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Daw, W. H.

Publication/Creation

London : Scientific Press, 1898.

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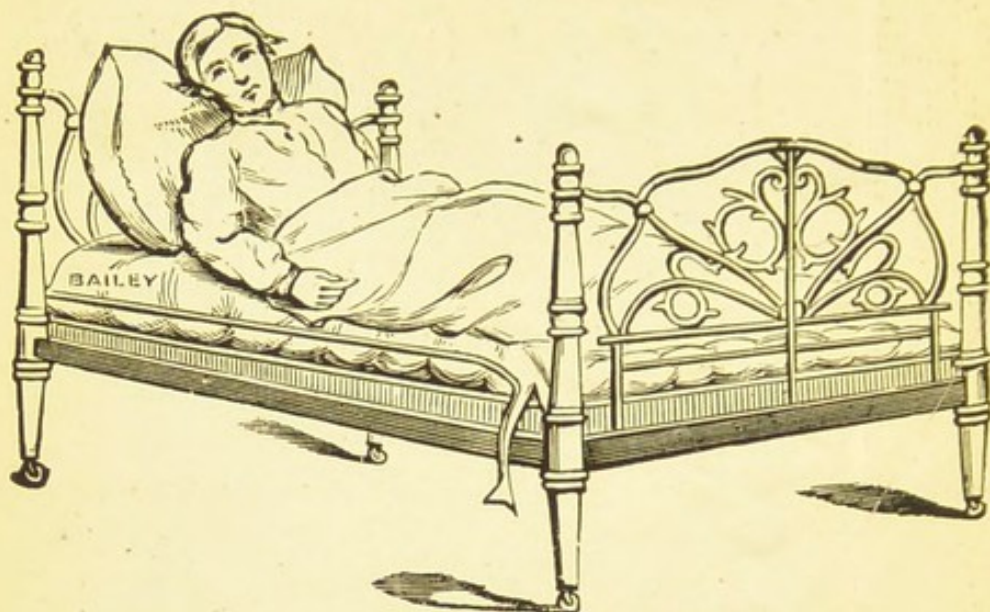
CONSUMPTIVES

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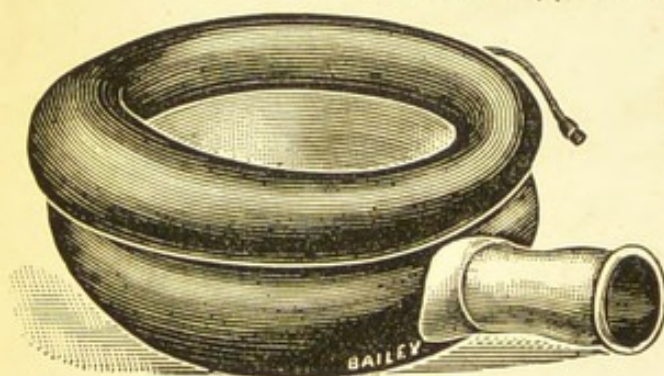


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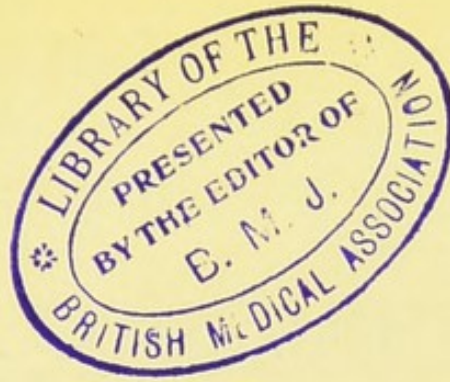
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THE
CARE OF CONSUMPTIVES

BY

W. H. DAW, M.R.C.S., L.R.C.P. LOND.

LATE HOUSE PHYSICIAN, ROYAL HOSPITAL FOR DISEASES OF THE CHEST

LONDON

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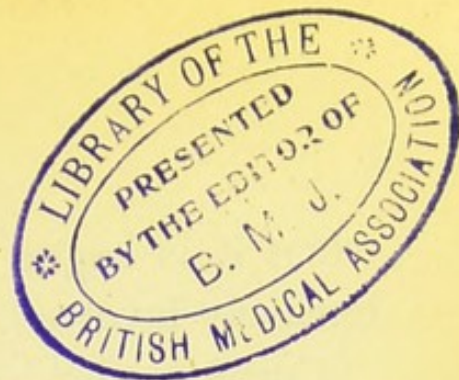
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PREFACE.

THIS continuation of the Burdett Series of Popular Text-books on Nursing is written especially for perusal by nurses engaged in the treatment of patients suffering from consumption, whether in public institutions or in private practice. A description of the disease is added, in order that the nurse may have a clear comprehension of the malady against which she has to contend. The portion of the book devoted to the nursing of consumptives is intended for the assistance and instruction of nurses, whose training in a general hospital so often fails to include experience of this most common disease. The warning to nurses and the patient's relations should be read and noted by all brought in close contact with sufferers from consumption.

The symptoms are detailed at length in order to call attention to the disease while not yet too late. Early detection is of vital importance: success in treatment can only follow

when it is begun before the lung is too extensively involved.

