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ON CONSUMPTION,

AND

TUBERCULOSIS OF THE LUNGS:

THEIR DIAGNOSIS, CAUSES, AND PREVENTIVE AND GENERAL TREATMENT.

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"Dum spiro, spero."

SECOND EDITION.

EMBODYING THE MODERN VIEWS ON THESE DISEASES WITH CASES TREATED BY THE AUTHOR.

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PREFACE.

SINCE more than one-eighth of the entire mortality in this country is due to Consumption, the acquisition of any knowledge that will augment our powers of prevention or restoration must prove of the highest value. Hence, the previous edition of 5,000 copies being exhausted, we have embraced the opportunity thus afforded, thoroughly to revise this work, and herewith present the results of the most recent investigations as to the causes, prevention, and cure of that most fatal disease.

On the doctrinal points, about which considerable differences of opinion exist in professional circles, we lay no great stress; but we invite special attention to the chapters on the *Causes of Consumption* (pp. 25—46), the *Hygienic Measures* (pp. 72—98), and the *Medical Treatment* (pp. 98—108). Herein we have shown how to avoid the causes which perpetuate a disease that brings great and lasting misery into the families it invades. We have great confidence in the principles and practice enunciated, and earnestly hope that the information we have conveyed on the nature of an ever-prevalent disease, with the view to its prevention and correct treatment, will not be in vain.

E. H. RUDDOCK.

2, *Finsbury Circus, London,*
July, 1873.

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ON CONSUMPTION, AND TUBERCULOSIS OF THE LUNGS.

I.—Introductory.

Object of the Writer.

In the following pages some practical observations are offered on a subject in which, unfortunately, most persons are deeply interested, there being few families of which some member, near or remote, has not fallen a victim to Consumption, or Tuberculosis. The most powerful influences which tend to engender and develop these maladies are pointed out, so that, by avoiding the former, the accession of the latter may be averted. These influences are of wide extent, and associated, not only with our closest social relationships, but with our habits as citizens of the world.

Popular Style.

As far as possible, technical phraseology and mere hypothetical statements are omitted, preference being given to points which have been amply confirmed by extended observation, and which non-professional readers may study with interest and profit. As it is impossible, however, to avoid *all* technical expressions without running the risk of obscurity or ambiguity, the chief technicalities used are either explained parenthetically in the text, or in the Index at the end of the

treatise. The subject is especially adapted for popular consideration, inasmuch as tubercular and consumptive diseases spring from causes which only the public can control. Nothing is so likely to raise the general standard of health, and to lessen the yearly loss of life from preventible causes, as a more general recognition of those laws which regulate health, but of which the great majority of persons are ignorant or unmindful. It is true, legislation has done something in this direction, and may yet do more; but legislation must ever be comparatively powerless to effect any substantial abatement of the annual mortality until public hygiene is more generally taught, and the *great body* of the people come to recognise, in all its bearings, the intimate relationship existing between a *sound mind* and a *sound body*, and all surrounding agencies.

Before proceeding to the more practical portions of our subject, a brief sketch of the anatomy of the breathing organs may enable some of our readers better to apprehend what is to follow.

II.—The Anatomy of the Lungs.

General Conformation of the Lungs.

The lungs are vascular, spongy organs, in which the blood is purified by atmospheric air, drawn into them by the process of breathing. They are contained in the chest, are two in number—a right and a left, one on each side of the heart—and exactly fit the cavity that encloses them. They are conical in form, hung up, as it were, at the ends of the two main

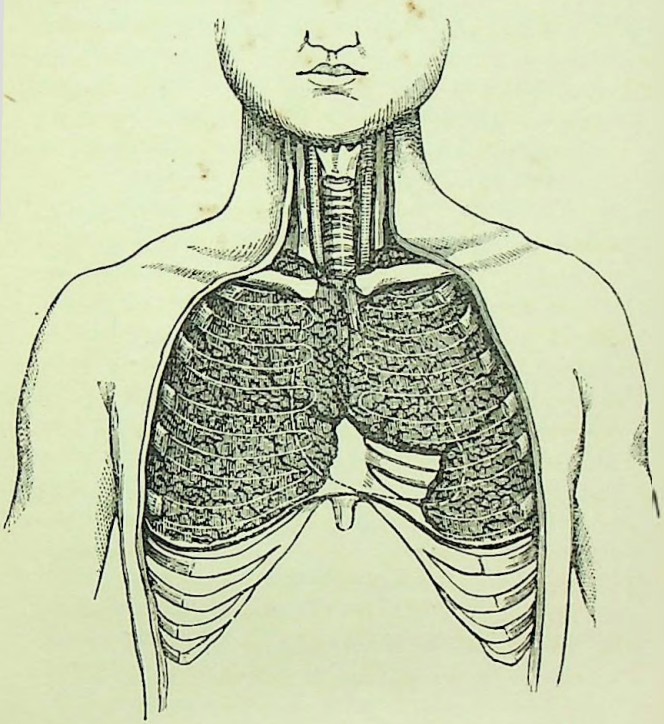

FIG. 1.

THE ORGANS OF RESPIRATION IN THEIR NATURAL POSITION IN THE CHEST.

In the centre, beneath the chin, are the larynx and trachea, and on each side the bloodvessels which carry the circulation through the brain. The lungs are shown dark mottled, resting upon the diaphragm (represented by a dark curved line), the summits rising just above each collar-bone. The position of the heart is also shown by a dotted line, the gap in the left lung being for the point of the heart.

divisions of the windpipe, their apices projecting into the neck above the collar-bones, and their bases resting on the diaphragm, which is a transverse septum in the body, and separates the lungs from the liver and stomach. The illustrations, pages 7 and 9, will enable the non-medical reader more fully to understand the description we have given.

The rough anatomy of the lungs may be very fairly studied by examining the whole breathing apparatus as it may often be seen in a butcher's shop, under the name of the "lights." If looked for carefully, there may be seen close to the root or back part of the tongue a little lid: this is the *epiglottis*, or lid of the larynx, and protects the vocal cords contained therein. It is a real lid, and opens and shuts to let the air in and out. But as air could get in and out without a lid, we must here explain why the epiglottis exists. Just behind it is the œsophagus or gullet, which is a muscular canal leading from the mouth to the stomach. Now when we swallow our food, it has to pass from the back part of the throat to the gullet, and in so doing it must go over the entrance to the air-passages—that is, over the larynx. If there were no cover to this, the food would fall into the air-passages and choke us. The epiglottis, however, prevents such a serious mishap by firmly closing on the top of the larynx, and allowing the food to glide over it into the gullet. If examined, the epiglottis will be found not unlike a little tongue, pointing backwards. It is somewhat hard, and very tough: it may be seen at the root of a calf's tongue as it is served at table. Next lift up the epiglottis, and look down into the little box which it covers: this is the

larynx, containing the vocal organs. As it stands out in the neck, the larynx has been called *Adam's apple*.

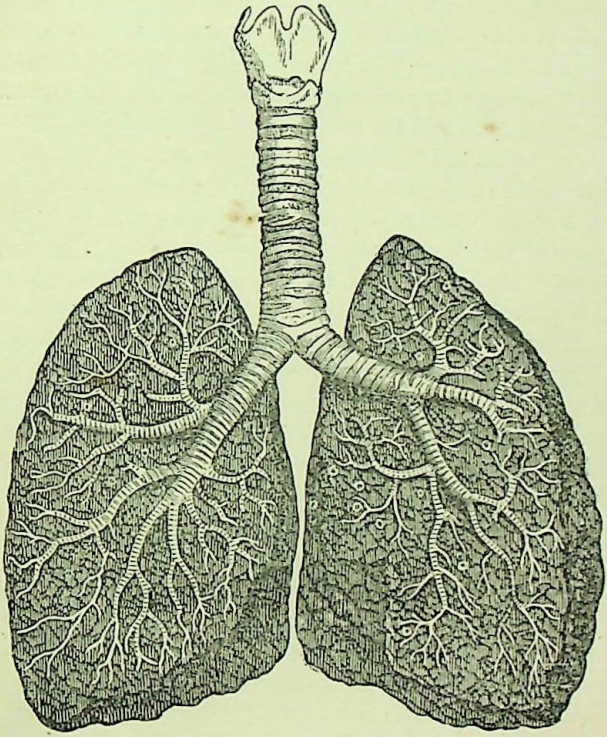

FIG. 2.

THE LUNGS IN HEALTH.

Larynx, Trachea, Bronchi, and Lungs. The illustration shows the divisions and subdivisions of the bronchi, and the cell-structure of the lung-substance.

Now look at the front of the larynx, and you see it is continued downwards as a single tube, composed of

little half-rings of cartilage, each being joined to the next by ligamentous tissue : this tube, which proceeds downwards from the larynx, is called the windpipe or the trachea. You can feel the larynx or Adam's apple in your own neck, just below the chin : in some persons it is remarkably prominent. As you continue your inspection, you will find that the trachea divides into two branches, called the bronchi,—one to the right, the right bronchus ; and the other to the left, the left bronchus. At the ends of the bronchi you see the lungs. If you take hold of them and squeeze them in your hands, you will find, if they are healthy, that they yield a little, and are crisp, for they contain air. If you wish to prove this, get a pair of bellows, put the mouthpiece through the larynx into the trachea, fasten a bit of string tightly round the trachea and mouthpiece, and if the lungs are complete and unwounded you may inflate them. Now you may observe that the right bronchus is wider and shorter than the left one ; and that each lung is shaped something like a cone, having the smaller end turned upwards, the base downwards, and its inner side much flattened or hollowed. Observe that the base is broad, concave, and of a semilunar form. The outer surface is adapted to the ribs; the inner is hollowed out to make room for the heart. In our bodies, the apices of the lungs reach up into the root of the neck, just above the inner ends of the collar-bones. Hence you may have noticed that when a physician examines the lungs, he places his stethoscope above, as well as below, those bones. Compare now the right lung with the left, and you will see that fissures appear to divide each of them into portions. These

divisions are called *lobes*, and each lobe is composed of lobules. The right lung is larger than the left (on an average as eleven to ten), and it has three lobes. These are called, respectively, the *upper*, *middle*, and *lower* lobes. The left lung has but two lobes—an *upper* and a *lower* one. The surface of the lungs is smooth and polished, and covered by a thin membrane, termed the pleura, which also lines the chest, and by its moist nature allows of the free movement of the lungs as they are alternately expanded and emptied by the acts of breathing. Each lung has its own pleura. When one of these pleuræ is inflamed we have the disease called Pleurisy. Keeping in remembrance the names of the parts, take a knife and slit up the larynx, trachea, and bronchi, and observe that they are all lined with mucous-membrane, a continuation of that which is seen in the mouth and throat. Run your finger along it, and you will find it smooth, and covered with a slimy secretion called mucus: hence the name. Now turn again to the bronchi, mark how each bronchus is divided and subdivided, something like the branches of a tree: the larger branches are termed bronchia, the smaller ones, stretching out all through the lungs, are called bronchioles.

Microscopic Anatomy of the Lungs.

Now this process of subdivision goes on until the bronchiolar branches have become exceedingly minute, and finally terminate in microscopically minute cells, termed air-cells, or alveoli. You will obtain a good idea of the microscopic structure of the lungs by taking a large bunch of small grapes, and imagining them—stems and fruit—all hollow. Now call the principal stem the

bronchus, the smaller branches the bronchia, the smallest the bronchioles, and the grapes themselves the air-cells, or alveoli. In this manner you have a fair conception of the minute structure of the lungs.

III.—Physiology of the Lungs.

The air, entering at the mouth or nostrils, and traversing the pharynx, passes into the larynx, the trachea, the bronchi, the bronchia, the bronchioles, and finally reaches the alveoli. It returns by the same channels. The parts are termed collectively the air-passages. Breathing-in is called *inspiration*. Breathing-out is called *expiration*. Both these processes together constitute *respiration*.

Why do we respire, or breathe? For this reason. There is a certain gas in our atmosphere called oxygen, without which we cannot live, and respiration is the means of bringing the oxygen into communication with the blood. If we breathe air containing too little oxygen, serious embarrassment, or even fatal suffocation results. If the air-passages become choked up with mucus, so that air cannot get in, we likewise suffocate from the want of oxygen. When we eat, and laugh or talk at the same time, the epiglottis is opened by the air, and a bit of our food is apt to get into our larynx—"it goes the wrong way," as we generally express it. We begin to cough violently to get the intruder out. This coughing is nature's way of keeping these passages clear for the air, so that we may get our oxygen, throw off our carbonic acid, and not die of suffocation. Further,

there is a gas in our blood called carbonic acid, which results from the vital process of combustion, by which our high animal temperature is maintained. This carbonic acid must be got rid of, or we are in danger of being poisoned by it. Nature's way of getting rid of this carbonic acid is (chiefly) by the lungs. We see, therefore, that the inspired air takes in the oxygen, without which we cannot live, and the expired air takes out the carbonic acid, which would poison us if retained. The fundamental idea of breathing is therefore simply this,—that between the lungs and the atmospheric air there is a continual process of exchange going on : the blood has carbonic acid and wants oxygen, the atmospheric air has oxygen and wants carbonic acid (for the use of vegetables, whose food it is); and so a constant interchange takes place. We are continually reproducing carbonic acid by our vital processes : yet we must expel it, or death results. We are continually using up oxygen in the organism, and we must have constantly renewed supplies. Hence the necessity for uninterrupted respiration, by which the interchange is effected, and to effect which the lungs constitute a most admirable apparatus. When a person has lost a part of his lungs by Consumption, the remaining part must perform an excess of work ; and that is one reason why consumptive patients breathe more rapidly than persons in sound health.

IV.—The Lungs in Disease.

During the last few years the doctrine has been forcibly established by the investigations of Niemeyer,

Dr. Andrew Clark, Virchow, and others, that inflammation constitutes the most potent cause of every form of Consumption.*

Pneumonia or Inflammation of the Lungs.

The intimate connection affirmed to exist between Pneumonia, and Phthisis of the common form, renders it desirable that the former disease should be explained. There are three principal kinds of Pneumonia, viz., croupous, catarrhal, and interstitial. When an inflamed part of the lungs becomes choked up by congestion of blood and effusion of proliferated cells, it loses its spongy texture, and a bit of it, cut off and thrown into water, *sinks*, whereas a piece of healthy lung floats. This choked-up state is termed consolidation, and the part has become inefficient for breathing; but this consolidated part may be gradually restored to its former permeable condition; or, on the other hand, it may undergo *caseous metamorphosis*. It is most important that this expression be thoroughly comprehended. It indicates a degeneration of a solid part—of any part, not of tubercle alone—into a cheesy mass which acts locally as if it were a foreign body, and produces irritation, and which if dissolved and absorbed into the blood becomes a violent poison. Now when such consolidated pneumonic product is present in an otherwise healthy person it undergoes *fatty degeneration*, then liquefies, and is taken up by the

Caseous Metamorphosis.

* It is due to the reader to state that some physicians still believe that inflammation does not produce Phthisis, unless a special predisposition to it exists; and, further, that in very many instances tubercles are deposited, as the result of deteriorated health, without any pre-existing inflammation.

absorbents, and carried off to the blood, to be made use of in some other part of the organism. In this way the solid part regains its normal permeability. When, on the other hand, such product is present in a weak or unhealthy person, it is apt to undergo *caseous degeneration*, the caseous mass then irritates the neighbouring parts, causes suppuration, and finds its way into the air-passages, to be finally expectorated. Now if the patient's health at this stage be improved as soon as the cheesy mass has been completely ejected, the vacancy may soon be replaced by connective tissue, and there is so far an end of it. But if the patient remain in a low state of health, notwithstanding that the mass finds a way out, the destructive process spreads to other portions of the lungs, and Consumption is set up.

There is no one special variety of Pneumonia which sets up Phthisis; any form may leave a product which, under unfavourable circumstances, is liable to be transformed into a cheese-like substance, and finally to break up into a cavity.

Caseous degeneration, however, is not necessary to originate Consumption; a simple suppurative process may suffice. The pneumonic product may also *calcify*, or result in fibrosis, or syphilitic gummata. If the cheesy metamorphosis does take place, and the disintegrated matter enters the blood, then is developed a constitutional disease of a most deadly nature, viz., *Acute Miliary Tuberculosis* of a whole series of organs, including the lungs. This is not, however, Consumption, but both diseases may co-exist.

Miliary Tuberculosis.

V.—Varieties of Consumption.

Common Form. There are several kinds of Consumption. Firstly, the *common form*, which results from the suppurative breaking up of an inflammatory product after the caseous degeneration just described, and involving the surrounding lung-tissue. This is the most usual kind, and may result from Pneumonia, Bronchitis, etc. Secondly, we have *Tubercular Phthisis*, in which tubercles are formed in the mucous membrane lining the air-passages, and not in the substance of the lungs. These tubercles are not capable of higher organization, but quickly degenerate into a cheesy mass, as before described, which irritates the contiguous tissue, excites cough, suppurates, and involves the surrounding lung-tissue, constituting Consumption.

The common form of Phthisis is what we mostly have to deal with, and is Consumption *par excellence*. Tubercular Phthisis is comparatively rare, and even more grave than the ordinary form. Besides these, we have hæmorrhagic, embolic, syphilitic, and fibroid Phthisis; all more or less rare, and consequently not within the scope of this treatise.

Preventibility of the Common Form. The most frequent cause of this form of Phthisis is, according to some modern authors, a neglected chronic Pneumonia, or an acute Pneumonia, occurring either in a debilitated subject, or under bad hygienic or other conditions. The only essentials, therefore, for its prevention are that the mal-nutrition of the debilitated subject should be corrected, that the laws of health be obeyed, and when an inflammatory process affects the lungs that it should be properly treated until the *consolidations*

have totally disappeared, and perfect health be restored. Herein lies a great source of danger ; a person takes a prolonged and deep-reaching chill, and Inflammation of the lungs results ; he is treated until pain, fever, and general *malaise* have disappeared ; then, supposing that the cure is complete, he pays no further attention to it until the consolidated part has undergone caseous degeneration, and broken its way into the bronchi, or become absorbed, and Acute Miliary Tuberculosis be developed.

Curability of the Common Form. Of the curability of common Phthisis there can be no doubt, provided it be taken in time, the proper remedies administered, and hygienic conditions duly observed.

Phthisis and Scrofulosis. We may safely affirm that precisely the same condition of mal-nutrition underlies both these maladies, for though there is at first an apparent hypertrophy of the glands in Scrofula, it is no true hypertrophy of the normal organism, but rather one of a low type, which finally results in a *consumption of the glands.* They are twin sisters of constitutional, hygienic, or nutritional misery.

Preventibility of Tuberculosis. If the state of nutrition be improved, and the conditions necessary for the production of caseous metamorphosis and the formation of tubercle be obviated, then Tuberculosis cannot occur.

Its Curability. But we must candidly confess that when tubercles have once been deposited in consequence of caseous toxæmia, then medical science, as at present developed, is comparatively powerless to effect a cure. There is probably not one single indubitable case of this veritable Tuberculosis which has been cured medicinally,

or in which a spontaneous cure has resulted. However, we do not despair even here. What we know not to-day we may know to-morrow. It is not long since we held erroneous views of the nature of Phthisis; indeed, it is evident from a recent discussion (April, 1873), occupying three meetings of the Pathological Society, that nothing like a uniform conclusion has yet been arrived at by the profession in general as to the nature of tubercle; but we are nearer to a knowledge of its true nature now, and therefore, we trust, nearer its cure and prevention.

The Constitutional Origin of Phthisis.

