to be remedial; for large blisters debilitate and irritate too much. The acetum cantharidis\* may deserve a preference over the plaster, where we are studious to weaken as little as possible; as the discharge is one of thinner serum and of shorter duration than from the ordinary blister, which acts more slowly and excites more the action of the deeper-seated vessels, and for that reason certainly is the most remedial, where the full action of a blister is wanted. The fluid preparation, from its very prompt action, and the facility of ap-

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\* I had suggested this preparation long before its admission into the Pharmacopœia, as Mr. Garden, of Oxford street, can testify, and one much more to be depended upon than that of the Pharmacopœia. It is a *saturated* solution of cantharides in very powerful acetic acid.

plying it in any situation by means of a camel's hair brush, is a remarkably convenient remedy. When lightly applied, it may act as a useful rubefacient. As a prompt remedy of this description, a mustard sinapism answers well: also the excellent counter-irritant of ammonia, &c. prescribed by Dr. Granville.

I have known numerous instances of the employment of setons and issues, but cannot remember one of real and evident benefit being derived from them. They are so troublesome in their nature to the consumptive sufferer, that but very rarely can we be induced to advise them; never when the debility is great; and, if at all, in those cases where there is a chronic tendency to hæmoptysis, and when scrofula is evidently combined with tubercular phthisis, the patient at the same time possessing sufficient strength to allow of the treatment. Hippocrates and Celsus advised the making of several eschars in different parts of the body, by means of the actual cautery, on the joint principle of derivation and counter-irritation; and, in France, the burning by moxa I have known to be much used; but these are not favorite means in this country, nor deserve to be so, in the treatment of consumption.

*Laennec* observes: "The cases in which the excitement of discharges from the skin is most indicated, are, no doubt, those in which the suppression of an habitual discharge, or the repulsion of a cutaneous eruption, has appeared to be the cause of the disease."

"Of the cauteries," he says, "I have used them, both actual and potential, exclusively in the treatment of phthisis; and I must confess that I have never obtained a cure in any case where they have been employed."

Latterly he restricted himself to the application of the caustic potass, commonly beneath the clavicle, or in the supra-spinal fossa, so as to form eschars of eight or ten lines in diameter; but he did not insist upon the treatment. The French physicians practise much more on the ancient principle of remote derivation than the English; and hence, *Lacune*, when making use of blisters, directed their application to the arm or the thigh, rather than to the chest. I give only partial credence to the doctrine. When active inflammation exists in the cavity of the chest, agreeably, I believe,



to the general practice of the present day, I avoid the immediate local application of a blister ; but, if there be only slight inflammatory action, as indicated by pain without fever, I choose to apply the remedy, as near as can be done, to the part affected ; finding that the good results support this practice, in opposition to the contrary theory.

*Louis* thus speaks of issues, “ which have been considered by more than one physician as prophylactic against phthisis, but on insufficient grounds, are still constantly prescribed at all periods of phthisis with the view of arresting its progress, or warding off the hour of its fatal termination. The practice appears to me to rest on no results of just experience, and I cannot recommend it. We constantly see phthisical patients admitted into the hospitals, who have had issues placed under the clavicles or in the arms, soon after the invasion of the disease, without any apparent modification in the progress of the affection having taken place, even for the briefest period. The same facts are observed in private practice also. I have, in truth, never noticed any improvement follow the application of issues to the arms or under the clavicles which could legitimately be ascribed to them. We should then abstain altogether to employ them, in spite of usage ; or at least never consent to their employment, except on the earnest solicitation of the patient, or more especially of his friends,—for in conducting the treatment of a disease which almost invariably terminates fatally, it is matter of importance to prevent the chance of after-regret, which would not be the less bitter, because in reality without foundation. Besides, by employing small issues, and watching them carefully, they may be freed almost completely from the usual inconvenience.” He equally condemns blisters when used with the same view of prophylaxis.

As a general principle of external and auxiliary treatment, I am partial to the use of a stimulating refrigerant to the chest by means of linen compress, applied more or less extensively according to the case ; and ablution, night and morning, of the whole chest, before and behind, by means of a towel, care being taken to wipe and rub the skin carefully dry by a coarse towel, to a degree that a pleasant glow may be produced. The

mixture for this purpose, which I have found answer very well, has consisted of two ounces of good Eau de Cologne, and the same of French white wine vinegar, with eight or ten ounces of water. Consumptive patients are so sensitive to cold, that more than ordinary care must be used in the method, simple as it may appear ; and in the commencement of the treatment, and especially if the weather be cold, I advise that the process be carried on by the patient when in bed ; first, in the front of the chest and under the arm-pits ; then behind, and covering the part finished with flannel, while the rest is proceeded with, so that there be no risk of chill. When the patient is well seasoned, and particularly in warm weather, the water may be used cold, and with more advantage, as a tonic. A higher degree of this treatment consists in the use of the rubbing wet sheet with water, tepid or cold ; but this is not applicable in all cases. The shower-bath also is rarely admissible. It is not safe to interfere suddenly with the general balance of the circulation, when the lungs are much affected with disease, and especially if there be a tendency to hæmoptysis. I have known more than one instance in which the patient, although having a small cavity in the lung, was considered strong enough to make trial of a cold shower-bath at his own very earnest desire ; but it could not be continued ; it soon disagreed ; and I am certain that much mischief would have followed if it had been continued ; the re-action from the shock being more than the diseased and weakened vessels could bear.

Of a chest compress, Dr. Marshall Hall speaks very highly, and appears to have procured from it a much larger and more important success than I should have expected from any kind of local external treatment.

He directs his lotion “ to be constantly applied by means of six folds of linen over and across the upper lobes of the lungs.” The following is his statement\*:

“ One part of pure alcohol is mixed with three parts of water. It is applied tepid at first, afterwards of the temperature of the atmosphere. It is applied, in *small* quantity at a

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\* Practical Observations and Suggestions in Medicine, p. 25.

time, every *five* minutes, so that the application may always consist of alcohol and water. (If applied in larger quantity and less frequently, the alcohol would evaporate, and water alone would be left, and this would be the source of a feeling of discomfort, instead of the feeling of glow which the alcohol induces.) The application is easily made: a piece of soft linen, of the size of a very *large* sheet of letter-paper, being folded in the usual manner, is then folded twice more, in lines parallel with the first, so that the whole consists of six folds. These are stretched, applied across the upper part of the thorax, just below the clavicles, and fastened to the shoulder-straps, or other part of the dress, which latter is to be arranged so as to be readily opened and closed. A sponge, the size of a walnut, is then filled with the lotion, and pressed upon the linen along its whole course, the dress being opened for this purpose and immediately closed.

This operation need not occupy five seconds. It should be repeated, as I have stated, every five minutes. The application of the lotion should be incessant during the day, and all waking hours, the dress being light or even entirely removed, so as to allow of free and rapid evaporation. It is suspended during the night."

If the least unpleasant sense of coldness be felt from the compress, a large piece of thin oil-silk should be put over it; and especially at night this is proper; it counteracts the quick drying of the linen: yet, in most cases during the day, the first method is the best.

In acute phthisis, free ablution of the burning skin with cold water, and its application by linen compresses to the most affected parts of the body, which are sometimes *intensely* heated, have a remarkably palliative and refreshing operation.

#### *Diet and Regimen.*

Formerly it was a favorite practice, especially in the first period of phthisis, to use a diet of milk and vegetables, with cooling fruits, under the idea of counteracting hectic fever, and preventing inflammation of the pulmonary tissues; with some theorists too, of combating the supposed inflammation of the tubercles! More recent experience has shown the fallacy



of such reasoning; and, except in the urgent hectic fever which attends very acute phthisis, we find the advantage of supporting the vital powers by a well-selected nutritious diet; animal food of a light, digestible kind, always once, and sometimes, when there is appetite for it, *and* digestive power, twice in the day, with a moderate quantity of fluid stimulus, as sound draught porter, or wine diluted, port or claret, of the best quality. When hectic fever is present, of course, cooling drinks only are allowable, as water, barley-water, and lemonade; and the solid part of the diet must be of a light description. I will not attempt further details in this general view of the present subject; for it is evident that no two cases can be treated exactly alike, either in the prescription of food or medicine. A certain principle may be laid down, as that of very supporting nutrition in phthisis, but the particular means must be varied, and judiciously adapted to the state and constitution of the individual.

Regimen embraces the further considerations of clothing, air, place of residence in which the patient lives, and exercise. Except in summer, the consumptive patient requires to be invested with flannel—and usually over the whole body; so desirable is it to preserve the utmost uniformity in the temperature of the surface. The day flannel should not be worn at night, and in warm weather it should be thin and light—and still better, if it suit the feelings of the patient, calico at night.

So soon as the invasion of phthisis is discovered, the place of residence and the most favorable air must be a first object of attention. As a general axiom, let it be changed; for it is almost always better to have another air and residence than that in which the complaint has broken out, so that other sacrifices are not too great. This observation applies to changes near home, and in this country. The greater change, that of England for a foreign climate, is a more serious consideration, and the propriety of making it ought always to turn on many circumstances. This is a subject which I shall more particularly consider in a future page; but I will here enter my strong protest against the sending any one abroad in the second period of phthisis, when cavities in the lungs are formed. I will admit a *possible* exception; but it must be

very rare. It is desirable that the place of residence should not be damp, that the soil should be either gravel or chalk, the house sheltered from N.E. winds ; the apartments, both for day and night, rather spacious, with a proper aspect—of good height ; and, as a most especial point, well ventilated. On the great importance of ventilation I could expatiate at much length. A high temperature of the apartments is very improper. If it can be managed, the range should be from  $58^{\circ}$  to  $64^{\circ}$ . The large ward of a hospital is very objectionable for the humbler consumptive patient ; and in any asylum distinctly appointed to this class of invalids, there should not, in my humble opinion, be more than two or three patients in one room, and those the least severely affected ; not more than two of those heavily laboring under the disease ; and when the latest of the last stage has arrived, the then dying sufferer should be placed alone, that others, for whom any hope of recovery may remain, may not have such a painful spectacle to witness.

I would prefer a range of small buildings to one large edifice ; and, in addition to the happiest choice of site that could be made, I would have the best arrangements carried out for the size of the apartments, the regulation of temperature, &c. ; with such excellent ventilation as would be proved by the sensible freshness of the rooms, and the total absence of all unpleasant smell.

A large ward, occupied by numbers in the different stages of the disease, presents to my eye a very objectionable appearance ; as being, if I may use the expression, a focus of phthisis poison ! and, if there be disagreeable closeness, and any sensible oppressiveness in the air of the ward, I become impressed with the idea that such asylum, although a real source of immense relief and comfort to the afflicted, and founded with the highest views of humanity and benevolence, is not well calculated to fulfil the object of making the best possible attempt to find the nearest approach to the cure of consumption. It is most desirable that the consumptive patient should enjoy the benefit of the fresh external air, whenever the state of weather will permit. Those have the best chance of recovery, and live the longest, *cæteris paribus*, who can most regularly take exercise abroad. The use of a respi-

rator is not without some objections, and is even improper to be worn when the atmosphere is at all genial, for it a little obstructs healthy aeration; but yet is an admirable safeguard against a north-east wind, and a doubtful state of atmosphere, which would otherwise induce the prudent patient to remain within doors.

The mode of exercise is to be considered, and partly so according to the station and means of the patient, and his state, as well as the season of the year and the weather. Neither exercise on horseback, nor in a small carriage open at the sides, should ever be taken on a windy day; for meeting the wind, and particularly in quick motion, is very fatiguing and depressing. An open carriage, closed around, as the *barouche* or *landau*, should be chosen. Gestation in a close carriage is preferable to remaining in the house the whole day. Walking in moderate sunshine is highly favorable to the invalid; and horse exercise, the animal being easy-going and gentle, is very valuable, because it allows of longer continuance in the air, with little comparative fatigue. The amiable Sydenham extolled it in language of enthusiasm, and indeed carried his panegyric beyond the truth, as I think will appear in the following quotation:

“In fine, how desperate soever a consumption may, or is esteemed to be, yet I solemnly affirm, that riding is as effectual a remedy in this disorder, as mercury in lues, or bark in intermittents; provided the patient be careful to have his sheets well-aired, and take sufficient long journey.”

Having now brought to a conclusion the preliminary part of my little work, I will proceed to the consideration of inhaling treatment in phthisis; the two editions of what I have before published on the subject having been for some time past exhausted. Previously to the narrations of my cases, it may not be uninteresting that I should give a short historical account of this mode of treating pulmonary disorder.

It would be matter of difficult research to ascertain the period at which the attempt was first made to relieve the disordered condition of the lungs and the air passages by means of inhalation. We are told that Galen prescribed the fumes of arsenic or orpiment. Dr. Beddoes, in the year 1793,



published some observations on pulmonary consumption, in which he pointed out the injury that had been produced in some consumptive cases treated by inhalation of oxygen which had served to aggravate greatly the cough and hectic fever. He argued, that benefit might be expected to arise from reversing this treatment, and directing the patient to breathe a mixture of atmospherical air with hydrog<sup>en</sup>, or with azote. He quoted the practice of Dr. Percival and Dr. Withering, in having used with advantage, although not with complete success, the inhalation of carbonic acid gas, procured from an effervescing mixture of chalk and vinegar, or carbonate of potash and vinegar.

In 1823, Sir Alexander Crichton published his observations on the treatment and cure of several varieties of pulmonary consumption, and on the effects of vapor of boiling tar in that disease.

With regard to the gases mentioned and employed by Dr. Beddoes, of oxygen, or the nitrous oxide, I have never made trial of them, and therefore cannot offer my testimony of their value as medicinal agents in pulmonary, or other kinds of disease. Various difficulties would attend the employment of the gases in general practice; much chemical dexterity being required in preparing them; the doses to be administered not of easy arrangement; and their action on the system being uncertain, and probably capricious.

I made early trials of the tar vapour recommended by Sir A. Crichton; but without satisfactory results. I must observe, however, that my experience with this remedy was not sufficient to justify me in pronouncing any positive opinion of its merits.

The inhalation of chlorine, as a remedy in consumption, has had many advocates. So early as in 1817, M. Gannal informs us that, being attached to a manufactory of printed calicoes at St. Denis, he had occasion to observe that those workmen who happened to be affected with phthisical symptoms experienced relief, and many quickly recovered their health, from being exposed to the inhalation of the chlorine disengaged in the various processes. He communicated the fact to the late celebrated Laennec, who, in the year 1823, at

the Hospital of La Charité, made some trials with a solution of ehloride of lime, sprinkled about the room of the siek, and also sprinkled on some sea weed with which the room was previously covered. This distinguished physieian further made an attempt, in a small ward of the Clinieal Hospital, to establish an artificial marine atmosphere, by means of fresh sea weed. The results which he pereieved from both of these methods were, to a certain extent, satisfactory ; but not so decisive as to induee him to follow up the praetice.

Amongst aneient and modern authors, we read of different kinds of inhalations being used, in addition to what I have mentioned ; as the volatile parts of different herbs, separately and in eombination ; of frankineense, turpentine, storax, æther, vinegar, and other substanees which might be mentioned. The most simple vapor in use is that of hot water, as a relaxant ; or, upon the idea of obtaining more emollient properties, a preferenee is sometimes given to the decoction of marsh-mallows. Thus the rationality of applying some remedial agent in a direet manner to the seat of diseased action, in certain eonditions of the bronehial and pulmonary disease, has been admitted and aeted upon for many past ages.

But the public attention has of late been powerfully drawn to the subjeet of inhalation in the well-known employment of pure æther to render severe surgieal operations painless. I advert to it partieularly as being a suffieient answer to those objectors to my treatment, who have asserted that the use of iodine with eonium, in the way of inhalation, is not a constitutional applieation of the medieine, and therefore can only form a superfieial and local kind of treatment. The very surprising and powerful effects of æther inhalation, at once demonstrate, that certain medieines which possess mueh volatility can strongly impress the whole organism of the body through the medium of the lungs. In the example of æther, the operation is ehiefly on the sensorium ; the nareotism of a sudden, *peculiar*, and transient intoxiciation ; and the stimulation being so intense and immediate, it is more than an unhealthy brain will allow with safety ; as we are taught to know by some oeeasional instanecs of dangerous, and even of fatal collapse. But this is a digression ; and I come now to speak distinetly

of the inhalation of iodine, which, in the method of my using it, originated with myself in 1828. I published the first edition of my observations upon it in 1830; and a short time before it had left the press, Dr. Murray, of Belfast, introduced, in a dissertation on other subjects, an account of the useful power of iodine in phthisis pulmonalis, administered by diffusion with the vapor of hot water into the general atmosphere of the apartment.

In the Medical Gazette for April 6, 1839, we find a paper by Dr. Corrigan, of Dublin, recommending, as a mode of inhalation, the impregnation of the atmosphere of the apartment with iodine vapor, by a mode different from that of Dr. Murray; but the principle is of course essentially the same. I am gratified with the favorable testimony which this physician bears to the remedial influence of iodine vapor in phthisis; but I do not approve of his mode of employing it. The volatility of the iodine would cause the vapor to ascend to the highest parts of the apartment\*; it would attach itself to the linen furniture, and must, of necessity, find its way to the lungs of the patient in a most uncertain degree of strength. The objections of Dr. Corrigan and others to the direct method of inhaling which I recommend, are without foundation. It does not, as they state, cause irritation to the larynx and air passages; but, on the contrary, its influence, if used of the proper strength, *and* with the addition of conium, is soothing and agreeable.

The superiority of the method of direct inhalation, which allows of the immediate conveyance of the remedy to the seat of disease, or its close proximity; and of precision in its dose; must be, I think, too obvious to require argument. As, in my experience, iodine inhalation is the only one to which I have attached much satisfactory agency, I shall speak of it chiefly; and of other articles incidentally in the course of my dissertation.

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\* Nor is the great *waste* of the iodine a slight objection to this method. The author states that in the use of the apparatus, "about six drachms of the tincture of iodine will be evaporated in an hour;" and when he has it at work, as he says, "from eight to twelve hours out of the twenty-four," it would form no small item of expence, employed in a charitable institution!



As, by mixing the tincture of iodine with water, the iodine itself separates into flakes which become precipitated, and as 7000 parts of water are required for its solution, I found it expedient to form a preparation which should be uniform, and preserve its transparency when united with water in any proportions. This admixture is effected by adding together iodine, iodide of potash, distilled water, and alcohol.

The following is my formula :

R Iodinii puri,  
 Potasii iodid a a gr. vi.  
 Aquæ destillat. ꝑv. ʒvi.  
 Alcoholis ʒii. M. fiat mistura, in inhalationem  
 adhibenda.

But invariably I direct the addition of a *saturated* tincture of the dried leaves of conium, which in the most favorable manner softens the action of the iodine solution, and tends to soothe the bronchial mucous membrane. Of the iodine solution I commence with the dose of 30 minims, and increase it by 5 or 10 at a time, in a gradual manner, according to its effects and the nature of the case, till I may perhaps carry it to 240 minims; but, in the majority of instances, I confine my range to 180 minims. Whatever may be the quantity I use for each inhalation, I constantly direct that two-thirds of it be put at first, the other third when half of the time for inhaling has expired; otherwise it would be too strong at first and too weak at last; 30 minims of the tincture is the ordinary dose which I prescribe, and this need not be divided, nor does it in general require increase, as it is so much less volatile than the iodine, and enough of strength remains; but, if much of its soothing influence be wanted, either to allay irritable cough, or to act as a soporific, a drachm, or even a drachm and a half, may be employed; but in such case, it is better to use it in divided portions. The water to which these preparations are to be added, should be of a temperature of from 115° to 125° Fahrenheit;—as a medium, 120°; a little more or less is not material. The whole should be well

blended by shaking the inhaler. This should be constructed of glass\*, for a metallic one instantly decomposes the iodine. Its tubes should be capacious, and the inhaler should never be quite half-filled; for if these two last circumstances are not carefully attended to, much inconvenience would arise, the inhaling would be rendered difficult, and which by proper attention is so perfectly easy a process, that an invalid with the weakest respiratory powers does not experience any difficulty.

The last part of these preparatory steps, for the purpose of keeping up the proper temperature of the contents of the inhaler, is to place it in an open vessel, large enough to allow of the inhaler being a little removed from its sides. Water, of a temperature from 120° to 130°, is to be put into it, enough to rise to about two-thirds of the inhaler; and, to prevent any inconvenience from the vapor which issues, the vessel should be covered over with a piece of thick paste-board, neatly fitted.

Now desire the patient to inhale by making a rather deep inspiration, then to relax, or take off, the lips from the mouth-piece; and to inhale again immediately, carrying on the process effectively†, so that the medicated vapour shall pass into the deep air-passages, but not in a quick and fatiguing manner. At the first time of using it, five or six minutes will be sufficient; but in the progress of the treatment it may be extended to twenty, twenty-five, or thirty; but I seldom in my direction exceed twenty. The frequency of repetition is from twice to thrice in the day; commonly thrice, for the first four or six weeks.

These instructions may appear frivolous from the minuteness of the detail; but I can assure my reader that I have known several instances of failure of the plan entirely from some kind of inattention to the proper mode. The extreme

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\* Care must be taken, and especially in cold weather, to warm the inhaler, by placing it in a basin of moderately warm water, before putting into it that which is to be of higher temperature.

† A rather strong gurgling of the fluid in the inhaler, is a sign of the inhalation being properly managed.

purity\* of the medicines is another point of the utmost importance.

I now proceed to the narration of cases, with observations, which will illustrate my views in this auxiliary mode of treating phthisis; and show further my general opinions. I hope fairly and truly to exemplify the effects, which others, who may be induced to take me for their guide, may expect to obtain. Many of the cases which I shall offer have been already published, either in my volumes or the journals; but I prefer introducing them again, because not only are they favorable to my purpose from their importance and interest; but, from the distance of time I am enabled to state the ultimate results; it being my anxious object to give a true and faithful account of the remedy, with an earnest desire not to magnify its powers, whether palliative or curative; not to claim for it any false pretensions; nor mislead, by any authority which I may possess, either the practitioner in medicine, or the public. I well know, from long and great experience, the delicate and difficult ground on which I have to tread, when pulmonary consumption is my subject; and that I owe it alike to truth and science, to be cautious in my confidence, and guarded in my statements.

*Magna est veritas, et prævalebit.*

## CASE I.

Chronic cough, apparently depending on the irritation of tubercles.

A gentleman, aged twenty-five, tall and slight, his chest well proportioned to his figure, first suffered from cough five years before he consulted me, and from which he had never since been free, although it always became alleviated in the summer months. Until the last year, he had regularly gone abroad for the winter and spring months, to receive the advantages of more equal climate; but he had passed the last

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\* I desire not to impugn the accuracy of any chemist: but, in my solicitude for my own immediate patients, I have usually recommended, both for the medicines and the inhalers, Mr. Garden, of Oxford Street.



cold season in this country, in apartments kept at a regulated temperature. He consulted me at the end of March. He related that his cough had been so severe in the previous December, that his medical advisers put him on a fish and vegetable diet, with entire abstinence from fermented liquor. His constitution was highly irritable; he was of the nervous temperament; his system could not accommodate itself to this privation of stimulus, for he had always been accustomed to a generous diet, and he found himself losing strength and flesh, was affected with night perspirations, and general pains, but especially in the loins and the legs; and, after a fortnight, he resumed a supporting diet, with the use of a little wine; but it always happened, that if he went beyond a small quantity, if he talked much, or sat in a hot room, his cough became severely troublesome.

I found this patient looking thin and weak; the pulse 96, the animal heat  $99^{\circ}$ , the respirations 28 in the minute; the tongue was coated with dark white fur. Under the stethoscope, the voice produced remarkable resonance on the right side of the chest at its upper part, and the respiration was not very audible over a considerable portion; the sound also being dull; while, on the left side, the indications were good. The cough was exceedingly irritable, hard and sonorous, unattended with secretion.

The digestive organs were not in a healthy state. His appetite could not be easily satisfied; and yet he had been losing flesh. He did not feel himself nourished and strengthened by his food. There was inactivity of the bowels. The urine gave a copious deposition of lateritious sediment.

I prescribed a morning draught with sulphate of magnesia, infusion of roses, and syrup of tolu; a saline draught at night; and in each of these draughts a minim dose of hydrocyanic acid; and that he should inhale, for ten minutes, three times a day,  $\mathfrak{zj}$  of the iodine mixture, with 30 minims of the conium tincture; the diet to be regulated as to quality, and quantity, and the hours of refreshment; but I did not debar him from animal food, nor from a glass and a half of the best sherry (as he preferred this wine) properly diluted with water. I changed his hour of dining from seven to two, and directed

him to take a supper of gruel and milk, or bread and milk, with the addition of a fresh egg boiled, when his appetite should require it.

I directed him to wash the chest with a compound vinegar lotion, rendered slightly tepid, and that, having dried the surface, he should use the flesh-brush as long as he could do so without fatigue. The cough became surprisingly relieved in a short time, the pulse reduced to 84, the animal heat to 98°, and the respiration much improved. The urine deposited a large quantity of mucus, still with some lateritious sediment. He was very sensible of the advantage of dining at an early hour; his digestive functions were improved: he had before complained of great inconvenience from flatus; I did not find reason to think unfavorably of the action of the liver. The proportion of iodine was now increased to ℥ii, used in divided portions, and for fifteen minutes. He praised the effects of the inhalation in the strongest terms: he felt “that it gave a pleasing warmth to his whole chest, a lightness and comfortable freedom from oppression, which before had often greatly distressed him;” and the cough was remarkably mitigated. The digestive organs were not in a healthy condition, and he was anxious to see himself improve in flesh. I prescribed the following alterative mixture:

R Cort. rad. sarsaparillæ contus. ℥ii.  
 Liquor calcis. ℥viii.  
 Macera per horas duodecim et cola.  
 R Hujus colat. ℥vii.  
 Syrupi cort. sarsaparill. ℥vi.  
 \* Liquor alkalini (Brandish's) ℥ii. ad iii.  
 Tinct. aurant ℥ss.  
 Potassii iodid. gr. vi.  
 Potassæ nitrat. ℥ii. M.

Fiat. mistura cujus cochlearia ampla ii. ad iv cum parte æquali lactis calidi commista, bis quotidie capiat.

Of this mixture he began with two spoonfuls, and soon took the full dose.

\* This preparation, being imperfectly caustic, is a much milder alkaline remedy than the liquor potassæ of the Pharmacopœia. I find it a very useful medicine.

The season of the year was now in his favor, and he took horse or carriage exercise according to the weather: he was a person of very active habits.

I have stated that no secretion had attended his cough; but he informed me that, on three occasions, immediately after inhaling, he coughed up very small yellow substances, and that his chest was sensibly relieved by getting rid of them. I had not the opportunity of inspecting them.

The patient improved progressively and regularly in all respects. The digestive functions were now healthily performed; and at the end of six weeks the cough had almost entirely ceased. At the end of a fortnight, he took the alterative mixture once a day only; and once also a quinine draught. He entered on the use of the graduated shower bath—graduated as to the temperature and the quantity of water, and the frequency of its repetition. It agreed perfectly, and afforded him great benefit. He made use of dumb-bells, with a view to strengthen the muscles of the chest.

At the end of ten weeks he expressed himself as enjoying the feelings of health. The pulse ranged from 70 to 76; the animal heat was 96·5; the inspirations were 18 in the minute; he had recovered flesh and strength, so as to appear to his friends, and to feel himself, far better than he had been for many years; he could take active exercise, and even ascend several flights of stairs without any embarrassment in his breathing, which before became difficult on ascending quickly even one flight of stairs; he had, in the last fortnight, lessened the frequency of using the inhalation to twice and once a-day. He now discontinued all treatment, and set out on a tour. Auscultation indicated a more free and clear state of the respiration; and there was scarcely any difference between the sound of the right and left side.

This gentleman passed the subsequent winter at his seat in Scotland, and was able to enjoy the pleasures of his gun. With very little exception, he had remained well for upwards of a year. That exception consisted in taking cold, which was followed by cough and an expectoration colored by blood; but the indisposition was removed in a very short time.

Six months after he had quitted me, he wrote me word



that he was fat and strong, equal to enjoying the sports of the field, and without cough. A sad history remains to be told. He was led into convivial society, and into great occasional excesses. He even drank spirits freely. He was careless of exposure, and kept late hours. A few months after, he was attacked severely with the epidemic influenza, and from which he never fairly recovered. He consulted me again in eighteen months from the former period, when the evils just mentioned had produced lamentable effects. I found at the upper part of the right lung the clearest evidence of a large cavity. The pectoriloquism was most strongly marked; there was cavernous cough; all the symptoms were urgent; and he had lost flesh and strength so seriously, that I despaired of him. London atmosphere so much disagreed, that I sent him into the country, where he inhaled as before, and with much relief; but, although he combated with his disease for a considerable time, he sank at last.

*Obs.*—I am quite convinced, that when I first put this patient under treatment, he had tubercles in the right lung; that he was in the first period of tubercular phthisis. What could be more satisfactory than his recovery, as I have stated it? But the same care which had led to this was equally wanted to confirm and maintain it. How opposite was his mode of life; and the unfortunate issue of the case cannot be matter of wonder.

I must here observe, that whoever is fortunate to surmount, as this gentleman had done, the dangerous symptoms of the disease, whether arising from crude or softened tubercles, should lead a life of the greatest possible care; pass all the months, except those of summer, in the most favorable climate to which he can have access, and observe temperance and regularity in all his habits. On such good terms, a cure may be established. Without care, a relapse must happen.

## CASE II.

Tubercular Phthisis Pulmonalis much advanced; marked by pectoriloquism, and by much evident tubercular obstruction; repeated relapses from fresh softening of tubercles; by due perseverance in the means of treatment for many months, the case brought to a successful termination.

M. A., aged 32, of fair complexion, slight in figure, above the middle height, and well proportioned, of delicate

constitution, the mother of several children, and who had lost a brother and a sister from pulmonary consumption, took cold in the middle of June 1830, and soon became affected with a troublesome cough, which was followed by the establishment of hectic fever, with emaciation and great debility. Digitalis was administered in free doses, with much disadvantage to the powers of the constitution, and without any relief to the symptoms. She expressed that she had felt herself as if poisoned by the medicine, and she thought of it with horror. Other medicines were afterwards employed, and counter-irritating applications were used to the chest ; but she became gradually worse.

When I first visited this lady, in January 1831, I found her situation highly alarming. She was very much emaciated, was so extremely weak, with such hollowness of cheeks, and such looks of sinking, that my first impression was that of painful apprehension that the case was beyond the reach of any medical treatment.

The patient herself, both then and at subsequent periods of alarm, had much less of that flattering expectation of recovery than is felt by most consumptive patients. The calm resignation of her truly Christian mind to her most probable fate, was no less interesting than worthy of example.

The pulse ranged from 120 to 130 ; the animal heat was  $103^{\circ}$  ; the cough was violent, and so peculiarly harassing at night, that the sleep was constantly disturbed. The expectoration was difficult, and in quantity about four ounces in the twenty-four hours ; partly colored with blood, and the whole of very puriform appearance ; of a peculiar, faint, and offensive odor. Viewed between plates of glass before a taper, it afforded a well-defined circle of different shades of orange, and an inner field of light green. There were morning and evening accessions of hectic fever. The night perspirations were so profuse as completely to saturate the sheets with moisture ; every night fresh linen was necessary once, sometimes twice. The mineral acids had been administered freely, without appearing to produce the slightest control over this symptom. The tongue was coated with brownish fur in the middle, and for the most part covered with creamy secretion,

giving a nauseous, mawkish taste. She had great thirst, but loathed food. The digestion was weak and irregular; but there were no signs of a diseased state of liver, or of tubercular irritation of the intestines. The urine was loaded with lateritious sediment. The catamenia had been suspended about six months. She was so reduced in strength, that she required to be carried from the bed to the sofa in the adjoining room.

On examination by the stethoscope, I discovered, on the right side, pretty well marked pectoriloquism, and strong gargouillement; and the respiration was evidently so imperfect, and the sound on percussion so dull, as to indicate great obstruction. On the left side, the signs were comparatively favorable, in all the circumstances of the voice, the respiration, and the sound elicited by percussion.

I prescribed my usual mixture for inhalation.

I directed a drachm and a half of the iodine inhalation, two-thirds for the first half of the time, the other third for the remainder, with the usual addition of conium, for fifteen minutes, three times a-day. Should expectoration be very difficult, from fifteen to twenty minims of the saturated tincture of ipecacuanha were to be added occasionally.

I prescribed the sarsaparilla mixture, as at p. 113, without the iodide, and with less nitre. At night, a soothing syrup, with solution of acetate of morphia, syrup of tolu, and diluted sulphuric acid. For the regulation of the bowels, which were usually inactive, a pill containing gr. iv. pilul. aloës. cum myrrha: and gr. ss. pulv. Jacob.

I directed the following lotion for the ablution of the chest night and morning: half an ounce of well-prepared tannin to be infused in twelve ounces of boiling distilled water for four hours; then to be strained; to be mixed with two parts of this liquor, one part of eau de Cologne (or spirit of rosemary), and one of acetic acid. The front and back of the chest and armpits to be well washed with this lotion, rendered just lukewarm by the addition of hot water; and afterwards the flesh-brush to be used. Soon it was used cold. The diet to be very supporting; in the morning early, some asses' milk and biscuit; for breakfast, black tea, mixed with an equal part of hot milk,



and some sugar; and a fresh egg lightly boiled; in the middle of the day, oysters, or some cold chicken or other light animal food, with sound draught porter; at dinner, meat, a little boiled vegetable, with porter; after which she usually took some light nutritious pudding; in the evening, she had two small cups of tea, as in the morning with milk, with biscuit or bread and butter; at night, arrow-root, or similar nourishment, with a small quantity of sherry.

In the first fortnight, the improvement in every particular was so remarkable, that the report made to me (for the patient at that time resided at a great distance from London) was expressive of the confident expectation of a speedy recovery. I could not indulge in so sanguine an expectation; for I was persuaded that there existed too much disease to be removed within a short period, even if so happy an event could be at all accomplished. A relapse did soon occur, and I made a second visit. The case presented some features of amendment. The countenance was less haggard, and the frame not so much under the influence of debility as before. The pulse rather below 120; the inspirations not exceeding 24 in the minute; the animal heat  $100^{\circ}$ ; the hectic paroxysms were less urgent; the expectoration was less in quantity; the appearance of blood had been less frequent; and the nights, till within the last week, had been more comfortable; the appetite, which had become very good, was now less satisfactory. At my first visit, she had not the power of lying a single moment on the left side without producing a fit of coughing; after a week's use of the inhalation, she could go to sleep on that side; but, at my second visit, she could not venture to make this attempt. Yet the general comparison was favorable, and there was every encouragement to persist in the plan of treatment.