Current text-books, notably Dr. Osler's, have been freely drawn upon, as well as treatises by Weber and Carl Ruedi, and various books on health resorts.

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THE CARE OF CONSUMPTIVES.

CHAPTER I.

TUBERCULOSIS, of which pulmonary phthisis or consumption is the commonest expression, is one of the most widespread of diseases. It exists in all countries, but is most prevalent in cities and houses where people are crowded together. It affects animals as well as men; bullocks and pigs are often tuberculous, an important fact to be remembered. All races in all climates are subject to the disease. While most infective disorders to which man is subject are being for the most part surely, if slowly, overcome through the work of scientists and physicians, by means of sanitation, segregation in special hospitals, and inoculation, consumption continues to claim each year a larger number of victims. In spite of patient and prolonged researches carried on with untiring assiduity by the most brilliant investigators of the century, the ravages of the disease have increased rather than diminished.

It is said that about one-seventh of mankind dies of phthisis ; when we consider the number of other causes from which death may occur, we must realise how prevalent is this malady, and how important it is to study the symptoms and course of the disease, and the means by which a fatal termination may be delayed or averted. Any nurse in private practice reading these figures must be convinced that the chances of any case to which she may be called being one of consumption are very great.

As a last convincing proof of the prevalence of consumption let the reader consider how seldom a family history fails to include one or more cases of phthisis. In a chest hospital it is the rarest thing to obtain a history which does not tell of some member of the family suffering or dead from phthisis.

The importance of this disease is intimately connected with the prevalence of the malady. A point worthy of great consideration is that though infectious, no efforts have hitherto been made to prevent the spread of the disease. Hundreds of persons suffering from phthisis are mixing continually with the general public, who run a very real risk thereby. Consumptives expectorate large quantities of sputum containing enormous numbers of bacilli, the inhalation of which will, if in sufficient

quantity, produce phthisis in a person predisposed to the disease.

The dust, collected in hospital wards and rooms that have been occupied by consumptives, has been found to contain tubercle bacilli weeks after the patients have vacated them. The importance of this last consideration will be insisted on later. A fact worthy of remembrance, having relation to the spread of the disease is that the malady is often far advanced before patients realise that they are affected, or consider they are ill enough to require treatment. The possibility of contracting the disease through a wound must never be forgotten, though such an event is unlikely.

CHAPTER II.

TUBERCULOSIS is an infective disease caused by a bacillus, the lesions of which are characterised by little nodules called tubercles, or diffuse infiltrations of tuberculous tissue which become caseous, or fibrous, and may finally ulcerate, or become calcified.

Tuberculosis of the lungs is the disease known as pulmonary phthisis or consumption.

The Bacillus Tuberculosis is a short, fine rod often slightly curved, rather shorter than half the diameter of a blood corpuscle. They can only be seen when specially stained, and by means of a high power of the microscope.

From the death of cells that occurs in the immediate neighbourhood of a bacillus, it is assumed that a poison is produced by the organism. They are found in all tuberculous lesions, and in especially large numbers in the purulent material that results from the destruction of lung tissue in consumptives.

MODES OF INFECTION.

(a) *Heredity*.—Children may and certainly have inherited tubercular disease. The disease usually remains latent for some months. In the vast majority of consumptives, a tendency to phthisis or a feeble resistance thereto is bequeathed by consumptive parents to their children. The disease or tendency to it is more often inherited from the mother.

(b) *Inoculation*.—This is very rarely seen, but none the less a nurse should always bear it in mind ; a wound from a broken spit-cup, or contact of an abraded surface with dry sputum, may cause first local, then general tuberculosis.

(c) *Infection through the Air*.—The risks of this are demonstrated in the chapters dealing with the importance of the disease and prophylaxis.

(d) *Infection by Milk*.—With improved sanitary conditions and frequent inspections of dairies this mode of infection is rarer than it was. But still it undoubtedly occurs even now, for a cow may be tuberculous without showing any signs of disease. Considering the difficulty of excluding a tuberculous cow,

it is better to have ordinary dairy milk from a number of cows, than from one cow which may be tuberculous.

CONDITIONS INFLUENCING INFECTION.

(a) *Constitutional Peculiarities.*—Any deviation from robust health, congenital or acquired by starvation, exposure, confinement, alcoholic excess, etc., predisposes to consumption.

The ill-formed and ill-developed child of consumptive parents can hardly escape the disease.

Subjects of congenital syphilis being anæmic and debilitated very frequently develop phthisis.

A large proportion of prisoners and inmates of workhouses die of the disease.

Phthisis very commonly ends the drunkard's career.

Diabetic patients and cripples frequently die of phthisis.

(b) *Influence of Age.*—The disease occurs during the whole period of life. In children the glands, bones and meninges are most commonly affected. In the adult the lung is always affected.

(c) *Influence of Locality*.—Switzerland with its high altitudes shows the lowest death-rate from phthisis. A damp, low-lying place is most unsuitable for a consumptive.