The doctrine that Pulmonary Consumption is a purely constitutional disease, the result of a specific morbid product, from a peculiar inherent tendency or fault, has recently been proved to be incorrect. We do not indeed doubt that some persons—the weak and puny—are more liable to Consumption than those who are strong and well developed; but we also know that these same debilitated persons are more liable to a host of other complaints. Phthisis, then, is not a specific morbid constitutional entity, as we, and with us all the highest authorities in Europe, formerly taught; but it is a peculiar state of mal-nutrition, with or without mal-development of the chest and its contents, which constitutes Phthisis. As such it is preventible, and, if taken in time, curable. Herein lies the great advance now made in this branch of medical science. Let us be thankful that so much light has been thrown upon the subject. It inspires us with hope for the future of our noble calling. Having discarded the doctrine of a constitutional taint,—a cachexia, a diathesis, a mysterious something lurking in the individual *ego*,—which Con-

sumption formerly occupied in our minds, we now see it in the clear light of mal-nutrition. It *is constitutional*, it *is systemic;* the lung-disease is only a local manifestation of a general degenerate condition—an effect of which mal-nutrition is the cause. In short, it is a *condition of defective health, which is preventible and curable.*

The *cause* of Tubercular Consumption—depression of the vital powers, leading to systemic disorder—and the *course* of the disease, marked by remissions of the distressing symptoms as the constitution improves—all alike point to the systemic origin of the disease: the common form of Phthisis may, however, begin and continue throughout its whole course a purely local disease of the lungs, and may result in a spontaneous cure, or become fatal, as soon as there is not enough healthy lung-tissue left for the proper aëration of the blood; or Tuberculosis may supervene from caseous toxæmia, and hasten the fatal issue.

Evidences. Proofs of the constitutional nature of Phthisis need only to be briefly stated. Any condition of nutrition is necessarily constitutional; so also is mal-nutrition, or Consumption. Yet very many of the symptoms, formerly referred only to the diathesis, are evidently the effects produced on the constitution by the local lesions in the lungs, which have impeded the functions of these organs.

A physical examination of the chest will generally detect the presence of the common form of Phthisis: but Tubercular Phthisis will escape detection if we rely on the physical examination of the chest alone. Hæmoptysis is an effect of both these kinds of Phthisis. When the blood is expectorated it cannot cause Con-

sumption, but if hæmorrhage takes place into the lungs the blood-clot may become a cause of Phthisis of any variety.

Elevated Temperature.

Heightened temperature of the patient also affords an important sign of the nature of Phthisis. Dr. S. Ringer's observations, made on patients in University College Hospital, are very confirmatory of this point. He has been able to detect a persistent elevation of the general temperature of the body as the invariable accompaniment or precursor of the growth of tubercle in any organ. This elevation he has found to exist for several weeks before diminished weight, or other physical signs, indicating Tubercular Phthisis of the lungs, could be appreciated. After a certain time, however, caseous infiltration became apparent by physical signs in the upper portion of the lungs. The writer has repeatedly verified these observations in cases under his own treatment, and his prognosis has been modified in accordance with the strength of the evidence thus furnished. But in the common form a careful examination will discover the condensation of lung-tissue, or a cavity in the organ, or some other physical change there.

Post-mortem Examinations.

Post-mortem examinations of fatal cases prove that Tubercular Phthisis is not a mere disease of the lungs, and afford evidence that these organs only furnish a specially suitable nidus for tubercular exudations; for, at the same time, various other organs of the body exhibit proof of the action of this destructive agent. In short, scarcely any organ escapes, and at last the patient succumbs not to one, but to many local affections.

VI.—Pathology of Consumption.

The Common Form. In many instances it is the already-described termination of Pneumonia in caseous infiltration that constitutes the morbid starting-point. In Bronchitis, too, when the air-cells of a lobule, or of a lobe, become filled with morbid secretions, and are thus rendered impermeable to air, caseous infiltration, irritation, suppuration, breaking-up of the consolidated part into the bronchi, and expulsion of the *débris*—all these processes may follow, and destroy the lung-tissue. Later on, Tuberculosis may be superadded.

Tubercular Phthisis. In this species of Phthisis the destruction of the lung is caused by the breaking down of Tubercles, and by the *secondary* Pneumonia or Bronchitis, which follows on the Tuberculosis. (The tubercle generally first develops in the mucous-membrane of the bronchi, as was first demonstrated by Virchow.) Even in the trachea and larger bronchial tubes we often find extensive granular patches, consisting of innumerable miliary tubercles, or ulcers with the characteristic marks (according to Rokitansky) of primary or secondary tuberculous ulceration. In addition to this, however, in the finer bronchi, besides the evidences of purulent catarrh, we find small whitish or yellowish nodules, and, upon examination of a well-prepared section under the microscope, we can satisfy ourselves that the development of the tubercle has spread from the bronchus to its lateral and terminal alveoli (*Niemeger*). The pneumonic process by which the tuberculosis is attended in this tubercular form is much less extensive, as a rule,

than the process which accompanies that kind of Consumption which is solely due to chronic Pneumonia, or than the process on which secondary Tuberculosis supervenes, at a late period, when induration and destruction take place,—a circumstance of some importance in the diagnosis of Tubercular Consumption.

Tubercles. We will here add a few remarks on the tubercle itself. Tubercles are of two varieties, the *grey* and the *yellow:* the former is semi-transparent and somewhat firm; the latter of a dull-yellow colour, and of a cheesy consistency. The yellow has in it far greater elements of danger; softening takes place earlier, and it has a greater tendency to aggregate in masses. Frequently the two varieties are mixed, but as cases advance towards a fatal termination, the yellow appears to gain the ascendency. Many pathologists are of opinion that the grey is a previous form of the yellow, into which it passes after the lapse of an uncertain time. Tubercles are usually deposited slowly and painlessly, during some period of defective health; and after remaining latent for an indefinite time, they waste, if the general health improves; or soften and cause abscesses and other destructive changes, if the health deteriorates.

Course of Tubercles. The practical conclusions of Lænnec, Clark, Bennett, Pollock, and other careful observers are, that if the further growth of tubercle can be arrested, those already existing may diminish in size, become absorbed, and the lung-tissue cicatrize; or they may remain dormant, without exciting any symptoms, after undergoing a process called *cretification*, in which the animal portion is absorbed, the earthy only

remaining. Frequently, however, from Indigestion, defective hygienic conditions, Bronchitis, or other causes, tubercles undergo a succession of changes: they become soft, first in the centre, that part being the oldest and farthest removed from living influences; then, like foreign bodies, they excite inflammation, suppuration, and ulceration in the neighbouring lung-tissue; the products being usually coughed up, and so expelled. The groups often continue to enlarge by fresh deposits till several groups communicate together, and form an abscess, or in medical language, a *vomica* (see Plate III., p. 62); this bursts, and discharges its contents into an adjacent bronchial tube, and the matter is conveyed into the windpipe, and thence to the mouth, to be evacuated. Unlike Cancer, tubercle contains within itself no elements of growth, and is only capable of extension by fresh exudations of the morbid materials. Unless the disease be arrested by remedial measures, other abscesses form and unite, till the lung-substance is so diminished in volume, and its continuity so completely destroyed, as to be incompatible with life, and the patient dies from exhaustion. In other cases, as before explained, as the result of treatment, and good hygienic conditions, the tubercular matter, with the inflammatory products it excited, are removed by expectoration or absorption, the tissues around the cavity contract and obliterate it, the general health is restored, and so the disease is cured.

VII.—Acute Miliary Tuberculosis.

Strictly speaking, this disease is not Consumption at all, but it so often steps in, in the later stages, that we

cannot well pass it by. It is not to be confounded with Galloping Consumption; it depends upon an eruption of tubercles in the lungs as well as in most other organs, and is accompanied by the symptoms of an acute disease. In the great majority of cases, the disease is seen in persons whose lungs and other organs contain old caseous deposits. This fact, and the circumstance that the symptoms and course of acute Miliary Tuberculosis bear a strong resemblance to those of the acute infectious diseases, would make it appear highly probable that the malady arose from infection of the blood by the caseous deposits. True it is that it now and again occurs apparently unpreceded by any such caseous product, but this does not contradict the hypothesis, as an infection from person to person is quite possible.

VIII.—General Considerations.

Importance of Lung Affections. Since Phthisis may arise from pneumonic, bronchitic, embolic, hæmorrhagic, syphilitic, and other products, having their origin in the lungs, it must be obvious that any and every pulmonary affection should be regarded as important, and detected early, with a view to proper treatment.

The Phthisical Habit. There is a peculiar build of the chest and other parts of the body which experience has stamped as belonging to the consumptive. No *necessary* connection, however, exists between this habit of body and Consumption,—that is to say, a person of phthisical habit will not *inevitably* die of

Consumption. But with a narrow chest we have feebly developed lungs, and experience tells us that a feeble part of the body is more subject to disease than a strong one, and, being thus subject, may easily give way to it. In fact, it is a well-known law that a strong organ can resist more strain than a weak one. It is only right to add that a person not of phthisical habit may, nevertheless, die of Consumption.

Phthisical Diathesis.

The phthisical habit is simply mal-development, and the phthisical diathesis is simply mal-nutrition, the former resulting from the latter. Phthisis does *not* necessarily go on from one generation to another, until the whole consumptive races be no more, from sheer want of vitality; the condition may be ameliorated in the parents, after which they may beget relatively sound offspring, and in one or two generations the phthisical tendency may be eradicated. On the other hand, parents usually of robust health may, when debilitated, beget children having a decidedly phthisical propensity. The phthisical diathesis is therefore not an immortal entity, always reproducing itself; but it is simply a condition of mal-nutrition, often of untraceable origin.

IX.—Causes of Consumption.

Necessity for studying Causes.

This is a most important Section of our subject, for in it will be suggested points of a highly practical bearing; and to no department could popular study be more profitably directed. Happily, we now know something of the direction in which we should look, and, consequently,

in which we should work, in order to trace out the causes of Consumption. The more general diffusion of the knowledge thus acquired is sure to be attended with a great reduction in the mortality of Phthisis. Just as Dysentery, Ague, Leprosy, and other diseases have declined in their intensity and fatality since their causes have been better understood, so a correct appreciation of the causes, and the various conditions which favour the development of Consumption, will wonderfully diminish it, and the health, happiness, and longevity of the community be correspondingly increased.

Predisposing and Exciting Causes.

There are two kinds of Causes to be considered,—those which *predispose* to, and those which *excite*, Phthisis. The former of these is coeval with birth; and when this hereditary influence is very intense, as when both parents are affected, there is great danger of the disease being brought into activity in the offspring. A person, however, *may have even a strong predisposition to Consumption*, and yet *not* fall a victim to it, if he can, under favourable circumstances, steer clear of those *exciting causes* which determine its accession.

a. Hereditary Predisposition.

By this is meant the transmission, from parents to children, of a liability to the disease; this is undoubtedly a common and fruitful predisposing cause of the malady. The potency of this influence may be inferred from the fact that, in its absence, thousands pass through the most adverse circumstances with exemption, and even reach a considerably advanced stage of life. Yet such as are capable

Power of Hereditary Influence.

of resisting lung-diseases are often laid low by others from which the consumptive may be free. In one person a cold may produce Pneumonia resulting in Phthisis, while in another a similar cold may produce Acute Rheumatism resulting in Heart-disease; and again, a third may, although exposed to similar circumstances, not take cold at all. A person of phthisical habit begets a child who remains healthy all his life, but the latter has a child that dies of Consumption. Does this prove that the parent transmitted the disease to the child? Certainly not; for privation, excess, errors in habits of life, sedentary occupations, the pernicious influence of certain trades, grief, anxiety, unkind treatment from parents and friends, and other wasters of vital power, will suffice to induce Consumption in many individuals. But it is also true that if to any or all of these conditions there be superadded a strongly marked hereditary tendency, very few indeed escape the disease. Consumption, as we have seen, is curable, and may be generated *de novo*. It is not a morbific entity, skipping over one generation, and then pouncing upon another quite independent of circumstances, but, on the other hand, it is most certain that consumptive parents are, *cæteris paribus*, more likely to have consumptive children than healthy parents: "like begets like."

Moral and Physical Analogies. Now it is often with a sad and puzzled state of mind that we contemplate the transmission of the infirmities and errors of those who preceded us in the ancestral line. We know, however, that such inflictions are in accordance with other inexplicable facts observed in the moral government of the world and also with the teachings of divine revelation. The lessons

which the physician gathers in the consulting-room and at the bedside have their counterparts in the inscrutable permission of the origin of moral evil, and in the penalty exacted for transgression even "from the third and fourth generations." "Nor can the fact be disputed, though appreciable with difficulty, that the natural and special dispositions of the individual descend to him in a certain measure from his origin, and that parents transmit to their children such and such moral propensities, just as they do such and such physical temperament, or such and such features. Hereditary transmission enters into the moral as well as into the physical order of the world" (*Guizot*). Disease may be transmitted through any person in whom, through a combination of favourable circumstances, it never became developed into actual mischief. "Individuals placed, as it were, on the chain of inherited disease, may personally escape its influence by avoiding the other agents which concentrate and precipitate any special disorder. They are not, however, the less transmitters of peculiar constitutions, if they be not individually sufferers. The electric current on the wire passes on its errand, and leaves no trace of its transit" (*Pollock*). True; yet *when passing*, its presence at *any point* of the wire may be demonstrated. So where Phthisis is transmitted, its presence may be equally proved by the operation of exciting causes.

Consumption and Marriage. The consumptive should not marry until they have been restored to health and strength. Indeed, weakly or sickly persons generally should not marry, for marriage involves a further drain upon the system already too weak to bear efficiently the

burdens of life. Confronted with this impressive truth, based on no mere theoretical grounds, but on practical observations a hundred times verified, we cannot but pause to gather a most obvious lesson, although we may refer to it again in a following Section. The lesson is plainly expressed, that individuals having consumptive, or any other transmissible disease, should on no account marry until they have thoroughly recovered their health; and not at all if the disease had so far advanced as to destroy a considerable portion of the lung-substance. Attention to this fundamental point forms the very foundation on which rests all our hope of diminishing the mortality from this potent and wide-spread cause of weakness and premature death. If the phthisical young man marry before being restored to health this condition often becomes a fresh cause of debility, and he will almost certainly become the father of feeble or tainted children, who often, after a few months or years of suffering, die, and the parent is surrounded with responsibilities and anxieties which press heavily on his weak frame. If the young woman marry, she probably becomes a mother,—for marriage in about five cases out of six is followed by pregnancy,—and while she thus exposes herself to the perils of childbirth, greatly heightened in such a disease, she indelibly imprints her infirmity on her offspring. With regard to the transmission of Phthisis, it has been noted that the probability in favour of the disease being transmitted from male to male, or female to female, is two-thirds greater than the probability that it will be transmitted from one sex to the other,—that is, a consumptive father is more likely to transmit his disease to his sons, and

a mother to her daughters than *vice versa*. The observant medical practitioner, who can trace effects to their causes, can alone gauge the suffering and bitter disappointment which result from such marriages, and should be oftener consulted before marriages are formed or arranged. Institutions for the reception and special treatment of the disease may be reared in the most congenial climates; our Materia Medica may continue to receive large accessions of the most valuable drugs; our already multitudinous appliances for the relief and comfort of those affected may be indefinitely increased; but unless the great fountain, whence nearly all the evil flows, be itself purified, the disease can receive but the most insignificant palliation.

Vital Importance of the Subject.

We hope we shall be excused for dwelling on this point; but we are strongly impressed with the belief that its vast practical importance has never received that general consideration which it deserves. The question of the marriage of unsuitable persons is either altogether disregarded, or is viewed from a too narrow standpoint, as though it only concerned the welfare of the individuals forming the alliance. Our duty, however, as protectors of the public health, imposes on us the responsibility of enforcing the neglected truth, that the health, and consequently the happiness and material greatness, of future generations are influenced by such marriages. As before remarked, no one but a physician can fully appreciate this evil, or accurately trace its workings in society. Consumptive parents become the propagators and transmitters of a grave constitutional disorder, and with it misery, pain, and often poverty. This subject is therefore both

humane and economic, and should enter into the consideration of persons contemplating marriage, as one of paramount importance. In cases of doubt, a physician should be consulted, and all the information he requires should be fully placed before him, so that he may arrive at correct conclusions. Frequently, indeed, he is consulted, but generally only when the misguided step has been taken, and the evil is past remedy. Great responsibility attaches to parents and guardians; they should not countenance unions which, though they may appear to favour commercial interests, or give solidity to family greatness, or cement family properties, can only result in the perpetuation of a disease which dims the brightest domestic hopes, and multiplies and strengthens a malady that prematurely sweeps away more than an eighth part of the human race.

Cautions respecting Marriage.

Should a consumptive young man fully regain his health, and decide to marry, the only hope of his having vigorous children lies in his allying himself to a female of sound health, descended from a healthy stock, and reared in the country. To ensure further exemption from Consumption in his children, they should live in the country, and be brought up under those hygienic conditions which we have pointed out in this Manual (Section XIII).

Still greater precaution is necessary in the case of females. After recovery from Consumption, they should wait sufficiently to be certain that recovery is permanent; for pregnancy,—from which we have shown the consumptive are not exempt—labour, and nursing are serious drains on such constitutions, and are almost certain to rekindle the disease if not thoroughly cured. Even

after marriage, if consumptive symptoms reappear, the process of child-bearing should cease. It may seem hard to separate a husband and wife, but it is far harder that they should beget children, with the certainty that their offspring will inherit the mother's disease, and possibly be the agents of introducing it to other families. Society has its rights as well as individuals. Liberty should not be used as a covert for license.

Evils of Consanguineous Marriages.

As intimately connected with this subject, we will here refer to the influence of the intermarriage of persons of near consanguinity. Hereditary tendency to Phthisis is by no other means so intensified and so certainly precipitated on the next generation. The evils of the marriage of persons of the same blood are not confined to families having a consumptive predisposition. For the offspring of such marriages are generally feeble. Constitutional weaknesses or defects, in themselves, perhaps, of no grave importance, are confirmed by intermarriage, and may readily become developed into actual disease. Should any hereditary weakness, derived from a common ancestry, affect both parents, it is almost certain to be intensified in their children. Whereas the union of persons of different families, nationalities, or constitutions, if exempt from positive taint of disease, is likely to modify any peculiarity possessed by one parent only. These remarks apply with double force to the disease under consideration. The marriage of near relations, whose families possess a consumptive cachexia, is sure to lead to a concentration of the disease in the progeny, and to lay the foundation of some of the most destructive maladies to which the human frame is liable. Even this expresses

but half the truth. A convergence of ancestral liability to nearly any disease, by intermarriage, is an almost certain method of insuring tubercular disease in its most active form, even where no such tendency previously existed. On the other hand, persons having a slight hereditary liability to Consumption, but with no actual disease, forming judicious marriages with persons of healthy blood, may lead to such an admixture and dilution of the peculiar element which exists on one parental side, as shall, in process of time, render it altogether inoperative.

Contagiousness of Phthisis.

This is a point of great practical importance, and one deserving general consideration. We believe there are but few observing practitioners who will deny that Consumption is, in a limited sense, contagious, for cases cited in proof are by no means rare—a phthisical husband conveying the disease to his wife, and *vice versa*. It is true, Sir Thomas Watson states that he does not believe Phthisis to be contagious; but then he adds, "Nevertheless I should, for obvious reasons, dissuade the occupation of the same bed, or even of the same sleeping apartment, by two persons, one of whom was known to labour under Pulmonary Consumption." On this important subject Dr. Fuller writes "Though the non-infectious character of Phthisis be admitted, it behoves the physician to warn the patient's friends of the dangers incident to long-continued attendance on him, especially if the disease be in an advanced stage. It would be the height of imprudence for a healthy person, and especially if young, and of a scrofulous diathesis, to sleep in the same bed, or even in the same apartment, with a consumptive patient;

for although the malady might not be communicated directly from one to the other, ... the surroundings and the air would be calculated to predispose him to the disease." It is precisely in this respect that we consider the disease contagious. We can call to mind repeated instances of a surviving husband or wife succumbing to the malady which carried off the deceased partner too quickly to allow of a reasonable doubt that, in some way or other, Consumption may be conveyed by long breathing an atmosphere charged and poisoned by the products of ulcerating lung-surfaces. "During the course of Pulmonary Tuberculosis," said Bouillaud, in the French Academy of Medicine, "when pus or other septic products are formed in parts which are accessible to the atmosphere, Phthisis, like so many other affections in which purulent foci happen, becomes indirectly a cause of septic infection."

The practical outcome of these remarks is, that relatives and attendants should not eat nor drink habitually nor sleep in the sick-room of a consumptive person; and during the whole time, by means of an open door, window, or other aperture, ventilation should be uninterruptedly going on. If sitting up with one, food should be taken, *in another room*, about every fourth hour during the night.