In the beginning of March, this lady was brought to town in an invalid carriage, and was placed under my immediate care, residing in an airy, well-situated house. She had again improved since my last report; but had subsequently relapsed; and it was manifest that there had been fresh softening of tubercles, indicated by increase of hectic fever and of night perspirations, by increase of expectoration, and

its bloody and more puriform appearance, with an offensive odor; by greater quickness of pulse; by a fresh loss of the newly-recovered flesh and strength: the animal heat was again 103°. I prescribed the following draught of quinine:

R Quinin. di-sulph. gr. i. ad. ii.  
 Aquæ puræ ℥x.  
 Acidi. sulph. dilut. gtt. vii. ad. x.  
 Tinct. aurant. ℥i.  
 Syrupi ejusdem ℥i.—M.

Fiat haustus octavâ quaque horâ sumendus.

The morphine sedative was continued at night, a little increased in strength; and a second dose was usually required. The liquid blister was repeated. The total quantity of iodine mixture at each inhalation was three drachms; and the time extended to twenty minutes, thrice in the day. The aggravated symptoms subsided at the end of a week, and again a promising improvement took place. The quinine tonic agreed perfectly, and the dose was increased to gr. iss.

This lady remained under my regular superintendence till the middle of July; and, as it would be too tedious to pursue the regular details of the case, I will give a summary of essential particulars. Several relapses occurred, in which a fresh softening of tubercles on every occasion appeared to me to be indicated; being always preceded by increased frequency of pulse, much elevation of the animal heat, alternate chills and heat, return of night perspirations, and such symptoms quickly followed by increase of debility, greater thinness of the person, an altered expectoration from what was entirely viscid and almost inodorous, to that which in all its characters was partaking of purulent secretion, very streaky or cheesy, and frequently mixed with blood. Such altered expectoration was also attended with great aggravation of the cough: happily, however, by degrees the attacks of this nature abated in violence; and also the powers of the patient became so much improved in the intervals, as to allow of a better resistance. On one occasion, from the concurring influence of an unfavorable exposure to a warm sun and a cold wind, and an accidental error in diet, the stomach and bowels

became so violently disordered, with attendant derangement of the biliary secretion, that the strength sunk suddenly, and I was much alarmed for her safety. Yet this illness was soon overcome, and the constitution again rallied. The principles of treatment already described were diligently pursued, and the inhalation was never neglected; although, in the latter weeks, the frequency of its employment was limited to twice in the day: on two occasions, I changed the iodine for chlorine, for about ten days each time, in consequence of dark slight ulcerations of the tonsils, which I thought might be owing to the iodine; but I was convinced, by the patient's statement of its sensible effects, and by my own observation, that the iodine was the only efficacious remedy. I had latterly increased the quantity of the iodine mixture for each inhalation to half-an-ounce; not using more than before of the conium. I lessened it again.

The plan of producing a small blister on the right side of the chest, always changing the seat of irritation, was acted upon almost constantly; and, usually, the liquid solution was employed. The quinine was changed for the *mist. ferr. compos.*; and, after a time, the proportion of sulphate of iron (it will be borne in mind converted into a carbonate), for the dose, was increased to seven grains. This medicine proved highly useful to the general strength; the patient experienced very sensible benefit from it. In the latter part of May, there was some evident increase of flesh; and the strength was so improved as to allow of carriage airing on every favorable day. Notwithstanding the occasional relapses, the general state of the patient was that of decided and most encouraging amendment. The explanation of the occasional increase of troublesome symptoms being given to the patient, to the effect, that they arose from the softening of some remaining tubercles, which could not be got rid of in any other way than by such a process, was satisfactory to her; and she felt encouraged to bear up under such recurring inconveniences with the more cheerfulness, as regarding them to be only of a temporary nature. She was on full diet, and had an excellent appetite to enjoy it. She drank upwards of a pint of porter daily, besides having a glass of sherry or madcira. In



July she was so much recovered, that, on account of the heat of the weather, it became highly desirable that she should have the advantage of country air; and, accordingly, she removed to a healthy spot for this purpose. Afterwards, the progress of recovery was almost uniformly favorable. The catamenia returned; and by degrees the general powers of the constitution were comfortably restored. The inhalation was continued once a day for several weeks. Internal medicine was laid aside, with the exception of a dose of the *mistura ferri composita*, or a quinine draught, on those days when languor or a sense of weakness might be experienced.

From this time no serious relapse occurred. On one or two occasions some bilious disorder took place; but with this the lungs did not appear to sympathise: they continued undisturbed.

A few months after, I had the satisfaction of seeing my patient restored to a comfortable state of health. She expressed herself, indeed, to be strong and better than she had been before the illness. So high a value did she set upon her improvement, that she practised all good rules and every care to maintain it.

*Obs.*—In reviewing all the circumstances of this important case, I feel it incumbent on me first to pay the just tribute of acknowledgment to the fortitude and perseverance which this lady displayed from the first moment to the last. How largely indeed are the physician's efforts encouraged and assisted by the confidence and attention of his patient!

This is an example of the injurious debilitating influence of *digitalis* given in full doses.

The mineral acids, which had been given with a view to check the perspiration, did not appear to produce the smallest influence on that symptom. Nor will this appear surprising, when we consider that it is depending on the tubercular irritation, and forming a part of the hectic fever. It takes place in the highest degree at that period when tubercles begin to undergo the softening process. General means of treatment—as ablution of the skin with an astringent lotion; a moderately warm apartment; the avoidance of unnecessary clothing; care not to take unnecessarily relaxing diluents—are of importance, and should be attentively con-

sidered ; but the real remedy is that which may exert a palliative and curative influence on the tubercular disease itself.

It should always be explained to the patient, that, as regards the effects of the iodine inhalation, immediate material relief is not to be expected. It is desirable certainly that it should sensibly agree, and that it should appear to palliate the uneasy feelings of the chest : but the principle of the treatment is of higher aim, being a curative attempt ; and hence it must be persisted with (unless in a rare case of exception in which it may not agree), under all the discouraging circumstances of a tedious, wearing, and apparently hopeless disease. I am persuaded that, in the present case, the patience of this excellent lady would scarcely have been equal to the daily, weekly, and monthly attention and exertion required of her, if I had not encouraged her confidence by my assurances, that with perseverance I did entertain the hope and expectation of rooting out the tuberculous disease from the lungs.

In no case which has ever come under my care, have I been more satisfied than in the present, with the propriety of directing a full and highly supporting diet ; always, of course, being careful to avoid producing any sensible oppression of the stomach and digestive powers, and to watch the effects of such diet in every way, as much as I would those of a powerful medicine. The good condition, for the most part, of the digestive organs was undoubtedly one of the most encouraging circumstances in this case ; as, by the converse, loss of appetite, weak digestive power, and constant tendency to diarrhœa, must weaken, if not destroy, our hopes of success. As the name of the disease, Consumption, so forcibly expresses, the waste that is going on from absorption and irritation requires a countervailing proportion of nourishment ; and, as a general rule, I should wish to give the consumptive invalid as much supporting food as could be comfortably digested. Such a method of diligent supply is not admissible in the mesenteric consumption of children. In that disease, the direct channel through which the chyle has to pass, the mesenteric glands, is obstructed ; and the purpose in view of opposing the emaciation would be frustrated by the attempt

of full diet. The food would be an incumbrance both to the stomach and the bowels.

Even in phthisis pulmonalis, the plan of a highly nutritious diet may, I know, be argued against very ingeniously as matter of theory; and I am aware of all the arguments which are commonly used of the necessity of avoiding excitement to the circulation, of not giving much labor to be performed by the diseased lungs in the process of sanguification; but I leave this field of speculation to those who prefer hypothesis to facts, and rest my confidence securely in the happy results which follow from the diligence of a good cook and a good nurse, to prepare and to administer all proper appliances to sustain and restore the languid and emaciated invalid.

Rather more than sixteen years have now elapsed since this lady first came under my care. A long time passed before she regained a firm state of constitution; and, on any accidental taking of cold, bronchial disturbance would follow, and she found a consequent necessity for resuming the inhaling, from which she invariably experienced a satisfactory result.

She had occasional attacks of diarrhœa, and what, in her communications by letter, she always termed "bilious disorder."

About six years ago, she became alarmingly ill from an attack of this kind, and was under my immediate care. She was not convalescent till the end of two months. It appeared to me that there was tuberculous irritation affecting the intestinal canal, so persistent were the symptoms, and so exceedingly difficult of treatment. But at length health was happily restored. Since that period she has enjoyed very comfortable health; and, as proof of her vigor, every morning she has used cold water ablution, followed by abundant dry rubbing, not only of the chest, but of the body generally. I should add, that her constitution has been materially improved by a three years' residence in Italy. No place agreed so well as Florence, where she passed one winter.

### CASE III.

Tubercular Phthisis Pulmonalis. Pectoriloquism. A very decided case of Consumption. The iodine inhalation successfully employed.

A gentleman, aged thirty, of slight stature, but well pro-



portioned, of delicate constitution, and nervous temperament, consulted me in January, 1831, on account of cough, and symptoms of consumption. He related that, on three occasions, in earlier life, he had suffered from pleurisy; that, in December 1829, when he was weakened by mercury, he took cold, and soon experienced severe cough, which harassed him much through the spring, but became moderate in the summer. In autumn it was again aggravated, and accompanied with hectic fever and its consequences. The late Dr. Davis, of the London Hospital, whom he consulted, particularly conversant with the use of the stethoscope, and much experienced in diseases of the lungs, advised him to go immediately to a warm climate. He told his friends, as I learnt, that "his case was tubercular phthisis pulmonalis, and that the only probable chance of his prolonging life was the leaving England for the winter and spring, and seeking a warm and more equal climate." "Recovery," he said, "was not to be expected." To this advice he would not listen, but preferred to take his chance of life amongst the friends to whom he was attached, and to continue the comforts of home. He chose a well-situated house, and lived on one floor, in apartments kept at a regulated temperature: His appearance presented to me entirely the look of a person advanced in consumption. He was very weak, and much reduced in flesh; the pulse ranged from 100 to 112; the animal heat was  $100^{\circ}$ ; the inspirations 30 in the minute; the cough was urgent, and was so distressing in the night, that he rarely slept till about five a. m.; and, on awaking, he found himself more or less covered with perspiration. The expectoration was in quantity usually about three ounces in the twenty-four hours, in appearance greenish or ash-colored, frequently streaked with blood; portions of it had a more purulent look than the rest, and, by the tests, had such a character in a great degree; the whole of a faint, offensive odor. He was affected with slight irregular hectic, but had not any well-marked paroxysms. He was exceedingly sensitive to slight variations of temperature, even from the opening of a door, and the going from one apartment to the other, if the thermometer in the two rooms differed but very little. The tongue was rather coated with

brownish fur. There was not much failure of appetite ; but the digestion was weak and irregular, the bowels were usually torpid and deficient in bile, and the urine gave a copious deposit of lateritious sediment.

The stethoscope afforded signs of pectoriloquism to a small extent at the humoral extremity of the right clavicle, and the sound was dull all around this part of the chest. On the left side there was scarcely any morbid evidence. I thought that, just at the superior part towards the shoulder, there was too much resonance of the voice ; but, upon the whole, I was well satisfied with the state of the left lung.

I prescribed, for inhalation three times a day, the iodine solution, with conium, beginning with  $\mathfrak{z}\text{i}$  of the former, and  $\mathfrak{z}\text{ss}$  of the latter. A small blister was applied over the seat of suspected excavation. The compound tannin lotion was used by means of a sponge over the chest, at first a little tepid, followed by friction with the flesh-brush night and morning.

As internal medicines, the acidulated morphine syrup with a small addition of hydrocyanic acid at night ; and on alternate nights, two pills, consisting of pilul. hydrarg. gr. ii, et pilul. al. cum myrrh, gr. iv. In the morning early, and at noon, a draught with magnes. sulph.  $\mathfrak{z}\text{i}$ , infus. rosæ,  $\mathfrak{z}\text{xi}$ , syrupi toltutan.  $\mathfrak{z}\text{i}$ , acidi hydrocyan. gtt. i. He chose tea for breakfast, with a new-laid egg, lightly boiled ; blancmange and bread at noon ; and light animal food, with one kind of vegetable, and some farinaceous pudding, at dinner. Toast-water was his beverage ; for he found that malt liquor, or wine, however diluted, much increased the irritability of the cough. He was refreshed, early in the evening, by two small cups of tea, and took a breakfast-cupful of bread and milk for supper.

He said that he had made up his mind with resignation to what he thought would be the certain consequences of his disease ; but he received my encouraging account of success in similar cases with evident pleasure, and displayed the animation of hope.

It was my first point of satisfaction, that the plan of treatment perfectly agreed. The rest at night was most satisfactorily improved. He obtained perfect tranquillity, and much refreshing sleep. He derived a sense of comfort from

the inhalation. The cough was usually troublesome during the process; but the increased facility of expectorating, and the subsequent quiet of the chest for an hour or more, made full amends for the temporary irritation. The quantity was gradually increased to ℥ss. of the iodine solution for each inhalation; and when, as occasionally happened, the cough was particularly irritable, more conium was added; when expectorating was difficult, from twenty to twenty-five minims of the tincture of ipecacuanha were also used with the other ingredients.

The small blister was repeated about once in ten days. The medicines last mentioned were changed, at the end of a fortnight, for the mixture of sarsaparilla and alkali; the bowels, having become more regular, were assisted occasionally by the red draught, without the hydrocyanic acid. The morphine syrup at night was continued.

During six weeks there was scarcely any difference either in the quantity or the nature of the expectoration; but the cough was moderated, and he became quite free from the violent paroxysms which had formerly often distressed him exceedingly. The constitution shewed signs of improvement; the skin had a more equal temperature; the flesh was firmer; there was some improvement of strength; the mind had lost much of its depression.

In two months, the improvement of the patient was more manifest. He had evidently gained flesh. He rarely required the morphine at night. I prescribed the *mistura ferri composita*; and finding this agree perfectly, directed diluted port wine at his dinner, which proved agreeable to him, and no longer had a heating effect. The average state of the pulse was 88; the animal heat was reduced to 98°; the inspirations to 24 in the minute. He inhaled now only twice a-day; but he did this with regularity, and invariably expressed the sensible benefit which he derived from it.

In another month, the favorable change in the case was very decided. The expectoration was reduced to about an ounce in the twenty-four hours; seldom had an unpleasant odor; was whitish, flaky, and free from blood. There was less of pectoriloquism, and scarcely any cavernous cough;



the pulse was from 80 to 84, and was stronger. In all respects there was amendment. He now took tonic medicine once a day only; having a draught of *mistura ferri composita*, and one of sulphate of quinine, in alternate use, the change being made once every ten days.

Through May and June, he inhaled usually twice a day, and never less than once. He took medicines rather occasionally than regularly. A pint of the best draught porter, daily, now agreed well, and he considered himself to be much strengthened by it. He took airings in a carriage on every fine day, open or closed, according to the weather. He used vinegar and water sponging every morning; and, after it, was diligent with the flesh-brush.

In the beginning of July, he appeared to be almost recovered. He observed, "that he supposed he must consider himself an invalid, but that he felt very comfortably well." The pectoriloquism was exchanged for a more resonance. There was a much better respiration. He had scarcely any cough remaining. It was only occasional. The pulse was 78 and 80; the animal heat  $97^{\circ}$ , the inspirations 16 to 20.

He thought himself fit again for active life, and went abroad on some mercantile concerns. I heard of him from time to time, and had the gratification of learning that he had no relapse; but the sequel is melancholy, from another cause. About eighteen months after leaving the English shores, on returning to this country, recovered in health, he lost his life at sea by an unfortunate accident. He was drowned.

*Obs.*—The simple fact of the opinion pronounced in the case, by a physician so experienced in the diseases of the lungs as Dr. Davis, was a proof of the serious importance which it had assumed. It is very well shown in this example, with what advantage the living in spacious rooms on one floor, with a regulated temperature, and at the same time proper ventilation, may be adopted by the consumptive patient compelled by circumstances to pass the winter in this climate. Indeed, if the proper period for going abroad, or for making a change even nearer home, should have passed by, I should suggest this method as one of great prudence and propriety. Travelling, near the approach of winter, is

very hazardous : and one accidental exposure to an unfavorable state of the atmosphere may undo the amendment which may have been slowly gained in many previous weeks ; and may even serve to bring on a state of danger ; so ready are the tender lungs and bronchi in phthisis to take on active bad symptoms.

#### CASE IV.

Tubercles in the right lung, with the suspicion of pectoriloquism in the axilla. The case evidently scrofulous. Iodine inhalation very serviceable. The patient recovered.

A delicate young woman, who had always lived in the country, aged twenty-four, fair, and evidently scrofulous, having cicatrices in the neck ; well proportioned, with a circular chest ; subject to cough for years past ; caught cold at different times in the early part of the spring of 1833, which ended in the fixing of a severe cough, for which I was consulted. She had a hectic appearance, complained of much debility, had lost flesh, the pulse was 100, the animal heat  $99^{\circ}$  ; the respiration was oppressed, and distressingly hurried, even by the slight exertion of rising from the chair. Her sleep at night was much disturbed ; and, before rising, perspiration became very copious ; the tongue was coated at the sides, and preternaturally red in the middle. The appetite was lost ; the bowels were confined ; the urine deposited much lateritious sediment ; the catamenia had been for some time suspended ; the cough was almost constant ; the expectoration, considerable in quantity, was creamy, offensive in odor, and frequently streaked with blood.

Dr. Edwin Harrison examined her chest in conjunction with me, and we found the sound duller than natural at the upper part of both lungs, but particularly so on the right side. For some extent the respiration was very imperfectly heard, and there was considerable evidence of pectoriloquism, and of cavernous cough in the right axilla ; so as, together with the other symptoms, to render the aspect of the case very serious.

I prescribed a draught, twice a day, as at p. 125, the acidulated morphine syrup at night, a small blister just under the

right clavicle, use of the compound lotion night and morning, and the inhaling mixture of iodine with conium, commencing with the dose of  $\zeta$ ss of the mixture.

At the end of a week there was a considerable alleviation of all the symptoms. She now mentioned that she had suffered, during the last fortnight, a painful state of her neck; and, on examination, I found a large glandular swelling, which was so much inflamed as to threaten suppuration. I thought it right to promote this, and directed that it should be fomented and poulticed.

At the end of another week, there was some further improvement. She expressed herself in the strongest terms of satisfaction with the inhalation, describing that although, at the time of using it, the cough was sometimes rendered more troublesome, yet the expectoration became more free, her respiration easier, and the chest altogether comfortably relieved. The dose had been increased to  $\zeta$ iii. The expectoration was improved in appearance, and very rarely mixed with blood. The gland had suppurated, and freely discharged pus, which was not thin.

I prescribed the sarsaparilla mixture with alkali, to be taken twice a day, or once when she might require the red aperient draught in the morning early. The morphine sedative was not always necessary at night.

On my next visit, I made a particular examination of the chest, and found better indications. Now the cough had lost its cavernous character; but there was still, for a small space, almost pectoriloquism, and what I believe many persons would pronounce to be such. The sound on percussion was improved.

In all the general circumstances of health she was much amended. The discharge from the neck continued; the surface was covered with a plaster consisting of equal parts of emplastr. hydrarg. et cerati saponis.

The case went on most favorably. At the end of three months, she expressed herself to be quite recovered. The catamenia had returned. She appeared restored in strength and good looks. After a walk of two miles, the pulse did not exceed 78; the animal heat was  $97^{\circ}$ ; the respiration was



comfortable. The stethoscopic indications were now good; the sound was improved, but not quite natural. She had, with only occasional intervals, taken the sarsaparilla alkaline mixture, and had never omitted to inhale once a day.

She quitted London for a distant part of the country; and I have had the satisfaction of receiving repeated good accounts of her continued health.

*Obs.*—Although I do not relate this case as a clear example of tubercular excavation, yet it was undoubtedly one of aggravated disease, with the certainty of tubercles. It may be offered as a corroborating instance of the useful and important effects of iodine inhalation. I have no doubt that the glandular suppuration in the neck was useful as a counteraction to the disease of the lungs; but even this consideration need not deduct from the praise to be given to the inhalation, which was too manifestly useful to admit of doubt.

The suspension of the catamenia is a very ordinary occurrence in the early periods of phthisis pulmonalis, and shews at least the general derangement of the system. This function is not to be disregarded, even viewed in the light of a periodical depletion from the circulation, particularly in some constitutions, and especially when there is any tendency to hæmoptysis; but I apprehend that, for the most part, it is to be considered important as an act of regular secretion, in an organ with which the nervous system sympathises in a high degree, destined to be as regularly excreted. The return of this function becomes an additional satisfactory evidence of the improvement of the constitutional health, and is a sign of harmony in the functions of the animal œconomy.

## CASE V.

Phthisis Pulmonalis; tubercles in each lung; great probability of an ulcer at the apex of the right lung; hectic fever present; the iodine inhalation highly beneficial; the tubercular irritation removed; and the patient restored to health.

A gentleman, aged forty-nine, short and slight, and evidently of weak constitution, subject to winter cough, was seized with hæmoptysis some months before the attack of illness which I am about to describe; but the discharge of

blood was not large, and did not continue beyond twenty-four hours. He had appeared to recover his usual state of health, which was always delicate.

I was consulted in June 1838, and found him affected with very irritable cough, short breathing, a painful state of the chest, with oppression, very disturbed sleep, and night perspirations.

The digestive functions were not materially impaired; yet the appetite was not so good as usual, and the urine deposited lateritious sediment. The bowels were regular, and the liver acted properly.

The expectoration was copious, consistent, of greenish appearance, of faint, disagreeable odor, and it afforded a well-defined colored ring when examined as before described.

He complained of great debility. The pulse was only 60; but I learnt that in health it was of the remarkable slowness of 44 and 46. He had a hectic paroxysm about noon every day. The animal heat was 100°. His habits were very temperate; and for many years he had refrained from all fermented liquors.

The following were the indications by the stethoscope and percussion: Pectoriloquism at the apex of the right lung, and suspicious at the apex of the left; dull sound in general on the right side, especially at the upper part; dull also at the upper part of the left lung. I drew the conclusion that each lung was tuberculated; that tubercles occupied the right extensively; and that there was, in all probability, a small cavity at its apex.

I directed a blister to the chest; a minim dose of hydrocyanic acid, at noon and at night, in infusion of roses, adding to the day draught some sulphate of magnesia. I prohibited animal food. He entered immediately on the use of the iodine solution, with conium. I enjoined great quiet; for he found himself unfavorably excited by any bodily exercise, or by mental exertion.

The chest was much relieved by the blister. On the healing of the skin, I directed the use of the compound vinegar lotion, to be applied just tepid, and afterwards the use of the flesh-brush. He was sensible of a very soothing influence

from the inhalation : it caused an easy expectoration, relieved the cough most satisfactorily, and rendered the breathing at once comfortable.

After three days, the pulse was 56 ; the animal heat  $99^{\circ}$  ; the sputa of a creamy white, and still of a faint, unpleasant odor. The tongue was coated with whitish flakes, and the gums were spongy, as if from mercury : but there was no ptyalism. This state of the tongue and gums was in part produced by the inhalation ; an effect, particularly as regards the tongue, which I have occasionally witnessed. But these effects either pass away, or become too slight to be regarded, as the patient becomes accustomed to the use of the inhalation.

As there appeared to be yet too much excitement in the system, I increased the dose of hydrocyanic acid to three minims twice a day ; but I did not continue these proportions more than three days ; for as the symptoms abated, I resumed the dose of one minim.

The whole plan of treatment agreed perfectly. In a fortnight, the state of the patient was surprisingly ameliorated ; and the appetite was much improved. I allowed him to eat boiled fish or mild animal food on alternate days.

At the end of three weeks, the amendment was still more confirmed. The pulse was reduced to its natural standard of 44 ; the animal heat to  $98^{\circ}$  ; the respiration was quite comfortable ; the cough very slight ; the sputa small in quantity, and consisting chiefly of frothy mucus ; the nights were passed with good sleep, and freedom from perspiration ; the tongue was almost clean, and the gums nearly restored to their natural state, although the inhalation had been regularly continued three times a day ; the urine was clear.

I never witnessed in so short a time such a happy change in the looks as appeared in this gentleman. The hectic flush of the cheeks had passed away ; there was a cheerful expression of countenance ; and there was some recovery of flesh. He spoke in the highest terms of praise of the inhalation ; and, as the patient was very intelligent, and minute in his observations, I attached the more importance to his report. He stated, that it invariably gave ease and comfort to his



chest; quickly improving the breathing, facilitating the expectoration, and most satisfactorily relieving the cough.

The circulation being now free from excitement, and the opportunity therefore presenting itself for the adoption of more restorative means, I prescribed, in addition to as substantial a diet as appetite and digestive powers would allow, the mixture as at p. 113.

The patient continued to improve progressively in the most favorable manner. Not one untoward circumstance occurred. He reduced the use of the inhalation to twice a day, in three weeks from the commencement; in five weeks, to once; and discontinued it wholly at the end of two months. At this period he was free from all symptoms of illness; quite relieved from cough, with recovered flesh and strength; the pulse at its natural standard of 44; the animal heat 96°; the appetite, the digestive functions, and the sleep, all natural. The patient continued in the uninterrupted enjoyment of health for three years. He quitted the neighbourhood of the metropolis for a distant part of the country. I learnt that in about two years after, from an accidental continued exposure to wet and cold, he was severely attacked with illness and soon died. I did not receive any account of the symptoms.

*Obs.*—I advert to this case with much satisfaction, as proving the great benefit of iodine inhalation. I had the fullest persuasion of the existence of tubercles; and could scarcely doubt the presence of some ulceration. The patient had made previous trials of medicines for the cough, without any apparent good effect. The bad symptoms were in active progress when I commenced my treatment.

The pain of the chest indicated pleuritic inflammation; but, as it was of the sub-acute kind, and as the constitution of the patient was delicate, I was induced to avoid the detraction of blood in any manner; and preferred the local depletion and counter-irritation which a blister so conveniently affords. It may indeed be expressed that a well-acting blister is equivalent to a small local bleeding; besides that, it acts as a counter-irritant. The long enjoyment of health, to which I had the pleasure of being instrumental, was a proof of the healed state of the lungs; but a delicacy might be left,

and the subsequent event is one of the warnings so often afforded by the consumptive, what exceeding care should be taken to avoid wet and cold—even in the best circumstances of amendment or recovery.

### CASE VI.

Hæmoptysis, succeeded by ulceration; hectic fever well-marked; from all concurrent symptoms, the existence of phthisis pulmonalis established; the curative powers of iodine inhalation strongly displayed.

A lady, aged thirty-four, of delicate form, with rather narrow, yet not ill-formed chest, of fair complexion, with dark eyes and white teeth, the mother of several children, having been much debilitated by three miscarriages within the last two years, and suffering from a severe cough, consulted me in February of the year 1840. In the history of her case, she related, that four years before, she first contracted a violent catarrhal cough, which had since continued always troublesome, with the exception of an intermission in the summer months; that in January she had coughed up blood to the amount of a tea-cupful; and from that time had been affected with constant cough, pains of the chest, with quickened and difficult respiration, frequent palpitation of the heart, inability to lie on the right side, and one very distinct paroxysm of hectic fever in the middle of the day, and a slighter one in the evening. There were copious night sweats; she was much wasted in flesh; the catamenia had been suspended two months; the pulse was 120; the animal heat  $99^{\circ}$ ; the expectoration was in quantity about four ounces in the twenty-four hours, of a general puriform appearance, and gave a ring of colors in the optical experiment; the digestive functions were not much disturbed; but the urine deposited much laceritious sediment.

The following indications appeared from the stethoscope and percussion: the voice was brought distinctly under the tube at the apex of the right lung, and there was obscure *gargouillement* at that part. It was the opinion of Dr. Edwin Harrison (whose loss we have so much to lament) that there was a small cavity in this part. The sound was dull at the

upper part of the right lung, and very remarkably so on percussing the clavicle. The left lung was comparatively in a healthy state.

I prescribed the iodine solution, directing a drachm and a half as the total quantity for each inhalation, to be repeated three times a day; the time occupied in the process to be fifteen minutes.

As internal medicines, I prescribed from one to two minims of the solution of acetate of morphia, to be taken at bed-time, and the following draught before rising in the morning:

R     Magnes. sulphat. ʒi.  
        Infus. rosæ ʒii.  
        Acidi. hydrocyan. ʒi.  
        Syrupi toluatan. ʒi.—M. fiat haustus.

The chest, all around, was washed night and morning with the compound lotion.

The diet was limited to boiled fish, vegetables, and farinaceous puddings. At the end of a few days she found herself improved, and particularly as to the greater facility of expectorating, more ease of chest, and better respiration. The cough, however, still being very irritable, I added more conium to the inhaling mixture.

The mitigation of the symptoms was now very obvious; and, at the end of a fortnight, the amendment was great; but about this period she took cold, and suffered severely for twenty-four hours from disorder of the bowels, and from spasms which appeared to proceed from uterine irritation. The cough became more irritable; but otherwise the pulmonary symptoms were not aggravated. I changed the inhaling mixture for one consisting of 40 minims of the saturated tincture of conium, and 8 minims of hydrocyanic acid. This indisposition soon yielded to treatment, and the iodine inhalation with conium was resumed, and the dose (divided as usual) to be increased to two drachms and a half. At the end of a month, her appearance was remarkably improved, and all the symptoms were relieved. The pulse was reduced to 80; the animal heat to 95°; the respiration appeared unembar-



rassed; the cough was comparatively slight; the sputa small in quantity, and much improved in character; there was no longer hectic fever; and the night sweats were much lessened. She had gained flesh, and some improvement of strength; yet she still complained of great debility.

She had been most attentive in the use of the inhalation three times a day, and extolled it as the source of her improvement; the quantity had latterly been increased to three drachms. For the last week she had discontinued the morphia at night, and took no other medicine than the mild aperient draught occasionally. The most urgent symptoms being subdued, I now directed my attention to the improvement of the strength. I prescribed the following draught:

R      Acidi hydrocyan. ℥i.  
           Decoct. cinchon. ℥i.  
           Mist. amygd. ℥ss.  
           Aquæ menth. virid. ℥ii.—M. fiat haustus bis die  
   sumendus.

She was desired to use the inhalation only twice in the day. She took mild animal food each other day, and at dinner two ounces of old port in a tumbler of cold water. She continued the use of the ablution with the lotion. She took carriage exercise when the weather was favorable, and walked out occasionally.

In another fortnight I prescribed a saline bark draught, omitting the hydrocyanic acid, and allowed her to take meat or poultry every day. She continued to amend regularly. The catamenia returned. Four months having elapsed, she had recovered so completely that no further treatment appeared to be necessary. For the last week she had inhaled only once a day. She improved in flesh, and was so much stronger, that she declared herself better in health altogether than she had been for six or seven years.

The patient removed to a very distant county, and I have not had an opportunity of seeing her since my attendance: but from time to time I heard favorable accounts of her health.

*Obs.*—The favorable circumstances, in this threatening case, was the comparatively healthy state of one lung, and the good condition of the digestive organs, which allowed of the reparative process in the lungs becoming accomplished, under the influence, as I conceive, of the iodine inhalation.

### CASE VII.

Well-marked case of Tubercular Phthisis ; successfully treated, and the recovery permanent.

A gentleman, aged 26, of the middle height, muscular, of the mixed temperament, well-formed in the chest, usually enjoying good health, with the exception of a liability to take cold and have a catarrhal cough in the winter season. He caught cold from exposure for some hours, on horseback, to a north-east wind, in March 1833. Inflammatory symptoms with pleuritic pain occurred, and general and local bleeding was used, with blistering, and an antiphlogistic treatment.

I saw him first in the beginning of June, 1834, and received the following account of his case from Dr. Skrimshire, of Peterborough, in Northamptonshire. “This patient is the subject of recent but rapid tubercular phthisis.” Then detailing the treatment which had been used, he adds, “I have not, however, at any time reduced the rapidity of the pulse, or the urgency of the cough, for more than a day or two ; the wasting has been progressive and rapid ; and the expectoration, though never profuse, has for the last three weeks or a month been puriform.”

I found the sound dull on percussion over a considerable extent of the left side ; the respiration imperfect, and near the axilla the indication of pectoriloquism was sufficient to render it probable that a small cavity existed at the upper part of the lung. The signs on the right side were good. His breathing was much hurried on slight exertion. The cough was harassing ; the morning expectoration was considerable, creamy, of disagreeable odor, and gave prismatic colors. He was suffering from slight pleurisy of the left side. He could not sleep without having the head much raised, nor lie well on either side. He had been more sensible of daily hectic fever and night perspirations a month before, than at

the period of my visit. The pulse ranged from 112 to 120; the animal heat was 101°. He had greatly lost flesh and strength, and his pale and hollow cheeks proclaimed at once the severe character of his disease. It was encouraging that his appetite was for the most part good, and that the digestive functions were not much disturbed; but the urine deposited lateritious sediment abundantly. So soon as I had removed the pleuritic pain by local treatment, I directed the inhalation of iodine with conium, and treated him altogether on the principles which I have detailed in the statement of my other cases.

This gentleman improved so regularly and favourably, that he went into the country at the end of July, with the feelings of nearly restored health. He had gained flesh and strength, and was almost free from cough. The pulse was regularly under 80, and the animal heat was reduced to 97. He praised the inhalation as the great source of his cure.

*Obs.*—I have the satisfaction of stating that this patient never had a relapse; and that, at the present time, now distant from the attack thirteen years, he is in the enjoyment of good health. His pulse is 68. The favorable circumstances in this case, when I made my first visit, and which allowed me to entertain hope, were the good appetite and digestion, and the favorable indications of the state of the right lung. But who can deny, even from the statement of Dr. Skrimshire, that the disease had the strong character of pulmonary consumption, and wore a very hazardous aspect?

### CASE VIII.

Tubercular Phthisis; the existence of a large cavity unquestionable. Symptoms of the case highly alarming; recovery, which lasted for a long period.

In the beginning of June 1839, I was consulted by a gentleman, aged 35, long an invalid from pulmonary disease. His father and two brothers had died from consumption. He had resided many years in the West Indies, from whence he came in what he felt to be a hopeless state of suffering. I found him in bed, almost too weak to leave it. There was an assemblage of the most urgent symptoms; a frequent and very weak pulse; the animal heat 99°; urgent cough, with difficult ex-



pectoration of an offensive puriform sputum, occasionally coloured with blood; the chest much oppressed, and the breathing quick and uneasy on the least exertion, with occasional pain in the sternum and intercostal muscles: he had hectic fever and night perspirations, which were not only profuse, but of a peculiarly faint and disagreeable odor. Sleep slight and unrefreshing; and the functions of the liver remarkably unhealthy; much reduced in flesh, and having coldness and considerable œdema of the ankles and feet. At the upper part of the right lung there was strongly marked pectoriloquism to a great extent, with *gargouillement*, indicating extensive cavity; the respiration almost wholly bronchial, with sibilant rales. On the left side, the respiration was imperfect in some parts, in others puerile, and there were occasional rales, but without pectoriloquism. Percussion confirmed the signs of tubercular obstruction in each lung, but especially in the right, which was scarcely in the least degree capable of its functions. The right side of the chest was flatter than the left, and rose but little in a forced inspiration. His mind was in a state of the utmost despondency; and, contrary to that buoyancy of hope which prevails in acute phthisis especially, but often also in chronic, he had a fixed persuasion that he should not recover.