(d) *Local Conditions*.—Measles and whooping cough leaving a child enfeebled, and with bronchitis, are very likely to result in phthisis.

Certain dusty occupations, for reasons explained under the heading of prophylaxis, are very prone to induce the disease, *e.g.*, steel filing, glass cutting, stone grinding, work in metals, painting, etc., which may produce lead poisoning.

To sum up, anything lowering the existing vitality, renders a person liable to contract consumption.

MORBID ANATOMY OF TUBERCULOSIS.

The lung is the seat of election, and is practically always affected by the disease, thus pulmonary phthisis or consumption is the most important feature of tuberculosis. Of other organs the intestines come next to the lungs, being infected by the bacilli and their spores swallowed with the sputum.

The Tubercle.—A description of the microscopical appearances of one tubercle, and

a consideration of the phases through which it passes, will render the changes that occur in the lungs of a consumptive quite comprehensible. One or more bacilli having settled, their irritant quality is quickly followed by changes in the immediately surrounding cells, the connective tissue cells and those lining the minute blood vessels multiply, and change their character, forming large, round, or cuboid cells. The irritant effects continuing, these cells are soon surrounded by white blood corpuscles, outside these again is formed a fine reticulum of connective tissue fibres. All these changes show the effort of nature to prevent the spread of the disease; wherever the body is injured white blood corpuscles are poured out; they take up germs or foreign particles, they combine to form a barrier against the advance of organisms, and finally exclude them by the formation of a wall of fibrous tissue. When the tubercle is formed it undergoes certain changes. The poison produced by the bacillus kills first the cells in immediate contact with it, then those more remote, producing the result known as caseation; if the tissues are unable to resist the poison the softening spreads in extent, the bacilli increase in number, numerous caseous or softened tubercles

unite, the mass breaks down and forms a cavity, the contents of which are got rid of through the bronchi.

If on the other hand the tissues gain the upper hand the process may be completely or partially stopped. The white corpuscles may form an impassable barrier, fibrous tissue is constructed out of these and connective tissue cells : this gradually contracts and gets thicker, till finally the bacilli are quite shut in. In very favourable cases where the bacilli are few, this process of healing may go further, earthy salts may be deposited, occupying the now fibrous tubercle which may then be said to be cured.

Having studied the minute anatomy of a tubercle as displayed by the microscope, we may go on to consider *first*, acute tuberculosis which will be dismissed as shortly as possible, including tuberculo-pneumonic phthisis, all coming under the heading "galloping consumption"; *secondly*, chronic pulmonary phthisis, which includes chronic ulcerative phthisis, and fibroid phthisis, these being described without qualification as consumption, and forming by far the most important part of tuberculosis both to the physician and nurse.

In acute tuberculosis the blood is invaded

by a large number of bacilli generally coming from an old focus in the lung, which enters the circulation through a vein opened by a process of ulceration, the result depends on where the brunt of the mischief falls.

(a) *General or Typhoid Form.*—There is in this case an eruption of tubercles in various parts of the body, the lungs and pleura, the brain and its membranes, the intestines and peritoneum, the liver, kidneys, lymph glands and spleen. The tubercles may be abundant in one organ, few in others. Death is produced by interference with the vital functions of the brain or lungs.

(b) *Pulmonary Form.*—Here the mischief is chiefly confined to the lungs and their lining membranes. The eruption of tubercles may be almost generalised, or what is more frequent, lobar or pneumonic, or lobular or broncho-pneumonic. The poison of the bacilli produces acute inflammation around the tubercles, the vitality of the lungs is so reduced that little or no resistance in the form of fibroid limitation can be made. The consequence is that many lobules, or one or more lobes of the lung, are reduced to a pulp of dead tissue which may be expectorated, leaving huge ragged soft-walled cavities, though more often the patient dies before

the tissue is sufficiently disintegrated to be expectorated.

(c) *Meningeal Form*.—This form is more frequent than the others and inevitably fatal. It is sometimes described as brain fever, and as water on the brain. In this case the pia mater lining the brain, and the fine vessels at the base of the brain are covered with tubercles, and nerves of the eye especially are compressed by the inflammatory exudation. The ventricles of the brain contain an excess of fluid. The meninges of the brain are œdematous. Death is caused by pressure on the vital centres in the medulla.

Chronic Pulmonary Tuberculosis. — The changes found in the lung in a case of chronic phthisis, though at first appearing to have no relation to the growth of a tubercle, will on consideration be easily comprehensible.

The lesions found are *nodular tubercles* from the size of a lentil to that of a nut, white or grey in colour; they are formed by the running together of numerous individual tubercles, the effusion of white corpuscles, and the formation of fibrous tissue attempting to shut it in. The colour depends on the amount of softening that has taken place.

Diffuse infiltration, areas of pneumonia, and broncho-pneumonia are seen—these are the

inevitable results of the presence of a powerful though chronic irritant.

Tissues thus inflamed are able to offer only feeble resistance to the spread of the bacillus.

Caseous masses are formed by the softening in the centre of an aggregation of tubercles.