Other Aspects. While it is undoubtedly of primary importance that consumptive persons should refrain from marriage until their medical advisers have declared them fit for such a relation, yet, though every phthisical person in the world should die without offspring, we should not thus get rid of Phthisis. It is being continually reproduced by neglect of the laws which govern

health. A neglected inflammatory process of the lungs, coupled with a certain amount of debility and bad hygiene, is all that is requisite for the generation of Phthisis, the subject of which would again transmit a phthisical tendency to his offspring. Until the masses of the population are instructed in the fundamental laws of health; until their children are taught something of the structure of the lungs and their physiology; until they know what air is, what breathing is, why *bad air is bad;* until these things are accomplished, Phthisis will continue to stalk through the land as heretofore. We look to our School-Boards for help; but even they will not accomplish much unless our School Managers take a proper view of the subject. May the day soon dawn when it shall be considered the characteristic of gentlemen, and of ladies, that they know something of "the house they live in." May our influential men come to see that it might possibly be as useful and quite as interesting to the young citizen to know how wonderfully and beautifully he is made, as it is to know this or that Greek root, the height of Mont Blanc, or the signs of the Zodiac.

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b. Impure Air.

We now proceed to consider other influences which act as causes of Consumption by enfeebling the nutritive functions. Probably the first in importance is that of breathing an unrenewed atmosphere. Nothing is more prone to deterioration than pure air, for every breath we breathe subtracts from it a portion of the oxygen it possesses, and imparts to it carbonic acid; but

this process can only go on when the air is confined around the breather in a badly-ventilated room, and is entirely obviated when he respires in the great air-ocean out-of-doors. Moreover, besides the changes in the proportion of its oxygen and carbonic acid, respired air is vitiated by animal effluvia given off from the lungs of each person by whom it has been inhaled. The want of pure air consequent on the imperfect ventilation of sitting and sleeping rooms is a frequent and potent cause of tubercular disease, as indeed might be inferred from the physiological evidence of the extreme importance of a due aëration of the blood.

Defective Ventilation. Persons breathing, for a considerable period, air which has been rendered impure by respiration, soon become pale, partially lose their appetite, and gradually decline in strength and spirits. Defective aëration of the blood leads to imperfect nutrition of the tissues, the general tone of the system sinks, and it can offer but a feeble resistance to morbific agencies. Of special diseases, Consumption is now known to be frequently induced by the constant breathing of air vitiated not only by respiration, but by the organic vapours and particles arising from the extensive surface of the skin. Evidences of this are very numerous. That this has been the chief cause of Phthisis among soldiers **In Barracks.** is proved by the well-known fact that with very different duties, and altered diet and circumstances, a great amount of Phthisis has prevailed in the most varied stations of the army, and in the most beautiful climates—in Gibraltar, Malta, Ionia, Jamaica, Trinidad, Bermuda, etc.: in all these places the only common condition was the vitiated atmosphere which our barrack

system everywhere produced. Of late years there has been a most decided decline in phthisical cases in these stations, while the only circumstance which has notably changed in the time has been the condition of the respired air. Two Austrian prisons, in which the diet and mode of life were essentially the same, offer the following contrast:—In the prison of Leopoldstadt, at Vienna, which was very badly ventilated, 54 per 1,000 died from Phthisis—there being no fewer than 42 cases of Acute Miliary Tuberculosis. In the well-ventilated House of Correction, in the same city, only 7·9 per 1,000 died of Phthisis. The deaths from Phthisis in the royal navy have been remarkably different in different ships, and excess of lung-disease has been clearly traced to contamination of the air.

In Schools. In a school at Norwood, containing 600 boys, Scrofula was extremely prevalent, and great mortality occurred, which was supposed to be due to deficient or unwholesome food. The diet was investigated, and found to be good, but the ventilation of the rooms and dormitories was very imperfect. This was corrected, and the disease rapidly disappeared.

Both among landsmen and seamen working in confined rooms, but otherwise very differently situated, an excess of acute lung-diseases prevails. The only condition common to both classes is the impurity of the atmosphere. The popular notion that Consumption and Bronchitis are caused by persons passing from hot rooms to the external air is probably somewhat incorrect; the main cause is the devitalizing influence of the impure air in the confined rooms. The reports of the Registrar-General show that the deaths from this cause among the

inhabitants of towns are twenty-five per cent. greater than in the country districts, notwithstanding the fact that the dietary and general comforts of the former are often greater than those of the latter.

"If in expiring," writes Dr. Mac Cormack, "we threw into the atmosphere Carbon or visible smoke, instead of invisible carbonic acid, we should really appreciate the noxious character of pre-breathed air—that is, air that has been already breathed by other human beings or animals, and which besides being minus the due proportion of oxygen, the pabulum of life, is loaded with the products of animal decay."* This writer considers Pulmonary Consumption to be almost wholly due to the respiration of pre-breathed air in close unventilated rooms; and although we have brought forward other factors as tending towards the same result, this is probably the most frequent and potent of them all.

Among the Lower Animals. Nor is the application of these statements restricted to man. Observations made on the health and habits of the inferior animals confirm the great fact that an insufficient supply of pure air is a fertile cause of tubercular disease in them.

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c. Unhealthy Occupations.

Unhealthy occupations occupy a prominent place among the predisposing causes of Phthisis and other diseases of the lungs. Many of the industrial occupations of this country are carried on, to a greater or less degree, at the expense of the health of those engaged in

* *Consumption from pre-breathed air.*

Why certain Occupations are Unhealthy.

them. Occupations, however, are only injurious to health incidentally, and the chief circumstances which render them so are mostly preventible, and are, briefly, the following :—Deficiency of sunlight and pure air, the inhalation of mechanical or poisonous substances, too great prolongation of the hours of work, a bad posture of the body during labour, and the intemperance, and consequent poverty, of those engaged in them.

Dust.

Phthisis has been observed to occur in workmen who breathe air loaded with particles of dust, as bakers, needle-grinders, stone-masons, quarrymen, cotton-carders, workers in porcelain, makers of mattresses, furriers, coal-miners, and others. Dust is undoubtedly a most destructive agent, and a fruitful cause of Consumption among those whose occupation compels them to inhale it.

The sedentary occupations, such as are carried on by milliners, book-keepers, tailors, shoemakers, and many others, are often most unfavourable to health, not alone from the effect of crowding without sufficient access of air, but from the effects of a sitting and stooping posture combined, thus offering a mechanical hindrance to the free access of air to the lungs, limiting the expansion of the bony walls of the chest, and preventing perfect aëration of the blood. It must be obvious that whatever diminishes the amount of air which enters the air-tubes to the same extent restricts respiratory changes, interferes with the renovation of the vital fluid, and tends to induce those secondary disorders which favour the development of tubercle. To a limited extent the hurtful consequences of such postures may be avoided

by occasionally changing to a standing position when at work, and by taking out-door exercise during the hours of relaxation. Plenty of healthful recreation in the open-air is the best corrective of the injurious consequences of sedentary employments.

In- and Out-door Occupations contrasted. From accurate statistics it has been shown that Consumption is five times as frequent in persons occupied within doors as in those following open-air pursuits. In the mining districts of Cornwall and Devonshire, among the most healthy portions of Great Britain, about one-half of the entire number of the miners deprived of fresh air and light, die of Phthisis. Tailors, shoemakers, printers, and needlewomen are found to form about one-sixth of the whole number of consumptive patients. Clerks also figure conspicuously; carpenters form about one-twentieth part; but gardeners, hawkers, and policemen, who are constantly exposed to weather vicissitudes, present only about one-fiftieth part. The general testimony of accurate observers in London, Paris, Vienna, Hamburgh, etc., confirms the correctness of these observations. The subject has another important practical aspect, namely, that patients in Consumption who have followed out-of-door occupations recover or improve more often under medical treatment than those employed in-doors. Dr. Walsh has shown that improvement in hospital cases was effected in about fourteen per cent. more persons following open-air occupations than in those who followed confined trades.

Cold a Cause. This seems a fitting place to observe that Consumption often *originates* in severe cold. Cold, or catarrh, consists of slight or intense inflammation of

the lining membrane of the nose and windpipe; and accurate observation shows that consumptive patients are more liable to cold than others, and when it is contracted, they cannot throw it off so easily. A catarrhal cold in itself is quite insufficient to produce the disease, except it be neglected; when it may go on to caseous infiltration and consumption: cold can also act as an exciting cause in persons already predisposed. Notwithstanding that consumptive patients easily take cold, they often bear exposure to cold air with striking immunity when the air is pure and dry; but when they do take cold it affects the weakest organs, namely, the lungs.

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d. Unsuitable or Insufficient Food.

A deficient supply or an improper quality of food may serve as an exciting cause of Struma and Tubercle, although probably to a less extent than causes already pointed out. It has frequently happened that Struma and Phthisis have prevailed amongst the inmates of certain establishments, and that such diseases have quickly disappeared on the introduction of an abundant, nourishing diet.

The influence of an insufficient diet in the production of Consumption was strikingly shown in a case that lately came under the author's care. An artisan, a Scotchman, earning good wages, consulted me having all the symptoms and signs of early tubercular disease. He came of healthy parents, and no member of his family had ever been seriously ill. I had some difficulty in

arriving at the true cause of the disease, and had to question him most minutely. The result was I found he had been depriving himself of a sufficient amount of nutritious food, from foolish ideas of economy. His plan was to have his week's supply of mutton well boiled-down, and to make the soup thus obtained serve him for about one-third of the week, and for the remaining portion of the week to eat the tasteless and worthless mutton, supposing that it yet retained all its nutritive juices. The patient made fair progress under treatment and improved diet, but I soon lost him, as he had a decided objection to pay a physician's fees, his ambition being, by long hours of work, and hard living, rapidly to amass a purse of gold, and return to his northern home.

Hand-feeding of Infants. The influence of hand-feeding of infants, as too generally practised, is certainly very considerable in the production of the consumptive cachexia. The blood and the tissues derive nourishment from the food administered; and Nature furnishes milk as best adapted for children till the period of dentition. A healthy mother should, therefore, always nurse her own children; when the mother's condition does not permit of this being done, a healthy wet-nurse should, if possible, be obtained. For further remarks on this subject, see under "Diet of Children," pp. 72-4.

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e. Depressing Emotions.

The influence of mental anxiety also ranks prominently as a predisposing cause of Consumption. The gradual decay of one member of a family who has

nursed another through the complaint, has so often occurred as to give weight to the belief that Consumption is infectious. Instances of very rapid cases of Consumption have come under our notice, in which, through the indiscretion of friends or the medical attendant, the fatal character of the malady has been so emphatically stated, that the patients, having abandoned all hope, and surrendered themselves to death, have rapidly perished.

Influence of Despair and Hope.

"Among the predisposing causes of Phthisis," writes Lænnec, "I know of none more certain than the *depressing passions*, especially when they are profound and long-indulged. I had under mine own eyes," he states, "for ten years, a most striking example of the influence of melancholy in the production of Phthisis. There existed in Paris for that space of time a nunnery, remarkable for the severity of its rules. The alimentary regimen of the nuns, although extremely severe, was still not beyond the bounds of nature; but the spirit of the rules of the nunnery, directing the mind to the most terrible rather than to the consoling truths of religion, as well as compelling the inmates to resign themselves in everything to the will of the abbess, produced effects as sad as unexpected. These effects were the same in all. At the end of two months' sojourn in this house the *Menses* became suppressed, and in a month or two afterwards symptoms of Phthisis appeared. As the nuns had not been allowed to take the usual vows, I entreated that they would leave the house; and all who followed this advice recovered. But during the ten years I was physician to this establishment the members were renewed twice or thrice, with the exception of the superior, the *tourière* (portress who attends at the gate), the sisters who had the care of the garden, of the kitchen, and of the infirmary, or of such as had more frequent intercourse with the city, and consequently greater distraction. The *rest* died of Phthisis."

Asceticism and Phthisis.

Mark well the concluding sentence in the above quotation,—the *rest* died of Phthisis. This is proof positive that Consumption can be generated *de novo*. Here the mode of life of these poor nuns must have been something more than a predisposing cause to Phthisis. Surely they could not *all* have been originally phthisical.

f. Exciting Causes.

Some of the circumstances which tend to call into activity or produce the consumptive diathesis may here be enumerated. The diseases or errors mentioned would not, perhaps, of themselves *originate* Tubercle without an intermediate inflammatory process; their influence is rather in the direction of lowering the vitality, or causing the germination of those seeds of disease which have either been transmitted from parents, or acquired through the long working of the predisposing causes already referred to. Acute diseases—Fevers, Hooping-cough, Pneumonia, and especially Measles—may excite congestion, which, acting in conjunction with inherited or acquired tendency, may determine a growth of tubercles. Prolonged Bronchitis, chronic Abscesses, severe Indigestion, interfering with the nutrition of the body,—these and other devitalizing diseases, with or without a pre-existing contamination of the blood, are sufficient to lead to the commencement of active organic disease. The periods of gestation, childbirth, and of nursing, are eminently favourable to the development of systemic mischief. It is thought that the course of Phthisis is often arrested during pregnancy; but if so, it advances with greater rapidity afterwards. The hæmorrhage which often complicates labour in women of feeble frame is highly prejudicial. Imprudent and unusual exertions, such as the tremendous respiratory efforts called forth by a University boat-race, or the long marches and steep ascents of a student or literary man during a hurried Alpine excursion; the sitting up, till the early hours of morning, of the anxious and jaded gover-

ness, in order to enjoy converse with books and absent friends; the excitement and effects of badly-ventilated ball-rooms, operating on the insufficiently-clad lady,—all these, and many other unwise proceedings, are either voluntarily endured, or through the hard necessities of life enforced, and the seeds of a dire disease, hitherto absent or dormant, germinate and produce their fatal fruit. The following case will be read with interest:—

"Thomas B., aged 32, comedian; no predisposition; presented February, 1857. A spare, low-sized, intelligent man, chest well developed, arms muscular; was accustomed to gymnastic exercise in the circus (as clown) till nine months ago, when he lost his voice, and with it his engagement at Astley's. Ill for five years, with cough and frequent hæmoptysis, and a certain amount of dyspnœa on exertion, which, however did not prevent his extraordinary exertions before the public. Has no present fever; digestion good, appetite excellent; leads a strictly temperate life. *Dulness, cavernous blowing, pectoriloquy well marked and circumscribed, left sub-clavian region.* Ordered oil, etc. May.—Voice as strong as it ever was; has resumed his occupation as clown, can sing, but by my advice avoids the more violent exercises of the circus (as somersaults). In October went to the north of England, and fulfilled many engagements. In August, 1858, I was telegraphed that he was seized with profuse hæmoptysis on the stage at H——. I directed the treatment, and he resumed his occupation within a month. In May, 1859, this well-walled cavity gave way, and *a coarse crepitant sound was evident over the whole left front, while dry blowing respiratory sounds were heard at the right apex.* Yet, in spite of many warnings, he persisted in his professional exertions, only greatly moderating the muscular exercises, and confining himself to the jesting department. In August he was so weak that he fainted more than once; but at the end of the month he again accepted a provincial engagement. In the summer of 1860 he had much improved, and still acted and sung. The expectoration had much increased, and diarrhœa at intervals reduced his strength. Yet, with a full knowledge of his danger, he continued at his occupation. Finally, in 1862, his weakness became extreme; and although in nightly attendance at a theatre in the north, he was so ill as to be scarcely able to stand. Alarmed, at length, by repeated faintings, he hurried up to London by train, and died in my presence two hours after his arrival.

"I cannot forbear from dwelling on the heroic fortitude of this remarkable man, and can testify to his self-denial and its object. He had a wife and aged mother much dependent on his exertions. I

have witnessed his performances at Her Majesty's Theatre when few would have credited the physical weakness against which he struggled" (*Pollock*).

Difficulties of Differentiation.

Although we have endeavoured to discriminate between *predisposing* and *exciting* causes, it must be borne in mind that this part of our subject offers very great difficulties. We can but very rarely demonstratively affirm that a given cause was absolutely exciting, or simply predisposing; for it is more than probable that one and the same cause may in one person be truly exciting, and in another predisposing.

X.—The Symptoms of Consumption.

The early symptoms, which are often obscure, may arise at any period of life from infancy to old age, but more frequently from the eighteenth to the twenty-second year; or speaking more widely, from the eighteenth to the thirty-third year. The chief symptoms are—progressive emaciation, impaired digestion, short or difficult breathing, more or less cough, rapid pulse, hæmoptysis, and as the disease advances, Hectic fever, Diarrhœa, and Aphthæ. As additional evidence, the gums should be examined to see if there is a red line next the teeth, and the nails, to observe if they are curved downwards at their ends (*filbert nails*), for both these are common in Phthisis. We must observe, however, that the latter supposed symptom of Phthisis is now believed to be simply one of emaciation, having no value whatever as a diagnostic mark of tubercles, but occurs more or less in emaciation from any cause. The shape of the nails, it will be found

by observation, varies with the state of bodily nutrition. The disappearance of the tissues from under the nail deprives it of its natural support. It must henceforth rest almost immediately upon the bone as upon a model, and is obliged to follow the direction of its surface. This surface being rounded at the top, the nail takes a direction downwards. But if a patient regain flesh, the nails duly recover their normal shape.

Wasting an Early Symptom. Progressive emaciation, in the absence of any other known cause, is one of the earliest and most important symptoms of Consumption. Except during well-marked intermissions, it generally proceeds uniformly from the commencement to the termination; and it extends to nearly every tissue of the body—the adipose, the muscular, and the bony; even the skin and the intestines become thinner. It evidently bears a closer connection to the constitutional than to the local diseases; and though liable to be increased by extensive disease of the lungs, of the intestines, and of the mesenteric glands, and by Hectic fever, still in the absence of these conditions, in their ordinary intense form, *wasting* goes on to the fatal termination, the patient sustaining a total loss of from one-third to half his entire weight. *Slow and gradual emaciation*—"the grain-by-grain decay"—is far more indicative of Phthisis than a rapid or irregular diminution of weight.

Emaciation is more marked, and also more dangerous, in individuals who have been previously stout. To gather correct and full information from wasting of the bodily tissues, frequent observations, extending over a considerable length of time, are necessary, as the

atrophy progresses insidiously and almost imperceptibly. As it is this continuously progressive emaciation which it is so important to detect, it becomes necessary to have the means of accurately weighing our patients. And by this means a physician is also able to judge of the proportion of the weight of a patient to his height, to his age, and to his breathing, and other functions.

Irregular Wasting. In advanced stages of the disease emaciation progresses in a peculiar manner, the patient losing perhaps three pounds in one week, and gaining two pounds or more in the next; and this alternation of gain and loss goes on for many weeks or months, but generally leaving a balance against the patient (*Aitken*)

Wasting without Apparent Cause. From a statement previously made, it will be perceived that the value of this symptom is contingent on its being unconnected with any temporary cause, such as acute disease, variation in diet, occupation, season of the year, and the like. But whenever a person becomes progressively thinner, without any apparent cause, even though it be unaccompanied with cough or expectoration, and especially if it be conjoined with any of the other symptoms pointed out, the best medical advice should be at once obtained and adopted.

Indigestion. Disorders of the digestive tract are prominent and serious symptoms, and are computed to occur in at least three-fifths of all cases of Phthisis. The indigestion, even in the worst cases, may only manifest itself by a capricious appetite, with special aversion to fat meat, pain in the epigastrium, and vomiting after coughing. But it is probable that no growth of tubercles

ever takes place except during a period of imperfect nourishment of the system, from loss of power in the digestive apparatus; and that the exemption of individual members of consumptive families from the disease is due mainly to the perfection of digestion and nutrition. Even when Consumption does occur, the restoration of the digestive and assimilative functions is invariably attended by great prolongation of life. Homœopathy holds out the most rational hope of cure, and its value is often strikingly manifested by the aid which its remedies afford to the digestive viscera; and, by correcting the mal-assimilation of food, it often arrests a further growth of tubercles, while those which previously existed remain latent and harmless. Power given in this direction is always beneficial, and often successful. On the other hand, a persistent irritability of the lining membrane of the digestive canal, with vomiting and diarrhœa, are symptoms so grave, even in cases in which the pulmonary affection is but limited, as to justify extreme anxiety. Simple innutrition from defective digestion or assimilation is one of the first links in the chain of processes by which Consumption destroys life, for the organs may be so disordered as virtually to lead to the same result as an inadequate supply of food, by depriving the blood of its necessary nutrient pabulum.