The physician, who had been in close attendance for six weeks, apprehended a fatal termination of the case. I will not enter into minute details in the account of my treatment, but endeavor to mention what is essential. The patient inhaled the mixture of iodine and conium regularly three times a day, at first for ten minutes, afterwards gradually increased to twenty; small blisters were applied to the chest from time to time; the lotion of tannin infusion, with acetic acid and eau de Cologne, was applied night and morning to the skin, followed by the use of the flesh-brush. Internally, pills composed of pilula. hydrarg. camphor, and c. colocynth extract, were given at night, occasionally followed by a morning aperient draught; a strong infusion of the cortical part of sarsaparilla, with alkali and gentian, was used twice in the day; and, to procure comfortable sleep at night, he took a soothing morphine syrup, acidulated with diluted sulphuric acid. The plan of diet was

changed to one highly nutritious; and such were the languor and debility, that wine, the best port and sherry, was allowed with more than usual freedom. He usually took three or four glasses in the course of the day, in addition to a pint of sound draught porter, not only without disagreement, but with every sense of benefit. He had sometimes alarming attacks of exhaustion, at the commencement of my attendance. His diet had been too much restricted, and he had indeed said that he was "dying from starvation." After a few weeks, iron and quinine were administered in conjunction, instead of the other medicines.

Mr. King, of Portland-terrace, Regent's-park, attended the patient with me. I extract from his written statement, the following particulars of the case: "The left lung gave strong puerperal resonance; the right lung was pectoriloquous, from the root to the mamma; there was much gurgling, and percussion was dull over the greater part of the right side; it was also much smaller than the left, and hollow at the clavicle. The body was much reduced; he had profuse hectic sweats, and the expectoration was copious, puriform, and very offensive; the pulse rapid. His debility was so great, that, to use his own words, he felt to be dying from day to day. The night perspirations were most profuse, and he was often sleepless. On the first inhalation, he expressed himself very sensibly relieved; afterwards, his breathing was never oppressed in going up stairs, as it was before using the inhalation; and, with a little more interval, he was able to walk two miles without fatigue."

So beneficial was the whole treatment, that, in rather more than a fortnight, the specific symptoms were most materially relieved, and the strength and spirits were greatly regained. The night perspirations had nearly ceased. As a proof of the amendment of the lungs, he could, within six weeks from my first seeing him, walk two or three miles, at a quick pace, without resting. At the end of seven weeks, in one day he walked seven miles! He improved progressively. In September, he travelled. I saw him again at the end of November, and found a remarkable diminution in the extent of the pectoriloquism, with an evident amelioration in the condition of each

lung. The rales had ceased; and by auscultation there was satisfactory evidence of a very improved respiration. The expectoration continued, but was much lessened in quantity, and almost free from its former offensive odor. It appeared to me that the tuberculous cavity was in a favorable progress of healing; and certainly the whole aspect of the patient was promising a fair recovery; for to regain perfect health could not be expected, when so much disorganisation of lungs had been produced, existing in conjunction with an unhealthy liver. In my early attendance, I was struck with his cadaverous and dark complexion; and this unfavorable omen disappeared in a few weeks. He related to me that at various periods he had experienced slight hæmoptysis. Under my own observation, in about seven weeks from the commencement of my attendance, he used a warm bath, not exceeding 96° in temperature, and was remarkably refreshed by it; but on the same evening hæmoptysis occurred; half an ounce of pure red blood issued with a cough. This hæmorrhage I attributed to the excitement which the circulation had received from the bath. It is satisfactory to state, that on no occasion did the inhalation give rise to this accident; and he always felt more or less of sensible relief from it. This and other treatment were continued, with occasional intermissions, from the commencement; when he had regained flesh and strength, and could attend entirely to business. He felt himself sufficiently recovered to return to the West Indies, for a period necessary to arrange his affairs.

After remaining at St. Vincent about a year, he returned to England; and, a considerable interval elapsing, made excursions abroad. On his next return to this country, he passed the winter in a cold, wet part of the North of Scotland, and there took cold very seriously, and had an attack of acute symptoms, which terminated fatally.

I never saw a case in which, at the first view of the patient, I formed in my own mind a more unfavorable prognosis. That the lungs acted with much difficulty, and that aeration was very imperfectly performed, was evident from the darkness of the complexion, the coldness of the extremities the blackness of the fingers and the nails, the op-



pression of the chest, and the embarrassment of the breathing on the least exertion.

Much of these symptoms was doubtless owing to extreme debility, and which was so successfully counteracted by a more than usually generous system of diet.

Although the case had a fatal termination, I think it must be viewed with satisfaction, that a great deal of recovery was accomplished, and that it lasted so long a time. It is surely, also, fair to presume that had this gentleman chosen a fit place of residence—a genial climate—for the winter season; and taken all prudent and necessary care of himself, his term of life, with the enjoyment of moderate health, might have been his reward.

### CASE IX.

The symptoms indicative of tubercular irritation, but not offered as a clear example of phthisis.

A young lady, aged twenty-four, whose sister had died from consumption. The inhalation of iodine and conium rendered the most satisfactory relief and lasting benefit.

In the history which she gave me of her case, she stated that, in the year 1830, she had fallen into a very delicate state of health, in consequence of a chest complaint. She went abroad, in the hope of re-establishing her health; and which object was, in great measure, effected by residing five months at Nice. Yet, living again in England, she experienced a relapse of her disorder in 1832; and such was the delicacy of her chest, that any slight exposure to a damp or cold atmosphere was almost certainly followed by pulmonary disturbance; her symptoms being, shiverings, succeeded by heat of skin, and perspirations; cough and shortness of breathing; with a general soreness of the chest, and a sense of constriction, attended with debility and great depression of spirits.

Under such circumstances, I was consulted; and upon examination of the chest, by auscultation and percussion, I had the clear evidence that the upper part of the right lung was much obstructed; but on the left side, the respiration was natural, with the exception of some slight rales. I

adopted my usual plan of treatment, the particulars of which I will not detail. The result was most satisfactory. My patient described that she "felt from the inhaling a soothing and healing effect; soreness and pain were soon removed; and she became sensible of a freedom and expansion of the chest to which she had long been a stranger. The relief which she experienced gave her the idea of long-closed valves being re-opened and set free." After a few weeks, all the troublesome symptoms passed away. By pursuing a careful system of management, medical and dietetic, and paying strict regard to regimen, this young lady regained her health; and, I have every reason to believe, has continued well.

### CASE X.

The existence of tubercles presumeable; a satisfactory recovery.

A lady, aged twenty-two, mother of three children, consulted me in April, 1835. She had been falling off in health for a year past. Her youngest child was fifteen months old, and she had nursed it for twelve, but with difficulty. She related that she had, within the last few months, lost flesh and strength very rapidly; that on six or seven occasions she had coughed up small quantities of pure blood, but latterly it had only appeared occasionally, streaking the expectoration.

At my visit, I found her suffering from harassing cough, with the inspiration easily hurried by slight exertion, and a distressing sense of restraint over the chest. She had daily hectic fever, and severe night perspirations; the pulse upwards of 100; the animal heat 100°; the appetite was lost, and the spirits were much depressed. The sputum was considerable in quantity, muco-purulent in appearance, offensive in odor, and slightly streaked with blood. The signs by auscultation were, much mucous râle on each side, but on the right especially, and there mixed with the sibilant. In this part, also, the voice was very resonant, and on percussion the sound was dull. I considered that there were tubercles, but that no softening had taken place.

It had been thought proper to keep her on very low diet; and it had been candidly stated to her friends, that as further trials with medical treatment could not in all probability

render any benefit, it would be most expedient to try change of air, and trust to that alone.

Without delay I prescribed the inhalation of iodine and conium; gave tonic and alterative medicines; used counter-irritation by means of the tartar emetic volatile liniment over the most affected parts of the chest; and elsewhere it was washed daily with a lotion of infusion of tannin. I have had many proofs that, in a very relaxed state of the skin, the addition of tannin to the lotion of acetic acid and eau de Cologne (or spirit of rosemary) has been very useful—constringing, as I believe, the cutaneous pores.

She experienced very sensible relief from the inhalation, and in a short time was enabled to lie down in bed comfortably on either side, from which she had been long prevented, and the embarrassment of her breathing on exercise was most satisfactorily relieved; she could take a considerable walk without inconvenience.

This lady quite recovered her health at the end of four months. I had the means of knowing that, for nearly three years, she remained well. After that period I lost sight of her.

### CASE XI.

Manifest tubercular irritation. Very satisfactory amendment, and one promising recovery.

A gentleman, aged 25, tall and slight, of consumptive family, and had recently lost a brother from consumption,—when under the influence of mercury, exposed himself to wet and cold, and in consequence was attacked by acute rheumatism. Having, after a long period, regained his health, he joined in the sports of the field; and one day, when much heated, and in a perspiration, forded a river, and kept on his wet clothes for some hours. Catarrhal fever and cough quickly ensued, and in a short time his state, as described to me, was that of a person labouring under the first symptoms of consumption. He took an early opportunity of visiting Torquay, and resided there some months, but made no progress towards health, although he had diligently followed the advice of his medical friends. One acquaintance had recommended him to consult me; but another, and he



was medical, dissuaded him, assuring him that inhaling iodine would do him serious mischief. He passed through London on his way to the Continent, Rome being his destination; and consulted a physician, who, with other means, prescribed the inhaling of creosote, which he tried steadily. It did not disagree, but proved of no benefit. He was exposed to many inconveniences in travelling, and at one place was detained in quarantine on account of cholera. His disease increased so much before and after his arrival at Rome, that his state became truly alarming, and his debility and emaciation had reached a fearful height. It occurred to him that, having possession of my book, he might adopt the treatment recommended in it, under the guidance of an English physician, whom he selected. He went afterwards to Naples, and followed up the treatment there. The terms of approbation in which he expressed himself, when he described the extraordinary benefit which he derived from the inhaling of the iodine with conium, were enthusiastic; and he declared himself to have amended from the first moment. In the account which he gave me of his ease at that time, when at Rome, he stated that he had daily two paroxysms of hectic fever, and suffered most severely from cough, attended with an offensive expectoration, which was frequently colored; shortness of breath, loss of sleep at night; copious perspirations, and other bad symptoms. The hectic fever was immediately controlled by the inhalation, and the respiration remarkably relieved.

I found him still an invalid, but, according to his report, surprisingly increased in flesh and strength; and he was in good spirits. His weight, he said, was within seven pounds of what it had been formerly in his best health. By auscultation and percussion, I discovered evident signs of obstruction at the upper part of the right lung, and slighter in the same situation of the left. There was no indication of cavity, but the mucous membrane of the bronchial tubes was not in a healthy state, and there was still cough. The pulse was moderate, and the animal heat  $97.5^{\circ}$ .

I recommended that the inhalation should be resumed; internally, sarsaparilla, with small doses of the iodide of potassium; and externally, the daily use of ablution with the

lotion of which I have before spoken, together with friction ; that he should live well, regulating his diet, and lead a life of care.

This gentleman, on quitting London, went to a distant part of Ireland, where he resided, and I have never heard from him since.

## CASE XII.

Interesting case of bronchitis, and at the time suspicious as to tubercles.

A gentleman, aged twenty-two, tall, slight, with circular chest, of the nervous temperament, while laboring under great mental excitement, which was quickly followed by inflammation of the membranes of the brain, exposed himself, in a state of delirium, to the cold night air, when without clothes. Bronchitis followed. He lost blood from the arm and by leeches ; and blisters were applied. It was observed that the severe symptoms affecting both the head and chest alternated remarkably. When I first visited the patient, he appeared pallid and exhausted, scarcely equal to the least conversation ; and if any exciting topic was touched upon, he became delirious. The eyes were bloodshot ; he could not bear light or noise ; said that his nights were almost sleepless ; that his brain often "seemed on fire ;" and that his greatest comfort was to have his shaved head washed with the coldest water. He felt his chest bound as if with cords ; the breathing was uneasy ; cough was frequent and exhausting ; the expectoration was in very large quantity, of highly puriform appearance, much colored with blood, and of offensive odor. The pulse was from 120 to 130 ; the animal heat 102°. Hectic fever was urgent, and on most nights the perspiration was excessive. The urine was of a dark color, and deposited lateritious sediment in the greatest abundance. On the right side, over the upper part, the sound was dull ; the voice gave much resonance to the stethoscope near the axilla. It seemed very probable that some ulceration had taken place. He was not at this time equal to the task of inhaling. I directed a blister to the chest ; and the following mixture :

R Potassæ Bicarbon. gr. c. viii.  
 Succ. Limon. ℥ii.  
 Mist. Amygd. ℥iv.  
 Syrupi Tolutan, ℥ii.  
 Acid. Hydrocyan. ℥ x.  
 Gutt. Nigr. gtt. vi.  
 Potassæ Nitrat. ℥ij. M.

Of this, two table-spoonfuls were taken every four or six hours. He derived great relief from this medicine; but his sleep being still deficient, I directed the use of the morphine syrup at night, and its effects were most satisfactory.

He gradually improved in general health; but as the brain acquired a more healthy condition, the pulmonary symptoms became more urgent. The cough sometimes continued for an hour without ceasing; and the expectoration, which was uniformly more or less colored, was, in quantity, upwards of a pint in each twenty-four hours.

I was resolved not to delay longer the trial of inhalation, and began with a small proportion of iodine, joined with my usual preparation of conium, the *saturated* tincture. At first he experienced great giddiness and sickness, and could only inhale for five minutes. He was in so weak and nervous a state (hardly able to raise himself in bed), that he was timid, and alarmed at the idea of the new treatment. With better courage, however, he resumed it on the following day; and I was highly gratified to hear him, in a short time, express in glowing terms the delightful relief which he experienced from inhaling, which he said not only relieved his cough and breathing, but "calmed him all over." Many of the symptoms remained urgent for a week; the quick pulse; the breathing easily hurried; the cough much excited by continued conversation; hectic fever at mid-day severe; perspiration at night excessive. But some appetite returned. There was more tranquillity of the nervous system, and much sleep was procured at night. Some decoction of bark had been added to the mixture. The bowels required regulation; and a pill with Pilul. Aloës c. Myrrh. and Pulv. Jacob. answered perfectly. In other cases I have mentioned the



remarkable reduction in quantity, and alteration in quality, speedily produced in the sputum by the influence of the iodine inhalation; but I never witnessed this effect more strikingly produced than in the present instance. Within three days the quantity was lessened by one half, and it was much less colored. At the end of a week it did not amount to more than four ounces, and in another ten days it was reduced to an ounce, with here and there only, streaks of blood.

In my former account of this case, I added: "I am happy to add that the patient is advanced towards convalescence, and, I hope, may, with great care on his own part, be restored to health. He has gained flesh and strength, and has a good appetite. When he is in a state of perfect quietude, the pulse is below 80, but is soon quickened by a little exertion. The animal heat is now only 98°. He is in good spirits, and is confident of recovery; but he still has cough, with, sometimes, colored expectoration; he has now and then copious night sweats; and, after sitting up some hours, his ankles become swollen. He continues to inhale regularly, and with unabated satisfaction. He uses the lotion for the chest, and the flesh-brush, with sensible benefit. He takes sulphate of quinine with sulphuric acid, &c. in the day, and the morphine syrup at night. He is quite free from hectic fever, and pursues a highly restorative diet, with evident advantage."

*Obs* —Thirteen years have now elapsed since this illness, and I can state that this gentleman is in the enjoyment of excellent health. My conclusion is, that he had not tubercles; but the symptoms attending the bronchitis were, as I have shown, of a very urgent character; and, at the time, the urgent hectic, and wasting, gave a strong picture of consumption.

### CASE XIII.

The symptoms of a very mixed character; not without grounds of suspicion as to tubercular irritation, but the leading character of the thoracic disorder, nervous.

An unmarried lady, aged 26, slight in form, and of the nervous temperament, had for several years been subject to winter cough. She had lost, from consumption, a sister, a sister-in-law, and two uncles. Two months before she con-

sulted me, she had taken cold from sitting on a stone bench, when the wind was N.E., with a hot sun. I found her complaining of a troublesome cough, which at times was violently spasmodic; and there was seldom any secretion; and when any appeared, it was yellowish white, not streaky. The chest was sore, with the feeling of having been bruised; the breathing quickened on the slightest exertion; severely affected with palpitation of the heart, and often shooting pains in that region; her general nervous agitation so remarkable, that sometimes she required to have her legs held for almost an hour after going to bed. The state of skin was most variable and capricious; hot on cold days, cold on hot; one night perspiring profusely, another dry and feverish. She had wasted and lost strength; and this was the greatest cause of alarm. The catamenia had been suspended two months; the pulse ranged from 90 to 110; the animal heat only 97°. By percussion and auscultation, the signs were not satisfactory, there being some dulness of sound, and obscure respiration here and there; but these indications were not sufficiently marked to indicate tubercles. The appetite was very deficient, the tongue coated, the digestion weak and irregular.

For a fortnight, I treated the case on general principles, making it my care to rectify the error of the digestive organs. For the cough, the following pills: ℞ Extr. conii.; extract hyoscy. pilul. scill. compos. aa gr. xii.; Misce et in pilulas xii. divide, quarum ii. h. s. et circa meridiem quotidie capiat. The chest was fomented every night for a week, and a liniment used with equal parts of linim. sapon. comp. linim. camph. C. et tinctura opii. By this treatment, much benefit was rendered; but still the cough was irritable; it was short, quick, and spasmodic. She thought that the pills nauseated, and confused her head. I directed an inhalation of iodine and conium; but she thought it disagreed. I changed it for a mixture of conium, hydrocyanic acid, and compound sulphuric æther, with which she was pleased, and thought it very useful. I put her on a tonic plan, and a perfect recovery was gradually accomplished.

She married in about eight months, and has enjoyed good health, now for several years.

*Obs.*—I relate the case for the purpose of showing it as an example, in my opinion, of Laennec's neuralgia of the lungs. Certainly the symptoms were not sufficiently marked for phthisis, and yet they were of a nature to raise some apprehension, especially when the prevalence of consumption in the family was considered. I was much encouraged in my prognosis by the low state of the animal heat.

#### CASE XIV.

Tubercular Phthisis, with the intestinal mucous membrane very prone to disorder.  
Great relief afforded, and life much prolonged.

G. A., æt. 47, a superintendent of a gas district, tall and well-proportioned; of delicate constitution. His father and mother, and uncle, had died from consumption. He consulted me in January, 1834. He was very thin, and stated that "he had lost almost all his flesh and strength, and feared he was past help." He had been ill, with cough and shortness of breath, since the beginning of December, having caught cold from exposure to a N.E. wind. I found his pulse from 96 to 106, and feeble; the respiration was distressingly hurried by slight exertion; the animal heat was 101°. By auscultation, great obstruction to the breathing was shown, and the sound on percussion was dull; these indications being most remarkable on the right side. The sputum was greenish in appearance, not copious, and, examined by the optical experiment, did not present the prismatic colors; the tongue was morbidly red; the appetite impaired; the bowels prone to diarrhœa. He had sometimes two hectic paroxysms in the day, and always one; night perspiration was more or less abundant, and he never obtained comfortable sleep.

I directed the usual inhalation of iodine with conium, three times a day, the internal use of sarsaparilla and alkali twice in the day, and at night the morphine syrup. The chest was washed, night and morning, with the lotion of purified pyroligneous acid, eau de Cologne, and water, used just tepid, followed by the use of the flesh-brush. The diet was nourishing and supporting.

The means of treatment agreed; but as I was convinced



that the lungs were obstructed by tubercles which would soften, I viewed this as a case which, in the most favorable event that could happen, would become much aggravated before any convalescence could take place. In other words, he would get worse before he could get better.

From taking cold, he lost his smell and taste, and suffered from a sub-acute attack of pleurisy, which was removed by blistering. He described that he felt very sensible relief from inhaling, and, together with the good effects on his chest, he was sensible of improvement of appetite from it. The intestinal canal had for some time been very irritable and often painful. He received benefit from a mixture of infusion of catechu with mucilage, tincture of kino, compound chalk powder, and Ford's laudanum (a saturated tincture of opium with the addition of spices). He took occasionally at bedtime, when there was evidence of vitiated biliary secretion, small doses of the hydr. c. cret., joined with pulv. ipecac. compos.

A journal of this case would occupy too much space; I shall content myself therefore with a brief general statement. At the middle of March, it was evident, both by the general signs and by the local indications, that the expected softening process in the tubercles was advanced. He was thinner and weaker, and his ankles were swollen towards night; the expectoration was increased in quantity, more or less puriform, and often colored with blood; the night sweats were usually profuse. In the right axilla, I detected, by the stethoscope, a resonance approaching to pectoriloquism. The sound on the right side was dull to a great extent, and the breathing very imperfect. For the most part, he maintained a tolerable appetite; but his appearance was altogether so unpromising, that I almost despaired of any success. He persevered with inhaling. I changed the iodine for chlorine for a short time; but of his own accord he returned to the use of the iodine, judging from his feelings that it was by far the most useful. When, after some time, the bowels had become settled, and the secreting functions healthy, I gave him the *mistura ferri composita*, and changed it at the end of a fortnight for the mixture of *sarsaparilla* with alkali, or for one with quinine,

according to circumstances. I directed some porter and a little sherry, with as substantial and nutritious food as his digestive powers would allow.

At the end of another fortnight, pectoriloquism in the right axilla was unequivocal; the expectoration was abundant, and the sputum was of that mixed description with which I am familiar, as coming from a cavity—puriform, cheesy, and offensive. The respiration was improved; there was less of hectic fever in the day, and the night perspirations were abated.

From this period he improved, steadily pursuing all the means of treatment. In the third week of November, he did not appear the same individual as when he first consulted me, so wonderfully was he recovered in flesh and strength, and his spirits were quite regained. He had scarcely any cough remaining, and his breathing was comfortable. The pulse was 76 to 80; the animal heat 98°. He had resumed his former occupation without inconvenience; and I thought, with great care, he might attain to a tolerable state of health. He did feel and consider himself well for ten months; but, unfortunately, in his business, he became exposed to cold and wet, and, as I learn—for I had not the opportunity of seeing him—he died of severe bowel complaint, in a short time from the attack.

*Obs.*—From the first, this was evidently a very unpromising case: for, not only were the pulmonary symptoms urgent, but there was constant and great tendency to diarrhœa, marking a highly morbid condition of the intestinal mucous membrane. The great amendment which the patient acquired was satisfactory and encouraging; and had his station in life allowed of proper care and indulgence, a better event might most probably have resulted.

#### CASE XV.

The tubercular diathesis, in the first instance, very marked; the symptoms referrible to it removed or suspended; and superseded by attacks of gout.

A gentleman, aged 24, of circular chest, of the mixed temperament, often wearing in his cheeks a color like hectic flush: of a very consumptive family, was attacked with trouble-

some cough about four years ago. The expectoration was occasionally colored with blood, and he found for the first time that his breathing became distressingly hurried by very slight exertion. He had lost flesh and strength within a short period, and was much alarmed, as were also his friends, with the dread of pulmonary consumption, from which a brother and sister had died. The indications afforded by auscultation rendered it almost certain that his lungs were tuberculated, although not *en masse*. He inhaled iodine and conium with the greatest advantage; but being of an active disposition, and disliking confinement within doors, he went to Madeira, where he passed the winter and spring, two years in succession. The last winter he passed at Lisbon. During his residence at that place he caught cold, which was followed by cough, attended with colored expectoration (which he described as a spitting of blood) every day for a month. He sent to London for an inhaler, the mixture of iodine, tincture of conium, and the internal medicines which I had prescribed for him on a former occasion. He did not receive the articles till the expiration of a month. A medical friend in attendance upon him used his strongest persuasions to dissuade him from inhaling, under the circumstances of a troublesome cough, attended with colored expectoration, assuring him that in all probability a dangerous hæmorrhage from the lungs would follow. He, however, fortified by his former experience, was resolved to adopt the treatment; and, accordingly, he inhaled the solution of iodine with the addition of tincture of conium. He informed me that, after the space of three days, the blood entirely disappeared; the cough was entirely relieved, and in a short time he recovered his health.

*Obs.*—Thirteen years have now elapsed since I gave the preceding report of this case. He used the inhalation, as I have mentioned, even while the sputum was colored. Of this I might not have approved; for I make it an invariable rule, from prudence, to suspend the inhaling, till at least the interval of twenty-four hours from the disappearance of any blood; if at all the result of hæmorrhagic action.

Since the first period, I have treated him occasionally for pulmonary symptoms; and at one time, when a physician of



high eminence declared that a tuberculous cavity had formed. Of late, being at a distance from me, he has not been under my observation.

I have procured from him the following account:

“ My chief ailments, latterly, have been relaxed throat, and gout. I have generally an annual attack of gout, but have not had one for seventeen months. I have not inhaled for a considerable time. I wash in cold water, sometimes with vinegar in it. Last summer I was weighed, and found my weight exactly what it was twenty years previously.”

This gentleman has always led a life of great exertion, mental and bodily. He has invariably taken a very supporting diet, usually drinking porter, besides a little wine. Hence, I conclude, in concurrence with a change of disposition in the constitution, arose the gout, which appears to have superseded the pulmonary complaint, to which it is the very *antipodes* in character and symptoms. I have known the reverse to happen, and remember a gentleman dying of rapid consumption at seventy-five, who, for fifty years previously, had been a great martyr to gout; and an exactly similar case in a gentleman of sixty-five.

One great disease supersedes another. Thus we see instances of scrofula and consumption mutually suspending each other. This *conversion* of diseases has been treated of by different authors.\*

## CASE XVI.

A mixed case of pulmonary disorder, having some symptoms threatening phthisis, combined with error of the liver, and intestinal pain resembling severe colic.

A lady, aged 20, tall and slight in form, of much delicacy of constitution, and of the nervous temperament, consulted me in Oct. 1840, on account of a cough and much general illness. The cough first came on in March, from taking cold,

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\* See Hoffman de Morbis Mutandis; Dr. Ferrier on the Conversion of Diseases; and the Pathology of the late Dr. Parry contains much disquisition on the subject. In my Treatise on Gout, &c. I have entered at some length upon it.

as she thought, in a damp church; and she had never lost it. There was occasional spitting of blood, which much alarmed her. She had a great dread of consumption, it having prevailed remotely in her family. She had lost flesh and strength, and had occasional hectic fever. The pulse ranged from 90 to 112; the animal heat 99 to 100°. The cough was hacking, and it was often particularly distressing in the night; the expectoration difficult, and the sputum yellowish white, in streaky lumps, sometimes greenish and sometimes colored with blood, but not of bad odor. The whole chest was tender, and with a sense of rawness in the middle of the sternum; the respiration always uneasy, and very quick and difficult upon exertion. By percussion and auscultation the signs were not so unfavorable as I should have expected. She could receive a large quantity of air in each lung; the examination being made when she was in her best state and perfectly quiet. There was imperfect respiration\* in the upper part of the right lung, and dullness of sound. Her greatest suffering was a pain in the middle of the abdomen, very acute, lasting an hour or two, coming on most days, and almost intermittent. In connexion with this, the tongue was coated with a yellowish and white fur, in part morbidly red, with raised papillæ, sometimes creamy. There was generally nausea, sometimes active sickness, and entire loss of appetite. The secretions were much vitiated; the urine heavily loaded with lateritious and mucous sediment; the alvine discharges mostly of an olive green, with great fœtor. The state of the bowels was quite irregular, and in the opposite states of inaction and overaction. The aspect of the case was, upon the whole, rather alarming.

She had been under medical treatment since March, and had taken a variety of cough medicines with scarcely any relief, and had been blistered over the chest once.

I prescribed the following treatment: each night for five times, and afterwards occasionally, hydr. submur, gr. i.; hydr.

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\* I find it advantageous, when using immediate auscultation, to interpose between the ear and the chest a sheet of letter paper. It seems to render the vesicular respiration more distinct; and it is a neat method.

c. cret. gr. ii. ; extract colocynth comp., gr. ii. ; pulv. Jacobi, gr. i. ; pilul. sapon. c. opio, gr. iss. ; M. et f. pilul. ii. In the morning, magnes. sulph, ʒi. ; mannæ, ʒii. ; infus. sennæ compos. ʒvi. ad ʒx. ; aquæ pimento, ʒiii. ; tinct. sennæ, ʒi. ; M. fiat haustus. Twice daily this draught: R acidi. hydrocyan. gutt. ii. mist. amygd. x. ; tinct. cinnamon, ʒss. ; tinct. calomb. ʒss. M. ft. haustus. On the accession of intestinal pain, she took from three to ten drops of *black drop*. Every night the bowels were fomented with a strong decoction of poppy-heads and camomile flowers. The diet was most carefully regulated, and solid animal food forbidden. Weak tepid brandy and water, in small quantity, was allowed now and then, to relieve the distressing sinking feelings, which were attended with general faintness, and sometimes with actual fainting away. Having succeeded in bringing about a more healthy state of the liver and the intestines, and finding that the cough and bronchial symptoms were but little relieved, I directed the inhalation of iodine and conium. Although the total quantity of the former for each process was only one drachm, so great was the sensibility of the larynx, that a sense of smarting, almost amounting to pain, was produced ; and I lessened it to half, and from this there was no inconvenience. She pursued its use in gradually increased proportions, and was delighted with the good effects, which exceeded her utmost expectation. She wore the wetted compress on the upper part of the chest, and over the trachea and larynx, covering the whole with a thin layer of flannel, and well-pressed to the skin ; for, the weather being severely cold, if the air penetrated under it, she was made chilly. One blister was applied to the chest at the beginning of my attendance, when the symptoms were very urgent.

In about a month, I entered on the use of tonics, beginning with sarsaparilla, gentian, and alkali. Afterwards I gave quinine, and the mist. ferr. C. in succession. At the end of three months, she was sufficiently recovered to go into the country. She had lost the cough, had recovered appetite and digestive power, and, with the gaining of much flesh and strength, her appearance was that of one renovated. Six years have now elapsed without any relapse. A year ago she



married, and I learn lately that she enjoys very good health. She has uniformly practised cold water morning ablution.

*Obs.*—Although I do not assert that this was an example of tubercles, I am not sure that there were not some scattered in the right lung, at its upper part; and from my statement it must appear that the symptoms were of a threatening character; and although, as the case was complicated, much of general treatment was required, the patient was greatly indebted to inhalation for the relief and removal of the cough.

This case reminds me of a paper in the 7th vol. of the *Medico. Chir. Trans.* by Dr. Wilson Philip (1816), on what he named dyspeptic phthisis, a species of consumption, as he conceived, distinct in its nature, and arising from disease of the digestive organs. But, from more recent investigations, as I have already stated, pathologists are led to the conclusion that true pulmonary consumption owns one cause only—that of tubercles; and that other symptoms and appearances, proceeding from disease or disorder of other organs and tissues of the body, are to be viewed as complications with the tuberculous disease of the lungs, and not standing in the relation of cause and effect. Yet, although of a secondary character, they have a considerable influence on the primary disease, and always demand an attentive appropriate treatment.

#### CASE XVII.

Urgent symptoms of Tubercular Phthisis, twice occurring, with an interval of three years. On the last occasion, strong evidence of a small cavity. The disease successfully treated.

A lady, aged 32, the mother of six children; fair, slight in form, and of delicate appearance, was severely attacked with measles, three years ago, in May 1844, being then a nurse. She was not bled, but her chest was blistered. A troublesome cough remained. In June, having been much fatigued with attendance on a sick child, “she burst a small vessel,” and coughed up about half a tea-cupful of blood, scarlet and frothy. The sputum afterwards was occasionally colored. She lost flesh and strength.

I was consulted in November; she was in the fifth month of pregnancy, and the pulmonary symptoms were becoming alarmingly serious. She was much wasted. The cough was

extremely irritable; there was great soreness of the chest, sometimes a feeling of its being raw. The breathing was very quick on the least exertion. The animal heat, 101; the pulse from 90 to 120°. She had one or two paroxysms of hectic fever every day; and night perspiration was considerable. Under the right clavicle, to a considerable extent, there was dulness on percussion, and the respiration was very obscure. There was some resonance of the voice, but no indication of a cavity. The appetite was totally wanting, the bowels were irregular. For a long time past her nights had been much disturbed, and she rarely slept more than an hour continuously—being prevented by cough and hectic irritation.

I directed the morphine syrup with one-drop dose of the hydrocyanic acid; the morning draught as at p. 135, and in the middle of the day, the sarsaparilla draught without the iodide and alkali; and, instead, an addition of infusion and tincture of gentian, and a little tincture of cinnamon; with these medicines, the inhalation of iodine and conium: of the former, a drachm only as the total quantity. She was very partial to hydropathic treatment, and used ablution, night and morning, of the front and back of the chest with water, just tepid; and wore the wetted compress over the upper part of the right side of the chest. A blister of small size was occasionally required to relieve pleuritic pain of the side.

The whole treatment, varied as to the internal medicines, agreed, and was so successful, that by the following March she was quite convalescent, and she got through her confinement remarkably well. She became a good nurse; yet this was not a wise proceeding to be attempted.

She retained the comfortable health which she had acquired, till last June, when, notwithstanding that she had always pursued the hardy plan of general morning ablution, first with tepid water, and finishing with cold, she had an influenza attack, which brought back slight hæmoptysis; and, in a rapid manner, all the bad symptoms which had distinguished her former illness came on. I saw her early in February, and found her in an alarming state. Again she was wasted and extremely weak; the pulse rapid; the animal heat 101°; the cough almost incessant; the sputum of much worse appearance than

on the former occasion; it was manifestly tuberculous. Hæmoptysis, in a slight degree, occurred now and then, raising great alarm in the mind of the patient, who was highly sensitive and nervous. The right was the affected lung; the left free from all bad symptoms. Under the right clavicle, in the middle, for a small space there was well-marked pectoriloquism.

I directed  $\mathfrak{z}\text{i}$  of the iodine solution with the conium, and had proceeded to  $\mathfrak{z}\text{iss}$ , when the sputum became suddenly increased in quantity, and greater signs of constitutional debility appeared. Indeed, the pale sunk countenance, and the general prostration, were now and then alarming in appearance. I diminished the iodine to  $\mathfrak{z}\text{i}$  as the total quantity, and the sputum lessened. She was so sensibly relieved by every act of inhaling, that she looked for the time of repeating it, (thrice daily) with the utmost satisfaction. Whenever, at the evening period, the cough was more than usually troublesome, apparently from spasmodic irritation, she inhaled the tetrachloride of carbon\*, from 10  $\text{m}$  to 15 as the dose, in water from 90 to 100 degrees of heat, and it had a very good effect in relieving the cough, without any addition of conium. The internal medicines were very similar to what I had employed on the former occasion, except that at first, with reference to the faulty state of the liver, I gave a few small doses of pilul. hydrarg. at night. She required, on occasional mornings, from a dessert to a table-spoonful of an aperient mixture. Instead of continuing the sarsaparilla draught, I directed, as more tonic, an effervescing saline one, with gr. ss. of quinine, and this dose I gradually increased to 2 gr. No medicine suited so well. The double citrate salt proved too stimulating. The night morphine syrup has been always in use. She has steadily pursued (in the careful manner described at p. 101)

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\* I have not myself given this new ætherial preparation internally; but a friend, an eminent physician, informs me that he has found great success from it in a case of dyspepsia, attended with obstinate sickness; and also as a cough medicine. The dose is from 8 to 12 minims, two or three times a day, or more frequently if necessary, simply in water. I learn from Mr. King, now of Marmion Villa, Grove End Road, that he inserted a paper in the Medical Times, for August, 1846, on the useful agency of this medicine in cholera.



the night and morning ablution of the chest; and also, with great sense of benefit, she has worn the chest compress, re-wetting the linen with eau de Cologne, vinegar, and water, every two hours.