Cavities are produced when the poison of the bacillus overpowers the resistance of the tissues. Numerous areas of softening unite, the irritation continues, the tissues die and are expectorated leaving cavities. The power of resistance may afterwards improve, when the wall of the cavity will become strengthened by fibrous tissue. It must be remembered that branches of the pulmonary artery are often exposed on the floor of a cavity, or running across, and it is from these that the blood comes in cases of hæmoptysis.

The pleura is almost always affected, and the two layers adherent by more or less fine bands.

The bronchi are generally inflamed, and often much dilated.

The larynx is frequently involved; the back of the vocal cords being ulcerated.

Fibroid Phthisis.—This is the result of a prolonged and strenuous effort on the part of nature to stop the spread of the bacilli and cure the disease; it is seldom successful ex-

cept in part. The result is the development of fibrous tissue in great quantity. Fibrous tissue always contracts whether in the scar from a cut, or the scar resulting from the healing of a cavity. The contraction produces a great diminution in the size of the lung; the wall of the thorax is pulled in, the shoulder is lowered, the heart may be pulled to the other side of the chest by the contracting tissue. If the patient keeps strong and leads a healthy life, the condition may persist for years, but if the health fails, the resistance is enfeebled: the bacilli still present recommence their work of destruction, and the disease spreads.

Distribution of the Lesions.—The disease almost invariably begins at the apex of the lung, and on the right side. This corresponds with the fact that the bacilli are generally inhaled, the right bronchus being larger affording an easier path to the right lung. The part affected being that aerated by the tidal air. In men the disease is almost always more advanced on the right side. In women it is generally more advanced on the left. The importance of this consideration will be seen later. It must always be remembered that advanced phthisis is always assisted by pus producing germs which are ubiquitous and

settle wherever resistance to their influence is weakened. These pus-organisms are responsible for the large amount of suppuration that goes on in phthisical lungs with the consequent absorption of septic products by the patient and hectic fever.

CHAPTER III.

THE SYMPTOMS.

IF the reader will keep in mind the changes described as occurring in tuberculosis, the symptoms will generally be found to be entirely referable to these changes and depending on the pathological condition.

The symptoms of acute tuberculosis will be passed over as briefly as possible, as the condition is one benefited little by treatment and generally ending in death.

Acute Tuberculosis is described under the following headings, depending upon which part of the body the brunt of the attack falls :—

- (a) General or typhoid form.
- (b) Pulmonary form.
 - 1. Miliary tuberculosis of the lung.
 - 2. Acute pneumonic phthisis.
 - 3. Tubercular broncho-pneumonia.
- (c) Meningeal form.

The onset may be gradual or sudden. The symptoms are sufficiently detailed in the chapters on the nursing of acute consumption.

CHRONIC ULCERATIVE PHTHISIS OR CONSUMPTION.

The disease begins so gradually and insidiously in most cases that the lungs are extensively involved before the patient seeks advice.

The symptoms most commonly calling the patient's attention to his condition are the following :—

Anæmia. — An acute and progressive anæmia frequently induces patients to seek advice.

Dyspepsia.—Intractable dyspepsia in young people with no apparent cause may sometimes be traced to phthisis.

Cough.—Probably the largest number of patients come to be treated for cough, often of considerable duration.

Hæmoptysis.—This is occasionally the first symptom calling for an examination of the lungs, which may show either very early or extensive disease of the lungs.

Pleurisy or Pain in the Chest.—Pain in the side on breathing, or pain in the front of the chest, or pain all over the chest is sometimes the complaint of patients coming for the first time, and who are found to have phthisis.

Loss of Voice.—In women often and men

occasionally affection of the larynx is quite early. More often it occurs quite late in the disease.

Progressive Weakness. — Labouring men often come with this complaint, finding themselves getting weaker and weaker, with no other symptom.

Loss of Flesh.—Others find this the first noticeable symptom, which occurs early in phthisis.

Morning Sickness.—This symptom is usually attributable to pregnancy or alcoholism, but is frequently met with in phthisis on account of the violent coughing induced by the first change of position in the morning when a lot of sputum has collected in the cavities and bronchi.

Sweating.—This occurs whenever the patient goes to sleep, and may be very distressing ; it is exhausting besides being uncomfortable, and exposing the patient to the risk of a chill.

GENERAL SYMPTOMS.

Temperature.—The thermometer is a most valuable indicator of the condition of the patient.

In the early stage and when the tuberculosis is spreading, the temperature is generally raised two or three degrees and keeps fairly steady. In the second stage, when the tubercles are caseating and the infiltrated lung tissue is softening and dying, the temperature keeps one or two degrees above normal in the morning, while at night it is raised from two to four degrees, *i.e.*, remittent. In the third stage, when there are large cavities filled with dead and dying tissues undergoing decomposition under the influence of the organisms of putrefaction, the temperature reaches to normal or below normal in the morning, while at night it may reach from 100° to 105° , *i.e.*, hectic or intermittent.

A normal or nearly normal temperature indicates that the disease is quiescent, and then the patient's health usually rapidly improves. In chronic slowly-progressing cases the temperature usually rises and falls gradually in recurring waves. The patient may put on weight the whole time, but usually goes back a little when the temperature is at its highest; the rise of temperature indicates extension of the disease and indicates a risk of hæmoptysis.