Gastric Symptoms.

The *gastric* or stomach symptoms most commonly present are,—furred, red, and often dry tongue, loss of appetite, dislike of fat meat, thirst, nausea, vomiting, irritability of the bowels, and, in rare cases, severe Gastralgia. The association of these symptoms with Hectic implies great danger.

Vomiting may arise from irritation, causing the food to be rejected soon after it has been swallowed; or it may result from coughing—the straining of the diaphragm and the abdominal muscles emptying the stomach of its contents mechanically. The tongue, furred in the earlier stages, afterwards becomes red, preternaturally clean, and smooth. The evacuations sometimes become more abundant than in health, from inability to appropriate the accustomed quantity of nutriment prepared by the stomach. In the last stage, the eruption of Thrush covers the mouth, and is a striking effect of the failure of vital power; this vesicular eruption being now known to be dependent on a microscopic vegetable growth on the mucous-surface. Diarrhœa does not usually occur in the early stages of Phthisis, and when it does is often amenable to our remedies. But its persistence in spite of well-directed measures, even in the absence of very extensive lung-complication, leads to a rapidly fatal termination.

Dyspnœa. Undue shortness of breath is a common although not an invariable symptom, and may be thus explained. The act of breathing is partly under the control of the will, and partly involuntary, and should be performed without any effort. When, however, the cells of the lungs are pressed upon by a mass of tubercle, the cause of the dyspnœa becomes obvious. The easy passage of air into and out of the air-cells is often further prevented by a secretion of mucus in the bronchial tubes. An extensive growth of tubercle in the lungs gives rise to very great distress in breathing: this symptom becomes, therefore, a sign of the extent of the deposit. This is confirmed by the use of the spirometer (described

on a previous page), which shows the reduction of the capacity of the lungs for air to be greater in extensive and diffused tubercle than when the growth is scanty and limited to one lung.

In Phthisis the capacity of the lungs is diminished, and enough air is not inspired to aërate the blood, sent there by the quickened action of the heart.

The chief cause, therefore, of the shortness of breath, arises from disproportion between the rapidity of the heart's action, by which blood is sent to the lungs, and that of breathing. The heart acts quicker during and after exertion that it may the better supply the muscles; and as the right and left hearts act together, sufficient air is not taken-in to aërate the blood sent to the lungs by the heart; and then the blood, not being properly acted on, stagnates in the pulmonary capillaries, and all the feelings and effects of dyspnœa arise.

The number of respirations in healthy, tranquil breathing is from 14 to 18 per minute, and they bear a remarkable proportion to the pulsations of the heart, that is, one complete respiration to about every five beats of the heart. In Phthisis, the number of respirations is from 24 to 28, the number increasing as the disease progresses. Inspiration is generally short, limited, and speedily checked, causing uneasiness, or inducing cough, and is quickly succeeded by expiration. The patient complains of want-of-breath; exercise, especially going up-hill, or up-stairs, or walking fast, exhausts him, and he often requires to rest. Such lowered respiratory power tends of itself to induce accumulations of mucus in the air-cells, and to excite inflammatory action. Everything which impedes the complete and regular

performance of the respiratory acts has a prejudicial effect upon the lungs. Life not only depends on breathing, but the energy and vigour of life are in a great measure ruled by the capacity and the free play of the breathing organs (*Sibson*). The circulation through the lungs is the measure of the whole circulation ; just as the strength of all constructions, and of all machinery, is measured by that of its weakest point.

Cough. Cough is a prominent, often distressing symptom of Phthisis. In the early stage it is dry, short, and irritative, and most troublesome in the morning, or after exertion ; it is unattended with expectoration, or is simply to clear the throat, and may continue for months without aggravation or the supervention of any other symptom. It is due to reflex action, the tubercles in the air-cells irritating the nerves distributed to the lungs. In the second or more advanced stage cough recurs during the day, and especially after slight exertion, and is caused by the necessity for getting rid of secretions, and then may be regarded as a conservative effort to clear the tubes of the morbid deposit, the inflammatory products and disintegrated lung-tissue, which then begin to accumulate. The recognition of this different variety of cough is necessary in order to prescribe for its cure or relief, as remedies suited to one condition are inadmissible in the other. The mere existence of a cough alone by no means proves that Consumption is present, as it may arise from diseases of other organs than the lungs, as from enlarged tonsils, elongated uvula, indigestion, a nervous habit, and other causes; neither does the absence of cough prove the non-existence of the disease. This symptom is, then, only

indicative of Phthisis when connected with that general disorder of the constitution which is characteristic of the disease.

Expectoration. As stated in the preceding paragraph, this is absent in the early stages of Consumption; for the cough being chiefly due to irritation, is dry, and has its seat in the upper part of the throat. As the disease advances, however, it is attended with the expectoration of a whitish adhesive matter, chiefly from the bronchial tubes, and most abundant in the morning. With further progress it becomes thicker, often contains ropy or glairy mucus, probably discoloured with streaks of blood. When tubercles rapidly soften, the expectoration becomes abundant, of a purulent character, and is discharged with blood; and in the end is usually in the form of yellow masses. In these stages there is disintegration of considerable and irregular portions of tubercle, with the adjacent lung structures; the expectoration, therefore, is made up of tubercular matter, fluids from the pulmonary vessels, and lung-tissue. The last furnishes a good diagnostic sign, and can often be recognised long before destruction of the organ has sufficiently advanced to yield conclusive general symptoms, or signs that can be detected by the stethoscope. The sputa of true Phthisis contains fragments of elastic tissue, the presence of which proves that the lung-substance is breaking up. For the detection of this the microscope is indispensable, as it exists in such minute quantities that it is only when considerably magnified that the fibre can be discovered. Examination of the sputa is of special service in cases in which Consumption follows or is associated with inflammatory affections of the air-

passages, as it often enables us at once to decide the diagnosis.

Hæmoptysis. Spitting or coughing-up of blood in a majority of cases takes place; and although, as a symptom of Consumption, it has a grave import, it often betokens a prolonged variety of the disease; within certain limits it produces an immediate salutary effect, by relieving the cough and breathing, moderating the pulse and fever, and enabling the patient, previously unable to do so, to lie down and sleep. But an attack of Hæmoptysis occurring without any injury or obvious cause, is an unfavourable omen. It indicates a morbid friability of the terminal branches of the bronchial arteries supplying the mucous membrane, and is generally associated with a tendency to inflammatory affections of the pulmonary tissue. Hæmoptysis often gives the first intimation to the patient of the real nature of his malady; and its occurrence either before or soon after the commencement of a cough always renders Consumption probable, especially if the patient has received no injury of the chest, and has no disease of the heart, or of the uterine system. The amount of blood discharged is sometimes very small in the early stage, merely streaking the sputa, or tasted as salt in the mouth; or there may be a few teaspoonfuls, due to extreme congestion of the pulmonary vessels from inflammatory action set up by tubercles; but in the latter stage there is sometimes so copious and sudden an effusion, from the opening of some large vessel in a vomica by ulceration and rupture, that the patient dies suffocated; this, however, is comparatively rare, because the vessels become plugged with coagula before the ulceration opens them.

Distinguished, of course, from sputa, merely tinged from spongy and easily bleeding gums, the discharge of blood by expectoration is almost always indicative of organic disease of some portion of the chest. But when Hæmoptysis occurs without previous cough, dyspnœa, or other sign of lung disease, it does not always indicate Consumption. When it does so, other symptoms are generally superadded.

The Pulse. A persistent rapidity of the pulse, ranging from 90 to 120, or higher, is an invariable symptom of active Phthisis. It is especially liable to become accelerated towards evening, and, as the disease advances, becomes more rapid, and also feebler. "The nervous system has the heart for its gnomon or dial of the clock; and extreme rapidity of the heart's action, while it has a most grave import in acute disease, is also an accurate measure of the failure of nervous power in chronic affections. The acceleration of the pulse during a febrile attack is not here alluded to, but a uniform high range of pulse, deficient in force, which, although it vary in number, is never below a high rate. It is rarely under 100, and may run up from this to 140, or till it is impossible to be reckoned; and there is no more disastrous symptom. In various chronic affections the muscular walls of the heart are thinned and softened; but unless this has taken place, the action of the heart during remissions of the symptoms falls to a more healthy average, and the pulse acquires fulness" (*Pollock*).

Hectic Fever. Hectic is often an early and very characteristic symptom, and its coincidence with those already mentioned clenches our diagnosis of Consumption. It

is a remittent fever. The febrile access most frequently occurs towards evening, with dry heat of the skin, chills, and flushing of the face—on each cheek-bone a circumscribed spot appearing, in strong contrast with the surrounding pallor. This is especially noticed after any exertion, or even after food: there is also burning heat of the palms of the hands and soles of the feet, and extreme restlessness. Towards morning the remission occurs, the patient falls asleep, and wakes bathed in perspiration. The pulse is small and weak; uniformly too high, but greatly accelerated towards evening, reaching 120 or many more beats in a minute, "the beat being performed with a jerk, as if the result of irritation upon a weakened heart": the heart, in fact, shares in the general waste of tissue. The bowels are relaxed, especially in advanced stages of the disease, the diarrhœa aggravates the effects of the sweating, and consequently increases the exhaustion; the tongue is furred white or brown in the centre, but unnaturally red around the tip and edges, and immediately preceding the final break-up, is covered with the eruption of Thrush. The urine deposits the red brick-dust or pink sediment, consisting of the urates of soda and ammonia; the skin is clammy, except during the evening exacerbation, when it is burning hot; the hair falls off; œdema of the feet and ankles sets in; the complexion is clear, the eyes are bright and sparkling, and there is most marked emaciation, especially as death approaches. The mind usually remains bright, often vigorous, and so hopeful, that even amidst this general material wreck the patient dreads not the future, and thinks he "would be well but for his cough;" towards the end, however,

suffocative dyspnœa may render the death-struggle painful, or, which is more frequent, slight delirium occurs, from circulation of venous blood in the brain, or a deposit of tubercles in its membranes, and the weary and exhausted sufferer sinks to rest.

Duration. It would be difficult to state, even approximately, the duration of Phthisis, as there are different varieties, and also causes, of the disease which influence its course. Tubercle arising from severe Continued Fever, Pneumonia, and especially Measles, or other acute disease in the young, runs a far more rapid course, with implication of several organs at an early stage, than the same disease in or after the middle period of life. A deposit of tubercles in one constitution may be tolerated for years without exciting any serious disorder; while in another a like deposit may give rise to the most violent irritation. Tubercular matter appears in some cases only tardily to pass through its destructive changes, slightly involving the surrounding tissues, and remaining almost as an inert substance; in other cases the process of softening, the implication of other structures, and the systemic destructiveness proceed most rapidly. *Intermissions* alter the duration. The disease sometimes becomes latent, and there is for the time marked general improvement, with increase of strength, till fresh irritation is set up, and all the constitutional symptoms become aggravated. Again, the influence of the digestive organs is very considerable. An irritable mucous membrane, indicated by loss of appetite, nausea, vomiting, furred tongue, diarrhœa, etc., will hurry the tubercular deposit through its stages; while a healthy digestive apparatus may prolong the stages, or

arrest the disease, indefinitely. Other circumstances must also be considered—age, amount of hereditary influence, hæmoptysis, fever, etc. Lastly, the type of disease transmitted greatly influences the duration. Every practitioner experienced in the disease knows that the acute or chronic form of the malady which prevailed in the older branches of a family is commonly shared by its successive members.

Absence or Ambiguity of Symptoms. We must, however, bear in mind that under certain circumstances any and all the ordinary symptoms may be absent, even when Phthisis is far advanced. Likewise it is to be remembered that many of the symptoms so characteristic of the disease may exist without Phthisis being present. Especially should it be remembered that there is no *single sign or symptom* by which Pulmonary Phthisis can be clearly and safely determined. Here it is the physician's province to differentiate, and to judge by the general symptoms and signs present.

Summary. Such is a brief description of the symptoms and course of this destructive malady. Some of the symptoms are more prominently marked in one case than in another, and are intensified as the end draws near. Exhaustion and emaciation, from impairment of the digestive functions, become confirmed and persistent symptoms. Increased susceptibility renders the patient liable to frequent attacks of Bronchitis, and even Pneumonia; dyspnœa becomes *very distressing*, so that the patient is unable to make any active exertion, or even to read aloud a short paragraph without pausing; the sputa is more purulent, and pus is often expectorated pure, in roundish masses that remain distinct in the

vessel into which they are spat. Other organs become implicated, as the lymphatic system. The intestinal is especially susceptible: a deposit of tubercle takes place similar to that in the lungs, which afterwards bursts into the intestines, and leaves an ulcer; the entire alimentary canal is affected, the diarrhœa is aggravated; and the appetite completely fails. The respiratory mucous-membrane may also be ulcerated, producing huskiness, and even loss of voice, but more frequently the former, from the thickening and increase in vascularity which it undergoes; and, frequently, deposit of tubercles, and consequent ulceration, occur in even the larynx itself. The skin covering the parts on which the patient lies is apt to become sore and inflamed, and even to perish, from the pressure of the attenuated body. *Aphthæ* of the mouth, pharynx, etc., or œdema of the feet, ankles, and even legs, ensue, and the long and weary struggle is at last terminated by the gentle and happy approach of death. It is therefore but seldom that the local affection in the lungs is the sole cause of the fatal result.

XI.—Physical Signs and the Methods of their Detection.*

Value of Signs. Notwithstanding the comparative conclusiveness of symptoms, a physician does not rely on them alone, but calls in the aid of other evidence; for,

* *Physical Signs* are those evidences of disease which we discover by our senses, in contradistinction to *symptoms* which are gathered from the complaints or statements of the patient. They depend upon some change in the organs of the body,—an alteration of their physical condition.

in consequence of the frequent obscurity that surrounds symptoms, or of the possibility that they admit of explanation by causes distinct from Phthisis, a physical examination becomes necessary to remove all uncertainty, and, if conducted with care, and aided by the study of natural science, the diagnosis of this disease may be rendered almost as clear as if the morbid processes beneath the chest-walls were exposed to view. Thus a skilled observer is not merely able to determine that the lung is implicated, but also the particular portion, and, to a great extent, the actual progress the disease has made. The value of such evidence is obvious; it often enables us to determine whether certain remedies are likely to be available; whether travel and change of climate are hopeful for cure; and so to avoid that distressing practical error of sending the patient to die in a distant land.

A physical examination of the chest is conducted by different methods, the chief of which we will now refer to.

Inspection. The first is Inspection or ocular examination of the external form, size, and movements of the chest, for which purpose the patient must be naked to the waist, or only clothed with a single thin covering. To serve any really useful purpose, the chest must be fully and leisurely seen; indeed, unless it can be thorough, a physical examination had better be omitted, and the general symptoms alone trusted to. An uneducated eye might not be able to detect anything abnormal in the chest of a consumptive patient, unless the evidence were very strongly expressed. A physician, however, would recognise at a glance *flattening of the chest* over the part affected, from shrinking of the lung-substance; also that the part thus affected does

not permit the same amount of *respiratory movement* as on the healthy side. The clavicles (*collar-bones*) become very prominent from shrinking of the lung substance in those regions. When the growth of tubercles is chiefly in the upper portion of the lungs, it will be observed that the patient breathes chiefly by the lower portion of the chest, the parts just below the collar-bones becoming nearly immovable.

Mensuration. Mensuration is simply an aid to inspection, for determining by measurement the comparative volume of the two sides of the chest, and also the degree of expansion and retraction during breathing.

Percussion. Percussion is striking with the fingers, first on one side, and then on a corresponding part of the other side of the chest, to ascertain the relative degree of resonance (*reverberation of sound*) or dulness. It is well known that a barrel containing only air yields a clear, resonant sound when struck; but that if filled with water or with any solid body, a dull sound will be produced. A drum gives a resonant sound in perfection. In like manner a well-developed chest, with air freely permeating the air-cells of the lungs, gives a full clear note when percussion is practised; but when the cells are filled with tubercular deposit, the clear sound is impaired; the tone is heavy and dull, like that elicited by percussing solid flesh, as of the thigh. The amount of dulness varies in different cases, according as the air-cells are partially or completely filled with tubercle. The absence of dulness does not always prove the absence of tubercle, as the deposit may be embedded below the surface, and a portion of healthy lung intervene between the diseased part and the walls of the chest, and a clear

but not a full sound be heard. The dullest sound arises when there is a large quantity of fluid in the pleural cavity. Information from percussion will be much increased, and its value as an aid to a correct opinion rendered much more certain, if it be practised during inspiration, and then during expiration. In the latter

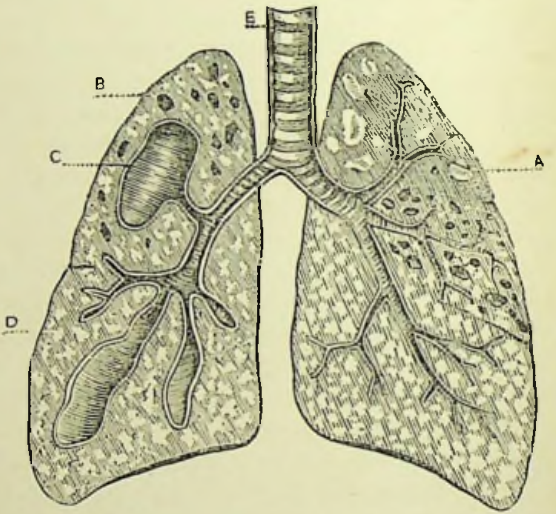

PLATE III.—THE LUNGS IN PHTHISIS.

The apex of left lung (B) is shown in the stage of consolidation: the large white patches indicate tubercles in the stage of softening (A). Below the latter, as at B, the black dots show tubercles in the first stage. C represents a cavity or vomica, resulting from destruction of lung-tissue; D enlarged bronchi, and E the trachea.

stages of the disease, when cavities exist, the resonance or dulness will depend on the actual condition which is then present; for if the cavity is filled with purulent

matter there will be dulness; but if empty and superficial there will be resonance.

Auscultation. On listening over a healthy lung we may hear, as the patient breathes, certain sounds produced by the air rushing from the windpipe into the bronchial tubes and air-cells; these sounds are called "the vesicular murmur," and have been compared to the breeze among the leaves, or to the cooing of doves. If, however, the air-cells become obstructed with tubercular matter, the natural sounds will be modified or changed; they are chiefly—feeble or harsh breathing, jerking *in*spiration, and prolonged *ex*piration. There will also arise an increased clearness of the sound of the patient's voice as heard through the affected lung, from the solidity of the tubercles rendering it a better conductor of sound. If these phenomena are persistent, and restricted to one side of the chest, they indicate tubercle. Persistent coarseness of breathing, with small bubbling râles and sonorous sibilant rhonchi—signs of Bronchitis—earliest marked in the supra-scapular, and supra- and infra-clavicular regions, inaudible below the second intercostal space, and limited to one lung, certainly justifies the suspicion of Consumption.

Although the investigation of internal disease by the sense of hearing is based upon an extremely simple theory, and affords decisive means for detecting disease, the acquisition of the art is by no means equally easy: indeed, much skill and practice, both in healthy and diseased persons, is necessary to arrive at truthful conclusions.

Stethoscopy. The stethoscope is simply an instrument for conducting the sounds of the chest to the ear of the

physician, and is chiefly used to avoid the necessity of placing the ear directly upon the chest of the patient, and when the sounds to be listened to are limited to a small and definite region. Frequently, however, the best way to hear the sounds within the chest is to apply the ear in immediate contact with it; but when it is desirable to localize the sounds the stethoscope may be used.

Thermometry. We must not omit to notice the aid which the thermometer affords. The proper application of the clinical thermometer yields most valuable diagnostic information when the ordinary symptoms and signs are ill-defined, or when their true cause may be doubtful; especially in the early stages, when treatment is likely to be most effective. The importance of the aid of the thermometer in this case will be recognised by the fact that, during the deposit of tubercle in the lungs, the temperature of the patient is heightened from 98° Fahr., the normal temperature, to 101° — 104°; the abnormal temperature, rising in proportion to the rapidity of the turbercular deposit. Heightened temperature may often be detected by the thermometer for several weeks before reduced weight, or any local sign, indicates the undoubted existence of tubercles. Hence the temperature not only affords us certain information as to the existence of *Phthisis*, but the degree of elevation enables us to estimate the extent of the disease, and also the rapidity with which it advances.