She has gradually improved. Small doses of *M. ferri C.* now agree well, and prove useful. The appetite is become excellent, and she takes draught porter with relish and perfect agreement; occasionally also, sherry, with calf's-foot jelly or arrow-root. In the first instance she could not bear the least stimulus of the kind. I believe that the cavity is healed. By the stethoscope, there is only some resonance of the voice; the sputum is small in quantity, and simply mucous. The animal heat is  $97^{\circ}$ ; the pulse from 78 to 84; the breathing is good; the cough but slight, unless she engage too much in conversation. She has regained flesh and strength in a surprising degree, and her looks are most happily changed, from an appearance almost that of dying, to animation and cheerfulness. She will go into the country as soon as the weather becomes settled; and continue to inhale once a-day. It is now the second week of May.

*Obs.*—I must particularly notice, in this case, the effects of the increase of the iodine solution in the inhaling, small as it was. I considered that it too much hastened the softening of the tubercles, beyond what the low vital powers of the patient could bear; and hence it is seen that the inhaling treatment must not be received as a remedy so simple, that the patient can be trusted with it in a case of any importance, without medical superintendence. In some instances,  $\zeta_{ss}$  of the solution for each process is not only well borne, but seems requisite for the desired object; in others, as in this, not more than  $\zeta_i$  can be found to agree. I have not yet made much use of the new ætherial preparation of tar-chloride of carbon; but I am led to think favorably of it, as an occasional additional inhalation to my usual one of iodine and conium; and I think it very corrective of bad and offensive sputa. The good circumstances in this case were, the integrity of the left lung, and the smallness of the cavity in the right. I may add, as important, the freedom from disease of the digestive mucous membrane.

If I had made my own credit and reputation a selfish consideration in the class of cases to be treated by iodine inhalation, I should have rejected all such as were evidently in their nature so confirmed and desperate as to preclude all chance of recovery; but as inhalation has the property of mitigating symptoms, where it cannot accomplish more, I have always felt it my duty to employ it in phthisis, if requested by the patient, even under the most unfavorable circumstances of the disease.

The two following cases, formerly related, will exemplify this statement:

### CASE XVIII.

Phthisis Pulmonalis in the last stage; the disorganisation of the lungs evidently too extensive to allow of the smallest chance of cure, and the treatment adopted with the hope only of alleviating the symptoms.

The patient, a young man aged twenty-two, short and slight, with a narrow chest, pale, sallow, was much emaciated, and extremely debilitated. His father and brother both died from consumption early in life. He had long been an invalid, but first became seriously ill, with cough and difficulty of breathing, in November, 1828.

I visited him in March, 1829. I learnt that his illness had been occasioned by intemperance in drinking spirits, and careless exposure to night air; that of late he had experienced daily paroxysms of strongly marked hectic fever, and had rapidly wasted in flesh.

I found the pulse ranging from 120 to 130 in the minute, the inspirations 30, with severe sense of tightness and oppression over the chest; the cough so frequent as to render any conversation difficult; and he stated that in the night it awoke him every hour. The expectoration was copious, amounting to more than half a pint in the twenty-four hours, of the appearance of ill-conditioned pus, and of disagreeable odor. The appetite was not deficient, and the digestion was for the most part regular. The night sweats were profuse; but he was not sensible of heat of skin at any part of the twenty-four hours, although, for some time previously, and before the copious and offensive expectoration took place, he had, as already mentioned, suffered from hectic fever.

The stethoscope, applied to the left axilla, indicated strong pectoriloquism with cavernous cough: in the right axilla, pectoriloquism was also evident: and there was a mixture of cavernous and sibilant rales. The natural respiration was scarcely audible in any part: the sound on percussion was very dull over two-thirds of the chest.

I prescribed a small dose of solution of iodine, with conium, to be inhaled for ten minutes three times a day; the morphine syrup at night; simple means for the regulation of the bowels; and ablution of the chest, night and morning, with the compound lotion. The diet was nicely regulated.

I shall confine myself to a general statement of the further particulars of this case, as its termination was so necessarily fatal.

On first using the inhalation, he experienced slight giddiness for a few minutes, and some sense of soreness with dryness in the tongue and throat; but the patient rather mentioned these sensations on being interrogated, than complained of them; and they did not continue. He soon found that it afforded him great relief, the power of expectorating being remarkably facilitated; the cough also very much abating; the respiration becoming comfortable; and the chest materially freed from oppression. In all respects, he improved in a surprising manner. At the end of a fortnight, the pulse ranged below 100; the looks and the strength were improved; and both he and his friends, flattered by this rapid amendment, anticipated an eventual recovery of health.

He had not quitted the house for several months, when he was tempted abroad by the favorable state of atmosphere on a fine day. The effect of the external air on his breathing and on his nervous system was remarkable. He could not meet the wind, mild and gentle as it was; and he was several times in danger of fainting. No injury ensued.

He repeated his out-door exercise, but was unfortunate in exposing himself to a cold wind. The cough became exceedingly harassing. His chest was affected with flying pains, which were soon concentrated at the lower part of the left side; in which situation the stethoscope indicated much sibilant rale.



For the relief of these symptoms, leeches and a blister were applied, and the inhalation was changed for a mixture of conium, with hydrocyanic acid. This mixture was highly effectual in relieving the irritation of the cough; and, at the end of a week, the use of the iodine mixture was resumed; and was attended with the same sensible and remarkable relief as before. But, ere long, the severity of the diseased action predominated, and prevailed in a frightful degree; so that even mitigation of the symptoms became difficult. The respiration was now most distressingly short; and he often expressed that he should "be suffocated with the phlegm," had he not been enabled to get rid of it by means of inhaling. The quantity of sputa was immense, and the odor extremely offensive. The disease, in its advanced state, was attended with the usual symptoms of colliquative diarrhoea, more or less alternating with night sweats, and with great œdema of the legs and feet. It would be useless to detail the progress of the case, which came to its fatal termination at the end of two months from the date of my first visit. He always expressed, in strong and grateful terms how much comfort and relief he derived from the inhalation.

The following were the appearances found on examination after death: the pleura pulmonalis of the lungs, on each side, was universally and most firmly adherent to the pleura costalis. There was an excavation at the apex of the right lung, sufficiently large to contain a duck's egg; and this was lined with firm layers of coagulable lymph. There was also an excavation at the apex of the left lung, similarly lined. With the exception of a small part of the inferior lobe of each lung, tubercles, *en masse*, and in many parts softened, constituting continuous ulceration, appeared. A considerable portion of each lung was hepatised.

*Obs.*—The want of success in this case cannot create surprise. I could not allow myself to entertain the least expectation of it. My object was to put to the test the powers of inhalation to mitigate the symptoms in an incurable case. In this respect the result was perfectly satisfactory; for, previously, the medicines which had been administered gave little or no relief.

The appearances on dissection confirmed the indications by the stethoscope. The pectoriloquism and the cavernous cough were unequivocal signs of the extensive excavation which had taken place. It is true that the stamp of phthisis pulmonalis, in this very advanced stage, was sufficiently obvious from the symptoms; but the more accurate information afforded by the instrument must be esteemed useful.

For a considerable period, and certainly long after that in which the disease of the lungs had become incurable, in the case which I have now related, the digestive functions were performed with considerable regularity; serving to show, in this example, if I may so express it, the independent nature of the pulmonary disease.

### CASE XIX.

Phthisis Pulmonalis in the last stage; the disease evidently incurable, and rendered more inveterate by its complication with tubercles and ulceration in the intestines

A gentleman, aged twenty, of scrofulous constitution, as shown by permanent swellings of the glands of the neck in early youth, slight in figure, with a fairly proportioned chest, was very far advanced in the last stage of phthisis pulmonalis when I was first consulted. The emaciation was extreme, and the debility so great that he could not walk across the room without assistance. The pulse was 150 in the minute; the inspirations 30. The nails were remarkably incurvated. The features were thin and contracted; presenting, in a considerable degree, the facies Hippocratica. The circulation was so feebly performed, that the hands and feet were often extremely cold, and the fingers of purple hue; and yet the thermometer, applied under the tongue, indicated 100°. The feet and ankles were œdematous. The cough was very irritable, the expectoration difficult, and much pain, with tightness, was experienced over the chest, especially at the inferior part of the sternum. The tongue was morbidly red in the middle, with foul and whitish edges. He had urgent thirst, and was without appetite. The state of the bowels was irregular; the chief tendency was to diarrhœa. The ex-

pectoration was flaky, white, of offensive odor, sometimes bloody, and gave a strongly colored ring in the optical experiment. The nights were constantly disturbed by cough, and there were occasionally copious sweats, which had an offensive odor like that of foul earth. There was pectoriloquism under each clavicle near the axilla, and the cavernous cough was strongly marked.

I prescribed the inhaling mixture of iodine with conium, the sixth of a grain of acetate of morphia at night, and medicine in the day, calculated to allay the intestinal irritation. I directed the chest to be washed with the usual lotion; to have the wetted compress in the day, occasionally. The diet was made as nutritious as the weak digestive powers would allow.

Extremely debilitated as this patient was, he could use the inhaler without difficulty; thus affording a proof of the convenience of this simple apparatus. The relief which was obtained from this process in the course of a few days was most remarkable, and such as to exceed my utmost expectations. The patient's description of the effects of inhaling, was, that it abated the cough remarkably, and rendered the expectoration, which before had been much suppressed, easy and free; from which change ensued a comfortable state of chest, with a great improvement in the breathing. He observed that he felt the inhalation very sensibly traverse the chest, causing an agreeable sense of warmth. By means of the morphine syrup, the nights were passed in comfort. On former occasions, when opiates had been given, they disagreed so exceedingly, that he declared "the remedy was worse than the disease."

He proceeded in a course of alternate amendment and relapse for many weeks; suffering much more from painful irritation and disorder of the bowels than from the chest; till at length nature became exhausted. The intestinal irritation was much controlled by small doses of the hydrargyrus cum cretâ, joined with the acetate of morphia; by anodine fomentation of the abdomen; and by the use of starch injections with tincture of opium. He used the inhalation regularly almost up to the period of his death, and always described in strong terms the relief which it gave to his chest.



On examination of the body after death, the following appearances were presented: on each side there was considerable adhesion of the pleura pulmonalis to the pleura costalis; the superior lobe of the left lung exhibited a continued series of excavations; the upper part of the inferior lobe was filled with tubercles. At the apex of the right lung there was an excavation capable of holding about three ounces of fluid. At the inferior part of the lung, the tubercles were very numerous, and many of them just passing into the softened state. In the excavations there was some lining of thin fibrine. The mesenteric glands were greatly enlarged and hardened. Numerous miliary tubercles existed in the small intestines; and in the ileum there were several patches of ulceration. The liver was large, and on its convex surface the lymphatic vessels exhibited a distinct and beautiful arborescence, such as I have rarely seen.

*Obs.*—I must again observe that if I had been governed by a rigid solicitude for the credit of inhalation, I might have declined the application of the treatment to such a case as this, at the first view so evidently hopeless. Opinion of the merit of remedies is usually referred only to the event; and a fatal termination of a case is liable to be quoted in condemnation of any particular treatment, and cannot seem calculated to support and recommend it. But surely it is the duty of humanity to adopt the use of those means which we know from experience are the most capable of relieving the symptoms; of mitigating the sufferings of the unfortunate patient; and thus rendering more smooth the path to death!

In the case just related, there was that state of intestinal disease so frequent in phthisis pulmonalis, and which is not only a source of highly painful irritation and disorder in the alimentary canal itself; but, usually, instead of acting as a counterpoise to the pulmonary symptoms, seems rather to have the influence of aggravating them. Such complication must always increase the difficulty of the case, and add to the gloom of our prognosis.

The soothing effect of the acetate of morphia was very satisfactory; and we must regard this medicine as a valuable addition to modern remedies. It is more sedative than the

ordinary preparations of opium, and, having a different mode of action, it is difficult to compare its strength with that of opium ; but, as well as I can make the estimate, I should rate it with the tincture of opium, in the proportion of a grain of the solid acetate to thirty-five minims of the tincture. For the relief of severe pain, I should give tincture of opium, or the powder or extract, to a patient with whom opium did not disagree, in preference to any other preparation; having most reliance on all the properties of opium combined, where I wish to prescribe this medicine distinctly as an *anodyne*. We well know also in how remarkable a degree great pain modifies the effects of opium; so that an individual who would be disordered in the most inconvenient manner by opium, if taking it for the purpose of procuring sleep, could have recourse to it in free doses with every good result, when using it as a remedy for *severe* pain. Yet, there is an occasional exception even to this statement; and in such instances the acetate or muriate of morphia may be employed most advantageously as an anodyne. In my own practice I have always chosen the acetate.

### CASE XX.

Empyema, with tubercles in the lungs; convalescence promising recovery; exposure to cold and wet producing a severe relapse of all the symptoms, and which proved eventually fatal.

A gentleman, aged twenty-five, exposed himself, on one of the coldest days of January 1829, on the outside of a coach, having fasted for a considerable time. He felt himself seized with the cold (*coup de vent*) in the most distressing degree, and in a few hours after, when sitting in a warm apartment, he was affected with symptoms of fever. This indisposition was shortly removed; but he exposed himself again to a cold wind, the east, and very soon experienced a severe pain in the region of the heart, rendering a deep inspiration difficult, but unattended with cough.

The treatment adopted had been so far successful, that he passed the summer without much cause of complaint, until August; when, in walking, he was alarmed by suddenly coughing up about three ounces of blood. This was succeeded

by an expectoration which was pronounced to be purulent: it was often mixed with blood. He was not much affected with cough. He very much recovered in October. In November he took cold, and soon discovered a hard swelling between the fifth and sixth rib on the left side, which continued very severely painful for six weeks. Leeches were applied, and afterwards poultices. An abscess formed, which was opened by the surgeon. He was relieved by a free discharge of thin pus, mixed with blood; but, in about a fortnight, the character of his disease was changed, and he became affected with considerable cough attended with puriform and sometimes bloody expectoration. When I first saw this gentleman, I found him much emaciated, and in a state of great debility; the pulse ranged from 110 to 120; the animal heat was  $99^{\circ}$ ; the heat of skin was temperate; but it was evident, from his report, that he had a slight paroxysm of hectic fever in the middle of every day. A deep inspiration produced some sense of pain, internally, in the situation of the abscess; but still more that of tightness. His sleep was not much disturbed. He usually had slight perspirations at night. The digestive functions appeared to be healthily performed, and the appetite was almost natural.

The fifth sixth and seventh ribs were elevated, giving to the side a very swollen appearance. The orifice of the abscess had its edges quite inverted. There was a slight purulent discharge; and it was remarkable that this alternated with the expectoration: when the one was free, the other was very slight. Of this fact I was several times an eye-witness. By auscultation and percussion, the following evidence was afforded: considerable resonance in the upper part of the right lung, and still more remarkable in the right axilla. Imperfect respiration in the upper part of the left lung; and below also it was imperfect and more indistinct.

Sound duller than natural on the right side; dull at the inferior part of the left, especially when the patient was in the erect position; and becoming clearer when he lay on the opposite side. I drew the inference that there were tubercles in the upper part of each lung, but particularly the right; that there was effusion into the cavity of the left pleura; that



nature had performed the operation for empyema in producing the external abscess; and that, internally, a communication had been formed, by ulceration, between the bronchi and pleura.

I directed the inhalation of iodine and conium; sarsaparilla mixture, as at p. 113; and that, when he felt himself affected with any symptoms of hectic fever, he should take a two-minims dose of hydrocyanic acid in a saline draught. He was allowed to take mild animal food daily, and half a pint of sound porter, which agreed with him rather better than diluted wine. The chest to be washed with the compound vinegar lotion. No inconvenient irritation was produced by the inhalation, and in a short time the expectoration ceased altogether to be bloody, although still purulent, as indicated by the optical experiment. The prismatic ring was well marked.

The patient improved favorably and progressively, and expressed his persuasion that he had received much benefit from the inhalation. At the end of six weeks the pulse was reduced to 90, and the animal heat to  $97^{\circ}$ : there was a great improvement in the strength, and a considerable acquisition of bulk.

At this period he went into the country, being desired to continue the inhalation twice a-day, and the use of the sarsaparilla mixture, to which was added a moderate dose of Battley's liquor cinchonæ cordifoliæ,\* and the iodide and nitre were omitted. The hectic fever had for some time disappeared, and there was no occasion, therefore, for the hydrocyanic acid.

In the country he took horse exercise daily, and had recovered flesh and strength in so great a degree, that he informed me he was almost well. The abscess in the side had appeared to be perfectly healed. He had relinquished the use of the inhalation, considering it no longer necessary.

He unluckily was overtaken in one of his riding excursions by a cold wind with rain, not sufficiently protected by

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\* A strong concentration of the infusion of bark in cold distilled water, under long maceration, affording a convenient preparation of all the principles of bark in the liquid form.

clothing; and from this accident ensued an attack of persistent rigors, followed by excessive perspiration. Such paroxysms returned daily for some time, and at a regular hour, so that he was supposed to have an ague. He lost his strength suddenly, and was confined to the house. Fresh inflammation of the pleura now took place, and the purulent secretion, which, as before, was discharged from the side and by expectoration alternately, became considerable. He quickly lost flesh and strength. With the exception of the empyema, his situation was exactly that of a person in the last stage of phthisis pulmonalis. There was every evidence of confirmed tubercular disease. The constitution by degrees yielded to such complicated causes of irritation; and it was not in the power of medical treatment to do more than mitigate the symptoms, and sustain the fortitude of the unfortunate patient under his sufferings, which terminated in death in about two months.

*Obs.*—The early progress of this case, consequent to the treatment which I adopted, was very satisfactory.

The inhalation had improved the cough, the expectoration, and the breathing. Indeed, his amendment much exceeded all expectation.

Too confident in his returning powers, this gentleman indiscreetly exposed himself to wet and cold, and brought on that renewal and aggravation of disease which art could not oppose: a strong lesson to the consumptive patient, upon whom it is ever incumbent to avoid, to the utmost of his power, all remote causes of injury, and especially a careless exposure to the vicissitudes of the atmosphere.

I may allude to two other cases of empyema, of a much more chronic nature than this. In the one, that of a man beyond middle life, inhalation did not appear in the least degree serviceable; but it was highly so (of iodine and conium) in that of a boy of fourteen, who eventually recovered.

Having endeavored to represent, however imperfectly, the nature of tubercular phthisis, and its treatment, general and especial, I proceed to the consideration of some of the diseases of the air passages; and first of

## CHRONIC LARYNGITIS.

The diseased condition of the larynx, to which I shall first and chiefly direct my observations, is that connected with phthisis. The delicacy of its membrane, and the sensibility of its whole structure, subject this small, but important organ, to several morbid affections. I believe that it never undergoes that slow and destructive inflammation which ends in ulceration, without being attended with pulmonary tubercular consumption. I have witnessed many cases in which the laryngeal affection has preceded the pulmonary one; others in which it has not shown itself till the advanced stage of phthisis; and lastly, others in which both diseases have begun at the same time, and proceeded, *pari passu*, till the fatal termination.

I remember the case of a gentleman who had suffered from chronic laryngitis for fifteen years. It had its origin from syphilis. There was great impairment of the voice, and it was sometimes lost for two or three months together. There was habitual cough, except in the warm months; and he was always thin, and had a consumptive look; but it is most important to state, that the disease was kept at bay by mercury; and he most commonly took pills prescribed to him by the late Mr. Pearson, composed of the oxy-muriate of mercury and muriate of ammonia. At length he fell into confirmed phthisis, and died.

In a post-mortem examination, which I lately witnessed, the lungs on each side were tuberculated very generally. There was a cavity at the apex of the left lung. The mucous membrane of the larynx was ulcerated, and the rima glottidis was almost blocked up by purulent matter.

*Louis*, in speaking of the ulcerations of the larynx, observes: "The point of junction of the chordæ vocales (where they were sometimes superficial) was the most common seat of these ulcerations; the next in order of frequency came the chordæ vocales themselves, especially at their posterior aspect; the base of the arytenoid cartilages; the upper part of the larynx; and, lastly, the interior of the ventricles, where, indeed, I but once met with a small superficial ulceration.



Sometimes one or more of the chordæ vocales were totally destroyed, and the base of the arytenoid cartilages laid bare. The cartilages themselves were, under these circumstances, perfectly sound."

The disease of the larynx, attendant on phthisis, does not, according to my observation, give rise to so much pain as might be expected. There is sometimes aching, and tenderness on pressure, in the situation as I have believed of the chordæ vocales. Louis remarks, "that sharp, continuous, and sometimes very severe pain, followed by aphonia, of one or more months' duration, denotes the presence of deep ulceration."

In the advanced stage of the disease, the situation of the patient is of the most distressing kind. He is harassed by violent cough, attended with the utmost difficulty of expectoration of a mixed secretion, partly viscid, and partly frothy; the respiration never comfortable, and easily made anxious, and hurried by exertion, and especially by a paroxysm of coughing. He shrinks from speaking, and cannot carry on a continued conversation. There is much pain in and about the larynx. Deglutition is arduous, and still more of liquids than of solids; and unless the attempts are very cautiously made, there is a threatening even of suffocation.

In the following example of affection of the larynx, the symptoms were very troublesome, yet slight in comparison with that height of the disease which I have just described.

### CASE XXI.

Chronic Laryngitis, Aphonia, suspicion of tubercles. Recovery of the patient.

A gentleman, aged thirty-five, originally stout and healthy, with a well-formed chest, first found his health to fail a year and a half before my seeing him, with the following symptoms: A catarrh of more than ordinary severity preceded a cough, which was loose, and not very urgent; but, in two months after, the voice became affected, first with hoarseness, and soon he could only speak in a whisper, and the effort to give tone was very painful. Eight leeches were applied, and drew, as he thought, eight ounces of blood. He fainted, and was low and weak afterwards, and he considered that he was

rather injured by the depletion. In the succeeding months, blisters were applied to various situations in the upper part of the chest, without any sensible benefit. He lost flesh and strength, and had copious night perspirations. He found it become so painfully difficult to speak, that at length he carefully avoided the attempt, and wrote down his wishes on a slate.

At my first visit I found his pulse not exceeding 90, and the animal heat  $99\frac{1}{2}^{\circ}$ . When sitting, he breathed without apparent difficulty; but quick movement, and making any ascent, so embarrassed him that he apprehended a disease of the heart. His mother had died of consumption, and he was full of fears for himself.

By auscultation at the upper part of the right lung, there was much resonance of the voice, and much dulness of sound on percussion. He was thin and weak, and had frequent night perspirations. His sleep was usually disturbed by cough and restlessness. Yet he was, he assured me, in a most improved state from what he had been some months before, when he had sometimes coughed "by his watch" for three-quarters of an hour, and expectorated half a pint of phlegm. He attributed his amendment to *Nature*, under the advantage of different changes of air, and thought that every kind of medical treatment had "done him rather harm than good."

On inspecting the posterior fauces, the mucous membrane appeared much too vascular and swollen. He had pain about the larynx, if he talked much. In a word, he was affected with all his former symptoms in an abated degree. The period was the beginning of summer, which was much in his favor.

I applied to the posterior fauces, every third day, a solution of pure nitrate of silver, in the proportion of  $\text{ʒi}$  to an ounce of distilled water, which did not produce inconvenience, but, on the contrary was decidedly relieving, and very useful. He inhaled, twice daily, a small dose of the iodine solution with conium, and took an alterative dose of pilul. hydr. with a grain of pulv. Jacob. each other night, a morning draught, as at p. 135, daily, and sarsaparilla mixture, as at p. 113,

with the iodide. He wore a wetted compress over the trachea and larynx at night, and used night and morning ablution with the lotion for some time, but afterwards with cold water only. At a later period, he took tonics, first quinine, and afterwards *mist. ferri compos.*, and by degrees he perfectly recovered.

Six years have now elapsed, and he has not experienced any relapse.

*Obs.*—Although the patient acknowledged that my treatment agreed perfectly, and was very useful, he appeared strongly impressed with the belief, that nature had been his best friend; and I coincided in opinion with him, that there was in his constitution a good disposition towards recovery, which gave a great advantage to any proper medical measures that might be adopted. He had always been a temperate person in wine, although, from his high station in society, he was exposed to the temptations of the table. He had found the necessity, as well as the advantage, of a good supporting diet.

## CASE XXII.

Ulcer of the larynx, with tubercles at the apex of the lung. The good effects of iodine inhalation well exemplified; although the termination of the case was fatal.

A journeyman printer, aged thirty-nine, of slight frame, and weak in constitution, with fairly proportioned chest, dated the commencement of his cough from a year and a half previous to the time when he consulted me. He was exceedingly emaciated; and his debility was such as to confine him to the chamber, and for the most part to his bed. He had lost his voice for six months. He stated that, some weeks before my visit, the cough had been dry, and barking in its sound. Now the secretion was excessive; for he expectorated at least a pint of muco-purulent matter every twenty-four hours. It was offensive in odor, in part of a tenacious consistence, in part frothy; of mixed colors of white, green, and yellow; and sometimes tinged with blood. The cough was violent, and especially in the night. The respiration was hurried and difficult; and when the sputa were much accumulated, he sometimes apprehended suffocation. The larynx was painful,



but not constantly; and was rather affected with shootings, and now and then, he said, as if pricked by a lancet. On the left side of the os hyoides there was some tenderness on pressure. The pulse was 120; the animal heat  $98^{\circ}$ . The tongue was coated with a viscid creamy fur. He had much difficulty in swallowing, liquids especially, and frequently the drink would return.

Upon a careful inspection, by which I obtained a view of the glottis, I could discover a dark whitish appearance, bordering on ulceration; while the velum pendulum palati, and the whole of the internal fauces, exhibited a swollen and an almost excoriated appearance.

By the stethoscope applied near the left axilla, I detected well-marked pectoriloquism; under the clavicle, for some extent it denoted the respiration to be almost inaudible; and the sound at this part was very dull on percussion. On the right side the evidences were rather favorable. I found that, a few weeks previously, he had suffered from excessive perspirations at night; but, at that time, they were comparatively slight. I directed a solution of the nitrate of silver, in the proportion of a drachm of the pure nitrate, to an ounce of distilled water, to be applied by means of a camel's hair brush to every part of the fauces which was accessible. The use of a small proportion of iodine solution with hemlock, by inhalation; and the washing of the chest with the compound vinegar lotion. A compress, wetted in it, was constantly worn over the larynx and trachea. Internally was given sarsaparilla infusion, with a little of alkaline liquor, and small doses of liquor cinchonæ cordifoliæ, two or three times in the day; and at night, a minim of the solution of the acetate of morphia in a saline draught. The diet to be mild, and lightly nutritious.

The change which was effected in the situation of this patient, in the course of a fortnight, was quite remarkable. The condition of the fauces had been improved so much by one application of the nitrate of silver, that he was enabled to swallow without much difficulty; and by a second application this benefit was so confirmed, that his deglutition was materially relieved. The amendment gradually produced in the state of the larynx and the lungs was no less remarkable.

The cough became abated, the expectoration was reduced to one-eighth in quantity, much less consistent, and almost free from disagreeable odor. The patient described that the inhalation afforded him very sensible relief, enabling him to expectorate without difficulty, and thus rendering the general state of his chest, and his breathing, comparatively comfortable. The pulse was lessened to 80, and the animal heat to 96°. He was greatly improved in strength, had evidently gained flesh, and his aspect was changed from that of one apparently dying, to the appearance of beginning convalescence.

I quitted London at this time, but learnt, from the medical gentleman under whose care he remained, that this prosperous course of improvement was suddenly interrupted by an exposure to damp and cold, in a change of apartments; for his was the lot of poverty. This was followed by a new and violent accession of symptoms, which quickly depressed the vital powers of one who had so long been enfeebled; and the struggle did not last beyond a few weeks.

*Obs.*—I relate this case as instructively shewing the fitness of iodine inhalation in a diseased state of the larynx, joined with tubercles in the lungs. I had my doubts whether its use was admissible, and was agreeably surprised to find that it produced the best effects. The total dose of the solution for each process never exceeded one drachm. I am sure that much advantage was derived from the application of the nitrate of silver; and I would always recommend this treatment in very irritable states of the larynx, when the posterior fauces present any appearance of disease of the mucous membrane. It is perfectly safe treatment, and, when applied carefully, and in a moderate degree, is not at all a severe remedy. It does not seem unreasonable to believe, that, if this poor patient could have received proper treatment at a much earlier period, and also have enjoyed all the comforts and advantages which his delicate condition required, he might have obtained more permanent improvement; and, by possibility, have been advanced to a moderate recovery.

## CASE XXIII.

Chronic Laryngitis. The symptoms immediately relieved by an inhaling mixture of conium and hydrocyanic acid; and the affected parts farther restored by the inhalation of iodine and conium.

A lady, aged thirty-six, was subject to chronic inflammation of the larynx, the symptoms of which were a sense of burning heat in the part, a viscid mucous secretion difficult to be excreted, impediment in the swallowing of the saliva, occasionally an irritable cough, and an uneasy respiration, which now and then became even painful, with a slight degree of spasm.

On a former occasion, when I was consulted by this patient, I observed, upon inspection of the fauces, a considerable degree of efflorescence, and the symptoms partook altogether of a more inflammatory character than in the present instance; and then, in addition to the benefit derived from leeches and a blister locally, with antiphlogistic constitutional treatment, I obtained very excellent effects from the application of a solution of nitrate of silver, as low down near the glottis as could be reached by a camel's hair brush.

On this second occasion, there was no inflammatory appearance of the fauces; and, as cough, with the abated state of the other symptoms already described, was troublesome, I was desirous of employing the treatment of inhalation; and I prescribed a mixture of conium and hydrocyanic acid, to be mixed with water at a temperature of  $115^{\circ}$ , and inhaled in the usual manner.

The effects were quite satisfactory. All the symptoms were immediately relieved; and, at the end of a week, I directed her to use the iodine inhalation twice a-day, with a view to produce a more permanently healthy state of the mucous membrane of the air passages. I was not disappointed in my expectations. She related that from the first inhaling mixture she experienced a soothing warmth in the windpipe and over the chest, with an equal relief of the breathing and the cough; and, finally, from the use of the iodine, a gradual recovery of the natural powers of the voice and the respiration.

I advised the daily use of the compound vinegar lotion, with the flesh-brush, &c., and of the graduated shower-bath,



with a view to effect a permanent establishment of health ; and these measures agreed perfectly, and conferred much benefit.

*Obs.*—At a former period, this lady, for a considerable time, was subject to occasional small discharges of florid blood from the trachea, issuing without cough, or any painful sensation. I have met with several examples of this complaint, which naturally alarms the mind of the patient ; and, although it does not appear to be attended with any danger, it should receive the due attention of the physician. Sometimes this discharge of blood proceeds from actual rupture of vessels—doubtless of very small calibre ; but at other times it seems probable that it is the result of transudation from the congested capillaries of the secreting mucous membrane.

These slight and occasional discharges of blood are to be distinguished from sudden, and especially from large hæmoptysis. I know a gentleman who has been subject to such effusions for the last thirty years, and who, during five successive years, never passed one week free from spitting of blood ; and yet, from his good looks and strength of body, he bids fair to enjoy great longevity.

It is true that in proportion as hæmoptysis is considerable, and accordingly as pulmonary symptoms denoting the invasion of phthisis may be present, so is the importance of the symptom, and the ground of alarm. Yet it is surprising how persons will live on for many years in supportable health, subject to rather considerable hæmorrhages, which I suppose to have come from the bronchial arteries.

The following extract from the Commentaries of Dr. Heberden is of much interest. Speaking of “sputa cruenta,” he remarks :

“The danger belonging to it will be greater in proportion to the greater number and degree of the other consumptive symptoms with which it is accompanied, and to the tenderness of the age at which it comes on. A spitting of blood seems sometimes to be the whole complaint, so that not even a cough shall be joined with it, but the blood will be brought up with as little effort as the easiest phlegm : it does indeed most commonly denote an unsound state of the lungs ; but from many facts it seems reasonable to infer the possibility of

a slight hæmorrhage from the vessels of the lungs or trachea, while the lungs are otherwise in a healthy state, and consequently with as little danger as from the hæmorrhoidal vessels, or those of the nose, especially if it happen after the meridian of life. I have seen a man in good health at seventy, who for fifty years had never been free from spitting of blood above two years together. In others I have known it return every now and then for as long time. In a peripneumony, a bloody mucus will be brought up as the patient recovers, and no cough, nor sign of any injury remain. A peripneumony, in which bloody phlegm had been spit up for two or three days, gradually abated, and the patient seemed to be recovered; but the cough soon came on again, and in a month's time there was a great wasting of the flesh, and a difficulty of breathing, with many signs of approaching death: After going into the country, and riding, the patient lost his cough and shortness of breathing, and lived healthy for many years."

He offers a caution against large venesection in these words:

"If I give so much to the established practice as to allow of one or two small bleedings, where the spitting of blood has not already occasioned too great a loss, I must think a caution necessary against large and repeated bleedings, which would probably conspire with the distemper to exhaust the patient."

*Aphonia* (from a priv. and φωνη the voice), or loss of voice, may occur as a transient affection, or as one of great duration. I knew a lady who, on every occasion of taking cold, first became hoarse, and then entirely lost her voice for periods varying from three days to as many weeks. On inspection of the fauces, there was a general appearance of congestion of the whole of the mucous membrane within sight, and enlargement of the uvula and the tonsils. Without doubt there would be more or less of inflammation and swelling of the mucous membrane of the larynx, but also of the arytenoid muscles and the vocal chords.

The most prompt attention should be given to the treatment of such a case, as one of inflammation; by the use of

leeches, followed by fomentations and poultices ; or by blistering, according to circumstances.

### CASE XXIV.

Aphonia, preceded by ulcerated sore throat and catarrh, lasting for three years, and then a recovery.