Digestive System.—The tongue may be clean or furred. The mouth, especially in

advanced cases, may be ulcerated or covered with thrush, a condition induced by parasites.

The appetite may be very bad, the patient nauseated by the sight of food ; in other cases the appetite keeps good all through.

Diarrhœa is common in advanced cases and depends on ulceration of the intestines, produced by swallowing bacilli and their spores in the sputum. There may be extremely troublesome tenesmus, with no evacuation, or with blood and mucus.

Appearance. — The changes produced by consumption in the appearance of a patient are so marked and so important that they are well worthy of mention. With some experience, the face and figure give indications almost as important as those obtained by physical examination of the lungs, etc.

The hair is dry and soft, the face is pale, dry, toneless and thin. The eyes may be sunken, and there is usually a haggard look which is almost diagnostic. The appearance of the chest is equally characteristic. The hollows above and below the clavicles are deeper than usual on one side. The muscles at the root of the neck are wasted ; the muscles of the front of the chest are wasted and toneless. The shoulder-blades often

stick out, the muscles that normally hold them into the chest being in part atrophied. When the patient breathes, one side of the chest moves little or not at all, either above, which is more usual, or below. The action of the heart is seen over a wide area. The heart may be quite displaced to one side or the other. There may be contraction or bulging of one side. The spine may be curved or one shoulder dropped. The muscles of all the limbs are wasted, toneless, and may show contraction on being tapped with the finger. The whole body is emaciated, and the weight much below normal. With chronic cough and impaired circulation through the lungs, the tips of the fingers may be clubbed and the nails curved.

Course of the Disease, etc.—It is fortunate both for the patient and nurse when the disease is discovered early, however the result is brought about. It may have been a cough or slight hæmoptysis, a pain in the chest or a visit to an insurance office, which has induced the patient to begin treatment. Such cases of true consumption, coming under the care of the physician and nurse, are likely to be a credit to both parties. The temperature reaches normal, all the symptoms subside, and the patient puts on weight. If the case

does not come under treatment till later, when softening and death of the lung tissue have taken place, the result can not be so hopeful: all depends on the amount of lung involved. With remittent temperatures, sweating, wasting, cough, perhaps loss of appetite and hæmoptysis, under favourable conditions the disease in the lung may become quiescent. The temperature may reach normal, the sweating cease, appetite return, and the patient may put on weight week by week, even without the temperature keeping down, and the disease in the lung may become quite chronic, and cease to advance except very slowly. Even when one or both lungs are extensively diseased, with large cavities, much improvement may take place. The temperature may come down to normal, the sweating and coughing cease; the fibroid limitation of the disease may advance till absorption of septic products from the cavities is impossible, and the case may become quite chronic. In less favourable cases the patient may put on weight, the temperature be reduced, but the disease slowly advances; the slightest accident or want of nutrition turns the scale and the disease spreads rapidly. In the last stages the case is evidently hopeless from the first. The tempera-

ture is hectic—septic products are absorbed from large cavities. Appetite and digestion fail. Cough exhausts the patient, diarrhoea and laryngitis may ensue, and the patient dies from asthenia.

Mode of Death in Consumption.—In the great majority of cases death is brought about by exhaustion. The continual drain on the system caused by destruction and suppuration in the lungs; the cough, inability to digest food, etc., bringing about a condition of debility which is soon followed by death. In cases where congestion, pneumonia, and acute phthisis develop, death is by asphyxia.

Hæmoptysis is sometimes immediately fatal, or kills in a few days, in other cases it is continued for weeks and kills by exhaustion. Death may occur from meningitis causing œdema of the lungs.

CHAPTER IV.

THE NURSING OF ACUTE CONSUMPTION.

IT will be remembered that in the description of the disease a distinction was made between acute tuberculosis and chronic pulmonary tuberculosis or consumption. It will be well to keep to those divisions here as the course of the disease is so different. Cases of acute tuberculosis generally die; cases of consumption under careful nursing almost always improve, and all are alleviated.

ACUTE TUBERCULOSIS.

(a) *General or Typhoid Form.*—The patient in this case is overcome by the poison of tuberculosis. The loss of appetite and fever are the most prominent symptoms requiring attention at first. The nurse must endeavour to feed the patient with small quantities and at frequent intervals; while the patient is conscious, enough nourishment can usually be

taken. Solid food is likely to be refused altogether, brandy, eggs and milk will be the staple articles of diet. Later on if the patient is delirious, is too weak, or refuses to swallow, it may be necessary to use a nasal tube; with the method of passing which every nurse should be familiar. If the temperature is very high tepid sponging or an ice cradle may be ordered. The urine may require to be withdrawn by catheter. The bowels may act too freely, or be constipated when an enema may be required; in either case the stool should be kept in case the physician should wish to see it. Incontinence of urine and fæces may come on when the patient has become unconscious. The patient should wear a light flannel nightgown easily removed. He should be dried rapidly when covered with sweat. The pulse, respirations and temperature require to be charted every four hours, and sometimes the periods when sweating is greatest. As the nature of these cases is usually uncertain, the nurse must assist the doctor by making careful observation and accurate note of any new symptoms, or changes, *e.g.*, the occurrence of a rash or spots on the skin, twitching, convulsion, delirium, squint transient or permanent, dilatation of the pupil, vomiting, incontinence, etc. Delirium if it

ensues is not usually active or violent ; should it be so the nurse should ask for assistance if in a private house ; in the case of a child or a mild case the patient can be kept in bed by fixing the sheet firmly over him, being sure to keep the arms confined under the sheet. If the patient expectorates great care must be taken that it is collected in a vessel, or on a piece of lint which may be burnt.