Spirometry. One other method adopted in our practice, especially in early and obscure cases, may now be described. The principle of the spirometer is very simple, and if an intelligent regard be paid to the height,

weight, and age of the individual examined by the instrument, most valuable and reliable information may be obtained. The spirometer consists of a cylinder, suspended and balanced by means of cords and weights in a reservoir of water, to which a graduated scale is attached. The patient, having taken a full inspiration, forces the air from his lungs through a tube, so that the cylinder ascends, and indicates by the scale affixed the amount of air passed into it. It will be found that the number of cubic inches of air thus expelled from the lungs of a person in health, after a full inspiration, is subject to so little variation, that the vital or healthy capacity of the lungs for air may be considered as a constant quantity. This capacity, however, depends upon four circumstances, —height, age, weight, and the state of the health ; and these must be taken into account before any inference can be deduced from the registered number of cubic inches of air expired by an individual.

Height. Height is an important element in the regulation of vital capacity, so that with few exceptions we are able to determine the height of an individual in health, by the number of cubic inches of air he is capable of expiring. We stay not now to offer any explanation of the curious connection that exists between height and vital capacity. Indeed, we have none to offer. But it is a singular fact that the vital capacity has a strict relationship to height, and yet that the height is mainly regulated by the length of the legs, and scarcely at all by the length of the body. Dr. Hutchinson, to whose able paper, communicated to the Medical and Chirurgical Society, we are greatly indebted, found by numerous examinations of persons, both before and after death,

that the circumference, breadth, and depth of the chest bore no necessary relation to height.

Weight. Weight forms another element in the calculation; and the standard weight of a person of a given height has been determined by Dr. Hutchinson, who obtained the weights of 2,648 men at the middle period of life. The annexed table contains reliable information, and may be consulted with advantage.

TABLE OF HEIGHT, WEIGHT, AND VITAL CAPACITY.

Height.		Weight.	Vital Capacity.			
			In Health.	In Consumption. 1st Stage.	2nd Stage.	Last Stage.
Ft. ins.	Ft. ins.	Stns. lbs.	Cub. ins.	Cub. ins.	Cub. ins.	Cub. ins.
5 0 to	5 1	8 8 or 120	174	117	99	82
5 1 „	5 2	9 0 „ 126	182	122	102	86
5 2 „	5 3	9 7 „ 133	190	127	108	89
5 3 „	5 4	9 13 „ 139	198	133	113	93
5 4 „	5 5	10 2 „ 142	206	138	117	97
5 5 „	5 6	10 4 „ 145	214	143	122	100
5 6 „	5 7	10 8 „ 148	222	149	127	104
5 7 „	5 8	11 1 „ 155	230	154	131	108
5 8 „	5 9	11 8 „ 162	238	159	136	112
5 9 „	5 10	12 1 „ 169	246	165	140	116
5 10 „	5 11	12 6 „ 174	254	170	145	119
5 11 „	6 0	12 10 „ 178	262	176	149	123

This table reads as follows:—An adult male of middle age, 5 ft. 7 in. to 5 ft. 8 in. in height, should weigh, in his clothes, about 11 st. 1 lb., and possess a vital capacity of 230: in the first stage of Consumption the vital capacity is reduced to 154; in the second stage to 131; and in the last to 108.

As might be expected, the breathing power is at its maximum during that period of adult life when the general functions are most vigorous, viz., from thirty to thirty-five. After this period they fall gradually, at the rate of, approximately, $1\frac{1}{2}$ cubic inches a year.

It will be manifest that if it is possible to determine, *à priori*, the standard vital capacity for all heights, weights, and ages, the spirometer enables us to decide upon the normal or abnormal condition of the respiratory organs of any persons tested by it. Hutchinson's extraordinary number of experiments gives us the standard of health in question, and its application in cases of Consumption becomes easy and conclusive, and is especially valuable during the premonitory stage. Every physician must occasionally find himself in difficulty, when called upon to give an opinion on a case, when the local signs are few or obscure, and the constitutional symptoms are too vague to enable him to fix with certainty on the real nature of the complaint, notwithstanding the strong suspicions he may entertain. In such cases the spirometer affords most valuable aid, and gives an almost certain test of the actual state of the lungs. Not only so—and this is nearly as valuable—it enables us to remove the anxieties of persons respecting themselves or their friends when we find the vital capacity normal. As an interesting illustration of the correctness of the information afforded by the spirometer, we may cite the case of Freeman, the well-known American giant, who was at one time an out-patient of the London Hospital. Previously to this period he had been examined by Dr. Hutchinson, who found the following to be his measurements:—height, 7 ft.; weight, 19st. 5lbs.; circumference of chest, 47 inches; vital capacity, 434 cubic inches. Two years subsequently to this period he was taken ill; and although complaining of some dyspnœa, no trace could be found at the time of the deposit of tubercular matter in his lungs. "An examination by the

spirometer, however, showed that his vital capacity had sunk to 344 cubic inches. In a year from that time he had fallen a victim to Consumption." This case fully indicates the value of the spirometer; and we have come to the conclusion, as the result of many observations, that a very small amount of tubercular growth in the lungs is sufficient to produce a great diminution in the natural elasticity of the organs, and a corresponding reduction in the vital capacity. It can scarcely be necessary to add that the spirometer aids, but does not supersede the usual methods of investigation, and is chiefly valuable when other data are insufficient or obscure. But "when the vital capacity is large, it is more than probable that no considerable disease of the lung can exist. So, too, when it is decidedly below par, we may infer that there are tubercles, *provided* the deficiency cannot be accounted for by debility and other conditions or diseases calculated to impair the respiratory movements, and the conclusion may be even received as highly probable, notwithstanding the absence of the usual physical signs, since there are, certainly, occasional cases in which disseminated tubercles are not positively revealed, either by auscultation or percussion" (*Dr Pepper*).

The Pre-tubercular State. Some physicians affirm, and we think correctly, that in most cases there may be detected some signs and symptoms which indicate the existence of Phthisis *before the actual growth of tubercle*. This is termed the pre-tubercular state, the physical signs of which are, according to Markham, "the slightest subclavicular dull percussion-sound, with lessened vesicular murmur, less forcible and deep inspiration, and flattening of the apex of the lungs." These signs, however,

are not distinctly marked, and can only be considered conclusive when there co-exists the general cachectic condition already described. The general symptoms must confirm the physical signs. The temperature of the body, it is believed, affords the most reliable ground for early diagnosis, long before any physical sign is present, and when the symptoms are insufficient to make such a diagnosis certain. We have such cases frequently under our care, and under early treatment they generally terminate favourably.

XII.—Curability of Consumption.

As may be inferred from preceding observations, we are now, happily, able to take the affirmative side of the question as to the curability of many forms of this disease. The testimony of numerous competent observers proves that if the further growth of tubercles can be arrested, those already present may be absorbed or shrink, and the portion of lung close up; or they may be converted into a cretaceous (*chalky*) mass, and remain quiescent, so as to be tolerated; or they may be ultimately expectorated. The lesions of the lungs occurring in early life often heal, although they may subsequently, perhaps not till advanced life, recur and prove fatal. The destructive and ulcerative process rarely goes on uniformly, the symptoms remitting and the patient appearing comparatively well. Even in the worst specimens investigated many cicatrices and proofs of efforts to heal may be detected. Fatal results, however, may ensue from the cicatrices becoming the seat of further induration, softening, and cavities, and consequently

further encroachment on the lung-tissue. The vital lesson therefore to be gathered from pathology is the necessity of correcting the conditions which lead to a further occurrence of tubercle. *Post-mortem* examinations furnish conclusive evidence, in the frequent occurrence of cicatrices in the upper portion of the lungs, that tubercular growths are either absorbed or thrown-off, and so the disease is practically cured. Many individuals, no doubt, are the subjects of modified attacks of Phthisis which they survive, and from which they completely recover. Many illustrations have occurred within our own experience, a few of which are briefly given in this treatise. In many cases, of which other physicians had made the diagnosis, we have witnessed all the evidences of tubercle arrested, and the symptoms entirely removed. "In such instances, after wasting, febrile access, cough, spitting of blood, expectoration, and the presence of physical signs indicating a solid deposit in the apex of one of the lungs, the systemic disturbance subsides, the patient regains flesh and strength, and all chest symptoms cease" (*Pollock*). The most practical scientific physicians are agreed that it is a disease specially likely to arise during the period of growth; that under proper treatment it ceases for a time, years may "elapse before there is any renewal of the symptoms; and that, were full advantage taken of the intervening period to correct the constitutional cachexia, the cure might prove complete" (*Carswell*).

Post-mortem Evidence.

Testimony of Experience.

The remarkable feature of remissions before referred to, which characterize the course of Consumption, may be regarded

Opportunities afforded by Remissions.

as efforts of the system to recover losses sustained, and to eliminate, by increased secretions, morbid materials from the blood. Neither should we overlook the opportunity which such pauses "offer in practice for an attempt, which is almost always successful, to assist in the reparative processes. . . . These are the golden moments, and if from some mistaken theory we overlook them, or through fears of inflammation should persist in a low regimen and the use of depressing drugs, we are counteracting the attempts to rebuild and repair, towards which the vital system is labouring with all its powers. It has been shown that the intermission-period is hopeful for resistance, for repair, and for cure; and it has been sought to establish that Nature herself indicates, by the cessation of morbid processes, and increased nutritive energy during these pauses, that the resistance of the system can be effectually aided by judicious assistance, if it be afforded at the right time and in the proper direction" (*Pollock*).

From the foregoing statements it must not be inferred that we do not sufficiently recognise the great danger and fatal character of the disease. We do regard it as dangerous to a high degree; the meaning we intend to convey is that, although in the majority of cases the efforts of the physician to bring about a cure are in the end unsuccessful, still recovery does take place in many instances, sometimes in very unpromising ones; and in most, not only may sufferings be greatly mitigated, but life—useful life—considerably prolonged.

XIII.—Hygienic Treatment.

From what has been advanced on the nature, symptoms, and causes of Consumption, it will be evident that the treatment must be of a comprehensive character, including the following aims:—(1) To *prevent* the disease, as in the case of the children of consumptive parents; (2) to *correct* defective nutrition, which leads to tubercular deposit; (3) to *arrest* the progress of active Consumption; (4) to *prevent fresh deposits*, by building up the health in the intervals of apparent recovery; (5) to *moderate* the hectic and lessen the sufferings of advanced and hopeless cases.

The chief indications for treatment are, therefore, to improve faulty nutrition, promote the formation of healthy blood, and thus to anticipate altogether the growth of tubercles, or to repair the constitutional health that further deposit of tubercles may be prevented, and that what has already occurred may be rendered harmless. These ends are to be obtained by hygienic means and by specific Homœopathic treatment. To the former we will first and chiefly direct attention, and afterwards, briefly, to the latter.

a. Nutritious Diet.

Diet of Infants and Children.

The diet of the children of consumptive parents is a point of the highest importance, and should engage attention from the earliest period of life. If the mother be delicate and predisposed to Consumption, a wet-nurse of a thoroughly healthy constitution should, if possible, be provided. If a

consumptive mother nurse her infant, she is in danger of bringing into activity the tubercular disease in herself; while the child is but imperfectly nourished, and derives, with the supply of milk, an additional element of danger to that which it inherited from birth. The infant should be restricted to healthy breast-milk for the first five or six months, after which slight additions of farinaceous food may be allowed once or twice daily, and the child weaned at nine months. If a wet-nurse cannot be obtained, the nourishment should bear the closest possible resemblance to the mother's milk. The best substitute, and one which we have known successful in numerous instances, is cow's milk assimilated to human by the addition of water and *Sugar-of-Milk*, for the milk of the cow contains more oil (*cream*), but less sugar than that of woman. It is prepared for use as follows:—"Dissolve one ounce of the *Sugar-of-Milk* in three quarters of a pint of boiling water. Mix when wanted with an equal quantity of fresh cow's milk, and let the infant be fed with this preparation from the feeding bottle in the usual way. Always wash the bottle after feeding, and put the teat into cold water, letting it remain until wanted again."

The Best Artificial Food.

In carrying out the above directions it is necessary to use cow's milk of good quality, and always to administer the food freshly mixed, and at a uniform temperature, namely, that of breast-milk, and for the first month not oftener than every two hours and a half during the day, and every four hours during the night. On no account should the babe be allowed to sleep with the tube of the bottle in his mouth, to suck as often and as long as he likes.

About the eighth or ninth month, when the teeth usually begin to appear, a gradual change of diet is necessary. This should consist chiefly of farinaceous preparations, the best of which is, according to our experience, *Neave's Farinaceous Food;* afterwards sop made with bread without alum, bread-and-milk, light puddings, oatmeal porridge, and a little mutton-broth, beef-tea, or bread soaked in a little gravy as it escapes when cutting up a joint of meat. Feeding with a spoon, by favouring admixture of saliva with the starchy particles, will probably insure a more perfect digestion of the food. Till the teeth appear, however, all preparations of animal food should be avoided. After weaning great care should be taken, and every kind of food avoided that causes irritation or diarrhœa. Children should be fed regularly, be taught to masticate thoroughly, and not allowed to take too active exercise immediately after meals.* Even thus early, should there be any symptoms of mal-nutrition, a small dose (ten to fifteen drops) of cod-liver oil may be given with very beneficial effects.

Diet of Adults. For older persons, the diet should be digestible, nourishing, and sufficiently varied and abundant to meet the requirements of each case. As a general rule it should include animal food once or twice a day; wholesome kinds of fish, especially those varieties which are richest in *Phosphorus;* good home-made bread, not less than one day old; puddings of arrowroot, rice, sago, tapioca, etc., taken, if preferred, with stewed fruit; various kinds of green vegetables, and mealy

* For fuller details the reader is referred to the Author's work on the "Treatment of Infants and Children," Chap. III.—Examples of Dietary for Children of Different Ages.

potatoes, oatmeal and milk; good milk is a fundamental article; raw eggs, swallowed whole, or beaten up with a little cold milk are strongly recommended; but fresh pork, sausages, veal, fish not having scales, pastry, and all articles that give rise to irritability of the stomach, nausea, heartburn, eructations, or any other symptoms of indigestion, should be avoided. If the patient is benefited by its use, a moderate allowance of beer or wine. Two or three glasses of Carlowitz, Burgundy, Claret, or Hock, diluted with water, may in some cases be given with good results.

The importance of selecting digestible food exclusively is evident from the fact that tubercles do not arise except during a period of imperfect nourishment of the body. By whatever means the nutrition of the body is increased, in the same ratio the advance of Consumption is prevented or retarded; an important sign of improvement being an increase in the patient's weight. The system is invulnerable to Consumption so long as it is well nourished by a healthy digestive apparatus.

"It is clear, therefore," writes Dr. Chambers, "that it is the tendency to tubercle, and not the existing tubercle, which we have to fear and to guard against; and that for the successful treatment of Consumption we must withdraw our minds from the morbid anatomy of the locality to the fatal propensity of the constitution. I know you are disposed to turn first to the lungs. But if we inquire into the histories of those who have lived long with vomicæ (*abscesses*) or tubercles, they are by no means found to have taken special care of their chests—they have not coddled or lived indoors, in even temperatures, hanging their lives on to their thermometers for fear of coughs; they have gone on with their professions or business or work; they have not 'laid a knife to their throat,' but have eaten and drunk like other people, and have enjoyed the gratification of their appetites. A patient of mine, over fifty, with copious pyoptysis (*spitting of purulent matter*) and condensed lungs (of probably a tubercular nature) from his youth, has kept hounds, broken his bones like other Nimrods, contested county elections, sat in Par-

liament, enjoyed his champagne and other good things, *but never allows any doctoring of his chest.*

"Leave the respiratory organs alone, and direct your thoughts to the organs of nutrition—the stomach and bowels, which will receive with thankfulness, and return with interest, any care you bestow upon them. It is truly by aid of the digestive viscera alone that Consumption can be curable. Medicines addressed to other parts may be indirectly useful sometimes, but they more commonly impede the recovery; whereas aid judiciously given in this quarter is always beneficial, and usually successful. Your aim should be to get the greatest possible amount of albuminous food fully digested and applied to the purpose of the renewal of the body, at the same time that the renewing agencies are brought to their highest state of efficiency. In this way a healthy cell-renewal takes the place of that morbid, imperfect cell-renewal which appears in the shape of tubercular matter."—*Lectures chiefly Clinical.*

Fat. Fatty matter, in quantities as large as it can be assimilated, has been strongly recommended. The late Sir James Simpson some time since remarked the healthy appearance and freedom from Scrofula and Consumption of the operatives of woollen factories, consequent on the oil which in the course of their daily labour is freely applied to the skin. It was also seen that the work-people improved in appearance when engaged in the more oily processes, and often lost flesh and strength after leaving them. So impressed was Dr. Simpson with the value of oil in the prevention of Consumption that he laid down rules for its application by inunction. He recommended a bland, inodorous olive-oil to be applied warm to the whole cutaneous surface, with a considerable amount of friction, which renders absorption greater.

Oil by Inunction.

Cod-Oil. *Cod-liver oil* * is the substance which has

* Cod-liver oil is perhaps most palatable when made up in bread. Two tablespoonfuls of oil to half a pound of dough (with an extra pinch of salt) make a small loaf almost tasteless, and which can be relished even when a small quantity of the crude oil excites nausea.

been found most beneficial. It may be considered as an item of food, and its power in checking emaciation and improving the healthy tone of the muscular structures is too well known to require commendation now. At Brompton Hospital more than six hundred gallons are consumed every year. Perhaps some of its usefulness depends on the *Iodine* and *Phosphorus* contained in the oil, which thus forms a natural compound of food and medicine. It may be advantageously given in scrofulous affections, troublesome cough, etc., especially if occurring in a family in which Consumption has been fatal.

The discriminate use of this agent nourishes the body, gives firmness to the pulse, checks the expectoration and night-sweats, and diminishes the cough. It should not, however, be alone relied on, but used only as an adjunct to such remedies as *Calc.*, *Phos.*, *Stann.*, *Lyc.*, *Zinc*, etc.

Cautions respecting Oil. Two cautions are necessary to be observed: —(1) It should not be given during the persistence of febrile symptoms,—hæmoptysis, congestion, or any active form of the disease. It is not till there are evidences of a pause in the disease, the decline of the pulse, and the cessation of the Hectic, that oil can be of any value. The sphere of cod-liver oil is to remove exhaustion and raise the general tone. This is best accomplished when active morbid processes and local irritation have subsided, for then the system is in a condition to appropriate a considerable amount of nourishment. The common error is to administer it when, active inflammation or irritation being present, it cannot be tolerated, but tends to produce gastric disorder. It may also then accelerate emaciation by supplying the elements of combustion. Such remedies as *Aconitum*, *Bryonia*,

and *Phosphorus* would then be more appropriate. (2) It should never be given in such large doses as to excite nausea or eructations. At first a teaspoonful, or in the case of children ten or fifteen drops, may be given twice a day, and the dose gradually increased to a dessert-spoonful, if it seems necessary. The appearance of any unchanged oil in the evacuations is evidence that more is given than can be digested, and the quantity should be reduced till none can be detected. Too large doses of oil, or other kinds of fat, may have a considerable share in the production of *fatty degeneration of the liver*, a condition found in the *post-mortem* room to exist in a large number of cases.

The best time to administer the oil is with, or directly after, food. If there be any difficulty in retaining the oil we prescribe it at bed-time, just as the patient lies down to sleep. But when there exists an insuperable repugnance to the internal use of the oil, enemata containing it may be tried; or it may be introduced into the system by inunction, or by applying lint saturated with it, to the chest, sides, or between the shoulders.