A young woman, aged fourteen, had an ulcerated sore throat, which was soon followed by catarrh and cough. She first had painful difficulty in speaking, with hoarseness, and suddenly lost her voice entirely. I saw her a month after. The tonsils and uvula were still sore, and the whole of the visible mucous membrane was red and swollen. The larynx was rather tender on pressure, and was occasionally painful, but more at the sides than in its substance. She had been a little improved by the treatment used, when a severe attack of measles aggravated all the symptoms. Various means were used during many succeeding months, as leeches, blisters, emetics, alteratives, and aperients ; inhaling of iodine with conium ; the rubbing in of iodine and mercury combined ; application of the solution of nitrate of silver ; a wetted alcoholic compress, &c. &c. ; but with no apparent effect on the voice, although all visible appearances were satisfactorily improved. After a year, she went to her native place in Hampshire, where her general health improved ; but she did not recover her voice till the expiration of three years, when it came so instantaneously as to give her a fright, and she says that her friends around her partook in the alarm ; but of course it was an alarm mixed with pleasure. Her catamenia occurred before the fiftieth year. The recovery, therefore, was not connected with this event. When she gets a bad cold, she loses her voice for a short period, which has happened several times, but it returns again perfectly.

### CASE XXV.

Aphonia, preceded by catarrh, of much continuance, ending in recovery.

A lady, aged twenty-two, slight in form, and looking delicate, although never complaining of ill-health, took cold in



October, 1844; which was soon attended with cough and hoarseness, and very shortly with loss of voice: and she attributed this in part to the having strained it in singing the high notes. She was remote from medical assistance at the time, and simple treatment only was used. I saw her in June, and found the tonsils, uvula, and velum pendulum rather swollen, but not with any well-marked appearance of inflammation. On strong compression of the larynx, a little tenderness was felt; and the effort to hold a conversation was distressing, and gave rise to a little aching about the larynx; otherwise, the complaint was not painful, and she declared herself to be in good general health.

I adopted many of the means mentioned in the last case; and, in addition, directed the daily swallowing of pieces of clear solid ice; and, at the end of three weeks, had recourse to tonics, and *galvanism*. This last remedy was so decidedly beneficial as to give me the belief that if it could have been steadily continued, it would have led to a speedy cure; but the patient was under the necessity of quitting London.

She continued a wetted compress over the parts constantly; used night and morning ablution with cold water; and had occasional change of air. I received the following account of this young lady lately. "Her voice returned in the most gradual manner. For many months it was very weak, and she was unable to speak for more than a few minutes without failure, or excessive effort; but now she never complains, nor do we discover any weakness of the voice. The voice for singing, however, has only partially returned; the upper notes are neither so clear nor so strong as formerly."

*Obs.*—I apprehend that severe and protracted cases of this description are of a very mixed nature; and that, in the latter stage of it, the defect is chiefly that of the local nervous\*

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\* I find the following case, related by Mr. Bishop, surgeon to the Northern Dispensary, in his paper on Aphonia. "The patient was a tradesman residing in St. Martin's Lane, who was standing in his shop when an impudent thief entered, and very coolly took up some article before his face, and bolted away. The tradesman ran to the door, crying "Stop thief," as loud as he could vociferate, and was about to repeat the same exclamation, when he suddenly found himself unable to do so. The larynx was rendered mute, and he remained incapable of uttering a vocal sound for the space of eight months, when his voice returned unimpaired."

power. But the eventual recovery may give a cheerful encouragement to those similarly affected, and encourage them not to despair, even though their affliction may have been of long continuance. It is also a great consolation that such cases may occur without the least participation of phthisis.

The laryngeal diseases of childhood do not belong to my present subject; but I cannot help adverting for a moment to that remarkable disease, the croup\*, in which the tubercular formations of fibrine result from the high and dangerous inflammation which always involves the larynx and trachea, and sometimes extends even far into the bronchi. The disease shows the high sensibility of the mucous membrane of the larynx, and its great vascularity, both lessening with advancing years. I do not remember to have seen more than two cases of fatal acute laryngitis in the adult.

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## OF BRONCHITIS.

Bronchitis is a disorder so intimately connected with phthisis, always forming a large part of that disease, and not unfrequently, when attended with hectic fever and protracted, so closely imitative of it, that the diagnosis is even more than difficult. I cannot therefore pass over its consideration, although I shall endeavour to confine myself within narrow

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\* M. Bland, in a work upon the disease, has described, as a peculiar species of croup, several cases which presented many of the characteristic symptoms of that disease; while, on inspection after death, the only morbid appearance consisted of an excessive accumulation of mucus throughout the whole of the air tubes. This, and the thickening of the mucous membrane which lines the margin of the glottis, give rise to false croup.

limits—narrow, in reference to the extent and importance of the subject. When we consider the anatomy and physiology of the bronchial tubes, and how immediately they are connected with the trachea and larynx in their commencement, and with the lungs at their termination; the importance of their function as “air-passages” is at once evident. The fine mucous membrane which lines them, tends to lessen their sensibility to various causes of irritation, atmospherical and mechanical, and to noxious exhalations; and it seems more surprising that it should bear with so much impunity the trials to which it is constantly exposed, of the most sudden and extreme variations of temperature, rather than it should occasionally become the seat of dangerous inflammation, and of other morbid conditions.

The fibro-muscular structure of the bronchial tubes, which gives them the useful power of contracting and dilating, at the same time subjects them to morbid spasmodic action, and to produce a form of disease to which is given the name of *Spasmodic Asthma*.

Bronchitis may be divided into the acute, sub-acute, and chronic—terms denoting the degree of inflammation, and consequent relative magnitude and hazard of the disease.

*M. Andral*, in treating of diseases of the air tubes, observes: “Under this title, I include those of the larynx and trachea, and of the bronchia, as far as they can be traced with the scalpel; beyond this point, the parenchyma of the lungs commences.” We are to keep in mind the alleged distinction of the structure between the lining membrane of the bronchia, which is mucous, and the membrane of the air-cells which is fibro-cellular; as affording a corresponding distinction between the inflammation of these respective tissues. Acute bronchitis may exist without pneumonia, and *vice versâ*\*; but it probably happens, not unfrequently, that the

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\* Andral (Pathological Anatomy) observes; “Hyperhæmia of the lining membrane of the air-passages is not necessarily connected with any of the diseases of the parenchymatous substance of the lungs. Indeed it is not very uncommon to find the trachea, and even the bronchia, perfectly pale in acute pneumonia; and this is still more common when the pneumonia is chronic.”



two kinds of inflammation are more or less blended;—I mean, that severe bronchitis does not exist without some attendant inflammation of the parenchyma and cells of the lungs; nor of the latter tissues without the bronchia partaking in the inflammation. In determining the chief seat of inflammation, and of the textures most affected, the stethoscope lends a valuable assistance. Acute bronchitis in its highest degree is a disease attended with great suffering and equal danger. The congested state of the air tubes, from the fuller supply of blood (active hyperhæmia), from the morbid, dense, and viscid secretion, often excessive in quantity; and, from the spasmodic contraction attendant on the increased sensibility belonging to inflammation, concur to render them very imperfect channels for the passage of air to and from the lungs; and hence the difficulty and great distress of breathing, with the occasional livor of the complexion; which is never more remarkably seen than in the acute bronchitis of children. It is an obvious consequence that aeration of the blood must be very inadequately effected, and that consequently the brain is only supplied with half arterialised blood. From this cause arises oppression and drowsiness, sometimes amounting to coma, together with great dyspnœa.

Regarding the treatment of acute bronchitis, I shall limit myself to a few remarks. I believe it to be of the highest importance, not only in pneumonia, which can never be a questionable point, but also in acute bronchitis, to take blood freely at the earliest period of the disease, doing the utmost to arrest the inflammation; and which, if it proceed unchecked, may soon bring the patient into danger, from which it may be too late to relieve him by the lancet. Cupping over the chest is also a very valuable mode of depletion, and when such treatment has been carried sufficiently far, the free application of blisters properly follows in succession. As internal medicines, calomel, and tartarised antimony, in suitable doses, at short intervals, with morning aperients to keep up a very free action of the intestinal canal, constitute the most effective antiphlogistic practice.

When the danger of inflammation is over, and the respiration is become free, the administration of Dover's powder, or

morphine, at night, becomes a delightful source of composure and relief to the wearied sufferer. The sputum itself serves much to shew the stage of the disease. In the commencement, it is of that density and adhesiveness, as to resemble thick gum arabic, or almost bird-lime, and the extricating of it by coughing is severely difficult. Hence, sometimes, the value of an emetic. In the further stage, when the tension of the bronchial vessels is relieved, the sputum assumes a creamy appearance, and is fluent, and far more easily expectorated. With each kind of sputa some blood may appear in admixture.

When all inflammatory action is removed, and not till then, the iodine solution with conium may be inhaled with very great advantage.

When the symptoms, although bearing the same character, are much weaker in degree, they come under the denomination of *sub-acute*. In this form, the complaint commonly showed itself in the epidemic influenza; upon which disorder I am induced to make some observations.

The epidemic catarrh, which of late years has received the popular term of influenza, expressing general influence, is a constitutional disease, especially affecting the mucous membranes of the body, and the bronchial membrane particularly.

That which prevailed in the beginning of 1837, was almost universal throughout the United Kingdom, and I believe in most other countries. It returned in 1833. In France, it was called the *grippe*. Cullen describes the disease as contagious catarrh. Respecting its probable remote cause, I shall take the liberty of quoting some interesting remarks from Dr. Watson's valuable lectures: "The occurrence of epidemic catarrh, as well as of most other epidemics, is unquestionably connected with some particular state or contamination of the atmosphere. What that state is, or what may be the kind of contamination, no one knows. The present epidemic (Feb. 1837) followed hard upon the sudden thaw that succeeded the remarkable snow-storm of the last week of the last year. A similar coincidence between the breaking out of the same disorder, and a sudden elevation of the temperature of the atmosphere, happened at St. Petersburg, in the epidemic of 1782. "On a cold night" (Maerteus says) "the thermometer

rose 30° of Fahr<sup>t</sup>; the next morning, 40,000 persons were taken ill with the influenza." Now, if every epidemic had been preceded by similar changes in the weather, we might resolve the universal prevalence to sudden accession of the complaint, into the effect of the cold and the damp state of the air produced by the thaw. But it is not so; for, as Dr. Hancock observes, "there has not been any uniform connexion between any one sensible quality of the atmosphere as to heat or cold, rain or drought, wind or calm, and the invasion of the epidemic. Irregularities, and great vicissitude of weather have, however, gone before the disease in very many instances; but sometimes one condition of the atmosphere, and sometimes another, has been its immediate fore-runner; and the epidemic has frequently been observed to fall partially and capriciously, as a blight falls on a field or district. Short, in his Chronological History of the Weather, says, that thick, ill-smelling fogs, preceded, some days, the epidemic catarrh of 1557. Jussieu states, that the grippe of the spring of 1783 appeared in France immediately after offensive fogs, "more dense than the darkness of Egypt," &c. &c.

Dr. Watson offers further historical particulars; and after commenting on the different hypotheses which have been brought forward, the non-electrical condition of the air, the migrations of the epidemic as possibly connected with magnetic currents, notices with most favor that which attributes it to the presence of innumerable minute substances, endowed with vegetable or with animal life, and developed in unusual abundance under specific states of the atmosphere in which they float, and by which they are carried hither and thither. Myriads of the animalcules, or of these germs, coming in contact with the mucous membranes, and especially with that of the air passages, irritate (it is imagined) these surfaces, and exercise a poisonous influence on the system."

Regarding, therefore, the remote or exciting cause of the epidemic, and still more, the phenomena of the more fearful one of cholera, we become bewildered with conjecture; and even the statistics of it are very puzzling. We have to deal with the effects. In its first visitation in 1837, the character of this epidemic (influenza) was not understood. Misled by the



bronchial symptoms, which were often urgent, and having the appearance of true inflammatory action, bleeding with boldness was frequently practised, and, in most instances, with the most unfavorable results. Of this I was an occasional eyewitness. The febrile state of the system had a marked tendency to the typhoid character; or, to change the expression, the vital powers were easily depressed by lowering means, and fatally so in aged persons, and in bad constitutions. In these circumstances, much support, and even very generous quantities of wine, would often be required. Medicines also of a stimulating character, rather than depressants. Carbonate of ammonia, with squill, and medium doses of compound sulphuric æther, may be mentioned as one useful combination for the relief of symptoms; and, later in the complaint, serpentaria, seneka, myrrh; and frequently, as the most useful of all medicines, quinine and sulphuric acid.

I found the inhalation of iodine and conium occasionally very serviceable in freeing the expectoration, abating the cough, and improving the respiration.

The disorder would of necessity, under any management, run a certain course; and the right principle of treatment may perhaps be generally stated, as consisting in a study to relieve all the symptoms which arise by the best-known means; with the most watchful care to avoid reducing the strength. The tedious duration of the disorder, and the frequent relapses I have known, marked by the same or some new form of symptoms, constituted another distressing feature of this epidemic.

Common catarrh, if severe, now usually receives the name of influenza, but incorrectly; but certainly those who have once been the subjects of influenza, may have relapses at different intervals, and the same title may then with fitness be given to the complaint. Perhaps not a year passes since the great epidemic, without some returns of it, either epidemic or endemic; yet, happily, it has each time come in a milder form.

I have thus far treated cursorily of bronchitis in different forms. The present occasion will not allow me to dwell on the pathological anatomy belonging to the several states of bronchial disease—the thickened condition of the mucous

membrane, very probably reddened with congested blood\*, and sometimes even ulcerated, second only to phthisis. The reader will find much valuable information on the diseased states of the thoracic viscera, in Dr. Williams's "Examination of the Chest through Functions." Nor can I do more than advert to *Emphysema*, a dilatation of the cellular texture of the air cells, and of dilated bronchi, sure sources of embarrassment of the breathing in a higher or lower degree, and a fruitful cause of dyspnoea and chronic asthma, with habitual cough. Two kinds of morbid change occur to the bronchi and the air cells; on the one hand, thickening (hypertrophy), on the other, thinning (atrophy), of their substance.

*Spasmodic Asthma* is a *specific* disease, affecting only particular individuals, and possesses an hereditary character. I have known examples of it in three generations. The immediate cause of the spasm appears to consist in a morbid contractility in the bronchial tubes, so lessening their calibre as to produce a very limited admission of air to the lungs, and hence to create the most extraordinary efforts on the part of every muscle, which in the least degree may serve to assist in respiration, for enlarging the capacity of the chest, and increasing the expansion of the lungs. There are few conditions of the body which present a stronger picture of physical distress, than a very aggravated case of spasmodic asthma. The patient feels as if his chest were bound with cords, and the larynx grasped with a tight hand; at moments he dreads suffocation; he desires every window and door to be open, that he may have as much fresh air as possible, and would prefer to be in the open air; he sits upright in a chair, that he

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\* On comparing together the bronchi of the different lobes, with respect to their liability to irritation and congestion, M. Broussais was led to conclude, that the bronchi of the upper lobes are those most frequently affected with hyperhæmia. M. Andral observes: "It often happens that not the least trace of redness is perceptible in the bronchi, when the substance of the lung is crowded with tubercles; in other cases, the smaller bronchi are more or less red, but the large ones and the trachea retain their natural paleness: It is much more rare to find the bronchi exempt from redness, when the tubercles are softened or converted into cavities. In such cases, the hyperhæmia is always most marked in those bronchi which are nearest the tubercular excavations; but those which are more distant may likewise participate in the redness, which sometimes extends to the trachea or even to the larynx.

may take all possible advantage of the aid to be given by the muscles; he heaves, and gasps, and breathes convulsively; while his countenance probably is bloated, livid, and most anxious; the eyes staring; the tongue and mouth clammy from viscid and frothy saliva; the pulse small, quick, and irregular; the skin cold in some parts of the body, and hot in others, with partial clammy sweats. The sphincters of the bladder and rectum are sometimes distressingly affected by relaxation, while there is spasmodic contraction of the organs themselves.

The disease sometimes affects early youth, either with or without hereditary disposition, and passes away from the constitution with the arrival of adult years. I know a gentleman who was severely affected with it till his fortieth year, when it left him, and no other disorder took its place. From alteration of circumstances, all his habits of life were changed for the better, and hence his cure. I knew a gentleman who was subject to gout from the age of 25 to 40, which left him to be succeeded by spasmodic asthma, with which disorder he was severely troubled for the remainder of life; which, however, was extended to the 84th year. I mentioned, in my Treatise on Gout, the following: "A gentleman was subject to gout during several years of his life; but for the last seven, he has been affected only with asthma, which succeeded to the gout."

The asthmatic invalid is more subject to attacks of bronchitis than other persons; but, under this infliction, he escapes the worst of the spasmodic sufferings; and this may be in part explained by the increased secretion of the mucous membrane, and by the morbid action of the vessels being concentrated in inflammation.

I shall now offer some examples of the favorable influence of inhalation in Chronic Bronchitis, and in Asthma.

#### CASE XXVI.

Asthma—Bronchitis—promptly and very remarkably relieved by inhalation of iodine with conium.

A gentleman, aged sixty-four, for many years constantly more or less affected with humoral asthma, was seized with



severe symptoms of acute bronchitis, which became mitigated by the application of leeches, blisters, and the usual treatment; but the disease continued, passing into the chronic form. The cough was frequent, and distressingly violent; the expectoration was profuse, usually amounting to about a pint in the twenty-four hours; it was in part frothy, but in the largest proportion it was heavy, tenacious, highly offensive in smell, and occasionally mixed with blood. The breathing was sometimes alarmingly embarrassed after the fits of cough, and exceedingly oppressed also whenever the morbid secretion was much collected in the bronchial tubes.

The stethoscope indicated a high degree of mucous rale, and here and there also the sibilant rale. In the upper part of the right lung, the respiration was so imperfect, and the sound from percussion of the clavicle and beneath it so dull, that I suspected the existence of tubercles.

The patient was much reduced in flesh and strength; the pulse was 80, its natural frequency being 66 in a minute; the animal heat, which I had occasionally examined when he was in his ordinary state of health, and found to be  $94^{\circ}$ , was now raised to  $98^{\circ}$ . In the course of every day some hectic fever prevailed. He expressively declared that he felt himself to be wasting and gradually sinking; and certainly the aspect of the disease was most unpromising.

He had taken various expectorants latterly, with but slight relief; he had removed to a favorable situation for change of air, and received all the advantages of regulated diet and regimen; but the bronchial symptoms continued almost as urgent as before, when I put him on the plan of inhalation, using the iodine mixture with conium. The good effects which were quickly produced exceeded my most sanguine expectation. Even in the short space of two days, great relief was experienced; and, at the end of ten days, the expectoration was lessened to about an ounce in the twenty-four hours, was simply mucous, and no longer offensive in odor.

He described that he felt his whole chest comforted by the inhalation; that he could without difficulty disengage the expectoration, which before had required for its expulsion such paroxysms of cough as were frightful and overwhelming.

He took at this period of his convalescence the draught as at p. 119, with the addition of a small dose of compound sulphuric æther.

The patient recovered his health to a point of improvement beyond what was usual for him to enjoy; but a perfect restoration was not to be expected in a case where such complicated disease of the lungs had long existed. After his recovery, I found the animal heat returned to its former point of 94°, and the pulse to 66.

*Obs.*—The powers of the iodine inhalation in correcting the morbid condition of the mucous membrane of the bronchi were here most happily manifested. The patient, having been furnished with the iodine mixture, separately from the tincture of conium, had from accident used it alone; but he found that it produced an inconvenient degree of irritation, and excited too much cough. The conium was then added, and he renewed the inhaling with perfect success.

### CASE XXVII.

Bronchitis, attended with high irritation. The existence of tubercles questionable. The utility of inhalation sufficiently well shown, as materially assisting the removal of the symptoms.

A married woman, aged forty, of delicate appearance, fair, with red hair, having a contracted chest, labored under a severe cough, which had existed, more or less, for two years, but was lately so much aggravated, and accompanied with such wasting of flesh, loss of sleep, with night sweats, and reduction of the general strength, that the inmates of the house in which she lodged were alarmed from day to day “lest she should suddenly die.” Four months before that period she had been delivered of a child, and the catamenia had not returned.

I found the pulse 140 in the minute, the inspirations 36; the animal heat 102°; and learnt that every day she was much affected with chills and heats. She complained of much pain in breathing, especially at the inferior part of the sternum, and between the scapulæ. She expectorated with difficulty, and the sputa were muco-purulent in appearance, but not copious. In the optical experiment the colored ring was

rather faint. There was strong resonance in the right axilla, scarcely any in the left, and more resonance at the apex of the right lung than of the left. The sound was also more dull under the right clavicle than the left; there were mucous and sibilant rales on the right side; and there was mucous rale over the whole of the left side of the chest. There was no decided pectoriloquism.

The digestive organs were not in a healthy state; the tongue was much coated; the appetite was lost; there was much thirst; in a word, irritation prevailed over the whole system.

I directed leeches to the right side of the chest, and to the lower part of the sternum; a blister between the shoulders, acetate of morphia at night; a mixture in the day with sulphate of magnesia, infusion of roses, and one-minim doses of hydrocyanic acid; and the following inhaling mixture:

R      Acidi. hydrocyan. ʒss.  
           Tinct. conii ʒss.  
           Tinct. ipecacuhan. saturat. ʒii.  
           Aquæ rosæ ʒiii. — M. fiat.  
 Mistura in inhalationem adhibenda.

Of this mixture, half an ounce, divided into two portions (as already described in the use of the iodine preparation), was used three times a day.

From these measures, the urgent symptoms became speedily relieved; and at the end of a few days I thought it expedient to direct the use of the iodine inhalation with conium. One minim of the acetate solution at night, and one dose of the mixture before mentioned as taken in the day, were continued. At this time the pulse was 96, and the animal heat 98°. The expectoration was free, and the appearance of the sputa much improved, being of yellowish white. The sharp pain of the chest was exchanged for an uneasy sense of weight, tightness, and soreness. The cough, although less irritable than before, was still very troublesome, and she complained that it fatigued and subdued her very much. Her nights had been comfortably soothed by the sedative. The hectic fever was abated.



She used the inhalation for twenty minutes, three times a day; and at the end of a week the proportion of the iodine was increased. Especial consideration was due to the general debility and the feeble state of the stomach. The use of the sedatives, the hydrocyanic acid, and the morphia, was also discontinued. I prescribed a saline cascarilla draught to be taken twice a day.

In another fortnight the patient was satisfactorily convalescent. The pulse now ranged from 70 to 76; the animal heat was reduced to 95°; the respiration was natural; the cough was so slight as to be scarcely troublesome; there was a return of the catamenia; the general functions of the animal economy were fast returning to health.

The inhalation was continued twice a day for another week; and once a day for a short time. All internal medicine was discontinued. This woman's health, in the course of a few weeks, became well established.

*Obs.*—There was not sufficient reason in this case to suspect ulceration; although I think the existence of tubercles highly probable. The signs of congestion in the right lung were manifest, and the mucous membrane of the bronchi of each lung was in a state of morbid irritation. I was much satisfied with the sedative influence of the first inhaling mixture; and still more with the curative power of iodine.

The degree of animal heat was remarkably high, and, together with the rapid pulse, was indicative of much pulmonary irritation. It appeared to me very probable that this might have for its foundation a tubercular cause. There was not any true inflammatory condition. I conceive also that the morbid vascular action was chiefly bronchial; with which the nervous system always holds much sympathy. I saw this woman six months after, quite well. With later results I am not acquainted.

### CASE XXVIII.

*Chronic Bronchitis.* The cough extremely urgent, and the bronchial secretion unusually viscid and tenacious. The cure effected by inhalations and counter-irritation.

A female, aged fifty-four, tall and slight, of delicate constitution, having rather a contracted chest, subject to winter

cough for the last twenty years, with asthmatic breathing, consulted me in the latter part of autumn, for a cough of unusual severity, from which she had suffered three weeks. It was a strong sonorous cough, and so irritable, that she could not carry on any conversation. She complained of a sense of tightness in the trachea, of an oppressive sense of uneasiness in the upper part of the chest on the right side, and of being very short breathed. The quantity of expectoration was upwards of half a pint in the twenty-four hours, partly frothy, but, in great part, also extremely viscid and ropy, and of a disagreeable faint odor. When this was much accumulated, the fits of coughing were of such violence as to threaten suffocation. By the stethoscope I discovered strong mucous, and some sibilant, rales on the right, and mucous rale on the left, side of the chest. The pulse was 96; the animal heat  $97.5^{\circ}$ . The digestive functions appeared to be in a natural state, and the constitution not affected, except with nervous irritability, in consequence of loss of sleep at night from the urgency of cough, which was scarcely intermitted throughout the twenty-four hours.

I prescribed a mixture for inhalation, composed of tincture of conium, tincture of ipecacuanha, and hydrocyanic acid; the application of the acetic acid with cantharides to the upper part of the right side of the chest; and no other internal medicine than a little sulphate of magnesia as occasion should require. The good effects of the inhalation were immediately apparent; and in two days the cough was so much abated, that I directed the iodine inhalation; but prematurely, as was shewn by an immediate and continued aggravation of the cough. She resumed, therefore, the first mixture, and with the former success. She described that, in two hours after the application of the counter-irritant, a considerable vesication was produced, fully as much as would have followed from a blister; that it was attended with some sense of burning, but by no means with the pain which she had always experienced from a blister; and, from the moderate sensations which she had felt, she was quite surprised to discover how much effect had been produced.

She had attentively used the inhalation three times a day

for a week ; at which period the cough was become comparatively slight and unfrequent ; the sputa were much reduced in quantity, and amended in quality ; but still there was much of the peculiar viscid secretion before described. The pulse was reduced to 84 ; the animal heat to 96°.

I now directed that the iodine inhalation should again be tried ; but with the addition of conium. It agreed perfectly ; it proved soothing, instead of irritating ; and she was much struck by the facility which it gave her of expectorating—still more decided than from the use of the other mixture.

The secretion from the bronchial mucous membrane was gradually corrected, and brought to the natural state of health. In three weeks this patient recovered entirely ; and, for the last few days, had used the inhalation only once or twice in the day.

*Obs.*—As far as relates to the treatment of bronchitis not attended with inflammatory symptoms, and at the same time of a very local character, I might, as in this case, be contented to confine my treatment to the use of the inhalation. This patient contrasted the benefit which she had so speedily obtained, with the slow and imperfect advantages which she had derived from ordinary internal medicines, administered for a long period in the preceding winter, when the bronchial attack, according to her own account, was less severe than the one now described.

I was particularly satisfied with the effects of the cantharides infusion. I have sometimes seen it produce complete vesication in the course of an hour, and think that the certainty of its action is even more to be relied on than that of the ordinary blister. But, as I have before remarked, it acts in a more superficial manner, and causes a thinner serous discharge than the regular plaster of cantharides.

### CASE XXIX.

Chronic Brouchitis, with suspicion of tubercles. The symptoms very urgent, and successfully treated by inhalation and other means.

A gentleman, aged thirty-eight, tall and of full make, corpulent, of fair complexion and thin skin, had been at various periods, since the age of twenty-three, subject to attacks



of acute bronchitis. Two years previously to the illness about to be described, he suffered much from an affection of the trachea; and he observed, "that strong and powerful as he appeared to be in his general frame, he was made too sensible of having a very weak chest." He added, that he had lost four, amongst his brothers and sisters, from pulmonary consumption.

I found this gentleman, in July 1831, suffering severely from symptoms of subacute bronchitis. I directed the usual means of leeches, blisters, and medicines, for the removal of inflammatory action; employing, at the same time, with much relief to the patient, an inhalation composed of conium, digitalis, ipecacuanha, and small doses of hydrocyanic acid.

He was, in a short time, relieved from the most severe symptoms; but the complaint assumed a chronic character. The cough was very irritable; the expectoration viscid, thick, deep white, and also frothy, of disagreeable odor, and excreted with difficulty. The respiration was restrained by a distressing sense of oppression. He complained of much internal soreness along the whole course of the sternum, and, in particular, of an internal itching irritation in the same direction. He described the irritable state of the air passage "as occurring three or four times in every twenty-four hours, and lasting for an hour at a time; commencing in the throat, and apparently travelling down the windpipe; attended with much uneasiness, and huskiness, with wheezing; these symptoms terminating with expectoration."

At this period the pulse was frequent; there were two slight accessions of fever daily, the one at six, a. m. the other about noon. He had strong night perspirations. The tongue was coated; the appetite deficient; the bowels were irregular; and the urine very copiously deposited lateritious sediment. By the stethoscope, mucous rales were discovered on the right side; the respiration appeared to be much obstructed; and, over a considerable extent of the right lung, the sound on percussion was dull. By slight exertion the breathing was distressingly hurried.

I prescribed an alterative pill at night; a saline aperient in the morning early; the sarsaparilla mixture in the middle

of the day; and for inhalation, the iodine and conium. The chest was washed every morning with the eau de Cologne mixture. The diet was regulated.

The treatment succeeded perfectly. There was every cause to be satisfied with the effects of the inhalation. He found the itching sensation within, quite relieved by it. The feeling of oppression of the chest was removed, and the expectoration was rendered free and easy.

He recovered entirely in the course of two months, and remained well for almost two years. The complaint returned last August, in a less inflammatory form than before; and again he experienced the most marked benefit from inhalation. At this period he does not make the smallest complaint of his chest. He was so well convinced of the great benefit which he had derived from inhaling, that he said he was bound in gratitude to represent the value of the treatment to any invalid whom I might wish to refer to his experience.

*Obs.*—I attach a particular importance to this case, from the belief which I was led to entertain of the existence of tubercles, and the consequent satisfaction that, during so long an interval as I have mentioned, the health was not interrupted by any return of pulmonary irritation.

The deposition of lateritious sediment in the urine is almost a constant attendant on phthisis; arising, without doubt, from imperfect assimilation of the chyle; and I conceive that the kidneys perform a depuratory office, in removing from the blood much of its unassimilated material. This symptom is a never-failing attendant on dyspepsia; and it is worthy of observation, that, in proportion as the functions of the liver are affected, the color of the sediment is pink. In very nervous states of constitution, under dyspepsia, the sediment is of a light color; much resembling magnesia.

I have elsewhere\* explained the physiology and the chemical nature of these different appearances.

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\* See Treatise on Gout, Gravel, and Morbid States of the Digestive Organs, &c. fourth edition.

## CASE XXX.

Chronic Bronchitis. The cough extremely urgent; the secretion from the mucous membrane remarkably viscid. The iodine inhalation curative within a short period of time.

J. C. aged fifty-four, tall and robust, and in good health till two months before the present illness, was attacked in March with bronchitis, the acute symptoms of which were not of long continuance. When he consulted me, he was laboring under severe cough; and he represented that the fits were sometimes half an hour in duration, and that it was especially troublesome in the night. He had great difficulty in lying down, and was disturbed every hour or two by the accumulation of sputa, which were so glutinous and ropy, as with great difficulty to be discharged, even by the most continued coughing. He suffered much from night perspirations. The pulse was 88; the animal heat did not exceed  $95^{\circ}$ ; he was free from fever. The appetite was deficient; but the digestion, for the most part, regularly performed.

I did not think it necessary to prescribe any internal medicine, and limited the treatment to the use of the inhalation, which consisted of the iodine mixture, with the addition of a small portion of eonium; but I recommended that he should omit this narcotic ingredient, except when the cough was particularly troublesome; for I conceived that the use of the iodine alone was more favorable to the discharge of the glutinous sputa; and so the result proved.

I directed the usual ablutions, and friction of the chest.

He quickly improved in the most satisfactory manner. He said that the inhalation created an immediate facility of expectorating, the effects of which were quite delightful to his feelings—"that the phlegm seemed to come from the bottom of his lungs; and that when this was cleared away, his chest was light and easy."

The appetite improved, and the looks of the patient testified the favorable change in the state of the chest. In his own natural language, he described, with great emphasis, "the wonderful benefit which he derived from the inhalation." His cure was completed in about three weeks.



*Obs.*—I consider that, in this case, the influence of the inhalation upon the constitution, as well as upon the parts with which it came into immediate communication, was very well shown. The patient soon found his appetite increased; a perfect regularity of the bowels produced; and an improvement of the spirits, and of the nervous system in general.

### CASE XXXI.

Bronchitis, unattended with fever. The cough very urgent, and remarkably relieved in a short time by an inhaling mixture of conium, hydrocyanic acid, and ipecacuanha.

A female, aged forty, of robust form, the mother of several children, for years past affected with severe cough in the winter season, had been ill for a fortnight, when she consulted me for the relief of one of her usual attacks. She related that she had been frequently affected with alternate chills and heats, that the cough had been “very hard,” and so violent and incessant as to disable her from occupation in the day, and disturb her rest at night. The breathing was short; she did not complain of pain in the chest; but she was sensible of oppression, and felt almost a constant tickling in the larynx. The sputa were copious, and she expectorated with much difficulty. She had considerable perspirations at night, appeared languid, and described herself as greatly subdued by the cough. The pulse did not exceed 84, nor the animal heat  $97^{\circ}$ . The digestive functions were not much disturbed, and I ventured to submit this case to the sole influence of the treatment by inhalations.

I prescribed, therefore, as in the last case, a mixture of conium, hydrocyanic acid, and ipecacuanha, which she inhaled three times a day. The effects were quite satisfactory. At the end of five days, the cough was so much mitigated that she declared herself to be almost cured; and that, in this short space of time, she had received more benefit from inhalation, than from medicines formerly taken in the usual way for a considerable time.

*Obs.*—Although I wish, in the general character which I offer of the treatment by inhalation, to speak of it as a valuable auxiliary rather than as being in itself sufficient; yet, I shall

express the truth only, when I affirm, that I have, in many other instances, as well as in these just related, been able to effect the cure of bronchitis and catarrhal cough, by pursuing the treatment of inhalation only, without internal medicines.

### CASE XXXII.

Bronchitis, acute, and afterwards chronic ; inhalation, as part of the treatment, proving very decidedly useful.

A gentleman, aged thirty, of slight form, and not of strong constitution ; twice ill with pneumonia within the last three years ; was attacked with acute bronchitis, and had been ill a fortnight when I was first consulted. He had been bled once from the arm ; a blister had been applied, and medicines had been administered, with relief to the most active part of the disease ; but I found him suffering from an assemblage of troublesome symptoms. The pulse was frequent, but free from hardness ; there was some heat of skin ; and, towards morning, after a restless night, perspiration was always considerable, and sometimes excessive. There was some sense of tightness and oppression of the chest, and the breathing was, by very slight exertion, inconveniently hurried. The cough was irritable both by day and night. The expectoration was partly flaky and yellowish, but chiefly of the mucilaginous kind, and very viscid. The tongue was coated ; the bowels, for the most part, confined ; the urine deposited lateritious sediment.

In similar cases, in which febrile irritation prevailed, as the attendant of some remaining inflammatory action in the bronchial tubes, I had found advantage from joining digitalis with the other ingredients in the state of herb. I used the following in the present instance :

Of digitalis and conium, cut into fine portions, each ten grains ; powdered ipecacuanha two grains ; water of the temperature of 80°, raised by means of a lamp to 130° or 140°, as the patient should find most comfortable. To be used three times a day.

This inhaling mixture produced very good effects ; relieving the irritability of the cough, and producing a more

easy expectoration. The urine deposited dense mucus very copiously.