(*b*) Acute pneumonic phthisis, and acute pulmonary tuberculosis, may be classed together as galloping consumption.

The first-named with its sub-divisions (*a*) pneumonic phthisis and (*b*) tuberculous broncho-pneumonia is generally but not inevitably fatal. The second-named, acute pulmonary tuberculosis, or miliary tuberculosis of the lung, is practically always fatal.

The most striking features in these cases are the dyspnœa and cyanosis ; the patient may live for days with the most intense lividity from want of aeration of the blood. The patient will probably be unable to lie down, so must be propped up as comfortably as possible with pillows, which will require frequent re-arranging. Medicines, stimulants and nourishment must be given with the utmost punctuality, for the patient's life hangs

on a thread. If oxygen has been ordered the nurse should find out if the valve opens easily before bringing the cylinder to the bedside, for when opened suddenly a great noise may be made and the patient much frightened; if a reservoir bag be used great care must be taken not to overfill and burst it—a simple india-rubber tube, and ordinary medium-sized glass funnel will be found to make the best method of administration. The patient may be able to take food only in very small quantities at a time as all his strength and mind are given up to breathing. As sleep is usually very bad, the patient should not be wakened either for medicine or food unless specially ordered, for he is almost certain to wake up a little later, and every minute's sleep is valuable. The pulse and especially the respirations must be accurately taken; any increase in either should be reported at the first opportunity, as also any improvement or the contrary. The wasting if there has been any may be obvious to the eye, or may be gauged by the relative ease with which the patient can be moved in bed.

Should the patient be going to recover, the temperature will gradually come down; cough and expectoration will diminish; the weight lost may be less than it was during the first

few weeks or the weight may be stationary. The most careful nursing is required to turn the scale in the patient's favour : the appetite is a most important item ; the diet must be light, nutritious, varied and in sufficient quantity ; the slightest failure of appetite must be noted and an effort made to improve it. Stimulants had best be given with food ; and care must be taken not to give any nauseous medicine before a meal. Much real help will be given to a patient by a nurse who is cheerful, and hopeful, and shows it. She should avoid referring to any unfavourable symptoms, while laying stress on those of good import, and should always encourage the patient by talking confidently of his recovery.

(c) *Tubercular Meningitis*.—In this form of acute tuberculosis the head symptoms dominate the scene. The first complaint is usually of neuralgia or headache. Either of these symptoms occurring in a consumptive patient should always be noted and reported by the nurse. She should endeavour to find the origin and localisation of the pain. The patient if in a draught should be moved, and if possible placed in a quiet and darkened corner. If the pain persists the most strict watch must be kept on pulse and temperature ; it should be noted if the pain changes in

character or locality. If vomiting occurs, its character, and the time at which it took place, and how long after food or drink should all be written down for reference. The headache may become very intense, anodynes or hypnotics may be ordered by the doctor. If left to herself the nurse may apply ice or cold water to the head. The bowels which are usually constipated may require to be opened by enema. The pulse may become very slow or intermittent, this should be noted and reported.

A rash on the skin may make its appearance at any stage.

The nurse should keep a sharp look-out for any mental change, irritability, dulness, drowsiness or delirium. The difficulty of giving nourishment is usually very great; the patient either cannot be roused, or altogether refuses to take food. In such cases the nasal tube will be required. The nurse must endeavour to gauge the condition of the patient's mind, for the drowsiness usually passes on to unconsciousness. The movements of the eyes require constant watching; any weakness of either muscle, or inability to move the eyeball in any direction, indicates that the nerve supplying the muscle is involved in the inflammation at the base of the

brain. The size of the pupil must be noticed; and whether it contracts when exposed to a light. A solution of homatropine gr. vi. to the ounce should be ready to be instilled into the eye if ordered, and unless it is stated to the contrary, only one eye should be treated, so that the size of the opposite pupil may be measured. From unconsciousness the patient passes into a condition of coma. The pulse and respiration must be frequently taken, the position of the eyeball, and size of the pupil watched as before. If an ice-bag or Leiter's coil be applied to the head the hair had better be cut if long, but only with the permission of the friends. In this stage nourishment may be withheld unless ordered. There may be retention of urine or incontinence. The back of the mouth will require to be constantly wiped clean with lint, which may be burned. Any rattling in the throat or lungs should be noted. The patient should be frequently turned from side to side, as the dependent parts of the lungs become œdematous, the condition advancing till the patient dies of asphyxia.