"The effects of cod-liver oil," writes Dr. Chambers, "become less and less a marvel the more we know of physiology. The instinctive desire shown by all nations for an oleaginous diet, and their association of substances of this nature with proverbial ideas of happiness in all ages, show the value of a certain amount of it to man's comfort. The 'butter and honey' of the prophets, used as a phrase for royal food, and the constant reference in the Bible to oil as a luxury (though it could have been no rarity in a land of 'oil-olive')—these are sufficient to prove its estimation among the Hebrews. The Hindoo labourer, when he devours his gallon of rice for a meal, will spend all the pice he can get on the clarified butter of the country; and 'as good as ghee!' is his expression of unqualified admiration. It was a mistake in Baron Liebig to state that oily foods are disgustful to natives of hot climates. All races

of men require them and seek after them; and the taste of the Esquimaux, so often quoted, depends mainly on the abundant supply of the article which the sea places at his disposal, coupled with a scantiness of other provisions. Throughout mankind there is an instinctive appreciation of the importance of this aliment, independent of accidental differences of nation and locality. It seems felt to be, as science really shows that it is, a necessary material *to prevent waste* of the tissues, and the desire for it becomes synonymous with a desire for augmented life.

"To find the easiest assimilated oil, and to prepare the digestion for the absorption of oil, are the main problems in the cure of Consumption."—*The Indigestions.*

Besides cod-liver oil, there are other animal fats and oils which, if they can be taken and assimilated, are certain to be followed with good results: such as rich milk, cream, butter, home-fed fat bacon, glycerine, and other substances rich in fatty matter. We mention these varieties so that in the event of a change being desired, one may be substituted for another, as circumstances indicate. Cream is often of great value; to prevent its oppressing the stomach, a teaspoonful of French brandy, or better, a teaspoonful of cold, strong black tea may be mixed with it. Cream is, however, probably inferior to cod-liver oil, and has not the same anti-tubercular effect, for the *Iodine* which is present in the former is absent from the latter.

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b. Pure Air.

One of the most vital elements of tonic treatment exists in fresh air; on the other hand, everything which impedes the free and perfect removal of respired air favours the development of tubercle. The children of consumptive parents should be exposed daily to out-of-door air soon after birth, in suitable weather. The pure air of the country, or of the parks which are now,

happily, provided for the inhabitants of most large towns, should be selected. Carbonic-acid gas, and effete animal effluvia, the product of breathing, are most inimical to healthy life, and provision should be made for their uninterrupted removal from houses, and especially from sleeping-rooms. Inasmuch as about one-third of human life is passed in bed rooms, *airy, well-ventilated sleeping apartments should be ranked with the most important requirements of life, both in health and disease.* The sleeping-room should afford a space of about a thousand cubic feet for each person (that is, ten feet each way); and one room should on no account perform the double office of sitting-room and bed room.

Ventilation.

To render air sufficiently pure for breathing, it must be continually changing, and this involves the following conditions:—(1) The air *entering* an apartment must itself be pure, that is, without admixture with effluvia. (2) It should travel at such a *moderate speed* that it does not cause the sensation of *draught.* (3) It should be *diffused equally* through the room. (4) *Expired* air should be uninterruptedly removed, that there may be no danger of breathing it over again. (5) Expired air naturally passes upwards; it should therefore be *discharged above.* (6) The means by which these ends may be attained are, *natural ventilation*—diffusion of gases, the action of winds, and unequal weights of air—and *artificial ventilation*—permitting free communications between the atmosphere without and the atmosphere within.*

* For an elaborate statement of these points, with excellent suggestions for their practical application, the reader is referred to *Parke's "Practical Hygiene."*

The possible evils to be guarded against in carrying out the ventilation of bedrooms are currents of air playing on the face of the occupants; there should be an uninterrupted but *imperceptible* movement of the air. In nearly every case, *draughts* may be obviated by placing the bed in a suitable situation, or by a single curtain on the side of the bed next the door or window. During windy or foggy weather, the apertures directly communicating with the external air may be closed.

A very important requisite in obtaining good ventilation is by the simple arrangement for windows to open both at the top and bottom. It may appear unnecessary to offer such a suggestion, but there are yet so many windows which do not open at the top that we venture to offer it here. Glass louvres, which admit of being more or less closed, placed in one of the panes, are a very useful contrivance. The use of them, with a door or window in an opposite side of the room, secures a certain amount of ventilation, by the removal of vitiated air, and the introduction of pure. It is of great importance that the size of the apertures for the inlet or outlet of air should admit of variation, so as to adapt them to the difference of the internal and external temperatures.

Mr. Rawlinson advises a slit an inch wide in the top of the door of bedrooms, or still better, in the wall above it, so as to form a communication between the air of the room and that of the staircase and passages.

In severe weather, when the invalid cannot bear the free access of fresh air from without, the generation of fresh oxygen in the apartment will be highly beneficial. This may be easily accomplished by placing near the bed a vessel containing permanganate of potash, either

in the crystal, or as Condy's fluid, to which two or three drops of sulphuric acid are from time to time added.

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c. Exercise.

The unrestrained exercise of the muscles and lungs in pure out-of-door air is of high importance, both as a preventive and curative measure; experience has largely proved that this is the most efficient means of benefiting the prospective or actual subject of Phthisis: the air, however, should be dry, as on a sandy or gravelly soil, and the situation elevated. In such a climate,

"The more fully the lungs are judiciously used, the more is their capacity nursed; and, conversely, the less they are used and expanded, the more useless are they likely to become, if not absolutely diseased. Under a judicious system of training, an undeveloped man, even although he may be feeble, narrow-chested, and sickly, may yet become active, full-chested, and healthy. It is therefore within the power of the medical adviser to direct the physical training of young persons, so that the apparently sickly and the short-winded may in time be developed into the wiry and active young man, long in wind, sound in body, and lithe of limb; a result which, however, can only be attained by judicious feeding, careful exercise throughout the whole period of development, and by the gradual nursing of the breathing powers" (*Aitken*).

Swinging the Arms.

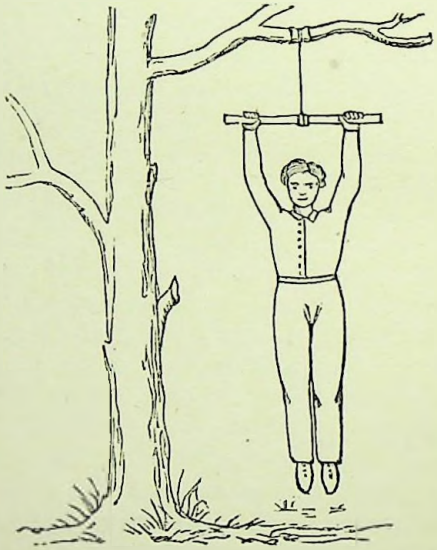
If possible, exercise should be so taken as to bring all the muscles into moderate and agreeable action, and with the body in an erect posture. *Walking* exercise secures these conditions to a certain extent; but in walking the arms should be allowed to swing freely, as this brings into play the pectoral and intercostal muscles,—the muscles by which the function of breathing is performed, and so tends to enlarge and strengthen the chest-walls and their contents. This suggestion is chiefly intended for females, who usually

hold the arms quite still; while a man in walking a mile swings his arms some 2,000 times without inducing fatigue. Riding on horseback has the advantage of permitting the patient to breathe a large amount of fresh air, while the exercise does not occasion great difficulty of breathing. Except when a cold north-easterly wind is blowing, *children* should take open-air exercise every day, as in running, trundling a hoop, or using other out-of-door toys. Frost, and even a moderate amount of damp, need not stand in the way, if the child is taught to move briskly, and a healthy circulation is kept up in the hands and feet. On the other hand, confinement in close rooms, and too little open-air exercise, leads to the worst results in children predisposed.

Rowing, Gymnastic Exercises, etc.

The exercise of the muscles of the upper extremity and of the chest is very desirable. *Rowing*, if practised within moderate bounds, is useful in raising the tone of the muscles of these parts. *Gymnastic exercises*, gradually increased, involving muscular movements of the upper half of the body, rapidly improve both the respiratory and digestive functions. When the weather forbids out-of-door recreation, *dumb-bells*, or some of the well-contrived apparatus for arm and back exercise, should be daily used in the house with open windows, or in a covered playground with a dry floor. Muscular and respiratory changes will thus be promoted, and the digestive processes strengthened. There is one form of exercise as a preventive of Consumption, first described by Dr. Long, which we have prescribed for many years with excellent results in suitable cases. We will call it the *cross-bar swing*.

The Cross-bar Swing. By this we mean hanging by the hands from a horizontal bar or piece of wood, about three feet long, to the centre of which one end of a rope or chain is affixed, the other end being fastened to a beam, or the branch of a tree. (See the illustration.) The gymnast should grasp this cross-bar,



which should hang from six to nine inches above the head, with the hands two or three feet apart, and swing very moderately at first—perhaps only bear the weight if very weak—and gradually increase, as the muscles gain strength from the exercise, until it may be freely used several times daily, various movements of the legs

being combined with this exercise. The arms being chiefly connected with the body by a muscular attachment to the ribs, the effect of this exercise is to elevate the ribs and enlarge the chest; and, as nature allows no vacuum, the lungs expand to fill the cavity, increasing the volume of air—the natural renovator of the blood,—and preventing congestion and the deposit of tubercles. By this exercise the measure of the chest may be increased from two to four inches within a few months, and with good results. It is, however, only as a preventive, or during the absence of active symptoms, that we recommend this exercise. Let those who desire long life cultivate a well-formed, capacious chest. The student, the clerk, the merchant, the sedentary, the young of both sexes, should have a cross-bar upon which to exercise daily; if this were done by the rising generation, in a dress allowing the free and full development of the body, tens of thousands might be saved from Consumption.

Cautions. In recommending exercise it is necessary to remark that it should not be excessive, or too long-continued, but regulated by individual fitness. Exercises unsuited to the frame, or continued beyond the power of the heart and lungs, will only result in overtasked powers and exhausted energies.* The *rationale* of this is obvious; Phthisis being a disease of debility, if the

* A painful instance of the neglect of this precaution is recorded by Mr. McLaren, in his "System of Physical Education." A man boasted to him some time ago that he and his son—the father a strong hardy man, the son a lanky and loose-grown lad of thirteen years—had just walked from London to Oxford in one day—a distance of nearly sixty miles. Before the year was out they made another journey together, a short one this time; the son carried before, the father, broken-hearted, following. The boy had never recovered from the exhaustion to that day.

vital power is expended too lavishly in exercise, sufficient is not left for healthy digestion; food is then imperfectly assimilated, nutrition is at fault, and the disease advances. Consumptive patients should indeed be much in the open air, but at the same time avoid any but the gentlest exercise; such patients lack endurance, and if exercise be carried too far, digestion will inevitably suffer, and the nutritive processes be inadequate to repair the wasted tissues. On this account horseback exercise, which gives the largest amount of fresh-air, with the minimum expenditure of muscular force, is strongly recommended. Excessive work of the brain must be strictly avoided, and an interest taken in natural objects and operations, such as those of the garden, the farm, the hill-side, and the river.

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d. Bathing.

Bathing the entire surface of the body daily is a most useful habit. The great vascularity of the skin, its large daily secretions, and its breathing-power in aid of the lungs, testify how corrective the healthy play of its functions must be in cases of threatened mischief to the internal organs. Perhaps there is no one other hygienic habit commensurate in value to the cold bath, both as a preventive and corrector of the consumptive cachexia. It improves the functional activity of the body generally, by increasing the capillary circulation of the skin, and so fortifies the system that persons extremely liable to take cold can in time endure severe changes of temperature with impunity. This is a point of great

advantage to a consumptive patient. For persons unaccustomed to it, the water should be tepid first, but gradually reduced to cold. The most healthy plan for children is to plunge them rapidly into water; this obviates the exposure consequent on sponging, and insures a quick and complete reaction. Adults who cannot command full bathing facilities may sponge the chest both in front and behind quickly, or rub the whole surface of the skin first with a wet sheet and then with a dry one; this can generally be borne and enjoyed, and where it is followed by a general glow is a most valuable aid in promoting capillary circulation. The use of sheets is preferable to sponging, as by completely covering the body they prevent loss of heat by radiation. Under all circumstances, vigorous friction with a dry bath-sheet or large towel should immediately follow the bath, as reaction is thus rendered more complete. Cold bathing must be regarded as injurious if, notwithstanding vigorous friction, the surface remains cold, numb, blue, or pale. In such a case, tepid or warm baths should be used at first, and cold water only adopted when good reaction follows.

Sea-Bathing. Except in confirmed and hopeless cases of Phthisis, sea-bathing is generally advantageous. The best season of the year is from July to October; and the best time of the day is perhaps about two hours after breakfast. The object sought is to produce *vigorous reaction*; and to secure it the nervous and circulating systems should be in some degree of excitement, and there should be a slight augmentation of the temperature of the skin, although it should not be in a state of perspiration. But on no account should the patient

bathe when exhausted by fatigue,or when the body is cooling after muscular effort; nor should he remain in the water more than a few moments at first. If the bather be strong, he may plunge into the open sea early in the morning before breakfast, not only without injury but with decided advantage; but the forenoon is the most appropriate time for a weak child or delicate patient, as then the air has become warm, and the system has been invigorated by nourishment.

Sea-Salt. Patients who are unable to secure sea-bathing may enjoy, to a limited extent, its advantages by adding a solution of *sea-salt* to the water of the bath. Sea-salt is the residuum of evaporated sea-water; and if it be added in proper quantity to a bath, so that the mineral ingredient approximates to that contained in sea-water, it will be very much more efficacious than a simple fresh-water bath, in consequence of the stimulating action of the water upon the skin imparted by the saline matter which it holds in solution. The addition of salt obviates the chill which fresh-water sometimes gives. It will often be found that consumptive patients, with feeble circulation and cold hands and feet, are much benefited by a salt-water bath, who could not bear the shock of fresh water. For inland residents, *Sea-salt* is an excellent substitute for sea-water bathing; in its absence a handful of bay-salt, or even of common salt, may be used.

e. Clothing.

This should be sufficiently warm to maintain in vigour the cutaneous circulation; the extremities especially should be kept warm, to obviate congestion in

the chest or abdomen. Flannel should be worn both in summer and winter: in the former it neutralizes any variation of temperature, and prevents sudden cooling by evaporation of the perspiration; in the latter it prevents loss of the vital warmth of the body. In winter, the addition of a chamois leather vest may be advantageously worn over the flannel. The notion that delicate children may be hardened by habitually exposing them to atmospheric changes, when but imperfectly clad, is erroneous in all cases; and in the instance of children of tuberculous predisposition, often leads to the worst results. It is in the spring that our climate is so treacherous, and this season especially requires careful attention to clothing. But flannel should not be worn next to the skin, as it is thus likely to cause unnatural action, and it should not be worn at night. The habit of sleeping in flannel is highly objectionable, and is subversive of the very object for which it is recommended. (See *Vade Mecum*, p. 49, 5th Ed.)

f. Healthy Residence.

A person predisposed to tubercular disease should, if possible, reside in the country, and select a house on a gentle slope and gravelly soil, with a southerly or westerly aspect; the bedrooms especially should look in one of these directions. If the house is not upon a slope, the *drainage* must be artificial. The house should not be too closely surrounded by trees, or in immediate proximity to thick woods, for they both attract and retain moisture, while they exclude much of the valuable influence of sunlight, and thus render the climate damp

and cold. At the same time the sight of green hedges, shrubs, and isolated trees has a beneficial tendency. If compelled to live in a town, the house should face a park, square, or other open place, or at least a wide street, with a favourable aspect. Some who read these pages may be compelled to live where their occupations, families, or means determine, being unable to adopt the hints we have given. Nevertheless, even such may be benefited by the suggestions, for although they cannot secure perfection in a residence, they may aim at an approximation towards it. Most young persons, however, notwithstanding their limited means, may abandon a town-life to find work or service in the country. Frequently this is the only way of escape, and there are few who have not friends to aid them to make the necessary change. This may involve the acceptance of lower wages, or an humbler position, but should on no account deter them from abandoning the bad air of a city workshop or sleeping-room, which constitutes one of the chief predisposing causes of the disease.

The choice of a *dry soil and climate* has a vital bearing on our subject. In the report of the Medical Officer of the Privy Council for 1866, a dry soil and climate is suggested as a means for the diminution of Consumption. It is there stated that in improved towns, where the soil has been dried by the laying of main sewers, it has led to the reduction, more or less considerable, of Consumption; in the case of some towns to nearly *fifty per cent.*

Writing on the importance of a dry soil for the residence of consumptive patients, Dr. Buchanan expresses himself in the following terms:—

"It seems probable that the central fact is, that *the soil* upon which people live may be seriously good or bad for Consumption. Populations living on flat retentive soils, or on low-lying water-logged plains die of Consumption far more than others who live on elevated, *pervious and dry soils*. It is questionable whether for any other influence comprehended under the term "climate," so strong a connexion with the disease has been proved to exist, as its connexion with qualities of soil. And if this be true as a *cause* of Consumption, we need not hesitate to believe that a dry soil will influence the progress of the actually present disease. But, indeed, we shall only be following the indications of long experience if we advise the choice of places elevated on a sandy or chalk soil, rather than of localities that lie low, whether on shore or inland. I know well what strong opinions are expressed in favour of sea-air, but the evidence has never been sufficiently sifted of the influence of sea-air, *apart* from the other influences that make up climate in the places that are favourite resorts for consumptive patients."—*Lancet*, Feb. 1, 1868.

Elevated situations are also to be preferred. By the rarefaction of the air in elevated situations the patient is obliged to breathe more fully and deeply than in low-lying localities, and in this manner the lungs are expanded and stimulated to healthy development.

g. Change of Climate.

It is scarcely possible to over-estimate the importance of a change of climate in the treatment of Consumption. It combines in one prescription a multitude of remedies for the whole constitution,—air, water, food, light, temperature, elevation, natural scenery, and diversified occupation. With a suitable change of climate, a patient is often at once enabled, instead of occupying two or three rooms on one floor to breathe a uniform temperature, to range at pleasure in the great air-ocean, to bask in the sun, in light and free apparel, and to enjoy a degree of warmth which shall keep the skin active, and so relieve the lungs and other organs of a portion of their work of depuration. The choice of a

suitable climate is a point of great practical importance, and requires a considerable knowledge of natural science.

Wide Meaning of Climate. The term climate has a wide meaning, it comprises many and varied influences connected with the nature and elevation of the soil; the temperature, moisture, and density of the air; and the character—chemical and microscopical—and quantity of the water. As these are highly complex subjects, it is not possible to determine their separate effects except approximately. In addition to the points referred to under "Healthy Residence," the following should be specially taken into account. The climate should be sufficiently mild and equable to permit *a large portion of the patient's time to be passed in the open air.* The summer residence should be in a northern and bracing region; but the winter in a southern and warmer, so as to favour the almost constant breathing of out-of-door air. To the consumptive, whose very life is air, this is a most vital point, and includes nearly everything that need be said here on climate.

Out-of-door Life. Dr. James Blake, of California, adopted the plan of making his consumptive patients live in the open air; in the summer months he made them sleep out without any tent; the result was an astonishing improvement in digestion and blood-making. The resistance to any ill effects from cold and wet are described as marvellous.

"In choosing a home for your consumptive patient, do not mind the average height of the thermometer, or its variation; do not trouble yourself about the mean rainfall: do not be scientific at all, but find out from somebody's journal how many days were fine enough to go out forenoon and afternoon; that is the test you require, and by that you may be confidently guided."—*Chambers.*

"In the true Alpine region, Tubercular Consumption is almost absent, and strangers arriving there suffering with it are often cured. Still, even there, especially in the lower heights, women suffer greatly in consequence of setting at defiance the principle we have so much insisted on. The women employed in making embroidery congregate all day in small, ill-ventilated, low rooms, where they are often obliged to be in a constrained posture. Their food is poor in quality. Scrofula is very common. The men, who live an open-air life, are exempt. There, in the very place where strangers are getting well of Phthisis, the natives die from it, another proof that we must look to local conditions and social habits for the great causes of Phthisis. It would seem even probable that, after all, it is not indeed elevation and rarefaction of air, but simply plenty of fresh air and exercise which cures Phthisis."—*Parkes.*

There is no unconditional curative power possessed by any climate, and those who have returned from distant health-resorts with renewed health and vigour are indebted for the favourable change mainly to their passing twice or thrice more time in the open air than they had previously done at home.