I joined other means of treatment, as the use of alteratives and aperients, with salines and diuretics. I applied the acetic acid solution of cantharides to the chest. The regular blistering plaster had lately produced so much inconvenient strangury, that he was glad to be assured that he would avoid such inconvenience by having this preparation substituted.

In four or five days, I changed the inhaling mixture for that of the iodine and conium; and, from its use, almost without any further internal medicine, all complaint was removed in about a fortnight. The expectoration was changed by its influence, in a very short time, from the ropy state which I just now described, to flaky mucus; and which, ere long, differed but little from the thin secretion which belongs to only slight irritation of the membrane.

*Obs.*—Although I should avoid all proposal of inhalation during the state of acute bronchitis, yet I am persuaded of the propriety of adopting the treatment, without delay, after the removal of the inflammatory symptoms. In using the tinctures for inhalation, it is to be considered, that the proportion of spirit is very small in the dose of the medicine necessary to be employed; and, becoming so largely diluted with water as it is in the inhaler, the alcoholic stimulus can never be reckoned objectionable, when the disadvantage, if any, is counter-balanced by its causing the properties of the medicine to be volatilised the more readily. But, in any case in which the practitioner may think it an objection, he may easily have recourse to several medicines in the state of herb; namely, digitalis, conium, stramonium, belladonna, lobelia inflata, and perhaps some other plants. When convenient, I would choose them in the fresh state; for then I should expect to obtain their volatile principles in the greatest perfection.

In order to use these herbs to most advantage, it is requisite to have an inhaler with a lamp\*. The water should be

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\* Mr. Garden, of Oxford Street, has inhalers of this description, very ingeniously constructed, with a small thermometer to be inserted in the middle tube.



mixed with the ingredients first at the temperature of 80°, and then gradually raised to 130°, 140°, or even higher, exactly according to the feelings of the patient.

In my future experience, I may probably have more occasion to speak of this mode of using the inhaling treatment. I have, on former occasions, employed the saturated tincture of digitalis with the other tinctures, and have been certain that it has had the effect of retarding the pulse, and proving useful.

I shall here advert to the remarkable circumstance of the very copious secretion of mucus appearing in the urine, which often takes place on the subsidence of the acute symptoms in bronchitis. The glass, into which the urine is put for inspection, will sometimes exhibit dense mucus almost to the very top. I have regarded such secretion as a curative effort, and as one of the critical indications of the abatement of inflammation.

### CASE XXXIII.

Spasmodic Asthma. Very satisfactory relief obtained from the inhalation of æther, conium, and ipecacuanha.

A married lady, aged thirty-six, had been subject to attacks of spasmodic asthma for some years past, from which she obtained relief by the use of antispasmodic and expectorant medicines; but her stomach was often disordered by their influence, and she had recourse to them with reluctance. I was desirous of trying the comparative power of inhalation; and prescribed, for this purpose, a mixture consisting of æther, conium, and ipecacuanha. I subjoin a statement of its effects in the words of the intelligent patient.

“ I inhaled the medicated vapor during fifteen minutes before going to rest. The first sensations it occasioned me, were slight fatigue in breathing, and an aching pain in the breast, which, however, subsided by degrees; and when ex-

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For the use of the tinctures, the cheaper and more simple inhaler answers perfectly well. The heat of 120°, or even less, is sufficient to bring off the volatile principles of the fluid preparations.

pectoration took place, which occurred copiously within half an hour after the inhalation, I felt completely relieved. Afterwards, in the course of the night, whenever I awoke, (instead of feeling the oppression, and difficulty of breathing which often distress me) expectoration took place without effort; and, breathing easily and freely, I then slept again immediately. Usually, whenever I awake with the sensation of tightness across the chest, I do not sleep for an hour or two afterwards.

“ During two days after the inhalation, slight expectoration continued; and ever since (now ten days) my breathing, both night and day, has been perfectly free.”

#### CASE XXXIV.

*Habitual Asthma.* The difficulty of breathing attended with distressing cough, readily induced by cold, damp, and especially by foggy states of the atmosphere. The symptoms satisfactorily relieved by inhalation.

A gentleman, aged twenty-seven, slight in figure, and having that form of chest which is commonly called “pigeon-breasted,” had been asthmatic from his infancy, and, two years before the occasion of his consulting me, experienced a dangerous inflammation of the lungs, which had left him almost constantly suffering more or less from irritable cough, and especially in the winter season.

When I first saw the patient, he was evidently laboring under bronchitis. The symptoms were very urgent, but wholly of a chronic character. The cough was extremely irritable; the bronchial secretion copious, viscid, of disagreeable odor, and of greenish color. The respiration, always in some degree embarrassed, was now much hurried, in number 32 in the minute, and distressingly accelerated on going up stairs, although he ascended with much care. He complained of a sense of stricture and oppression of the chest, with some sense of tightness in the trachea; had considerable difficulty in lying down in bed, and, when he arose in the morning, the struggle to free the air passages from the secretion which had been collected during the night, was often so severe as to weaken and render him languid for the whole day. The

pulse was 96; the animal heat 95°. On each side, the stethoscope indicated much mucous rale; and there was a considerable degree of resonance.

The digestive organs were not in a healthy state: the appetite was impaired, the bowels were irregular, the biliary secretion was deficient and vitiated, and the urine deposited much lateritious and mucous sediment. The patient was thin, and had the appearance of being worn and debilitated. He said that he always felt weary, languid, and wretched.

I prescribed internally, at first, mild aperients and alteratives, as preparatory to the use of the alkaline sarsaparilla mixture; the inhalation of iodine alone, but a small portion only of the solution, or conjoined with conium, directing him to add the latter ingredient only when the cough was irritable; and further, that when the asthmatic embarrassment was troublesome, he should add some saturated tincture of stramonium. I desired him to wash the chest daily with the compound vinegar lotion; its application being followed by the use of the flesh-brush. The result of this treatment was perfectly satisfactory. He made the following report of the effects of the inhalation: he used it regularly on first rising in the morning, sometimes before quitting his bed, and immediately obtained a facility of expectorating, which superseded the necessity of the usual cough, and prevented its taking place in any troublesome degree. The breathing was rendered easy, and the chest light and comfortable: a happy exchange, he said, for the feelings of oppression and restraint which formerly always affected the windpipe and the chest, more or less severely. He repeated the inhalation in the middle of the day: for the most part, he employed the iodine mixture separately, as he conceived that it acted more strongly as an expectorant when thus used; although, occasionally, he found the advantage of adding the other ingredients; and then he used rather more of the iodine.

On the further plan of invigorating the constitution of this patient, I took the earliest suitable opportunity of directing the use of a graduated shower-bath, and the employment of dumb-bells.

The permanent method of treatment then consisted in the



use of the iodine inhalation every morning early, the occasional repetition of it during the day, the continuance of the tonic alterative, the sarsaparilla mixture, the shower-bath, &c.

*Obs.*—It could not be expected that so confirmed an asthmatic patient should acquire the possession of perfect health; but it is satisfactory to report that the state of his chest was rendered, for the most part, very comfortable. He obtained every morning, by means of the inhalation, an effectual clearance of the bronchial tubes: by the use of the shower-bath, the ablution, friction, and dumb-bells, he gained a very marked increase of strength in the muscles of the chest, and in the body altogether; and his general health became equally amended.

### CASE XXXV.

Asthma; much morbid secretion of the bronchial membrane, relieved by inhalation.

A gentleman, aged sixty-six, of delicate constitution, subject to gout from early life, and also to asthma during the last twenty years, is occasionally in a high degree distressed with bronchial irritation, attended with excessive secretion of viscid mucus, and urgent cough. He finds great relief and permanent benefit from having recourse to inhalation, using the mixture with the addition of tincture of stramonium, when irritation of the membrane strongly predominates; and when this subsides, he has recourse to the mixture of iodine with conium, using the iodine in small doses.

*Obs.*—This patient has found, by comparative experience, that his “humoral asthma” is more quickly and more speedily relieved by inhalation than by medicines taken in the usual way; and he congratulates himself that he is spared the necessity of taking expectorants, which formerly created much nausea, and interfered with the functions of his weak stomach very seriously.

I must repeat that I desire not to be understood as overlooking the value of other treatment, in my praise of inhalation. In every case of chronic bronchitis, and in proportion as the secretion of the mucous membrane is excessive, particular attention should be given to the state of the alimentary canal, and the

functions of the liver and the kidneys. The use of alteratives and aperients is, in many instances, not only important, but quite indispensable.

### CASE XXXVI.

A remarkably morbid condition of the bronchial membrane, in which there was strong evidence of ulceration; relieved in the most satisfactory manner by the inhaling treatment.

A gentleman, aged sixty, of the extreme nervous temperament, a severe sufferer from asthma during the greater part of his life, caught cold and experienced an attack of sub-acute pneumonia. By means of bleeding, and other remedies, the inflammatory symptoms were in a short time for the most part removed; but the morbid secretion of the bronchial membrane, which followed, was remarkable. The appearance of the expectoration strongly indicated ulceration. It exactly resembled pus discharged from an ill-conditioned ulcer. It was often streaked with blood, and very offensive in its odor. In the optical experiment it displayed a decidedly purulent character. Together with this sputum there was an abundance of the ropy mucilaginous secretion which is so common to asthmatic persons.

I directed inhalation, and first prescribed the mixture with stramonium, &c. mentioned in the last case, and it agreed perfectly and gave relief; but, as the same bad appearance of the sputa continued, I made choice of the iodine mixture with conium and ipecacuanha; and the good effects which soon resulted were most satisfactory. At the end of three weeks, the state of the bronchial membrane was restored to health. This gentleman usually experienced much inconvenience from acidity of stomach, and derived benefit from the alkaline liquor, joined with tinctura humuli.

*Obs.*—The patient was very mindful of his inhaling remedy, and has recourse to one or other of the mixtures when he is incommoded by his asthmatic symptoms. We know how unwelcome it would be to the asthmatic patient to impose any extraordinary labor on the muscles of respiration, which did not give the reward of certain relief. The readiness, there-

fore, with which he has recourse to the inhaling treatment, is a presumptive proof of its beneficial agency.

I may here observe, that I have made trial of the saturated tincture of the lobelia inflata, for the purpose of inhalation, in asthmatic cases; and I have seen relief given to the spasm by its use; but I require more experience with this medicine, so employed, to enable me to make a fuller report of its effects. When administered internally, it is unquestionably a very useful medicine in spasmodic asthma; and I have often seen it palliate the symptoms promptly and decidedly. I say palliate, for, in regard to more lasting benefit, those means should be employed which are most calculated to rectify the disordered functions of the digestive organs; embracing a plan of medicine, and most particularly a regulated diet, and an exact regimen.

### CASE XXXVII.

Irritable cough, with hoarseness, relieved by inhaling mixture of conium, ipecacuanha, and hydrocyanic acid.

I was consulted, by letter, in the case of the wife of a medical gentleman, who had long suffered from a highly irritable cough, attended with great hoarseness. I prescribed a mixture of conium, ipecacuanha, and hydrocyanic acid (two or three drops of the latter ingredient), for the purpose of inhalation; and suggested that, in a short time, it should be changed for the use of iodine with conium. I received, after several weeks, the following report:

“The hoarseness is considerably relieved, and her morning paroxysm of cough is not so severe. She still continues the practice of inhaling, night and morning, and has found that, when by accident she has omitted it, she has not rested so well, and her cough has been more troublesome. She has found more relief from the mixture with hydrocyanic acid, conium, &c. than from the iodine.”

*Obs.*—Almost invariably, the use of the hydrocyanic acid by inhalation agrees perfectly well. As it is very volatile, I now commonly direct that a drop should be added once in four minutes. It occasionally happens, from a peculiar



idiosyncrasy of the patient, that the odor of this medicine affects the nerves remarkably and inconveniently.

It cannot, I think, be necessary to expatiate on the perfect safety of receiving, by inhalation, the vapor of the hydrocyanic acid, in a quantity not exceeding the ordinary dose in which it is taken into the stomach. As with any other medicine, if it do not agree with the particular individual, we have only to discontinue it. I view it rather as a palliative than a curative agent; but I have considered that, in many cases, it has formed a very useful addition to the conium and ipecacuanha. The gentleman who made the report of the effects of the inhalation, which I have quoted, is a practitioner of good judgment and of great experience.

### CASE XXXVIII.

Cough, of long standing, of a very spasmodic nature, attended with colored expectoration; the existence of tubercles rendered probable. Recovery of the patient.

A gentleman, aged thirty-four, slight in figure, but with well-proportioned chest, had suffered from a cough, more or less, for three years, when he consulted me for a very aggravated state of his usual symptoms, in May 1832. Two of his sisters had died from consumption.

From an accidental exposure to wet and cold, he had seriously increased the complaint of his chest. I found him suffering with very urgent cough; occasionally it was violently shaking to his chest and whole frame. The expectoration was, for the most part, free; but it was of a bad appearance, flaky, ash-colored, and occasionally streaked with blood. The pulse was 120 from irritability; for he was wholly free from continued fever. At night he appeared to have some hectic irritation, as he stated that he was cold on first getting into bed, afterwards much too hot, and, towards morning, perspired considerably, sometimes in a very great degree. He said that he had lost flesh. He complained much of debility. The appetite was better than the digestion; the bowels were usually confined; the urine deposited pink sediment. He found himself short-breathed on going up stairs,

and on attempting to walk quickly. The chest was not free from a sense of tightness, which occasionally became attended with pain.

On the right side, I found, by auscultation, that the inspiration was obstructed at the upper part to a small extent, and in the same situation the sound was dull. It appeared to me probable that there were tubercles. On the left side the signs were good. I prescribed a blister to the chest; a draught twice a-day, as at page 135; pilul. hydr. and extractum conii at night; and, after a few days, a mixture for inhaling, consisting of the iodine solution, conium, and tincture of belladonna. This latter ingredient was added with reference to the highly spasmodic nature of the cough. On first inhaling, he experienced a little giddiness, and some increase of cough; but such inconvenience was temporary, and he was perfectly satisfied with the after effects.

At the end of a month, the treatment was so successful, that the cough was almost cured. He took quinine latterly with much advantage, and I recommended that, if he should lose the cough, he should make use of the shower-bath. He went into Devonshire, where he resided; and, in August, I was gratified with the following account, extracted from his letter. "I have inhaled once a-day until the last week, and have had no return of cough, and I hope to be able immediately to adopt the use of the shower-bath which you recommended. I have taken the quinine draught occasionally, and always with advantage."

*Obs.*—This case, although of much less serious importance than many of the others which I have related, may be mentioned as a very favorable example of the good effects of inhalation. The patient had, previously to my advice, made trial of various remedies without success; and the complete removal of a cough, which had harassed him almost constantly during three years, within a less space of time than two months, was very satisfactory. I should expect that benefit would be afforded by the shower-bath, as I had so much cause to approve of its effects in Case xxxiv, p. 204, the constitution of that gentleman being affected by the same kind of morbid irritability. As a general rule, I should be unwilling

to prescribe this agent, until the removal of all cough, and uneasy feelings of the chest; and I should always direct it to be used with caution, graduated as to the quantity of water, the temperature of the bath, the frequency of its employment, and some other circumstances.

Having brought to a conclusion all the evidence which I intend to offer in favor of Inhalation, it remains for me to express my sentiments and convictions, still more distinctly than I have yet done, regarding the value of the particular inhalation of iodine and conium, as a remedy in tubercular phthisis.

From the favourable list of cases which I have given, it may doubtless be inferred that I entertain great confidence of being able to cure consumption. I may, perhaps, be accused of showing too much of one side of the picture, and painting that in too flattering colors.

I can conscientiously declare, that I have not been guilty of the least exaggeration in any part of my narrative of cases\* ; and, in my panegyric of the remedy, I have chiefly quoted the language of the patients, as being the simplest proof of the effects which they have experienced.

By some it may perhaps be said that the relief which has been afforded, has been only to the symptoms of the bronchitis which has attended the tubercular phthisis, and which always forms so large a part of that disease; but even if this assertion were true, it would be no small praise of the treatment. I have, however, certainly obtained lasting success in some urgent cases of tubercular phthisis, in which, by the old methods of practice, according to all my former experience, I should have failed.

The instances of success, as compared with those of failure, in my practice in consumption, have been, I confess with regret, comparatively very few; but one explanation of this painful truth is, that I have for the most part been consulted so

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\* I could add largely to the cases of phthisis which I have treated with satisfaction to myself; and I could swell the list by a selection from numerous cases of good results which have been communicated to me by my friends of the profession who have used the inhaling method; but, with every respect and acknowledgment to others, I have preferred to state my own experience exclusively; making myself responsible for the truth and accuracy of every detail which I have brought forward.



late in the disease, as not to have a reasonable chance afforded me of effecting more than a mitigation of the symptoms.

Such cases have been of consumption so confirmed, as truly to come under the forcible description given by Sir James Clarke, at p. 88, of the absolute impossibility of cure; and had been given up by others as *lost*.

It must be reckoned amongst the advantages of inhaling, that it tends to the useful expansion of the bronchi and air cells; and, indeed, the patient usually expresses that he feels a sensible lightening of the chest, and a freer and easier respiration after the process.

No one is more fully aware than myself of the doubtful balance in which a physician places his feelings and his reputation, who engages in the treatment of consumption. In former years, it was so much the sentence of death to pronounce a case to be consumptive, that removal to another climate was the only measure thought of.

The number of cases precluding all reasonable thought of success by any mode of treatment which can be laid down, must far exceed that in which a recovery may be expected. And it must often happen that the success which can be obtained, proves temporary only. It is very true that the relapses ending at last fatally, have often been manifestly attributable to want of care on the part of the patient. Some examples which I have related in this volume, will, I think, carry with them this clear evidence.

That the introduction of iodine into the system through the medium of the lungs is effected, I have had the proof occasionally by witnessing some of those inconvenient effects on the constitution which its use as an internal medicine, or as rubbed in the form of ointment on the thyroid gland, now and then produce. But I am happy to add, that such instances are so very rare, as not to form any objection to its employment. I am convinced that it does not happen so much as once in fifty times. The disagreement in question is a peculiar nervousness, a tremor, and a timidity; but no disorder of the stomach or bowels; as is liable to happen from the ordinary taking of iodine.

Surely it must be satisfactory, if I can show, that while I

spare the stomach the reception of this powerful medicine, I can produce a strong therapeutic agency from it in the way of inhalation.

I ought not to pass over a question which has now and then been proposed to me, as to the perfect safety or otherwise of inhaling iodine? It will be kept in view that  $\text{ʒi}$  of the solution which I prescribe contains the eighth of a grain of iodine. Half a drachm is the smallest quantity I ever employ for a single process; five drachms the largest, answering to the 16th of a grain of iodine, and 5-8ths of a grain.

Lugol, who has written so fully and ably on the use of iodine in scrofula, states that, in prescribing it internally, he commences with half-a-grain daily; in the second fortnight, he gives three-fourths of a grain; and during the fourth or fifth fortnight, a grain, usually continuing this quantity to the end of the treatment. I think it must be admitted, that the administration of iodine by the stomach must be far more powerful on the constitution than by means of inhalation; and, consequently, would be attended with a greater liability to accidents. M. Lugol, in his Memoir, upon which a report was made to the Royal Academy of Sciences, with the highest encomiums bestowed on this physician by the Commission appointed, thus expresses himself of this important medicine:

“I have described, as clearly as I could, the effects of iodine on the animal œconomy. Resting on my own observations alone, I cannot relate a single accident produced by this substance; but I should not therefore pass by the assertions hazarded about its pretended noxious action, especially since prejudices have been created in the minds of several practitioners\*.” And again, when alluding to its supposed influence of producing emaciation, he says, “I can confidently assure the practitioners who have listened to such prejudices, that I have never seen a case in which iodine injured the health in any manner whatever. Far from being ever hurtful, it is a powerful stimulant, which revives the organic functions, fortifies the general constitution, and *encourages the growth and increase of size.*”

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\* See Translation from the French, by Dr. O'Shaughnessy.

This will probably be regarded as too partial a statement. Iodine is certainly a medicine which should not be carelessly given, and it is one not fit for inexperienced hands. We cannot expect to find a medicine capable of producing important effects in disease, and at the same time incapable of doing any harm.

There are idiosyncrasies of constitution which render the action of all the active medicines in the highest degree inconvenient; for example, opium, which, with the majority, when required, acts as a heavenly balm, produces, with some individuals, waking delirium. Mercury, in very small doses, acts most deleteriously as a poison in a few constitutions. It may also occasionally happen, as an exception to the general rule, that a long-continued use of iodine inhalation will not agree with the constitution of the individual. The opinion should not hastily be taken up. In the influence of so destructive a disease as pulmonary consumption, there is quite enough to account for the distress of the body, without impugning the treatment. I have rarely had occasion even to suspend the use of the iodine inhalation till three or four weeks after the period of its commencement; and in most of the bad cases, I have continued it once, twice, or three times a day, without interruption, for months; as I have shown in many of my cases. But, in any instance in which we have reason to doubt its agreeing with the individual, it will be right to change it for chlorine; and resume it afterwards, according to circumstances.

The iodine inhalation sometimes occasions an irritation of the mucous membrane of the posterior fauces, which gives the appearance of a dark-colored inflammation, scarcely attended with any sense of soreness. It commonly passes away even during the continuance of the treatment; but if it prove troublesome, this would be a motive for suspending the treatment for a few days. In these circumstances, I have sometimes employed chlorine with the addition of conium\*.

I have every reason to believe that some practitioners have abruptly given up the use of the iodine, from having com-

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\* The admixture of iodine, and also of chlorine, with hydrocyanic acid, is incompatible; and equally so that of iodine with chlorine.



mitted the error of commencing with too large a dose ; or, not being careful to mix with it a sufficient quantity of conium. The purity of all the preparations is another important point of consideration.

With very rare exceptions therefore, and such as must happen in regard to every active medicine, I have as much cause to be satisfied with all the effects, as with the efficacy of the iodine inhalation ; and when the disease has not proceeded too far for remedy, the patient expresses his daily approbation of the treatment, from the sensible benefit which it produces ; not only in regard to the lungs and air passages, but to the digestive functions, and consequently to the whole system.

I have had much less reason to think highly of the curative agency of chlorine inhalation, than others who have reported of its effects ; but I consider it to be next in utility to iodine, and much approve of its occasional employment, during the course of the iodine inhalation, if only on the principle of changing the stimulus ; and certainly, therefore, when there may seem any just cause to call in question the operation of the iodine, in any particular case.

Chlorine, from its great volatility, comes over so quickly with the aqueous vapour, that the total quantity used at each inhalation should be partitioned into doses ; and I commonly begin with six minims of the pure aqueous solution, renewing this quantity every three or four minutes. Eighteen minims is the smallest total quantity to which I have limited myself for each process ; sixty, the largest which I have ever directed. If it irritate the air-passages inconveniently, I add the tincture of conium ; but this must always be done at the time of using the inhalation ; for, otherwise, the chlorine would be too much weakened by decomposition. The most favorable temperature of the water, is, according to my experience, 110°.

In repetition of what I have before said, I lay it down as a principle, that, in the treatment of tubercular phthisis, we have a two-fold object to fulfil : the immediate treatment of the lungs, and the endeavor to change to the utmost the whole blood of the system—to create the greatest change of matter.

It is evident that it is capable, by its peculiar stimulating

power, of inducing a new action in the secreting vessels of the mucous membrane of the bronchi, so as to supersede the morbid one. It is most surprising how it will, often in the short space of twenty-four or forty-eight hours, reduce the quantity and favorably alter the quality of the sputa in chronic bronchitis; unless as in some diseases of the heart, on which bronchitis is an attendant, and when the cause of evil is so persistent and incurable, that no means can succeed in abating it.

If there be only few and scattered tubercles in the lungs, or if they occupy one lung only, and that not very numerously, it is presumable that by the continued influence of the direct application of iodine, absorption of them more or less may be accomplished in the earlier stage of their formation. If the tubercles should have attained that bulk or condition that they can only be removed by means of the softening process, and subsequently in part by the action of the absorbents, but chiefly by means of expectoration, the inhalation will come into most useful play. And here I must enjoin a caution which I have already expressed, that of being careful not to hasten the softening process beyond the convenient powers of the patient to bear its weakening influence.

I sometimes find it necessary to lessen the doses of the iodine, and the frequency of using the inhalation.

Every pathologist must allow that it is highly desirable to remove the tubercles from the lungs, if in our power; remembering that when nature succeeds in effecting a cure (a rare event), it is in this mode—the expulsion of the tuberculous matter after its softening, and the subsequent healing of the cavity. But I do not forget that, if this object, by means of art, could be accomplished with greater certainty, it would not be the whole cure; for all the evil may return by the fresh formation of tubercles taking place, perhaps, by impossible prevention; or from the inveterate disposition to the disease in the state of the blood; or from want of due care in the patient to preserve the benefits which he may have obtained. Nor is this consequence of relapse peculiar to the consumptive invalid. What permanent benefit from treatment can a gouty man expect, if he continue to indulge in all the pleasures of the table, and in every irregularity?

But, however favorably I may think of iodine inhalation as one important part of treatment in phthisis, I do not place my exclusive faith in it. I desire to unite with it all the other means which may be suitable to the case, and may be expected to have a concurring favorable influence; and on this ground, that it does not interfere with other treatment, an opposition offered to its employment does not, I think, seem fair and reasonable.

When no objection exists to the use of the full doses of iodine by inhalation, I consider that as much of the influence of that medicine on the system, as well as locally, can be obtained in this manner, as is usually desirable; but sometimes, and especially when the inhaling doses are small, I find advantage in giving, at the same time, internally, the iodide of potassium in *small* doses, either with sarsaparilla as at p. 113, or in a less stimulating form, as follows:

R     Sodæ bi-carbon gr. xv.  
        Potassæ bi-carbon. ℥i.  
        Aquæ puræ ʒx.  
        Potassii iodid. gr. i. ad. ii.  
        Spir. ætheris. nitric. ʒss.  
        Syrupi simpl. ʒi.             M.

Fiat haustus, e. cochleari amplo succi limon recentis commistus, inter effervescendum bis quotidie sumendus.

In conclusion, although the method of practice which I have advocated in these pages is the most useful and the most likely to succeed in tubercular phthisis of any with which I am acquainted, it falls short of that which, for the good of humanity, I desire. The *desideratum*, as I conceive, is a medicine which shall be found to exert a successful *specific* agency against the tuberculous poison; to neutralise it, and effect a radical cure! But, until such an æra in the healing art may arrive, from so blessed a discovery, I will continue to employ and to recommend the best combined means with which I am acquainted, and say to my medical brethren, with the Poet,

“ Si quid novisti rectius istis,  
 Candidus imperti; si non, his utere mecum.”—HORAT.



In chronic bronchitis, the benefits of inhaling are too manifest to admit of any doubt; but, in urgent cases, treatment by internal medicine is also necessary.

When, in bronchitis, the symptoms indicate an over-charged state of the liver, and abdominal congestion, the employment of mercurial purgatives must rank as the first remedy, and inhaling as the second.

I have not had any extensive experience in the effects of inhaling in nervous asthma. It can only be a palliative treatment, except, as the complaint may be kept up by bronchitis; and by the cure of which a more permanent relief may be afforded. In the fearful struggle of the paroxysm of spasmodic asthma, to inhale is almost an impossibility, even were it a surer source of relief than it can be considered to be. The most desirable inhalation appears to be, that of the pure fresh air of Heaven!

In conclusion, with the subject of bronchitis, I will notice two forms of bronchial irritation which arise from remarkable causes; the presence of substances acting as foreign bodies.

#### OF BRONCHIAL POLYPI, OR TUBULAR SPUTA.

A rare disorder of the mucous membrane of the bronchi, of a chronic nature, is one to which the name of bronchial polypi was formerly assigned\*, simply from its physical resemblance to the marine animal, the polypus. I have met with only one example. It was the case of a gentleman in an advanced state of phthisis, who came from a long journey, much fatigued, and whom I had appointed to visit. But before I could reach him he had coughed up a considerable mass of arborescent substances, moulded in the bronchi, whitish in color, and having the appearance of solidified albumen; too firm for mucus, too little so for fibrine; and, in the difficulty of disengaging this matter from the air-passages, in his weak state, he was so nearly suffocated, that in an hour

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\* Tubular sputa is the term now used instead of bronchial polypi. The sputa called vermicular, moulded in the small bronchi, and very albuminous in composition, have sometimes very much the appearance of white worms.

after he died from exhaustion. No post-mortem examination was allowed ; and, unfortunately for my further inquiry, the " polypi" were by accident thrown away.

Dr. Watson, in his Lectures, gives an interesting exposition of this complaint ; relating two cases which had come under his own observation and care. It is comparatively very rare in occurrence. It is not the offspring of evident inflammatory action, nor usually productive of inflammation ; but gives rise to great embarrassment in breathing ; to violent fits of cough ; and to great irritation and disturbance of the whole system. It appears, from the recorded cases, never to have had a fatal termination, except in one instance related by *Tulpius*, when the patient died from hæmorrhage. Always when the attachment of these substances to the bronchi has been very firm ; by radicles so toughly adhering, that the separation of them was extremely difficult ; more or less of hæmorrhage has been the consequence ; and much alarm for the safety of the patient has arisen : yet, a recovery, with occasional relapses however, seems always, in the best-related cases, to have taken place. The disorder appears to be very little under the control of Art, and Nature takes the management of the case into her own hands. The tubular formations have occurred before we have any suspicion of their existence ; and, when they become fully and fairly expelled, the health of the patient spontaneously returns, more or less quickly.

Those who are curious to investigate the history of this extraordinary disorder, affecting the mucous membrane of the larger bronchi, may consult with advantage, first Morgagni, who, upwards of a century ago, gave the following account : " The concretions said to have been expectorated, might be similar to those which sometimes form in the arteries, and in the intestines.\* I have seen them bearing the form of the trachea, which they exhibited when floated in water. Ruysch and Cheselden have represented ramified

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\* I remember a remarkable instance of the mucous east of one of the intestines, so firm, that it maintained itself in shape, and served for a preparation in diluted spirits, which I presented to the College of Physicians. I think it probable that it might soon become a half-fluid mass. The patient was a delicate lady, a great invalid from dyspepsia, and inveterately fond of taking purgative medicine.

concretions of this nature; they have been seen by other anatomists; and when hollow, were supposed to be veins.”

The first Dr. Warren wrote an extended paper on the subject, in the Transactions of the College, which was read in 1767. There are several cases related. See *L'Expectoration supposé des Vaisseaux Pulmonaires* (evidently of this description of tubular formations), in the 5th volume of *Memoires de l'Academie Royale de Chirurgie*, 1774. The 22nd volume of the *Medical Gazette* contains a paper of much interest, by Mr. North, on the same subject; and two cases, with observations, are related by Dr. Reid, in the 27th volume of the *Medico-Chir. Trans.*

I have said that this curious disease is not the result of inflammation, as that of croup; it is a chronic and not an acute disease; yet it is a morbid action of the secreting vessels of the mucous membrane, which must, I think, be considered as something more than can be fully expressed by the term irritation; and, perhaps, the term chronic inflammation is the most applicable.

ON THE BLACK DEPOSIT IN THE LUNGS, COMMONLY CALLED  
“MELANOSIS.”

I think it necessary to recur to this subject, to which I have briefly alluded at p. 62. With Bayle, the melanotic deposit constituted his third species of phthisis; and he states, that “it is sometimes single; more frequently it is complicated with tubercular phthisis, but in this complication the tubercles are not numerous. It is also sometimes united to granular phthisis, and even to other species.”

*Laennec* draws a distinction, which I do not find he proves by any chemical experiments, between melanotic and black pulmonary matter; and indeed assigns to melanosis the serious character of cancer, in these words: “Melanosis is one of the rarest species of cancer\*, and is very seldom met with in the lungs†.”

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\* I have seen good examples of fungus hæmatodes in the lungs, when similar tumors were found in the brain, and other parts of the body. This is the only kind of cancer of the lungs with which I am acquainted.

† See Forbes's Translation, third edition, p. 302.



As I have before stated, M. Guillot is of opinion that the black deposit is sometimes to be considered as a fortunate occurrence, in operating as a check to the tuberculous formation, and staying the march of consumption. He believes that it so acts, "by obliterating the new system of capillary vessels, which he has observed replaces the obstructed capillaries of the pulmonary artery."

Both Guillot and Andral speak of the black matter as a secretion; "but whilst M. Andral regards the melanotic phthisis of Bayle\*, or the black induration of the lung, as a form of chronic pneumonia, with the addition of a coloring matter, he thinks we may conceive cases in which the black pulmonary matter may be formed, without the texture in which it originates having been indurated; though the occurrence of the black unindurated lung could not be admitted by those authors who regarded the induration as owing to the presence of melanosis. Instead, therefore, of regarding, with M. Laennec, melanosis of the lung, and black pulmonary matter, as two distinct forms of production, M. Andral conceives the only difference to be, that in the one case the discoloration co-exists with an induration, resulting from chronic inflammation, whilst in the other case it exists without induration†."

This subject has long been involved in doubt and discussion, and even at the present moment requires a closer inquiry for its elucidation. What is the chemical distinction between the different specimens of black matter—of that found in the lung, and in other tissues and organs of the body, and in specimens from different individuals?

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\* Thus described by him as his third species of phthisis: "This species is not very rare; authors have often perceived it without making it known in a distinct manner. It affects only adults, and, above all, persons advanced in years. Those whom it kills have ulcers in the lungs, of various sizes, as black as coal, and very hard, sometimes a few lines thick, at other times a few inches. The parts remote from the ulceration are commonly very sound. But if the disease affects an entire lung, it is hard, compact, black as ebony or charcoal; and sometimes like half-burnt leather, as authors have related who have published observations that may be applied to this species."

† I make this extract from Dr. William Thompson's interesting and highly instructive paper on this subject, in the third volume, second series, of the *Medico-Chir. Trans.*

I believe it will be admitted by most physiologists, that it is more reasonable to consider that the chemical action always going on between the oxygen and the carbon, in the animal economy, is not confined to the lungs, but is carried on also in every part of the circulating system\*. Hence, if this idea be correct, we may suppose that this black deposit is not the distinct result of secretion, but chiefly a precipitation of carbon, from there being an excess of it beyond the relative proportion of oxygen necessary for its combination and total conversion into carbonic acid. Taking this view of the question, it may be expected that the carbonaceous matter should be found in very different states, according to several circumstances;—viz. in large and small portions; in lumps or in granules; almost dry, or moist, and possibly liquid, from combination with serum; and, lastly, from containing a greater or smaller amount of the several principles of the blood.

M. Barruel found, in the deposit, most of the principles of the blood itself.

Dr. Pearson appears to have considered its origin entirely external; as the mere inhalation of carbonaceous matter from the atmosphere, in which sooty materials might be floating.

Dr. Bree appears to have taken a more extended view of this phenomenon, and to have offered an explanation, bearing some resemblance to my opinion. Without asserting that I am entitled to the following conclusions, I will submit them as hypothetical statements.