CHAPTER V.

THE NURSING OF CHRONIC PULMONARY TUBERCULOSIS, CHRONIC PHTHISIS OR CONSUMPTION.

THE reader, remembering the microscopical appearances and pathological changes described in the chapter devoted to the description of the disease, will be able to understand that treatment directed towards killing the bacillus by drugs introduced into the system, either through the stomach, or blood-vessels, must necessarily be futile. It was shown that the bacillus in the tubercle is surrounded first by a zone of the products of dead cells, next by a layer of white corpuscles, and lastly by a ring of more or less fibrous tissue, that the tubercle has no blood vessels supplying it with nourishment, consequently the bacillus cannot be affected by matter injurious or fatal to its growth circulating in the blood. Drugs introduced into the system in sufficient quantity to kill the bacilli, are more likely to kill the victim of

the disease. The vitality of the bacilli is so great that they will live for six months in the dry state, and in sputum kept in 1 in 20 carbolic they will live for forty-eight hours certainly.

Consequently the treatment of phthisis resolves itself into the following considerations :—

1. To place the patient in surroundings most favourable for maintaining the best degree of health.

2. To take local and general measures best calculated to assist the tissues to resist the spread of the disease.

3. To alleviate symptoms.

It will be seen that the greater portion of these measures comes into the province of the nurse, whose interest in a patient under her care suffering from consumption should consequently be supreme.

It will, perhaps, be most convenient to divide the disease into early, middle and late stages for purposes of description, remembering that all stages occur together, but one condition is dominant.

EARLY CONSUMPTION, OR FIRST AND SECOND STAGES.

These cases are among the most important that come under the nurse's care ; in this stage with favourable conditions a perfect cure may result.

In a private house the nurse's first care should be to secure a large airy room with plenty of light, facing the south if possible. For consumptives 3000 cubic feet of air are considered necessary day and night. If the room contains about 3000 cubic feet, *e.g.*, 20 feet long, 15 feet wide, and 10 feet high, the air needs to be changed every hour. If smaller than this, *e.g.*, 1000 cubic feet in capacity, the air would require to be changed three times per hour, which cannot be done without causing a draught. The window should be kept open at the top, or one pane replaced by strips of glass (like a Venetian blind), allowing when opened the air to enter, and giving the incoming air an upward direction to avoid draughts, and ensure better mixing with the air contained in the room. The door may be kept ajar or opened at intervals ; a screen may be placed in front of the door if necessary. The simplest test of the purity of the atmosphere

of a sick-room, is to go into it after having just been outdoors ; if the air in the room smells badly, or seems stuffy, more ventilation is required. In winter or when cold or dull a fire should be lit. The fireplace should be fitted with fire-bricks at the sides and back, the latter sloping forward to throw out as much heat as possible ; an "economiser" under the bottom bar may be used. A fire helps to ventilate a room, and keep the air pure to a great extent ; and is infinitely preferable and more hygienic than hot air or hot-water pipes for warming a room. Night air, unless very damp, is not noxious, and ventilation must be as thorough by night as by day. It is better to have a room as far removed as possible from street noises. The bed should not be directly between the windows and door for fear of a draught. It is an advantage if the patient can get something of a view while lying in bed. All unnecessary articles of furniture, rugs, carpets, curtains, etc., should be removed, as they only serve to accumulate dust. The bedclothes should not be heavier than usual, but an extra blanket may be kept to cover the patient if feeling cold after sweating. A locker or small firm table should be put by the bedside within easy reach, on which may be placed milk, spit-cup, etc. The

spit-cup should be of enamelled metal with a cover, always containing a sufficient quantity of carbolic acid, creolin, or other disinfectant. Every effort must be made to admit the maximum amount of air and sunlight; neither fever, sweating, cough, nor hæmoptysis are objections to this rule. For the first few days the patient will probably be kept in bed. The rest from mental or manual work is by itself of great benefit to the patient. If the appetite is good an ordinary diet may soon be given; if not, the ingenuity of the nurse will be taxed to the utmost to tempt her patient to eat. The condition of the appetite should be reported to the doctor who will probably stop the cod-liver oil, if any is being given, and any medicine that may be nauseous or disagreeable. Stimulants, *e.g.*, brandy, whisky, may be ordered and are best given with food. The appetite is the most important element of all in consumption. Every effort must be made to restore the appetite. With nausea and vomiting Seidlitz powders and bismuth mixture may be ordered, the former to be given the first thing in the morning, the bismuth mixture just before food. With judicious treatment, and nourishment given in small quantities repeatedly, the appetite will probably return. Forced alimentation may be

used. In Debove's system an œsophageal tube is passed, the stomach washed out, then powdered meat, milk, or eggs together or separately, with or without alcohol, are given through the tube. The diet should then be cautiously increased to normal; green vegetables should not be given except with a good digestion; overcooked meat should be rejected. Fat bacon for breakfast is very good if the patient will take it. Cod-liver oil when ordered may be rendered less nauseous to some patients by the addition of salt or lemon juice, and a piece of orange, sugar, or an acid tablet may be given afterwards; it should always be given about half an hour after meals. Maltine should always be given about a quarter of an hour before meals.