A Sea-Voyage. The entire change of climate we have just recommended involves a voyage, which in itself, under favourable conditions, often wonderfully renews the constitution. Persons troubled with cough, and other symptoms of a phthisical character, often find a voyage, if undertaken before the development of advanced active symptoms, of signal benefit, or permanently restorative. The continuous moving through pure fresh air, free from dust, and rich in *ozone*, *iodine*, etc.; the novelty and grandeur of the scenes; the rest without complete inactivity; and the sharpened appetite which soon follows the walk upon deck, tend to render the voyage both charming and invigorating. The amusement to be obtained from exercise, games, books, music, and the pleasant interchange of thoughts, entirely divest a sea voyage of monotony. A voyage, however, to insure

good results must be taken under favourable circumstances; for if a patient suffers from prolonged sea-sickness, has to spend a large portion of the time in a confined and imperfectly ventilated space, and cannot command every necessary comfort and adjunct, a long voyage would only tend to deteriorate the health of the invalid, and jeopardize the prospect of recovery. Further, sea-air, if to a great extent *preventive* of pulmonary disease, should only be confided in as an adjunct to medical treatment in the *cure* of the disorder, and even then only when it is undertaken before the health is much impaired.

The Colonies. Entire change of climate is a subject of special interest to the inhabitants of this country, as our extensive colonial dependencies, and the comparative ease with which they can be now reached, place the advantages of a suitable climate within the reach of most persons. It is a subject that specially concerns families whose members have given evidence of a marked proclivity to Consumption; they should consider whether, to consolidate their family interests, and render them healthy and long-lived, they had not better turn their early attention to some of those fairest portions of the globe which are included in the vast outspread of our colonial empire, in which to seek that immunity from Consumption which they cannot insure in the mother country. Foremost among the advantages which such a change would confer is the choice of an active out-of-door occupation in the bush, among cattle, trees, and corn, and in a dry climate, in exchange, perhaps, for the vitiated air of a crowded workshop, or the sedentary life of a counting-room. Even individuals in whom actual disease has shown itself may often be

benefited by change to a suitable climate, by obviating congestion and irritation, which the sudden and extreme changes of this climate frequently occasion.

The Climate of Victoria.

The climate of Australia * has been recommended for the permanent residence of the consumptive, and it offers no doubt some points of favourable contrast with the long-esteemed resorts of Southern Europe, which, however grateful they may be in winter, are unsuitable in summer. It is, however, only in the early stage of Consumption, or if possible in the *pre-tubercular condition*, when the patient can "rough it" in the Victorian bush, and live chiefly an active out-of-door existence, that such a change of climate is advisable. It cannot be too emphatically stated that the chief advantage of an Australian climate is, that it enables a patient to take open-air exercise at all seasons of the year. But in the last stages of Consumption, when the strength is so far reduced as to prevent exertion, and when Hectic and its concomitants confine the sufferer to his bed, it will be evident that little benefit can result from change of climate. Patients should not, therefore, on any account be sent away from home and friends without a reasonable expectation that the case admits of benefit by such change, as it has too often happened that patients have left home merely to die. The chief point which contra-indicates change of climate is the presence of *active disease*, as shown by a persistently quick pulse, and a temperature above 100° Fahr. The importance of these

Contra-indications of Change.

* A recent report states the death-rate from Consumption and other lung-diseases to be less than half that of England.

indications lies in their being continuous, and not when due to merely temporary and passing causes.

Further, facts have recently been adduced which prove that Phthisis prevails very extensively in Australia, especially in Melbourne, and elsewhere among those following occupations liable to be so affected, and that in rapidity of course, and in fatality, it rivals the same disease at home. Not only does the disease exist there, but there is ground to believe the cases are not all imported. Benefit may be derived from a favourable voyage, and good new hygienic surroundings, but Melbourne does not offer to the consumptive patient a certain cure. Still, although not infallibly curative, an out-of-door life in the pure air, and under the clear sky, with a favourable temperature and the absence of humidity, is certainly likely to benefit a youth, without ties, in the incipient stage of Phthisis, who leaves our shores to rough it in Australia.

New Zealand. The climate of New Zealand is, in some respects, a more desirable one than that of Australia for a consumptive patient. The Australian summer is excessively, and often injuriously hot; New Zealand is cooler, while offering summer weather during our winter months.

The Climate of Egypt. Egypt is now much recommended for the consumptive, on account of the dryness as well as moderate warmth of the climate; dryness of air prevailing even on the Nile. Those who can command such a remedy, improve their prospects of recovery, or at least prolong their lives, by migrating to this climate in the winter.

Madras. At the time of writing, Madras is

recommended, by an eminent member of our profession, as a highly advantageous winter residence. It commands, especially, four essential elements for the restoration of health,—*warmth*, without any fatiguing effort to maintain the animal heat; *air*, in unstinted measure, for the patient almost lives out-of-doors, or in spacious rooms, in which there is a moving mass of delicious air; *food*, in the most liberal supplies; and *amusement*,—for he must be dull indeed who does not find something to excite his curiosity every hour.*

When removal to very distant countries is impracticable or undesirable; and even Nice, Cannes, Mentone, San Remo, Malaga, Cadiz, Madeira, Algiers, or other European health-resorts, are beyond reach, Hastings, Clifton, Bournemouth, Ascot, Dartmoor, Torquay, Ventnor, Guernsey, and Queenstown (Ireland), are places in our own Islands to which patients may be sent with the prospect of excellent results.†

Ascot. Among our inland health-resorts, the locality of Ascot is perhaps one of the healthiest in England, often far superior to foreign places, the reaching of which is both exhausting and expensive, and proving frequently unavailing in the end. The whole neighbourhood, including Sunningdale, Sunninghill, Bagshot, and Ascot, stands pre-eminent in soil and in natural drainage, while the air is specially advantageous to persons of a consumptive cachexia. The late Sir James Clark, who occupied the royal residence in Bagshot

* See "Notes on Madras as a Winter Residence," in the *Medical Times and Gazette*, June, 1873, *et seq.*

† Useful information respecting the various health-resorts in the British Islands is contained in the first and second volumes of the *Homœopathic World*.

Park, said it was the most salubrious district in England. Pine trees stud the locality, emitting at evening a delicious fragrance, which is believed to be as restorative as it is pleasant. Bournemouth possesses also this advantage, probably to a greater extent, being surrounded with pine woods.

Dartmoor. Another not less favourable, but perhaps more neglected place, both for children and adults suffering from incipient Consumption and its attendant debility, is that extensive tract of country in Devonshire known as Dartmoor. The fine moorland air in some cases acts like a charm, and invalids going there with weak lungs and lost breathing-power, return home after a few months' residence apparently in perfect health.*

XIV.—Medicinal Treatment.

Difficulties of Treatment. Although our rich Materia Medica furnishes medicinal agents applicable to every form and stage of Consumption—preventive, remedial, and palliative—yet, when we come to prescribe for the actual treatment of the disease, we find our task a most difficult one, as a multitudinous and varied class of remedies are required to meet the different manifestations of the malady as met with in practice. Just as no two human faces are exactly alike, so no two cases of Consumption ever present, from their early manifestation to their full and fatal development, precisely the same symptoms. Consumptive patients are to be dealt with, therefore, according to their most special conditions.

* See *Homœopathic World*, vol. vi., p. 141-2.

The perfection of the treatment of Phthisis, as, indeed, of disease in general, lies in its adaptation to individual cases. The stock whence the patient has sprung, the circumstances of his early life, his education and general habits, the influences of soil and climate, the diseases he may have passed through, the tendency to disease of the body generally, and of organs and tissues in particular, —these are but illustrations of the points that have to be brought, as it were, into the focus of thought before a course of treatment can be prudently decided upon. We need, therefore, scarcely add that the knowledge and experience of a physician are pre-eminently necessary, and that every case of suspected disease should be confided to the care of a professional Homœopath.

Medicines subordinate to Hygiene.

In accordance with the title of this book, we have endeavoured to give a clear view of the conditions under which Consumption and Tuberculosis of the Lungs are most likely to appear, and of the preventive and general measures to be adopted in order to their correction. It must be distinctly stated that, if these measures are neglected at the proper time, they cannot be atoned for by any subsequent medical treatment, however skilfully applied ; hence the remedies mentioned in this chapter, though of great utility for the correction of disordered functions, especially digestive and assimilative, should only be regarded as secondary to the early and continued observance of the hygienic rules we have pointed out in these pages.

Incurable Cases may be mentioned.

Still, in keeping with the motto we have placed on the title page, hopefulness must be encouraged. The fear is that,

in unmistakably clear cases of incurable disease, the practitioner and friends should be so appalled by the amount of structural change that has taken place as to overlook those favourable results which good treatment may yet effect. It should never be forgotten that in many instances considerable organic mischief may be arrested, and urgent symptoms so modified as to comport with the exercise for many years of various useful functions, and with a tolerable share of real enjoyment: cases of this nature are always under our care, and we have given brief details, further on, of examples in point. Although we have no overweening confidence in medicines, our experience justifies us in stating that there are few if any conditions of the disease in which the application of well chosen remedies is not capable of rendering most valuable aid, or at least of acting as handmaids to hygienic and climatic influences. Instead, then, of being disheartened by the extent of lung-mischief which has been detected, earnest and well-directed efforts should be made to correct the digestion, and improve such other functions as are still within the range of our remedial resources.

Epitome of Treatment.

1. *Tubercular Cachexia.* — Calc.-Iod., Ferr., Ars., Phos., Sulph.

2. *Indigestion.*—Lyc., Puls., Nux Vom., Hydras., Calc., Merc., Kali Bich., Ant.-Crud., Carbo Veg.

3. *Active Symptoms.*—Ars.-Iod., Ars., Phos., Hyos.,

Acon., Bell., Ipec., Ferr., *Sodæ Arsen.*, and the Warm Bath (See pp. 107–8).

4. *Cough, etc.*— Bell., Hyos. (*nightly dry cough*); Bry. (*with stitching pains in the side*); Phos., Stannum (*with profuse expectoration* and *night-sweats*); Dros. Ipec. (*paroxysmal cough*); Kali Carb. (*cough from irritation of the throat*); Kali Bich. (*with tough stringy, adhesive mucus*). In most cases, the frequency and violence of coughing may be considerably controlled by voluntary efforts made by the patient.

5. *Hæmoptysis.*—Mill., Ham.-V., Ipec., Dros., Arn., Ferr., Calc.-Iod.

6. *Dyspnœa.* — Ars., Ant.-Tart., Ars.-Iod., Ipec. Rubbing the chest with cod-liver oil, or glycerine; also, the chest compress often relieves difficult breathing.

7. *Hectic Fever, Night-sweats, Diarrhœa, etc.* — Phos.-Ac., China, Sulph-ac., Hep.-S., Samb., Ars. Spong. Also the *Warm Bath.* Night perspirations are diminished by sponging with warm vinegar and water, and by improvement of the cutaneous functions generally. Smearing the skin with clarified suet at bedtime is also useful.

8. *Various Symptoms.* — Kreas. (*sympathetic vomiting*); Acon. (*congestive and febrile symptoms*); Merc. (*yellowness, depression, and other liver symptoms*); Kali Bich. (*yellowish, stringy expectoration*). As a general tonic, and to relieve various local discomforts, hard rubbing the skin, and the manipulations of the shampooer are often strikingly effective.

The *Accessory* and *Palliative* treatment of advanced and hopeless cases is not described here, as it did not come strictly within the scope of this treatise. Appro-

priate *directions on Nursing* are given in the author's "Vade Mecum."

LEADING INDICATIONS.—*Calcarea Carbonica.*—This noble remedy is well adapted to those constitutions in which the digestion or assimilation of food is imperfect, not resulting in the formation of good blood and healthy tissues; there is an impoverished appearance, notwithstanding that a fair, or even a large supply of good food is taken. Other indications are—a want of firmness of the bones, slow or difficult dentition, scrofulous swellings, extreme sensitiveness to cold and damp, cough, easily induced fatigue, acid eructations, relaxed bowels, gradual wasting, and, in females, too frequent and profuse periods. It is specially adapted to children and females, to those who have previously exhibited scrofulous symptoms, and to the pre-tubercular condition generally.

Calcarea Phos.—The sphere of this remedy is nearly the same as that of *Calc.-Carb.*; it corrects the assimilative functions, and most forms of mal-nutrition from imperfect cell-growth. It is especially valuable for patients who have grown too rapidly, or suffered from exhausting discharges, excessive menstruation, prolonged nursing, the bad effects of town life, worry, or any other causes of debility.

Phosphorus.—Incipient Consumption, when the lungs are frequently and easily affected, as from a slight cold, with a short, dry cough, pain or soreness of the chest, shortness of breath, tendency to diarrhœa or perspiration, and general feebleness of constitution. This remedy should also be prescribed in confirmed cases, especially in delicate girls, troubled with frequent moist cough and

greenish expectoration, from an abscess in the lungs; excessive shortness of breath, diarrhœa, sweats, and emaciation; pain and tenderness of the chest, poor appetite, and small, quick pulse.

Arsenicum.—Tight feeling of the chest, as if bound round, greatly oppressed breathing, aggravated on lying down; chilliness in the chest, or soreness and burning from coughing; constant thirst; exhausting diarrhœa; rapid emaciation; depression of spirits. *Ars.* is valuable in all stages of the disease, especially in the last.

Arsenicum Iod.—Broncho-Phthisis, with shortness of breath, dry, irritable cough, with muco-purulent or stringy expectoration, and other symptoms and signs of tubercles. If given before softening has commenced, excellent results may be anticipated.

Arsenite of Soda.—Severe cough and profuse expectoration; hectic fever; night-sweats; diarrhœa. Even when auscultation detects abscesses in the lungs, the disease may sometimes be controlled by this remedy.

Spongia.—Loose, splashy cough, with fluid, greyish-green, fœtid expectoration; bitter taste; hectic; cold extremities.

Laurocerasus.—Irregular pulse, sweats, and emaciation; hoarseness, thick bloody mucus, poor appetite.

Iodium.—This remedy is adapted to that condition of the system in which swelling, or atrophy of the glands, and general emaciation, are prominent symptoms. A chronic diarrhœa, premonitory of Consumption of the bowels, is also an indication for *Iodium.*

Merc.-Iod. and *Silicia* are suitable adjuncts to *Iod.* in many cases.

Ferr.-Iod.—Valuable in the anæmic, impoverished,

and cachectic conditions so common in Tuberculosis, arising from imperfect assimilation of food.

Sulphur.—Phthisis, with chronic inflammation of the lungs.

Nux Vomica.—This is a prime remedy for Indigestion with the following symptoms:—flatulence, heartburn, acid eructations, and constipation or irregular action of the bowels. It is specially indicated in persons of dark complexion, sallow skin, of sedentary habits, or who suffer from much mental fatigue or anxiety.

Pulsatilla.—This drug is adapted to that form of Indigestion in which fat, an important constituent of a mixed diet, is distasteful, and is not taken without more or less derangement of the mucous membranes. But except that *Puls.* is generally more suitable to light-complexioned persons, and where there is a tendency to *diarrhœa* rather than to *constipation* from gastric disturbance, the indications are much the same as for *Nux V.* For *obstinate acid eructations*, not cured by *Nux V.* or *Puls.*, with a debilitating relaxation of the bowels, *Calc.-Carb.* should be had recourse to.

Lycopodium.—Acidity, intestinal flatulence, obstinate constipation, and other symptoms of chronic indigestion. It is chiefly adapted to old-standing cases, and when the symptoms are not active; it is also said to be more useful in young men than in young women. (See *Phos.*) Emaciation, poor appetite, pain in the lungs, hacking cough, Hectic, and profuse night-sweats are also indications.

Mercurius.—Faulty action of the liver, with yellowness of the skin and white-of-the-eyes, mental depression, loss of appetite, purulent expectoration, etc.

Hepar Sulph.—Scrofulous patients in the early stage. Hoarse, rough, or weak voice; hollow cough, with expectoration of mucus, sometimes of blood; dyspnœa, especially on lying-down; night-sweats; pain after the least food; clay-coloured or greenish evacuations.

Aconitum.—This is a prominent remedy in Consumption, and its administration during any course of the disease, when febrile symptoms recur, is attended with the best results. It is especially valuable in removing congestion, and modifying inflammatory and febrile action. Physicians of the old-school were formerly accustomed, and in many cases are so still, to use depletory measures—leeches, blisters, cupping-glasses, low diet, fever-draughts, and exclusion from fresh air—to diminish local congestion; but, thanks to Homœopathy, in *Aconite* we have a remedy which answers this purpose better than the lancet or the leech, without the consequent loss of strength. No inconsiderable portion of the fatality of Phthisis in former days was due to the lowering methods of treatment adopted,—methods calculated to hasten the fatality rather than to arrest a disease, the main element of which is one of lowered vitality.

Belladonna.—Cough, with expectoration of bright-red blood; spasmodic, often violent cough, worse at night; frequent congestion of the head, with alternate redness and paleness of the face.

Hyoscyamus.—Night-cough, especially when the cough commences, or is aggravated, on lying-down.

Bryonia.—Tearing dry cough, as if the chest or the head would burst by the effort; stitching pains in the sides, catching the breath.

Ferrum.—Anæmia, hæmoptysis, diarrhœa, œdema of the lower extremities, emaciation. *Ferr.* is required in most cases for the constitutional condition. Administered in large and long-continued doses, *Iron* has been known to bring on hæmoptysis; hence in small doses it is homœopathic to the condition.

Ipecacuanha.—Spasmodic cough, with accumulation of mucus in the chest, causing a sensation of weight, often vomiting of mucus, and sometimes of blood.

Administration of the remedies. In this disease, as in others, the frequency of the doses must be regulated by the acute or chronic nature of the symptoms. In administering one or more of the above remedies as modifiers of the constitutional tendency, a dose may be given once or twice daily, and continued for ten or fourteen days. After one or two days' pause, *Sulph.* may be administered, morning and night, for a few days, after which the course may be repeated; or if the symptoms point to it, another remedy may be chosen. When the symptoms come on rapidly, or are severe, the doses may be given every three or four hours, or even at shorter intervals, till improvement takes place, when they should be administered less frequently.

Medicines by Inhalation. In concluding this part of our subject, we will notice a mode of medication which often proves extremely useful, especially for administering such remedies as *Iodine*, *Kreasote*, *Aconite*, *Bryonia*, *Hyoscyamus*, *Belladonna*, *Ipecacuanha*, etc. In certain forms of the disease, especially in those chiefly involving the throat and large bronchial tubes, or in cases of irritative or convulsive cough, or with fœtid expectoration, the method of inhalation is very effective.

It is done very simply, and often more effectively and with less effort, without, than with a special inhaler. All that is required is a jug of *hot* water, over which the mouth may be held, and a towel so arranged that it covers the face below the eyes and surrounds the top of the jug, and so confines the vapour. A few drops of the drug to be inhaled being added to the hot water, the medicine finds ready access to the air-passages through both the mouth and the nose. This may be practised for five or ten minutes at bed-time, and if necessary, and the patient has not to be exposed to cold air during the day, it may be repeated once, twice, or oftener in the day. A portion of the drug thus administered reaches the lungs and enters the general circulation; but the chief action of the medicated vapour is on the throat and bronchial mucous surface. Inhalation can, however, be only a subordinate method of treatment in a great constitutional disease like Consumption. A well-chosen Homœopathic remedy, administered in the usual way, just as certainly reaches the seat of the disease as anything inhaled can do, and at the same time tends to correct the constitutional error on which the local symptoms depend. Apart from this method of applying various remedies to the respiratory passages, the simple vapour of hot water is of great utility; it soothes the inflamed mucous membrane, and assists in detaching mucus from the air-passages.

The Warm Bath in Consumption.

The use of the *Warm Bath*, two or three degrees below the temperature of the patient, for twenty or thirty minutes, and the temperature uniformly maintained by occasional additions of hot water, has an extremely

beneficial effect in controlling the active symptoms of Consumption, as well as of Pneumonia, Pleurisy, etc. The cough subsides, the expectoration is facilitated, the pulse moderated, and the high temperature reduced. Beyond these immediate results, after three or four baths, or even earlier, sleep is improved, diarrhœa lessened, and early-morning perspirations diminished. For consumptive patients a warm bath as above described is not recommended to be given oftener than every second day; it should be administered at bed-time, or when the patient has not to be again exposed to chilling influences; and the duration of each bath should be regulated by the strength of the patient.*

XV.—Cases Treated by the Author.