1st. That the black deposit found in the lungs may be derived from two sources; viz. externally from the atmosphere, and more especially from such confined atmospheres as collieries and other places abounding in suspended carbon; and internally, from a deficiency of oxygen in the lungs, with relation to the quantity of carbon requiring to be converted into carbonic acid; and also that when found in other organs and tissues of the body, the same explanation of deficient oxidation of the venous blood, as that offered with regard to the lungs, may be stated.

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\* In my Essay on the Blood, I have shown, I think clearly, by the experiments which I have related, that the blood normally contains free carbonic acid; and, if this be admitted, is it not also a proof of the decarbonisation of the blood taking place in the course of the circulation as well as in the lungs?

2nd. That when the black deposit is the result of atmospheric inhalation, it will probably be found to consist wholly of uncombined charcoal.

3rd. That when it is found in persons who have not been exposed to a carbonaceous atmosphere, it may be considered as a precipitation from the blood insufficiently oxidated, and containing more or less of the several principles of the blood.

4th. That, in particular instances, the melanotic mass may be a compound derived from both the sources just named.

5th. That the forms and characters of the deposit, and whether isolated or encysted, hard or soft, in a large mass, or in granules; separate or combined with tuberculous matter; solid, or as a fluid infiltration; will be owing to varying accidental causes.

6th. That the symptoms to which it may give rise do not constitute a species of consumption; and when found united or co-existing with tubercles, it is to be viewed as an accidental complication.

7th. That in no case is it to be considered distinctly as a secretion, but chiefly as a deposit.

8th. That any deleterious agency which it may exercise may be ascribed to its influence as a mechanical irritant to the mucous membrane of the bronchi; as a cause of obstruction to the air canals and cells; and as compressing the capillary vessels.

9th. That when derived from the atmosphere by inhalation, its influence is entirely that of a mechanical irritant; but that when it is the result of defective oxidation of the blood, it argues an unhealthy state of the system, which may be pulmonary, or general, or both.

Several important papers have been written by different ingenious authors\* on the bronchial and pulmonary injury inflicted by mechanical irritation, in certain unwholesome occupations, as those of the different classes of grinders and polishers of metals; stone masons and workers in quarries; flax dressers, &c. It may be considered that such irritants would operate as an exciting cause to tubercular phthisis,

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\* Drs. Knight, Holland, Favell, Alison, Hastings, &c.



when the constitutional disposition to that disease should be existing ; but, otherwise, we may expect chronic bronchitis and its consequences to be the effects more legitimately to arise from sources of injury of this description.

Sir James Clark, on this subject, in his statistical section, after quoting from Dr. Knight a statement of the post-mortem examination of a fork-grinder, observes : “ Such, I apprehend, are the appearances which will be generally found in these cases ; viz. vascular congestion and ulceration of the bronchial membrane, congestion or induration of the pulmonary substance, and adhesions of the pleuræ, in many complicated with emphysema, tubercles, and enlarged heart. The mechanical irritation of the respiratory organs, the sedentary habits, and constrained position of the workman, the impure air which he breathes, and his usual habits of life, are abundantly sufficient to account for all these morbid changes ; the mechanical irritation alone is not sufficient to produce them.”

I would here remark, that we can scarcely ascribe, I think, too much injurious influence to the distinct cause, the foreign materials introduced into the bronchi and lungs, in the various unwholesome occupations which I have mentioned only in part.

#### ON THE MEANS OF PREVENTION.

The Physician can never exercise his thoughts and skill with more humanity, and with greater credit to himself, than in studying to recommend the best measures for the prevention of a disease. It is obvious that such consideration and care cannot begin at too early a period. The training of the understanding, the control of the temper, the formation of the disposition, the fashioning of the whole behaviour, commence even with infancy. Equally so at least does the right culture of the body, the creation of a good constitution.

In every instance in which we have cause to apprehend the hereditary taint of pulmonary consumption in a child, we should exercise a more than ordinary care to implant in the system all the principles of health ; by means of fit nutrition, of pure air, proper exercise, and every good custom.

The foundation of health is too often undermined in infancy

and early childhood. The milk of an unhealthy, or imperfectly qualified nurse may convey so impure a nourishment, as to produce some contamination of the blood, vitiate the solids, and favor the development of any germ of disease which may have been born with the infant, and which we will now suppose to be that of tubercular phthisis. This, by a happier management, in infancy and afterwards, might lie dormant, and never come into action. There can be no question that breast-milk is the natural and most eligible food for an infant; and, as regards the child itself, should continue to be its exclusive nourishment for the first twelve or eighteen months. The mother is the proper nurse, and if she be fitted to the task by her strength, by freedom from all disease, declared or latent; and by having a good supply of milk; she will most probably be not only sensible of the sacred duty which she has to perform as a matter of principle, but will discharge it with delight and satisfaction.

There may, however, be many circumstances over which she has no control, that may compel her to delegate the tender task to a hireling nurse; and when this happens, the choice should be made with the greatest care and judgment; as to the perfect health, the purity of constitution, and correct manners and conduct of the individual.

I shall pass over those minute details which properly belong to the subject; but I cannot refrain from quoting a few observations from the "Commentaries on some of the most important of the Diseases of Children," by the late Dr. John Clarke, whose sagacity and judgment could not be exceeded. When, from uncontrollable circumstances, a child falls under the disadvantage of being brought up by hand, "the food should be entirely fluid, and taken by suction, till it has teeth; bottles to answer this purpose are now commonly sold in the glass shops of the metropolis, and by most of the makers of surgeons' instruments.

"Ass's milk is the best substitute\* for that of the mother—

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\* This appears to me a greater refinement than is necessary, and that, unless in some particular instances, cow's milk answers very well, provided that it is furnished from healthy animals; for it is well known that cows confined in stalls in London cow-houses very frequently become tuberculous.

cow's milk is too rich, containing too much oil and cheesy matter. It is moreover formed, by the gastric juice in the stomach, into a firm curd, which is not digestible by the stomach of an infant. Diluting it with water does not entirely prevent this; therefore, when ass's milk cannot be procured, it is best to mix cow's milk, previously skimmed, with two-thirds or three-fourths of its measure of gruel, made from pearl barley, grits, rice, or arrow-root. When so mixed, it does not become hard in the stomach, as when diluted with water alone, but forms a thick fluid. As a child advances in age, the proportion of milk may be gradually increased.

“Where this food does not agree with a child, weak mutton, chicken, or beef broth, clear and free from fat, mixed with an equal measure of any of the mucilaginous or farinaceous decoctions above mentioned, may be tried. As soon as a child has got any of the teeth called incisors, solid farinaceous matter, boiled in water, beaten through a sieve, and mixed with a small quantity of milk, may be employed; and then, for the first time, the child should be fed by hand. Weak broth may be substituted, if cow's or ass's milk does not agree. With some children, no form in which cow's milk can be given will agree; but the stomach will digest farinaceous decoctions, mixed with a little cream, which will not coagulate there.

“When the molares, or grinding teeth, have protruded through the gums, the child should live upon farinaceous matter, mixed with milk, or weak broth; but the bread need not be beaten through a sieve, because the child has now an apparatus for grinding it.

“Solid animal food should not be eaten till the child has all the cuspidati, or canine teeth, and then in small quantity, and only once in a day. The animal food given to young children should be plainly roasted or boiled, hot or cold; fried and broiled meats, and all food heated a second time, by hashing or mincing it, being less digestible, should be avoided.”

It is undoubtedly the general error to give infants and young children too much food, and produce diseases to which repletion is both a predisposing and exciting cause. When there is the full complement of teeth, animal food should only



be given once a day, the best of its kind, and first dressed ; and if the child be of full habit, on one day in the week, at least, meat may be omitted with advantage, and wholesome boiled fish be substituted.

Daily ablution of the whole body, on first rising in the morning, is a practice of great value and importance, beginning with tepid water, and ending with a quick application of cold, after which the most careful dry rubbing with a small coarse sheet should be used, so that not only every part of the surface shall be perfectly dry, but shall glow with proper warmth. The nursery apartment should be spacious, and of good height, and always kept well ventilated. Every child should sleep by itself, and have no impediment, from drawn curtains, to the free circulation of air. A good judgment must always be exercised in regard to taking young infants out of doors in the cold season of the year, or, rather, in doubtful weather ; but when the advantage of open air cannot be enjoyed, the freedom of a large play-room, of cool temperature, should be the substitute.

In the onward growth, the health and strength of the body should never be sacrificed to too much early cultivation of the mind ; and a precocious child should rather be restrained than encouraged in study. The brain must be considered like any of the muscles of the body, incapable of bearing a great degree of fatigue, and more especially much over-exertion, without injury. Pressing the young mind to unusual attainment of knowledge is no eventual gain, and may greatly injure the brain and nervous system.

The custom of giving young children wine as an indulgence, cannot be too much reprobated. Water is the true beverage of health. There do occur instances of rapid growth, and of debility, in which sound malt liquor, and perhaps draught porter may be adviseable ; and if wine, of course diluted, be ever given, let it be as a medicine.

The observations which I have here offered on this important subject, limited in relation to its extent, are of general application, and suited to every constitution, whether healthy, or in any way predisposed to disease ; and it must be that true hygienic principles cannot vary, although the exact prac-

tice of them may be modified in individual cases. For example: a delicate child, that may be suspected to possess a consumptive taint, must be clothed more carefully than another, and have flannel covering of the chest in the cold season of the year; and be more cautiously exposed to the outward air, in doubtful weather, than other children; lest pulmonary or bronchial inflammation should be produced, and which might become the exciting cause of tuberculous formation. It is very desirable to make all children hardy and strong; but the same means cannot succeed with all; and the weak and delicate might be destroyed, in rude and injudicious attempts to force upon them the bold habits, which are only unquestionably proper for the favored few that are already strong.

Particular place of residence is a point of important consideration, when health is made the question; and it is only repeating a familiar and acknowledged truth, when I speak of the advantage of a soil of chalk or gravel; and how carefully one of a clay nature, retentive of moisture, should be avoided; and still more, marshes and stagnant waters, sure sources of malaria. Even pure water should not run close to a house, nor trees be planted very near. Free circulation of air, and that not much loaded with moisture, is always so much to be desired.

When one of a family may have fallen a victim to consumption, it is important that any other of the children which may show the least signs of debility should be removed to some other locality, if not to another climate. Let every care be taken to alter and amend the constitution, by new influences of every favorable kind.

It is very essential to those who seek to improve a weak chest, or maintain the health of a good one, to live in airy, well-ventilated apartments, and avoid such as are crowded—unless they are spacious and lofty, as the halls of public colleges. It is most objectionable that many children should sleep in the same apartment. Indeed there cannot be too few. The animal respiration, and the cutaneous excretions, seriously contaminate the air of a small room in which there are too many persons. Whenever we detect a want of fresh-

ness in an apartment, a sitting or sleeping one, we may be sure that there is insufficient ventilation. An Irish cabin, with its abundance of air-holes, is less unwholesome than an apartment of elegance, ill-constructed as to ventilation.

The deleterious influence of miasma, from whatever source it may emanate, is much increased by high temperature of the atmosphere, being rendered more volatile and diffusible. Even with ventilation, hot apartments are unwholesome, tending to debilitate. Of the evils produced by confined air, and want of exercise, familiar proofs are afforded in the deterioration of the health of domesticated wild animals, so many of which acquire pulmonary tubercles from confinement, and more especially if crowded in narrow spaces, and in such as are damp. The tame rabbit is a daily example of my statement. In the lungs, and still more in the liver of this animal (tame), tubercles are very commonly found. The food of animals is another great point of consideration. What lessons do we then receive on every side that nature cannot be opposed with impunity in her decrees; and that the blessing of health is only to be obtained on the terms of rightly earning it, by observing all good principles and rules. The goddess Hygeia is most faithfully worshipped in the country: and here I think of the fervor of the warm-hearted Poet—

“ God made the country! man the town.”

*Diet.*—It generally happens that those young persons who show any predisposition to phthisis are thin; although they do not always complain of being weak. I consider that it is right to support them with extra nutrition, giving them animal food rather twice a day than once, if they have appetite to enjoy it, and digestive power to profit by it.

All persons may know the importance of eating slowly, and masticating the food fully: and yet how much is this good rule neglected. If the digestion be active, and the nervous energy well maintained, pure water should be the chosen beverage at meals, for it is the most wholesome; but if there be bodily languor and depression of the nerves, shown by sinking sensations at the stomach, it may be highly proper to prescribe some fluid stimulus, as a little of diluted port or



sherry, or sound malt liquor; and porter may be considered less heating than ale, and draught more suitable than bottled.

As little fluid as possible should be drunk when there is hæmoptysis\*. Iced water is the fittest beverage: and lemonade is also proper. When any hæmorrhagic action is present, whether in the lungs, bronchi, or the intestinal canal, free water-drinking tends to increase it by the distension of the vessels, although that be temporary. I witnessed at Gräfenberg many proofs of it; and the more flow of blood, the more water they drank; from ignorance of pathology! The present subject of dietetics would allow of extensive details; and the minutæ of which have their importance: but I do not think it necessary at present to extend my remarks.

Exercise is a means of health of such evident importance, that it might seem wholly unnecessary to speak of and recommend it; and yet it is often very remarkably omitted. The true value of it consists in its freedom; and it is not sufficient that a school young lady shall take a stately walk in marching order. It is necessary that the lungs should expand fully, in order to healthy function; and, for this desirable effect, the breathing must be hurried by occasional free running, skipping and jumping, up the hill and down the dale.

It is really surprising how small a quantity of air we take into the lungs in an ordinary quiet inspiration, compared with that which we have the power of receiving when we draw it in with the greatest effort.

I submitted three strong healthy young men to a pneumatic experiment. I made use of a graduated jar† over water,

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\* I think that I should have dwelt more on the nature and treatment of hæmoptysis, in the previous part of this book, than I have done. Here I can only slightly advert to it. In its highest degree it receives the incorrect appellation of pulmonary apoplexy, it being then an active hæmorrhage from rupture of large vessel or vessels. In my Essay on the Blood, I have stated experiments to show the styptic quality of alum: and, although the principle of its administration as an internal medicine (to be used in most cases of hæmorrhage) be rather chemical than physiological, it is a medicine which deserves to be tried; and is eligible from its perfect safety, and in this respect preferable to lead. Diluted sulphuric acid should be joined with it. But the proper treatment of hæmorrhage embraces many important considerations. Ordinary hæmoptysis subsides, usually, with repose and cooling diet, and cool or cold air.

† The pulmometer, so called, and first, I believe, introduced into use by the

furnished with a flexible tube and stop-cock, the nostrils were closed in the experiments. The results of the different trials gave scarcely any difference. By the easy, almost imperceptible inspiration, from two to three cubic inches of air only appeared to be received ; by that which was forced and prolonged to the utmost, 212. The experiments being comparative, some instructive conclusions may be drawn, as showing how little the air in the bronchi and cells can be changed, in that very passive respiration which I have just noticed ; and how necessary active exercise must be to produce the full aeration of the blood, which is the most conducive to health and bloom : And this should be in the open air, and in good air. Many persons seem to think that they do enough by being very active in the house ; and Sir John Sinclair, in his code of health, recommended running up and down stairs often, as a wholesome plan ; but this, although better than the indolence of seldom moving from the arm-chair, is but a poor fulfilment of the Hygeian principle of taking exercise abroad.

*Gymnastics*, properly conducted, are useful to young persons, tending to strengthen the muscles and to expand the chest.

The tender invalid, who is precluded by prudence from going out, except in favorable weather, may get a little advantage, and yet one not to be despised, by traversing the apartments, with open windows, once or twice in the day ; clothing as if this exercise were taken out of doors. I have before remarked on the different kinds of exercise, and I need not repeat my observations.

*Of Hydropathic Treatment.*—The internal health is in so material a degree connected with a due attention to the state and functions of the skin, that a study on this point becomes one of great interest and importance. Happily it has long been the well-understood custom in the nursery to use ablutions of the body, partially or generally ; with tepid or cold water, according to the season of the year, and the capability

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late Dr. Kentish, of Bristol. It is a very imperfect instrument for measuring the vital capacity of respiration, there being so much resistance in the body of water to overcome ; which does not happen in Mr. Hutchinson's spirometer. Even with his instrument, the *minimum* of air breathed cannot be correctly measured.

of the infant to bear the treatment; for, whatever exact mode of the application of water may be adopted, and at whatever age, the extent to which it may be carried must depend on the degree of re-action; the proper glow of the surface that is produced; the feeling of refreshment, and that entire sense of comfort taking place, which affords an unquestionable proof that the practice perfectly succeeds.

At p. 101, I have remarked on the cautious mode of ablution to be used by the patient actually labouring under phthisis. I am now considering the means of strengthening the frame and the system by a bolder application of water; yet, nevertheless, always with caution and due reflection. The methods are various: as by the plunging-bath, the shower-bath, the wet rubbing sheet, towel rubbing, and the sponging of the body. Upon each of these I will make some comments.

The cold plunging-bath is too severe a measure for the delicate individual, and not admissible for one who betrays any disposition to phthisis. Nor is it often suitable to one subject to bronchitis. Sea bathing in the summer season, as a plunge, may be allowable in some circumstances of weakness of the constitution, even with an attendant cough; but any instance of the kind would be an exception to a general rule of prohibition, when the lungs or air-passages are in a doubtful state. The shower-bath is liable to the same objections, but not so strongly, as it may be used tepid. It must always be borne in mind, that when we have any reason to apprehend an unsound state of any part of the pulmonary organs, even of the bronchi only, we should exercise great caution in the sudden application of cold; lest, by a disturbance of the balance of circulation, and a re-action more violent than weak vessels of parts so vitally important, when in a morbid condition, might be competent to bear, we might run the risk of producing some serious evil, as hæmoptysis, or inflammatory action of the tissues.

In my "Medical Visit to Gräfenberg\*," I gave the fol-

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\* I was resolved to go and judge for myself of the nature of the water-cure; and I had full opportunity of forming my opinion in a six weeks' stay at headquarters—Gräfenberg. I pronounce it to be a treatment of high value and importance, and to constitute a most valuable remedy for very many of the dis-



lowing account of the rubbing wet sheet. A large sheet, of the same coarse quality, fitted for holding water, and serving well for friction, is here used. The sheet is pressed, not wrung, out of water always cold, and sometimes it is allowed to be dripping. The patient standing ready, it is dexterously thrown over the head, so as to create surprise and a slight shock; and instantly the most active friction is used by the assistant (*Badediener*) behind, and by the patient, or another attendant, before; and this is continued from two to five minutes, when the skin becomes much reddened, and a considerable sense of warmth is obtained, and which is pleasantly confirmed by the subsequent rubbing with a dry sheet.

This is a very admirable species of cold bath; and, as such strong friction with the coarse linen accompanies the application, it is in no slight measure a counter-irritant. It has, therefore, a different action from that of the shower-bath, which causes a more sudden and violent reaction, from which some sensitive persons experience great disadvantage, especially as regards the head; and this even if the fall of water be not upon the head.

The convenience of this remedy, the quickness and facility with which it is procured, is another recommendation of its use. It is applicable in various circumstances of indisposition, as I shall mention cases to show, and is one of the processes with which the patient always begins the treatment. Sponging the body comes the nearest to it; but it differs in these respects: more evaporation takes place from the surface during the exposure in sponging; and active friction cannot be used at the moment of the application of the water, as with the sheet. If

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ordered states of the body, when used with care and correct judgment; but I have no doubt that the treatment has often been misapplied, and also carried to excess, so as to have been productive of injury. Any bad results which may thus have occurred, should not be quoted as an impeachment of the *proper* application of the water cure. I consider that the whole profession ought to esteem hydropathic treatment as an important therapeutic agent, capable of most useful application in many circumstances of ill-health; and most highly worthy of being added to our general list of remedies; but I equally argue, that it is an entirely false principle to hold it up as an exclusive treatment, and in offensive opposition to the practice of physic; in this manner, too, destroying its good name with the profession at large, and bringing unmerited opprobrium on those who conscientiously approve of hydropathy, on the prudent grounds which I have stated.

employed for refreshment, after heat and fatigue, the sheet might be pressed out of water at 62°; or also, with a very delicate patient, as introductory to the lower temperature. I have with much satisfaction, in several instances, directed another modification of this process, as introductory to the fuller treatment; viz. the rubbing of different parts of the body in succession, by means of a very large coarse towel, pressed out of cold water (in some cases a little tepid at first), with the injunction that one part is rubbed dry before proceeding to a fresh part.

The last mode to be spoken of, is the use of the shallow tepid bath—the quantity of water from eight to twelve inches, and of a temperature (for the delicate patient with a tendency to consumption or bronchitis) from 80 to 90°. In this he sits, and is well rubbed or sponged, and the process is finished with the application of water at a lower temperature, either by rubbing or sponging, or affusion over the head and shoulders, &c., or avoiding the head perhaps at first, according to circumstances; for all the variations which I mention, modify the effects produced. When cold water is well borne, and really enjoyed, its tonic power is to be desired.

The drinking of a moderate quantity of very pure cold water daily before breakfast, and, if found to agree perfectly, again between breakfast and dinner, is adviseable for those who wish to practise all the hygeian principles of management with full consistency; conjoining, as indispensable, abundant exercise in good air. When, therefore, a systematic plan of diet and regimen is fully carried out, in conjunction with medicinal means, we do, I conceive, employ the most effectual method of creating “*a change of matter*,” of producing healthy blood, and opposing the progress of any germ of disease, of whatever kind that may be, whether consumption, scrofula, or gout; and upon rational principles lead to the formation of an improved constitution; where, by careless inattention to all good rules, the reverse would most probably happen; viz. the growth of disease, and the destruction of health, or even of life itself.

It remains that I should treat in a brief manner of another highly important subject, as connected with the design of this volume—that of particular places of residence, with relation to their climate.

## REMARKS ON THE PLACES OF RESIDENCE

CHIEFLY RESORTED TO BY THE CONSUMPTIVE INVALID.

A change of climate, as a remedial measure for the consumptive class of invalids, is to be considered in two points of view : for the prevention of the development of the disease, when we have reason to fear that the seeds of it are in the constitution ; and for its alleviation, and the hope of cure, when it has declared itself by manifest symptoms.

If, happily, arrangements for so distant a removal from home can be conveniently made, there can be no question, I think, of the eligibility of a foreign climate for the purpose of altering and improving the constitution ; not only because it is less variable than our own, but also because the mind is agreeably engaged by foreign travel ; and lends, in such enjoyment, its powerful influence towards the improvement of the bodily health. Too short a time is often given to the attainment of the great object in view ; which should be that of not merely effecting a temporary improvement of the health, but the establishment of a firm state of the constitution, and permanently substituting strength for weakness. When, therefore, it can be accomplished, the residence abroad should extend to two or three years.

But, even in the south of Europe, no one spot can be mentioned as proper for continued residence. Pisa, Rome, Naples, Florence, and Nisee, have their objectionable months ; and it should be the care of the invalid traveller to locate himself in different situations at different periods of the year. I have often heard it remarked that no climate equals that of England for a permanent residence, as we are not subject to either extreme of heat or cold ; but this is not a fair view of the question. Who would think of remaining in any of the places in Italy, which I have mentioned, in the summer months ; or,



who would pass each month of the winter period, with very delicate lungs, at Nice or Florence? How seldom, comparatively, with the deep blue sky of Italy, do we see the cheering sun, the benefit of whose rays, when moderate, I have alluded to at p. 105. How long is our winter, how variable our spring, how short our summer, how doubtful our autumn! I cannot be patriotic enough to praise the climate of England, even in its most chosen situations, for the comfort and welfare of the tender invalid, in comparison with the south of Europe.

The plan of passing different months at different places, will allow of much varied selection. I should not mislead a patient in recommending Naples for the months of October, November, and December: Rome, for January, February, and March, and part or all of April. Then a visit may be made to Florence, where the attractions of painting and sculpture are so delightful. When the heat becomes too oppressive, the baths of Lucca, or of Montecatini, afford a very charming summer retreat; and, the stay there being concluded, the former sojourn might be repeated, or with such variations as the convenience and taste of parties might suggest. For example, the commencement may be with Nice, at the end of October, where a stay may be advantageously made till February, and much longer by any invalid, except the delicately consumptive one. This climate being remarkably dry, is particularly favorable to the gouty and rheumatic. With the pleasure of the sea prospect, it unites in a high degree the charms of the flower garden, and the beauty of flower fields and hedges. *Flora*, here and at Florence, is triumphant; and Nature puts on a most cheerful aspect. But, in Spring, the sharp chilling winds from the East, in many seasons at least, are unfriendly to tender lungs; and when this evil is experienced, the invalid may then proceed to Villa Franca, an hour's journey from Nice, where the temperature is almost constantly at 65°, during February, March, and April, the place being completely protected from the NW. winds by high mountains. Here the citron tree is seen in full vigor throughout the winter season in the open air. The atmosphere at Menton, a village a short distance from Villa Franca, is still softer, and indeed a paradise!

The month of May being arrived, a short passage by sea takes the invalid to Genoa, a most delicious residence for six weeks, the wind being generally still, and Nature smiling. The summer heat now becomes great on the shores of the Mediterranean; and, as the winter has by this time left the north of Lombardy in full possession of its luxuriant beauties and genial air, the patient should travel to Milan, visit the lakes, and, taking an easterly direction, proceed to Venice, through Bergamo, Brescia, Vicenza, Verona, and Padua, occupying in this tour, and the necessary stay of ten days in each town to recruit strength, the months of June, July, and August.

In September, fogs and cold winds, the harbingers of winter, invade the northern region of Italy; and then the invalid may take a south-westerly direction through Mantova, Parma, and Bologna, to Florence, quitting the latter about the middle of October; which month, with the whole of November, should be spent at Pisa. From thence, Naples and Rome might follow in succession.

When the two or three years' residence in Italy shall have been completed, and the invalid, who may however happily have shaken off this title, desire to return home, the most agreeable route would be over the Mont Cenis at the end of May, into Savoy and Switzerland, descending the Rhine in June, when the season is very genial, and, passing through Aix-la-Chapelle, Antwerp and Brussels, pursue the usual direction, and reach England in July or August.

But it may suit better the inclination or the convenience of the patient to remain at and near one place throughout the first year. Rome might be his choice for all the periods which allow of remaining there with advantage and comfort. He could in that case pass the hot months at Albano or Tivoli; but some prefer to go so far as the baths of Lucca.

OF NICE. — I received the following interesting communication from a friend and patient long resident in that city.

“The climate of Nice is very bright and delicious, where it agrees; but it is never neutral. The first winter I spent there, I was ill for four months before I could get acclimated. It is generally very dry, painfully so at times. It is very ex-

citing to the nervous system, and, in cases of tendency of blood to the head, is often highly dangerous; but when it agrees, it is very bracing. It is subject to sudden and violent changes from heat to cold. The sun has immense power, and, even in winter, one can hardly bear exposure to its rays on the head. Where the bise or mistral blows, it is very cutting; and the spring is trying, from the prevalence of these winds. Yet Nice is certainly in general a delightful winter residence as to climate. It has no objects of interest beyond the pretty country, a l'entour. Florence is much colder than Nice, being more like the temperature of England; but the objects of interest are endless."

OF NAPLES.—In regard to this beautiful and important city, I will make the following extracts from the agreeable and instructive work of my friend, Dr. Cox, who still resides in practice at Naples.

Is Naples a good winter's residence?

"In answering this question, we must go a little into detail.

"The months of September, October, November, December, and January, are beautiful, and of a temperature very favorable for an invalid. No place yields greater temptation for various forms of exercise. The lovely shores of Lago d' Agnano, Baiæ, Cumæ, Lago d' Averno, di Fusaro, Pompeii, Amalfi, Sorrento, La Cava, Pæstum, Caserta, Camaldoli, Capo di Monte, &c., all afford delightful excursions, full of classic interest, and calculated to produce the highest gratification. The first three months are peculiarly adapted for exploring these interesting places. The rains of autumn, which occur early in September, have refreshed and cooled the earth, the vines still sustain their beautiful purple burden, and it is not till the end of November that they are bare of leaves.

"With common precautions, the months of February and March may be passed without any danger, and certainly with as little inconvenience here, as in any place on the Continent. The mean temperature of the months of February and March is 48 and 52° respectively; the thermometer at noon being from 55 to 60° in the shade; and at night, from 42 to 46°. In the sun, the thermometer rises to 70 or 80°.



“ Temperature of February, 1839, the thermometer in a north aspect.

Highest.....	68°
Lowest .....	38°
Daily mean highest .....	58°,5
—————lowest .....	47°,4
Mean.....	52°,9
Number of rainy days .....	3

“ Temperature of March, 1840. This was much below the average, the snow being on Vesuvius ten days.

Mean highest .....	52°,2 north aspect.
—————lowest .....	41°,7
Mean at noon .....	66°, 4 south aspect.
Highest in the shade .....	60°
Lowest ditto.....	35° at night.
Highest in the sun .....	90°
Number of rainy days.....	10

“ The above details will give the most correct impression of the character of the season.

The invalid should, during these months, restrict his rides to the Riviera di Chiaja, the shores of the bay of Baiæ, or the Strada Nuova; return home by four o'clock, and shun evening assemblies. Happily the carnival is now passed, and balls are proscribed during Lent, very properly, by the Romish Church.

“ The under dress of all persons should be of flannel or merino knit, from November till May, and knit cotton during the rest of the year; which latter is the most eligible summer wear, as it absorbs perspiration, and prevents the annoyance of insects. The Villa Reale forms a pleasant and sheltered walk for the invalid, being defended from the cold wind, and always dry.

“ With moderate precaution then, the winter, if it may be so called, may be passed without inconvenience or danger; and, during this season, Naples offers advantages as great, or greater than any city on the Continent. Rome has no walks

so well defended as the Villa Reale; one side of the street often glowing with the heat of summer, while the other is cold and damp as winter. Florence is the least eligible of all places for the invalid in winter, though lovely and delightful in spring and autumn. Nisee has the Maestrale, which is almost irrespirable. Pisa, perhaps, along the Lung Arno, is the most defended of any place; but if the patient extend his walk beyond this limit, he is stricken with the cold blast; and in the *agrémens* of society, both of Rome and Naples, it is very deficient."

It is rather difficult to obtain correct accounts of the climates of particular places from travellers; and, chiefly, because they all vary much in the weather in different years. A pulmonary patient would be deterred from resorting to Naples, if he placed full confidence in the following statement by Matthews, in his "Diary of an Invalid."

"February 11th, 1817. The weather is beautiful, and as warm as a June day in England. We sit at breakfast without a fire, on a marble floor, with the casements open, enjoying the mild fresh breeze from the sea. February 12th, 'Oh! this land of zephyrs, yesterday was as warm as July; to-day we are shivering, with a bleak easterly wind, and an English black frost.' Naples is one of the worst climates in Europe for complaints of the chest, and the winter is much colder here than at Rome, notwithstanding the latitude. February 20th. The weather is beyond measure severe and trying, with a hot sun; there is a winter wind of the most piercing bitterness. A pulmonary invalid had better avoid Naples at any time, but certainly during the winter, unless he wish to illustrate the proverb, 'Vedi Napoli e po' mori.' It is not easy for such an invalid, if his case is notorious, to get lodgings; or at least he will on that account be asked a much higher price for them; for consumption is here considered to be contagious\*; and, in case of death, the whole of the furniture in

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\* The infection of phthisis is quite contrary to theory and to general observation; but yet there are instances which may stagger our incredulity. I have repeatedly seen the husband ere long follow the wife to the grave; and the husband the wife, both dying from consumption, when the survivors in these cases had not apparently

the occupation of the deceased is burnt, and his rooms are fumigated and white-washed." Such notions and practice are found to exist, here and there, at the present day; but I do not believe that they are prevalent.

Regard must be had to residence for an invalid. Dr. Cox offers the following suggestions:

"1. That the apartments for an invalid should have a southern aspect; this is quite essential throughout Italy. A south room, at Naples, has the sun in winter, and receives the sea-breeze in summer. There is sometimes a difference of from 30° to 40° of Faht. between the north and south side of a house at noon; and, in a room with a south aspect, the thermometer will rarely fall below 60° throughout the winter, even without fires. During the night there is but little difference.

"2. None of the apartments should be exposed to the Tramontana winds, or N.E.

"3. The apartments should not be too near the Tufa rock, through which the offensive fluids often percolate, causing unpleasant and unwholesome effluvia.

"4. A second or third floor is to be preferred to the ground floor, because the streets being paved with lava are very noisy, and also in a country where the rains are heavy and the evaporation is great, it is better not to be too near the ground.

"5. An upper floor is damp and cold in winter, and also in summer, unless there be a double roof or strato. If the house have a flat single roof, the rain causes it to be very damp, and the heat of the sun renders it unpleasantly hot. Almost all good houses have a double strato or are roofed."

"The whole of the bel' quartiere, including Mergellina, the Riviera di Chiaja, St. Teresa, Largo, Capella Vecchia, Chiatamone, St. Lucia, and the Largo del' Palazzo, as also the whole of the Pizzo-falcone, are clean, airy, well drained and lighted, and exceedingly salubrious."

A common notion prevails, that it is more judicious in the English to consult an Italian physician in case of illness, than

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been predisposed to phthisis. Any one under the disease should sleep alone, and any second bed be occupied only by the nurse. The sisters and brothers of the family should communicate with the invalid rather cautiously.



one of their country as being supposed to understand the disorders incidental to the climate better than an English one. This, without doubt, is true abstractedly ; but the Italian does not understand the English constitution ; which, in the event of serious disease, requires English treatment, in preference to the occasional, I will not say universal, slender and inefficient practice of the Continent.

Dr. Cox makes the following statement :

“ A noble traveller arrived in Naples early in the autumn ; he exposed himself to the hot sun, while pursuing his English system of diet. He was attacked with great determination of blood to the head, nearly amounting to phrenitis, with congestion of the liver, his eyes red, and suffused with bile, and his circulation strong and rapid. He resorted to an Italian physician, who applied a few leeches, and gave gentle aperients ; the nobleman died. The physician treated the disease as he would have done a person of Italian constitution. Free blood-letting, and mercurial purgatives, would probably have saved his life.”

I do not conceive that Sir James Clark has done ordinary justice to Naples, when he states that, “ as a residence for invalids, it is unnecessary to say much ; for consumptive patients it should certainly not be selected.” He relieves this disapprobation in some measure by the following : “ Naples is, however, well suited as a winter residence for those who are labouring under general debility and deranged health, without any marked local disease. The beauty of its situation, the brilliancy of its skies, and the interest excited by the surrounding scenery, render it a very desirable and very delightful winter residence for those who require mental amusement and recreation, for the restoration of their general health, rather than a mild equable climate, for the removal of any particular disease.”

OF ROME.—Sir James Clark observes that “ the climate of Rome is mild and soft, but rather relaxing and oppressive.”

“ Rome, although a soft, cannot be considered a damp climate.

“ In steadiness of temperature from day to day, in which

England, with the exception of the SW. of Cornwall, is so remarkably deficient, Rome comes after Madeira, Nice, Pisa, and Penzance, but precedes Naples and Pau."