These cases, which might have been multiplied to fill a volume, are taken partly from private and partly from dispensary practice; they are not published as presenting any remarkable results from treatment, but simply as illustrations of the method of dealing with this frequently-recurring disease. The mere outlines are given, and *symptoms* rather than *signs* are noted, our space being limited. In fact, the idea of inserting cases at all was but an afterthought, and when the pages intended to be occupied were already filled.

* In a case under our care at the time of writing, the warm-bath proved strikingly and promptly beneficial. On the morning following the first bath the patient was able to rise before breakfast, although she had not done so for some time previously. All the distressing symptoms have been ameliorated.

We have omitted cases in which the disease was so hopelessly advanced as to confine the patients to their rooms, our object being rather to record such as were yet within the reach of cure, or of prolonged amelioration.

Case No. 1.—*Phthisis, with Hæmoptysis.—Subsidence of Active Symptoms.*

J. T., æt. 21.—This patient, of dark complexion, lymphatic temperament, and looking much older than his years, first consulted me May 11th, 1871. The signs and symptoms of Consumption were strongly expressed. Emaciation was excessive, the patient having lost two stones in the twelve months preceding his coming under my care. There was copious, thick, muco-purulent expectoration; and after any exertion he spat up red blood in considerable quantities. Cough and dyspnœa were very troublesome, and entirely prevented him from following his occupation, that of a cutter of fishermen's clothes, which necessitated his having to breathe a great deal of cotton dust. The chest-walls under the clavicles were much sunken, and their mobility greatly diminished. The percussion note was dull, with feeble inspiration and prolonged expiration.

Treatment.—The chief remedies prescribed were—*Dros.*, *Phos.*, and *Calc.-Phos.* They were continued, with some interruptions, to the end of the year, and with such good results that I recommended the resumption of his employment, if practicable, with a sea-coast residence. The only place which presented itself in which he could obtain occupation at his own handicraft was Yarmouth, to which town he went at the end of 1871,

and there he has continued to follow his employment to the present (June, 1873), with scarcely any loss of work during the whole of the time.

Besides the remedies above mentioned, *Bry.*, *Merc.*, *Acon.*, *China*, *Ign.*, and *Mill.* were now and then given for intercurrent symptoms. *Millefolium* was especially valuable for the recurring hæmoptysis. An attack occurred in May of the present year, and was quickly arrested by it.

This patient has been most grateful for restoration to comparative health, and consequent ability to resume his work and means of subsistence, which his previous physician had given him no ground to hope for. The climate chosen was not the best for a residence through the whole year; for Yarmouth is much exposed during the spring months to cold east winds, which often tell disastrously on the consumptive. In spite of this drawback, and somewhat long hours of employment—8.30 a.m. to 8 p.m.—he feels quite equal to his duties, and states in a letter, June 12, 1873, "I do not know anything that ails me now, unless it is that I am excessively liable to take cold." Colds tell very injuriously upon his health, aggravating his cough, and sometimes bringing on hæmorrhage. I recommended him to cultivate his beard, to acquire the habit of breathing by the nose, and to take a cold shower, or sponge-bath daily.

Case 2.—*First Stage of Phthisis.—Speedy Results.*

Anna W., æt. 30.—Came under treatment Nov. 14, 1871. She suffered from a distressing, frequently-recurring cough, aggravated on lying down, and in the

night. Great dyspnœa; often spat blood; and could not lie on the right side. She also complained of loss of appetite, sickness after food, and other symptoms of Indigestion.

Under a course of *Dros*, with an occasional dose of *Ipec.*, or *Hyos.*, she made rapid progress, lost her cough, regained her appetite, and discontinued treatment, considering herself cured, in rather less than two months.

The treatment of this case differs from the last, inasmuch as little or no change in the hygienic surroundings of the patient were practicable. The beneficial results recorded were therefore clearly due to the remedies administered.

Could the advantages of a dry climate, a sheltered house, and other favourable hygienic conditions have been superadded to the medical treatment, the tubercles present could no doubt have been reduced to so latent a state that she might almost literally have been said to be cured, and years added to her span of life.

The same observations apply to the following case, and to others recorded in these pages.

Case 3.—*Phthisis, complicated with Pleurisy.*

J. B., æt. 32.. Nov. 29, 1871.—Has been gradually getting thinner, being now eight stones nine pounds. Pulse small, 80, and the hands and feet cold and purple. He has copious night-sweats, pain in the right shoulder and side, which is aggravated by deep breathing. There is dulness extending for an inch under the right clavicle, and moist mucous râles can be heard in the same region.

There is also impaired mobility of the chest. He had, too, very unfavourable antecedents, his father dying of Phthisis at about his present age.

℞ *Bry.* 1× gtt. iij. *ter in die.*

Dec. 4.—Less pain in breathing, but otherwise the same. ℞ *Phos.* 3× gtt. iij. *ter in die.*

Dec. 13.—Much better, both locally and generally. Compressible pulse. Repeat.

Dec. 22.—Coughs on lying down.

℞ *Hyos.* 1× gtt. iij. *ter in die.*

An accurately-fitting chest compress to be worn.

Dec. 29.—Compress does much good. Cough bad in the evening, and on stooping or moving quickly.

℞ *Bry.* 1× gtt. iij. *ter in die.*

Jan. 10, 1872.—Suffers from a severe hacking cough day and night, the result of a catarrh.

℞ *Dros.* 1× gtt. iij. *ter in die.*

Jan. 17.—Catching pains in the right side on coughing or deep breathing. ℞ *Bry.* 1× gtt. iij. *ter in die.*

Jan. 31.—Pain continues in spite of the remedy.

℞ *Acon.* 1× gtt. iij. *ter in die.*

Feb. 12.—Pain quickly relieved after commencing the last medicine. ℞ *Phos.* 3× gtt. iij. *ter in die.*

March 25.—Better every way. Has gained about three pounds in weight, and considers himself cured. The physical signs have correspondingly improved ; the area of dulness has considerably diminished, mucous râles can scarcely be detected, and the breathing capacity of the lungs has greatly increased. Continue *Phos.*

Considering the severity of the weather during the time he was under treatment, and the occasional aggravation of his symptoms by colds, the progress he made was most satisfactory.

The patient's medical history, however, is very discouraging, and the manner in which that information was given to me showed that he also felt it to be so.

Phthisis is more or less hereditary. Insurance offices are justified in considering that they incur increased risk when they become responsible for the lives of the children of the consumptive. This risk is greatly increased in the descendants born of parents suffering at the time from the symptoms of Phthisis. The duty, therefore, we have attempted to enforce in the preceding pages, that consumptive persons should not marry till they are fully restored to health, although it cannot be enforced by legal penalties, should tell with all the force of a moral obligation.

Case 4.—*Phthisis* (*early stage*).—*Recovery.*

T. A.—This patient came under my care Sept. 21, 1871. Up to within a few weeks of consulting me his health had been fairly good, but there was a family history of Consumption. He was pale and thin, his height 5 ft. 6½ in., and his weight 8 st. 10 lbs. He now

complained of hoarse cough, with spitting of blood, and copious purulent sputa. The appetite was poor, the circulation accelerated but feeble, the pulse being 104 in the minute; the hands and feet were cold, and he was troubled with early-morning perspirations.

℞ *Phos.* 3 ×.
Phos.-Ac. (*dilute*).

A dose four times daily, on alternate days.

Oct. 9.—Cough much relieved, expectoration easier, and no more hæmorrhage. Repeat.

Oct. 26.—General health much better; again spat a little blood. ℞ *Ferrum* and *Phos.* on alternate days.

Nov. 8.—Much better. Repeat.

Nov. 15.—Continues better, except being troubled with diarrhœa, chiefly after tea. ℞ *Phos.-Ac.*

Nov. 26.—Still improving. Appetite good; takes his food with zest, and enjoys everything more than he did. The diarrhœa previously mentioned no longer exists. Complains of pain in right lung, and expectorates dark-coloured thick phlegm.

℞ *Phos.* and *Hep.-Sulph.*, a dose every alternate four hours.

Dec. 13.—Better. Pulse now 88. Enjoys his food, and has gained two pounds in weight. ℞ *Phos.* and *Ferr.*

Under the use of these remedies the patient was so much better and stronger that, after Feb. 14, 1872, he discontinued treatment, and, just as the second edition of

this treatise was preparing for publication (June, 1873) two of his sisters came under treatment, who informed me that T. A. continued to enjoy good health.

Case 5.—*Incipient Phthisis.—Restoration.*

W. L., Eltham, æt. 21.—This patient first consulted me on December 30, 1870. He was pale, anxious, and depressed. He was also very liable to take cold. He complained of severe dyspnœa after any exertion, troublesome cough, especially on rising, with thick, gluey, ropy sputa; pains in the left side of chest, and rapid loss of strength and flesh. Present weight, 11 stone ½ lb. The respiratory murmur was feebler in the left infra-clavicular region, the chest-wall of this part was also much depressed, and there was but imperfect movement of the chest-walls generally.

℞ *Kali Bich.* 3× ℥j.
Phos. 2× ℥j.

The remedies to be taken in alternation, three drops every four hours.

January 7, 1871.—The patient reported himself much better; the expectoration was easier and greatly diminished; the spirits and appetite had also much improved. The patient now complained of pain in the arms, legs, etc.

℞ *Phos.* 2×.
Sulph. Φ.

A dose thrice daily of the former for three days, and next of the latter; afterwards, the course to be repeated.

The patient remained under treatment till May 11, when he had gained five pounds in weight, could stand a heavy day's work—being a wheelwright—without

fatigue, and had little or no cough, except occasionally on rising in the morning.

This patient permanently regained his health; for although he has been under treatment for a disease contracted since, he soon recovered, and remains well to the present time (July, 1873).

Case 6.—*Incipient Phthisis.—Recovery.*

J. J. H., æt. 17.—Nov. 17, 1871. Formerly had Bronchitis and Pleurisy. Complains of defective eyesight, so that he cannot read for half-an-hour continuously. Teeth much decayed, tongue foul on rising; hands and feet cold; pulse irregular, 88; temperature, 100°; feeble respiratory murmur, and depressed infra-clavicular regions. The patient, being apprenticed to an ironmonger in Hertfordshire was confined to the shop for about twelve hours daily. The skin, lips, and mucous membrane had a bloodless appearance from deprivation of sufficient air and sunlight.

℞ *Phos.* 3x. A dose thrice daily.

Ferr.-Red. A dose twice daily after meals.

The former to be taken for three days, and next the latter for three days; afterwards the course to be repeated. *Liq.-Ferr.-Perchlor.*, as a paint, was also prescribed for an ingrowing toe-nail.

I recommended the patient to abandon his present occupation, and return to the home and pursuits of his father, a farmer in Ireland. My advice was carried out with as little delay as possible, and the patient continued the treatment by correspondence for a short time, and rapidly regained health. *Phos.*, *Phos.-Ac.*, and *Ferr.* were the chief remedies prescribed, and they acted very

satisfactorily. The *Ferr.-Perchlor.*, painted on the ingrowing toe-nail, also gave rapid relief.

This case illustrates the injuriousness of occupations carried on within-doors, especially to persons not possessing great physical resistance. At the same time it confirms the more pleasant view previously stated, namely, that patients with consumptive symptoms more frequently recover or improve under medical treatment when they can pursue out-of-door occupations. Risk may be incurred during active symptoms by exposing consumptive patients to chill and damp air, but they will not steer clear of catarrhs by excessive confinement to warm rooms, and they inevitably suffer injury by breathing vitiated air. No doubt there is more danger in confinement to the house than in going freely into the open air.

Case 7.—*Early Tubercular Stage.—Rapid Recovery.*

M. A. S., æt. 21.—Complained (Nov. 26, 1871) of severe cutting pains under the collar-bones; great dyspnœa on taking exertion, especially going up-stairs or up-hill; night perspirations; and excessive general loss of flesh, so that her dresses had to be taken in. The pulse was small and quick; she often suffered from palpitation, and her temperature was abnormally high.

Phos. and *Phos.-Ac.* were the chief remedies given, and in little more than a month she had so far regained her strength and flesh, and had so entirely lost all the symptoms complained of, that she felt no further treatment was necessary.

Case 8.—*Phthisis, with Hæmoptysis.*

G. N., æt. 32, Nov. 1871.—Complained of bad cough,

great dyspnœa, occasional spitting of blood, and abundant expectoration of thick and blood-streaked sputa. He was also losing flesh, and had early-morning perspirations, and other symptoms of Hectic.

Phos. and *Ars.* were the remedies administered, and in a few weeks all the symptoms were wonderfully mitigated. He had also cod-liver oil, and now and then a few doses of *Hyos.*, when the cough was troublesome at night. In a few weeks more the patient lost all his distressing symptoms, and regained such a measure of health that he could follow his employment fully and uninterruptedly.

Case 9.—*First Stage of Consumption.—Complete subsidence of the Symptoms.*

M. J., æt. 22.—This patient consulted me Feb. 7, 1872. Her medical history was very discouraging, her mother having died of Consumption many years ago. She complained of severe cough, with copious muco-purulent expectoration, and distressing want of breath. She was also very bloodless, her lips, tongue, and inside of eyelids being unnaturally pale.

This patient was under treatment for four months, and was so greatly improved in every respect that she considered herself cured; and consequently discontinued treatment. *Ferr.*, *Ars.*, *Phos.*, *Ferr.-Iod.*, and *Puls.*, constituted the medical part of the treatment.

Case 10.—*Pre-Tubercular Condition.—Complete Recovery.*

F. M., æt. 31, a draper, much in doors, breathing an atmosphere inimical to health, complained of a hoarse, almost inaudible voice, rapid loss of flesh, perspirations

in the early morning, was soon fatigued, and was physically and mentally depressed. The respiratory murmur was lessened, the percussion sounds somewhat dull, with slight flattening of the chest below the clavicles. There were also the symptoms of Indigestion which characterize the antecedent phthisical state,—failing appetite, furred tongue, distention after dinner, pain in right side, irregular action of the bowels, etc.

The patient made a good recovery under a course of *Merc.*, *Nux V.*, *Podoph.*, *Phos.*, and *Sulph.* The last remedy was given for a crop of blind boils which troubled the patient towards the end of the treatment. The dietary was made conformable to the plan already sketched (pp. 74-5). Gardening, horseback exercise,* and other open-air pursuits were also recommended. The patient was under observation from Jan. 4th to April 9th, 1873, and I have been informed within a few days, by a patient from the same town, that he continues in good health.

Case 11.—*Phthisis, with Hæmoptysis.*

G. H., a young man of 20 (May, 1869), stated that he has had a harassing cough, with a variable amount of expectoration, since he was sixteen years old, and at the time of coming under my care presented the following symptoms and signs :—Indigestion with flatulence and distressing irritability of the mucous-membrane of the intestinal canal ; extreme weakness ; small pulse, 112 per minute; night-sweats ; cough with expectoration containing blood ; painful breathing, and great dyspnœa on making

* Sydenham says, daily riding on horseback is all in all; and that if this is done, the rules of diet may be neglected, and the patient need deprive himself of no sort of meat or drink.

any exertion. There was considerable dulness over the apex of the right lung, prolonged expiratory sound, flattening of the chest-walls, and other signs.

Phos. 2× thrice daily, and a teaspoonful of Cod-liver oil, twice daily, were prescribed. In four days he reported himself "rather better." *Ferrum Iod.* 2 × was now prescribed, a dose thrice daily. He next stated himself to be altogether stronger and better, the cough was less frequent and troublesome, and the pain on breathing diminished, though the sputa still showed streaks of blood. The progress was constant under this remedy; in one week he felt much stronger; in fourteen days he was freed from the cough and its accompanying symptoms, and in a month considered himself so well that he discontinued treatment. Nearly three years have now elapsed, and the patient has not again presented himself at the Dispensary, as he most probably would have done had there been any relapse.

Case 12.—*Phthisical Cough, with Diarrhœa.*

S. W., a girl eleven years old.—On March 1st, 1869, she complained of cough, causing pain between the shoulders, worst in bed at night; there was no expectoration, but the breathing was short; she was getting thinner, and had a cadaverous appearance. Digestion was impaired, the tongue coated, the papillæ of which projected through a whitish fur, giving the tongue a pale strawberry-like appearance; she was thirsty, and the bowels were relaxed. *Phosphorus* was given in the 3rd dec. dil., thrice daily.

Two days afterwards she reported herself better of the pains in the chest. Repeat *Phos.* 3×.

Five days later, "still better;" bowels relaxed only three times a day. Continue same remedy.

A fortnight subsequently she appeared much improved; her general condition being comparatively firm, and her face wearing a more cheerful and healthy aspect.

A week afterwards she took cold, and had a sharp attack of Diarrhœa, with "pricking pains," etc., for which *Arsenicum* 3 × was prescribed.

Nine days afterwards she reported herself "quite well," and remained so for a year afterwards, during which time she was under observation. Since then I have lost sight of her.

This patient's history, symptoms, and physical signs, all alike pointed to Phthisis, and if the condition described above had not been promptly corrected, she would no doubt have succumbed to the disease ere this.

XVI.—The Providential Results of Phthisis.

A few words on one point, often lost sight of in the consideration of this disease, may not be out of place here.

It has been abundantly proved that an exudation of tubercle is evidence of *vital decay*; the mission, then, if we may so express it, of Phthisis is, the eradication of worn-out constitutions to prevent the perpetuation of enfeebled or diseased generations. In a philosophic sense, says Dr. Bennett, Tuberculosis is not an inexplicable scourge of the human race, but one of the means by which Providence weeds it of worn-out

Weeding-out the Weak.

organizations, incapable of perpetuating healthy offspring. The diseased parent begets diseased children, who, being incapable of continuing the race in its integrity, die off like plants that perish before they blossom and seed, and the earth remains the heirloom of the strong. Were the sickly members of the community to have the power of continuing their race, it would rapidly deteriorate. It is well known that those who marry too young or too old, or are diseased, have children who die of Tubercular Meningitis, of Scrofula, or Pulmonary Consumption; whilst even those who have healthy youthful parents may wear-out their organic powers in the struggle of life, and succumb to accidental Phthisis. Mr. Darwin has shown by his researches that the struggle for life pervades animated nature. In the undomesticated animal kingdom the sickly and the aged die from want of power to secure their existence, or are exterminated by their natural enemies, so that the young and vigorous alone survive to perpetuate their races. The destruction of birds of prey is supposed to have engendered disease among the game, in this way. It is well known by naturalists that birds of prey always attack those birds in a covey which rise last, and are *weakest*, and all wild animals destroy those which are the victims of accident or disease, even of their own species; thus the perpetuation of a deteriorated and enfeebled race is obviated. With man, however, it is different; his intellect enables him to accumulate for the future, to preserve his own existence in old age, and to provide for his sickly progeny. But the laws of Providence correct the operations of the human intellect,

Illustrations in the Animal Kingdom.

and the race is weeded of its exhausted organizations by the instrumentality of disease and death.

The all-pervading law to which we have referred presses heavily, indeed, on individuals who have to be thus prematurely weeded ; but individual interests have always to be merged in the general good ; and although the operation of the law may appear harsh to the few, it is really an evidence of the existence of that guardianship which, as a shield, our beneficent Creator has thrown over the human family. The action of the law has been likened to hurricanes which inflict great individual suffering, but at the same time contribute to the fruitfulness and perpetuity of the human race.

Conclusion. And here we bring to a close our contribution to a better knowledge of the laws of this disease. Of its shortcomings no one can be more conscious than the writer. But we have done our best, and believe it will not be unproductive of good results. The principles enunciated as to the causes of Consumption and the preventive measures are, we believe, in harmony with the teachings of true physiological science, and with the experience of the most intelligent and observant physicians of the present day. Should the suggestions be widely acted upon, this scourge of our race may be prevented in countless instances, and man's earthly life lightened and lengthened ; and even where the existence of Consumption shall be manifested by unmistakable signs, the disease may be, in many cases, so largely arrested, and for so long a time, that it may virtually be said to be cured.

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