In my belief, the climate of Rome is entitled to higher praise than this; and which, indeed, in subsequent remarks, the author himself bestows.

I grant that opinion may be divided as to the eligibility of Rome for the residence of a consumptive patient; and especially for the whole winter; but, from my own observation, and from the best opinions which I could collect, I am strongly led to recommend it for the three first months of the year.

In Rome, as in other parts, the variations of the temperature of day and night are frequently very great, and are to be guarded against.

Care should be taken by the delicate invalid in meeting the differences of temperature on the sunny and the cold side of the street; and also not to remain out late in the afternoon. You see the Italians rush home cloaked at four or five, even on a fine day, in the winter. Both at Rome and Naples, in the winter of 1844-45, I had the enjoyment, on occasional days, of such beautiful weather as we only know of in England in June and July; and then we can never behold the likeness of the deep blue sky of fair Italy, without one speck.

On the 19th of December, at Rome, as my table shows, the maximum heat in the shade was 68°, and at this time the accounts from England were uniform as to the great severity of the winter. The post was three weeks in arrival.

On Christmas eve, after visiting the church of San' Luigi de Francesi, at midnight, and witnessing the magnificent spectacle of its illumination, with the imposing ceremonies of high mass, and enjoying the fine singing of the choir from St. Peter's, we found the night most favorable for an excursion to the Coliseum, there being a full moon to light the starry firmament, and the air so mild, that no extra clothing beyond that worn in the day was required.

To mention the word Coliseum, brings back to one's mind delightful inspirations; and I may be pardoned if I make a partial quotation from that great Poet, who could feel and describe in matchless verse such rare scenes.

“ ————— Upon such a night  
 I stood within the Coliseum's wall,  
 'Midst the chief relics of Almighty Rome ;  
 The trees which grew along the broken arches  
 Waved dark on the blue midnight, and the stars  
 Shone through the rents of ruins," &c.

There is no better quarter for residence than the Piazza di Spagna, and it is a favourite one with the English. The second piano, or story, is the most eligible for the invalid who has not convenient breathing for great ascent. The sun's rays find no admission in the lower story ; and they have a saying, “ that where the sun does not enter, the doctor does !”

The quality of the air of Rome will be very differently reported by different travellers, according to the month, and to the particular season, whether a favorable one, or the contrary ; but there can be no difference of opinion as to the purity and pleasantness of the water of the beautiful Fontana di Trevi, from which much of the city is supplied. I have scarcely ever met with a more agreeable and wholesome spring.

In this most interesting of all the cities in the world, where the mind is kept in a state of the deepest and most gratifying excitement, week after week, and month after month, the invalid must impose restraint on his curiosity and researches, and not attempt to see many places of interest on the same day. The lofty ascents of stone stairs are a source of severe fatigue, and which must be guarded against, as producing debility. The invalid should mount the stairs very slowly. I have witnessed much evil consequent results from the enthusiasm and over exertion of those who were weak and delicate, and especially when the chest has been the seat of complaint.

OF PISA.—I think of the air of this place, what I do not of that of Rome ; that it is rather relaxing and oppressive ; and that, late in the autumn and the winter season, it is also damp. It has been found very suitable to the consumptive, but unfavorable to those who have relaxed nerves. The “ Pisa-head-ache” seems proverbial. I was much less pleased with the climate of Pisa, than with that of Rome. With its several objects of the highest interest I was exceedingly delighted.

From all the foregoing statements, and from the tables



which I annex, the reader may be able to form some idea of the nature of an Italian winter, and will see the propriety of making judicious selection of particular places, according to the months of the year, and other circumstances which will relate rather to individuals than to the general question.

I have hitherto had in view the value of a prolonged residence in some part abroad, for a delicate constitution threatened by, rather than actually suffering under, consumptive disease. In the first stage of declared phthisis, it may be often questionable whether the patient should be sent abroad. It must chiefly depend on the amount of discoverable disease, and on the strength of the individual to encounter the fatigue and inconveniences of travelling. But in the second stage, when tubercles have softened, and a cavity or cavities have formed, it is a measure absolutely to be prohibited. It would, too, probably be going to a foreign grave! and it is most unwise in any one, so painfully circumstanced, to quit the comforts of home, and undergo the risk of fatigue in a journey so severely fatiguing—removing from many dear friends, and from approved medical aid.

MADEIRA.—Perhaps no place is more to be recommended to the consumptive invalid than Madeira; with which island I am wholly unacquainted, except from the communications which I have received from patients, and the information which I have derived from books. I quote the following remarks from Sir James Clark:

“ The mean annual temperature of *Funchal*, the capital of the island, is  $64^{\circ}$ , being only about  $5^{\circ}$  warmer than the Italian and Provençal climates. This very moderate mean temperature, relatively to its low latitude, arises, however, from the summer at Madeira being proportionally cool. For, whilst the *winter* is  $20^{\circ}$  warmer than at London, the *summer* is only  $7^{\circ}$  warmer; and whilst the winter is  $12^{\circ}$  warmer than in Italy and Provence, the summer is nearly  $5^{\circ}$  cooler. The mean annual range of temperature is only  $14^{\circ}$ , being less than half the range of Rome, Pisa, Naples, and Nice. The heat is also distributed throughout the year with surprising equality, so that the mean difference of the temperature of successive

months is only  $2^{\circ}.41$ : this at Rome is  $4^{\circ}.39$ , at Nice  $4^{\circ}.74$ , at Pisa  $5^{\circ}.75$ , and at Naples  $5^{\circ}.08$ .

“ Whilst there is much equality in the distribution of temperature through the year, there is no less so in the progression of temperature for the day, the mean range for the twenty-four hours being  $10^{\circ}$  by the *register* thermometer, while at Rome it is  $10^{\circ}$ , at Naples  $13^{\circ}$ , at Nice  $9^{\circ}$  by the *common* thermometer, which gives only the extremes observed during the *day*.

“ The steadiness of temperature from day to day also exceeds that of all the other climates. In this respect it is not half so variable as Rome, Nice, or Pisa, and is only about one third as variable as Naples. The degree of variableness from day to day at Madeira, is  $1^{\circ}.11$ ; at Rome it is  $2^{\circ}.80$ ; at Nice  $2^{\circ}.33$ ; and at London  $4^{\circ}.01$ .”

“ Nearly the same quantity of rain falls annually at Madeira as at Rome and Florence; but at Maderia there are only 73 days on which any rain falls, while at Naples there are 97, at Rome 117, and at London 178. The rain at Madeira falls at particular seasons, chiefly in the autumn, leaving the atmosphere, in general, dry and clear during the remainder of the year.

“ From this comparative view of the climate of Madeira, it must be readily perceived how great are the advantages which this island presents to certain invalids over the best climates on the continent of Europe. It is warmer during the winter, and cooler during the summer; it has less difference between the temperature of day and night, between one season and another, and between successive days; it is almost exempt from keen, cold winds, and enjoys a general steadiness of weather, to which the best of these are strangers: the rains are circumscribed, and generally fall at regular and stated periods. During the summer, that is from June to September, the almost constant prevalence of north-easterly winds maintains the atmosphere in a temperate state. The sirocco, which occurs two, or three times at most, during the season, and then continues for a few days only (seldom more than three), sometimes raises the thermometer in the shade to  $90^{\circ}$ . With this exception, the summer temperature is remarkably uni-

form, the thermometer rarely rising above 80°. In consequence of the regular sea-breezes, the heat is not so oppressive as the summer-heat in England often is. Close, sultry days are little known in Madeira; and there is neither smoke nor dust to impair the purity of the atmosphere. Such, indeed, is the mildness of the summer at Madeira, that a physician, himself an invalid, who has resided for some months on the island on account of his health, doubts whether it is not more favorable to the pulmonary invalid than the winter."

These particulars fully agree with my private accounts. It is very evident that this favored island is a most eligible place of resort for the consumptive invalid, embracing so many permanent advantages of residence, and requiring no more distant removal than the mountains, or to a more elevated situation in the neighbouring country, in the hottest weather. Such escape from the fatigue of travelling must, in many instances, be a great comfort and advantage to the weak patient.

*Laennec*, as I learnt from my conversations with him, thought very favorably of the influence of sea-air for the consumptive, and carried out this idea to a fanciful extent. He attempted to establish, in a small ward of the Clinical Hospital, an artificial marine atmosphere, by means of fresh seaweed. The results, though not very distinct, appear to have afforded him some little satisfaction. He thus expresses himself: "Twelve consumptive patients were subjected to this treatment for four months. In all of them the disease remained stationary; and in some the emaciation and hectic fever were sensibly lessened. Nine of them, considering themselves cured, left the hospital, although I must admit that only one of these afforded any real hope of cure. Our supply of sea-weed having failed towards spring, owing to the difficulty of procuring it, the disease from this time assumed a rapid progress in the three remaining patients, and speedily carried them to the grave.

"The exhalation from the sea-weed would but in a very small degree partake of the nature of a marine atmosphere."

Some delicate persons of the consumptive class (and others also) believe that the sea air has too exciting an effect, and tends



to produce cough and bronchial irritation; and does not prove friendly to the tranquillity of the nerves. Making all allowances for the operation of fancy, which is no less creative on the subject of climate than all other things, we are constantly made aware of the fact, that diversified influence of particular air on different constitutions is as remarkable as that of various kinds of food, and often quite contrary to what might be expected. This uncertain operation of air is especially seen in cases of asthma. One asthmatic sufferer will sleep with more comfort in the air of London, another in that of the country; and, certainly, the latter agrees best in the large majority of instances. The choice, therefore, of an air that shall most harmonise with the feelings, must always be the careful study of the individual invalid.

I repeat that when a consumptive patient is under the affliction of a most confirmed state of the disease, and especially when cavities have formed, he should make choice of one of the numerous favorable places of resort which England so happily offers to those desirous of a mild retreat; and I may enumerate as the principal: Torquay, Dawlish, Exmouth, Sidmouth, Penzance, Flushing, Clifton, Hastings; Isle of Wight, comprehending Undercliff, Bonchurch and Ventnor, &c.; lastly, I may mention Bournemouth\*.

TORQUAY.—When all the advantages of residence, embracing the comfort of the habitations, the excellence of provisions, and the extreme beauty of scenery, belonging both to sea and land, are considered, I know of no place in this country which, together with its mildness of climate, so much recommends itself as Torquay; and I speak from some personal knowledge of it, having resided there a short time.

There are various localities in Torquay and Tor, which will be respectively suitable to persons of different constitutions, and in different states of indisposition; some desiring an airy open spot; others, one much sheltered. A reference to the

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\* Of this new place of resort, a full and interesting account is given by Dr. Granville, the ingenious author of the "Spas of England and principal Bathing Places."

tabular statement at p. 255 presents a very favorable view of the mean temperature of this charming situation, so full of panoramic beauty—unrivalled, I think, in this country.

I have never heard a difference of opinion from those who have consulted me, respecting the merits of Torquay as a residence for the consumptive, bronchitic, or asthmatic invalid. Those who are in a state of nervous relaxation will require a more bracing climate.

CLIFTON ranks highly as a chosen place of residence, for those who desire to combine the beauty, both of immediate and surrounding scenery, with salubrity of air. It is open to the SW. and the British Channel. The air coming across the Atlantic would most probably possess a mean temperature, and would tend to equalise that of the land. On the north side, the nearest lofty hills are those of Malvern; on the north-east those of Cotswold, forty miles distant. The general character of the air is that of being clear, rather dry than moist, and bracing to the nervous system; but, from the great elevation of the place, it cannot be expected to possess the mildness of Torquay, or be so favorable to the consumptive patient, although much more so to those who require a tonic and invigorating air; and numerous would be the suffrages of those who bestow the highest praise on Clifton and its vicinity, for the restoration of their health and strength, after having suffered from languor and debility for many years in various other situations.

Sir James Clark observes, that “Clifton is built on the southern declivity of a hill, the greater part of which consists of carboniferous limestone and hard sandstone. These circumstances, with a scanty covering of soil, explain the short detention of moisture on the surface after rain, and the dryness of the air.”

Like every other place of great extent, it possesses within itself favorable and unfavorable localities. Of such, comparatively, I had the opportunity of forming an opinion, during my four months' residence in the last winter. Those who are subject to bronchitis may feel every confidence of receiving benefit and satisfaction in selecting for residence either the West Mall, the Royal York Crescent, or the Lower Cres-

cent; and many other situations sufficiently favorable might be mentioned.

The HOT-WELLS, once the favorite resort of consumptive invalids, is now almost matter of history; such is often the decree of fashion, rather than of reason, in respect to Watering Places. Witness the different reputation of Bath from that of former times, although its waters still possess an undiminished virtue, and the highest claim to medical approbation. The tepid spring of the hot-wells at Bristol as a drinking water, has yet many advocates; and I met with invalids who spoke in great praise of its qualities for improving the digestion, and invigorating the nervous system. The following is the latest analysis by the celebrated Chemist, Mr. Herapath.

*Bristol Hot-well Water.*

Contents of an imperial gallon of 70,000 grs.

Carbonic acid gas..... 8·75 cubic inches.

Nitrogen gas..... 6·56

	Grains.
Chloride of magnesium.....	2·180
Nitrate of magnesia .....	2·909
Chloride of sodium .....	5·891
Sulphate of soda .....	3·017
Sulphate of magnesia .....	1·267
Carbonate of lime existing as bicarbonate .....	17·770
Ditto magnesia ....	·660
Ditto iron .....	·103
Bitumen.....	·150
Sulphate of lime .....	9·868
Silica .....	·270
	44·01

Minute as is the proportion of iron in the water, its medicinal influence is not to be despised, nor will it be by the admirers of Homœopathy. Being in a state of such minute division, its action on the animal œconomy is heightened; and this observation applies still more to the Bath water, which has a higher temperature, and contains more carbonate of iron.



The close proximity of the Hot-wells to the river\*, although a strong tidal one, renders the residence on its very border, in my opinion, somewhat objectionable, and especially in warm weather. I own I should fear some slight unfavorable impregnation, even from the transient exposure of the offerings of the river on the shore at low water. The constitutions of those who live there may become so seasoned, that they find no inconvenience; and I know this to be the case with many persons residing constantly on St. Vincent's Parade. Although, therefore, this locality is so much recommended by its mildness and equability of temperature, from being so remarkably sheltered, I should prefer selected situations in Clifton itself for those affected with bronchitis. Doury Square, at the Hot-wells, is said to agree well with the consumptive.

HASTINGS has long enjoyed a high and well-deserved reputation as a place of favorable resort for consumptive invalids; and, within no very distant period, this has been shared by its near new neighbour St. Leonard's, a place of much beauty and great recommendations.

Hastings and St. Leonard's must be viewed as essentially the same climate; and sheltered situations are to be found for the delicate invalid at each place; the exact choice turning rather on private considerations, than those of a general character.

Many of my consumptive patients have made the selection of Hastings as a winter residence, and in preference to St. Leonard's, as it possesses some warmer and more sheltered localities. For the spring months, I have often heard both places objected to, on account of the sharp winds which then prevail, chiefly in March and April. I apprehend that those who continue their sojourn on this coast through the winter till May, ought to be very guarded in their clothing, and careful how they expose themselves in the treacherous weather of the spring.

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\* Although I state my own impressions, as I think it right to do, regarding the proximity to the river for residence, I wish to treat the question without prejudice, and therefore insert the following observations communicated to me by a very intelligent friend who resides at Bristol. "At first sight the Hot-wells might

Dr. Harwood\* thinks Hastings and St. Leonard's most favorable for invalids from November to the end of February.

The eligibility of different places for the improvement of health, is always a relative one in the particular case; and the choice of the individual must turn on many circumstances: as the convenience of access; the season of the year, and its prevailing character of weather; while the medical adviser will reflect upon the peculiar constitution of the patient, as requiring one kind of air rather than another; the nature and state of his disease, whether bronchitis or phthisis; and, if the latter, its exact stage and the force and nature of the symptoms. Whatever place may be fixed upon, the exact locality of residence must always be matter of consideration.

I quote the following from Dr. Young's *Essay on Climates*, appended to his *Introduction to Medical Literature*:

“In whatever situation the residence of an invalid may be fixed, it is of no small importance that the aspect and exposure of the house which he occupies should be selected with a view to the qualities of climate which he is desirous of obtaining. We have an illustration of the truth of this remark, in an observation recorded by Dr. Carrick, respecting the influenza of 1803.

“One of the most open and exposed of the buildings on Clifton Hill, is Richmond Terrace, which forms three sides of a parallelogram, pointing respectively to the east, south, and west; in the east side, not one family and scarcely an indi-

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be supposed subject to malaria, from its close proximity to the river; but when we observe the steep banks which, in its whole course, from Bath to the Severn, confine it to its smallest width, and notice that the direction of the wind is up the river two out of every three days, we must be satisfied that theory and practice must agree in the non-existence of malaria. By those who prefer lofty situations, Clifton would doubtless be chosen. This delightful and picturesque village has now become a fashionable and elegant town, as far as regards dimensions and inhabitants. The two combined, possess advantages but rarely to be met with: the Hot-wells, on or nearly on the level of the sea, with its mild and uniform temperature, and unrivalled scenery; and Clifton, within five minutes' walk, at 300 feet of elevation, with its consequent bracing air, yet tempered by the breezes of the Bristol Channel.”

\* On the Climate of the Hastings' Coast; viewed in reference to its effects in diseases of the Chest and Throat.

vidual escaped the complaint ; while on the south side, a great majority, both of persons and families, in all other respects similarly circumstanced, escaped it entirely.' Such facts as these are among the few which afford solid grounds for medical reasoning, and they deserve more attention as they relate to circumstances of continual occurrence, and of perpetual influence on our health and comfort ; and, in proportion as both the medical and the meteorological sciences become founded on a firmer basis, it cannot be doubted that their beneficial effects will be more and more experienced, as well in the preservation of health as in the treatment and cure of diseases."

It is obvious that the consumptive invalid should not trust to the sole influence of air for his improvement, in any situation, the most favorable ; unless, indeed, the change of air and scene prove so sensibly useful, that he finds his disease decreasing from day to day, in a manner to warrant the discontinuance of medical treatment. In less favorable circumstances, it is his duty, I conceive, to unite the employment of the best therapeutic means ; and if I should be so fortunate as to have taken a correct view of my subject, theoretically and practically, I should very consistently recommend inhaling, and such general measures as I have now proposed.

Towards several of the places whose salubrious air I have warmly recommended, I could have offered strong criticisms and objections regarding the domestic water in general use ; and I should hope that, whenever there may be such ground of serious complaint, no expense may be spared to search for good springs. I believe that artesian wells most commonly prove successful for the attainment of this valuable object.

A pure spring is distinguished by the coldness and the transparency of the water, its freshness and its freedom from much saline impregnation. Also it should not contain vegetable matter ; and hence, meadow and land springs are not the best sources of supply.

The diet which should be observed in particular climates, and this varying according to the season of the year, is a subject of importance always to be considered ; and, of course, must have reference to the constitution of the individual, and the nature and state of his complaint.



In forming an estimate of the salubrity of particular climates, and of the climate of particular places, there are many circumstances to be taken into consideration, besides the notations of the thermometer and barometer, and even hygrometer; I may mention, the nature of the soil, the elevation above the level of the sea, the contiguity to the sea, the vicinity of woods and mountains. And in regard to thermometrical statements, the mean of a month is not alone a safe guidance; as, although that may be high, there may be too large a number of cold and unfavorable days. The maximum and minimum of every twenty-four hours should be known; and the average state of the weather, and proportion of *sunshine*, so important to the health and spirits. There is one meteorological influence on human health, over which we have no control, and little understand; I mean the electricity of the atmosphere, which undergoes greater changes in some parts than others; the most, obviously, in places very subject to storms. Finally, it may be said of air, as affecting the health of individuals, that all must make some study for themselves, and judge of what suits them from their own experience. The most wholesome food will disagree with some persons; as Gall, the celebrated phrenologist, found mutton violently disorder him, in whatever way it might be dressed. His friends, thinking it was prejudice, had dishes of this meat disguised; but the effect of disagreement was the same. Other mild articles of food might be mentioned in the same way. So, with respect to the air of places, and different climates, we are sometimes disappointed in the expected good results, owing to the idiosyncrasy of particular constitutions.

I have alluded to the necessity of suiting the diet to the particular climate as one point of reflection; and I can only notice it in this general manner. The strong wines which we drink in England would be very heating and disadvantageous in Italy. Even the light wines of the country are usually drunk diluted, all over the Continent.

The reader who desires full and extensive information on the subject of climate at large, may consult with every advantage the able and comprehensive work of Sir James Clark, which has lately reached a fourth edition. Also "The Spas of

England," by Dr. Granville, is a work not only amusing, but instructive. The tables, which have been arranged with great care, will, I trust, be found to possess some interest. They may be relied upon for their accuracy; and I offer them with more confidence than my own. All of Italy, except those which relate to Rome, were kindly presented to me by Edward Cooper, Esq., of Makree Castle, County Sligo; a gentleman much distinguished in meteorological science: and those of Rome, by Dr. Deakin, long a resident Physician at Rome, who has published some valuable meteorological charts. I should mention that I have reduced the journal of calculations to weekly statements, as being, I think, sufficient to guide the reader in the information wanted; and they are thus rendered more convenient in the perusal.

In conclusion, I may observe of climate that it is of the most comprehensive signification, and may relate to a large quarter of the world, or to the most insulated spot. Within a very narrow geographical space, there may be several local climates.

It is an important point of consideration for the consumptive patient, that he should seek that locality which is the least subject to daily variations of temperature, and which possesses the largest average of sunshine; affording him the fullest opportunity of enjoying the pleasure and the benefits of exercise in the open air.

These are beautiful conditions of climate, and rank prominently with all the rest of which I have already spoken.

When under an external influence so happy, proper medical treatment is employed, and all possible good rules of health are attentively practised, it is reasonable to hope that such lungs as are only slightly affected with disorder should gradually become healthy; and that such as are more seriously diseased might at least acquire great amendment.

Let those then who are blessed with the means of putting in practice the wisest prophylactic principles of treatment, do so in good time; and thus judiciously endeavour to oppose the growth of the first seeds of disease, according to the ancient maxim of the Poet—oft quoted, but not the less appropriate:

*Principiis obsta; sero medicina paratur,  
Cum mala per longas invaluere moras.*

OVID.

*Selected from Meteorological Tables for Torquay, published by the late Dr. Barry.*

The Mean Temperature of Torquay during the months of January, February, and March, as deduced from Observations made for a period of six years, including the unusually severe Winters of 1830 and 1838, is as follows:—

YEAR.	JANUARY.	FEBRUARY.	MARCH.
1828	45.9	45.4	48.2
1830	34.7	39.5	46.8
1831	40.1	45.5	45.1
1832	43.7	44.6	45.5
1833	41.8	46.7	43.5
1838	35.6	38.7	44.9
Mean	40.3	43.4	45.6

On comparing notes with those who have kept a register in the most sheltered parts of the Town, we find that at least a degree and a half may be added to the above, which gives an average mean temperature of 41.8, 44.9, and 47.1, respectively.

As no comparison has been hitherto instituted between the mean temperature of Torquay, as calculated from data collected for several years, and that of Penzance, and the places on the Continent most frequently resorted to by Invalids, it may be interesting to give it here. The most correct estimates for these localities, and of which we shall avail ourselves, are those published by Sir James Clark, in the first Table in his work on Climate.

	JANUARY.	FEBRUARY.	MARCH.
Rome.....	47.6	49.4	52
Naples.....	46.5	48.5	52
Nice.....	45.8	49	51.4
Pisa.....	44	48.1	51.5
Torquay...	41.8	44.9	47.1
Penzance..	41.8	44.3	45.8
Pau.....	38.8	44.9	46.8



# ROME.

1844 Nov.	THERMOMETER.					BAROMETER.						HYGROMET.*			
	Max.	Min.	9, A. M.		9, P. M.	9, A. M.	3, P. M.	9, P. M.	ATTACHED THER.			9, A. M.	3, P. M.	9, P. M.	
			9, A. M.	3, P. M.					9, A. M.	3, P. M.	9, P. M.				
15	66	44	50	63.5	52	30.27	30.24	30.29	56	59	58	2	6.5	1	Cloudless.
16	65	45	48	65	54	30.25	30.20	30.20	56	58	58	0.5	6	0.5	Light fog, cloudless.
17	64	41	48	64	50	30.20	30.23	30.25	56	58	56	0	6	1	Ditto, ditto.
18	64	42	48	64	50	30.24	30.24	30.25	51	56	55	1.5	5	1	Cloudless.
19	65	42	47	65	51.5	30.30	30.27	30.30	54	56	57	2	7	2	Ditto.
20	65	40	16	65	49	30.30	30.25	30.26	54	56	56	1	7	1	Ditto.
21	63	45	46	63	51	30.20	30.10	29.95	54	55	56	0.5	4	1	Ditto, cloudy, rain in night.
22	61	42	53	61	50	29.73	29.64	29.64	55	57	56	0.5	8	1	Light fog, cloudless.
23	57	42	46	57	46	29.64	29.63	29.70	54	54	54	4	8	1	Lightly cloudy.
24	55	33	47	55	41	29.71	29.75	29.94	53	54	52	3	5	1.5	Ditto.
25	56	34	40	56	42	30.08	30.10	30.14	49	51	50	2.5	9	2	Cloudless.
26	51	44	40	50	47	30.17	30.15	30.15	48	50	50	2	4.5	1	Lightly cloudy.
27	54	41	46	54	48	30.14	30.10	30.05	50	51	51	1	2	1	Rain, rain, cloudy.
28	59	42	45	58	47	30	29.95	29.95	50	53	52	2.5	8	3	Cloudless.
29	57	38	46	57	45	29.94	29.90	29.90	51	52	52	2	6	1	Ditto, cloudy.
30	52	39	44	52	47	29.89	29.90	29.93	50	52	52	1	3	2	Cloudy, slight rain.
Dec.															
1	58.5	48.5	44	58	46	29.95	29.88	29.89	50	51	52	2	7	2	Cloudless, lightly cloudy.
2	57	41	41	57	44	29.93	29.924	29.93	50	52	51	2	6	1	Ditto
3	54	46	44	53	50	29.90	29.88	29.78	51	51	51	2	4	1	Light clouds.
4	50	45	50	50	48	29.75	29.75	29.874	52	52	52	0.5	1	1.5	Rain.
5	54	37	46	53	42	29.75	29.74	29.74	52	52	52	3	7	2	Ditto, overcast.
6	52	34	40	52	38	29.74	29.73	29.76	50	50	50	3	10	3	Cloudless.
7	46	33	36	46	35	29.74	29.73	29.79	48	48	48	4	5	3	Ditto.
8	49	40	40	49	43	29.79	29.78	29.73	46	47	47	5	7	1	Light clouds, rain.
9	47	42.5	45	47	46	29.68	29.63	29.65	48	49	49	1	1	1	Rain.
10	54	42	45	54	49	29.70	29.72	29.76	49	50	50	2	1	1	Passing clouds.
11	55	47	43	53	49	29.76	29.70	29.65	50	52	52	1.5	5	1	Gloomy, rain.
12	51	48	50	50	49	29.55	29.50	29.49	52	52	52	4	4	1	Rain.
13	54	44	49	51	46	29.50	29.60	29.69	52	52	52	2	4	1.5	Showery.
14	57	41	47	57	49	29.51	29.62	29.70	52	54	53	1	6.5	1	Ditto, cloudy.
15	58	41	44	57	48	29.85	29.88	29.88	52	53	53	1	7	2	Cloudy.
16	62	52	54	61	56	29.90	29.876	29.86	54	56	55	3	4	1.5	Lightly cloudy.
17	65	47.5	60	64	55	29.85	29.82	29.85	56	58	57	5	5	2	Ditto.
18	62	48	52	61	53	29.96	29.95	29.94	56	58	57	1.5	4	1.5	Ditto.
19	68	42	53	52	50	29.93	29.94	29.96	56	57	56	3	1.5	1	Light clouds, thund. & lightning.
20	57	46	41	57	49	30	29.96	29.86	54	56	55	1.5	3	2	Overcast.
21	52	48.5	50	52	52	29.74	29.60	29.53	54	55	54	5	2	1	Ditto, rain.
22	54.5	49	49	54	52	29.53	29.55	29.64	54	55	54	3	2	1	Lightly cloudy, rain.
23	57	47	50	54	53	29.82	29.89	29.98	54	55	54.5	3	5	2	Rain, lightly cloudy.
24	57	37	48	57	48	30.10	30.152	30.27	54	54	54	4	7	2	Light clouds.
25	54	34	40	54	39	30.31	30.324	30.31	51	52	51	2	5.5	1.5	Cloudless.
26	54	34	37	54	39	30.29	30.25	30.26	50	50	49	1	5	1	Ditto.
27	57	46	38	54	49	30.29	30.24	30.28	48	49	49	2	4	1	Light clouds.
28	56.5	46.5	48	54	50	30.33	30.33	30.36	50	52	52	2.5	4	1	Gloomy.
29	60	45	50	59	51	30.42	30.39	30.35	52	53	52	1.5	4	1	Ditto.
30	56	53	50	56	54	30.30	30.22	30.18	52	56	55	2.5	4	1	Light clouds, slight rain.
31	60	53	56	60	55	30.12	30.12	30.12	54	56	56	3	2	1	Gloomy.
1845															
Jan.															
1	61	52	55	60	55	30.12	30.06	30.06	56	57	56	3	6	1	Gloomy.
2	58	50.5	52	58	55	30.05	30.04	30	56	56	56	1	2	0.5	Rain.
3	58	41	52	55	48	29.95	29.94	29.93	55	56	55	2	3	1	Overcast, rain.
4	59	41	43	59	45	29.92	29.95	29.99	54	54	54	2	5	1	Fog, passing clouds, cloudy.
5	55	38	48	53	45	30.10	30.10	30.18	53	54	53	2	7	1.5	Light clouds.
6	58	35.5	42	55	40	30.27	30.25	30.26	51	53	51	2	6	1	Cloudless.
7	56	34	39	55	39	30.28	30.20	30.18	50	52	50	1	3.5	1	Ditto.
8	53	40	36	53	38	30.15	30.08	30.08	49	50	50	1.5	4	1	Ditto, gloomy.
9	53	45	45	52	36	30.08	30.07	31.15	49	50	51	3	4	1	Light showers.
10	54	48	49	54	50	30.22	30.24	30.25	52	53	53	2	4	1	Rain.
11	60	43	50	60	50	30.25	30.25	30.25	53	53	53	2	6	1.5	Lightly cloudy.
12	57	40	15	57	45	30.24	30.23	30.25	52	53	53	2	6	1.5	Cloudless, heavy shower.
13			42	56		30.23	30.16		52	52		1	5		Gloomy.

\* The Hygrometer is *Mason's*, and the degrees of difference between the wet and dry bulb are here registered.

TABLE, showing the weekly average of the maximum or greatest heat of the day, and of the minimum or lowest degree of the night, at Rome; and the mean temperature at Rome; also the mean temperature at Nice; for December 1842 and 1843.

Week.	ROME. 1842.			NICE. 1842.	ROME. 1843.			NICE. 1843.
	Max.	Minimum.	Mean.	Mean.	Maxim.	Minimum.	Mean.	Mean.
1	58	43	50.5	57.1	55.4	37.3	46.3	54
2	57.3	42.4	49.8	56.2	54	37.3	45.6	54
3	54.2	36.1	45.15	53.6	52.3	34	43.15	53
4	55	38.30	46.65	52.5	52.3	32.1	42.2	52.2

*Obs.*—It was proposed at first to give the *daily* thermometrical and barometrical statements, as they were actually furnished; but, upon consideration, the above method (which is a weekly calculation) has been adopted, as being less voluminous, and better suited to the comprehension of the general reader. The readings of Mr. Cooper were taken at four different times of the day. In every instance the thermometer was facing the North, and the estimates are according to Fahrenheit.

TABLE, showing the weekly average of the maximum and minimum heat of the week at Pisa and Rome; and the mean temperature at Pisa, Rome, and Naples; together with the *mean* barometrical pressure at Pisa and Rome; for January 1845.

Week.	THERMOMETER.							BAROMETER.	
	PISA.			ROME.			NAPL.	PISA.	ROME
	Max.	Min.	Mean.	Max.	Min.	Mean.	Mean.	Mean.	Mean.
1	51	43.2	47.1	57.30	41.91	49.60	52.6	30.165	30.5
2	52	43.4	47.7	55.75	45	50.37	52.7	30.215	30.14
3	58.1	51.7	54.9	59	44.6	51.8	53.8	29.828	29.84
4	54.4	42.5	49.4	56.2	37	46.6	49.4	29.880	29.64

TABLE, showing the weekly average of the maximum, minimum, and mean heat, at Pisa, Rome, and Chiswick in England, together with the mean heat, as observed at Naples, for the month of February 1845; with the mean height of the Barometer at Pisa, Rome, and Chiswick.

Week.	THERMOMETER.												BAROMETER.		
	PISA.			ROME.			CHISWICK.			NAPLES.			PISA.	ROME.	CHISW.
	Maxim.	Minimum.	Mean.	Maxim.	Minimum.	Mean.	Maxim.	Minimum.	Mean.	Maxim.	Minimum.	Mean.	Mean.	Mean.	Mean.
1	49.5	38	43.7	53.92	83.12	46.02	42	25	33.6	54	36.8	45.4	29.56	29.18	30.15
2	42.8	33.5	38.1	48.85	36.25	42.55	36	24	30	55.2	38	46.6	29.83	29.59	29.997
3	42.3	32.6	37.4	49.8	34.27	42.03	41	22	31.5	56	36.5	46.2	29.75	29.35	29.973
4	49.2	40.1	44.6	56.39	42.1	49.24	46	32	39	60	41.5	50.7	29.77	29.78	29.754



TABLE, contrasting the weekly average of the maximum, minimum, and mean heat at Pisa with that of Rome, Naples, and Chiswick in England, for the month of March 1845; together with the mean height of the Barometer at the above places for the same month.

Week.	PISA.			ROME.			NAPLES.			CHISWICK.			
	THERMOMETER.			THERMOMETER.			THERMOMETER.			THERMOMETER.			
	Maxim.	Minimum.	Mean.	Maxim.	Minimum.	Mean.	Maxim.	Minimum.	Mean.	Maxim.	Minimum.	Mean.	
1	51.1	43.1	47.1	29.76	46.2	53.4	29.68	43.6	54.6	39.5	24	31.7	29.92
2	51.9	43.4	47.6	29.74	47.1	56.3	29.74	47.2	57.9	39.2	24.2	31.7	29.93
3	58.9	51.7	55.3	29.72	50	59.2	29.70	47.7	60.5	41.1	23.2	32.3	29.87
4	54.4	42.5	48.4	30.22	45.2	54.2	30.10	40.8	51.7	57	40.3	48.6	30.01

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- 258, Table of Rome, line 1, for 83,12 read 33,12.

*Contents, xiii l 31 for tar-chloride 2. ter &c*  
*p 57 l 6 for mucus read mucous*

ERRATA.

- Page 55, line 30, for Hussen read Husson.
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