While the patient is keeping his bed, the nurse will help materially by making his days pass as quickly and pleasantly as possible; bringing in news, etc., from outside, having some bright flowers, keeping a cheerful demeanour, etc., will assist the patient to look on the bright side of things. The patient if sweating at night should wear a light flannel nightgown, and will be much relieved by being rubbed dry with a soft towel. The urine should be saved for testing or tested by the nurse at least once a week. Unless ordered

to the contrary the nurse may allow the patient to get up to use a commode or go to the lavatory. The weight being such an important indication of the progress of the disease, every effort should be made to weigh the patient when first coming under treatment, and once a week afterwards. When allowed to get up, if it can be done, the patient should keep out of doors as long as possible every day, but should be warned by the nurse not to fatigue himself, also not to allow himself to get cold by sitting in a draught. The possibility of hæmoptysis must always be kept in mind. If the temperature begins to go up higher and higher every night, the patient should be kept in bed when it gets up to, or over 101° ; it means the disease is advancing, and any measures which have been allowed to lapse on account of the patient's improvement should be again adopted. The sputum must be watched, so that any staining with blood may be discovered; for the disease when spreading is very likely to erode a blood-vessel, and a profuse hæmoptysis may result. With rest in bed, stimulants, careful feeding, medicine, and attention directed towards obtaining mental and bodily comfort, the fever will probably subside. Supposing the patient to be in a hospital or city, as soon as the fever and

cough have subsided, a change of air, such as a visit to the country or seaside, will promote the cure of the disease, and perhaps complete it. Here he will need only slight supervision, if he has been warned to take care of himself, and report any change in his condition. Under care such as has been sketched above, patients often put on from one to two pounds a week, sometimes more in one particular week; their colour returns: the fever, cough and sweating leave them, and with health and spirits revived they begin almost a new life. Few cases repay the nurse and physician so well for the trouble they have taken with them. The patient must be warned most emphatically by the nurse when leaving of the dangerous qualities of the expectoration which must always, if possible, be received into a receptacle and never into a handkerchief.

THE MIDDLE PERIOD OF CONSUMPTION OR SECOND AND THIRD STAGES.

It is in this condition that by far the greater majority of patients come under treatment. The evidences of disease are plain to the experienced eye; one or more symptoms are distressing the patient whose vitality is

by this time probably considerably lowered. These cases coming under the care of a skilful doctor and nurse derive the utmost benefit from treatment under favourable conditions, though one may not hope for complete cure, yet the vitality is raised to an altogether higher grade, and a condition of health attained compatible with years of useful work.

As in the last case we will consider the nursing of a consumptive in this condition in a private house or hospital; in the former case the nurse may rightly be expected to be allowed to act more on her own responsibility than in a hospital where the doctor visits the case at least twice a day, and can be fetched at any time.

The arrangements for the patient's comfort should be as complete as those suggested for early cases. No detail which can render the illness less distressing should be neglected. The patient will probably be much more difficult to nurse than one with earlier mischief in the lungs. He is likely to be anæmic, weak, wasted, unable to eat or digest ordinary food, and sweating at night; the cough may be very distressing, hæmoptysis may occur, pain in the chest, or laryngitis may be exhausting the patient, and the

temperature will probably be elevated, and irregular or remittent.

Rest is the first thing to be obtained. The patient should be placed in a comfortable bed and an effort made to secure mental and bodily repose; to attain this end distressing symptoms, *e.g.*, cough or pain must be alleviated. As a temporary expedient, a liquorice lozenge may be given, or a dose of cough linctus if it has been ordered. The weight, temperature, pulse, and respiration having been taken and charted, the nurse should look at the ankles and back to see if there be any œdema. Most patients coming under treatment, if able to walk about, may have a hot bath before going to bed; the contra-indications are high fever, recent hæmoptysis, cyanosis of any degree, or rapid breathing, *e.g.*, more than twenty-eight per minute. The initial bath will add materially to the patient's comfort; if it cannot be managed the next best substitute, a good washing in bed, will do instead. Inquiry should be made as to the appetite so that some idea may be got as to what sort of diet will be necessary. The patient may be kept on milk for the first few hours till this has been decided on. The nurse must insist from the first on the use of the spit-cup, and warn

the patient against wiping his mouth in his handkerchief. During the first night accurate observations are necessary on the amount of cough and sweating, and how long the patient sleeps. The first thing in the morning a glass of milk, either hot or with soda water, should be given if the patient will take it, or a cup of tea made with boiling milk instead of water. The more nourishment that can be given the better, provided the patient digests it perfectly. The patient having washed himself, or been washed, the air in the room or ward should be renewed as far as possible by opening windows and doors. The spit-cup should be emptied, the quantity of expectoration being measured if necessary. The dusting and sweeping of the room should be completed with an effort to stir up the particles of dust as little as possible. For breakfast, eggs lightly boiled, poached or scrambled will form the staple dish, being varied as can best be managed. If the appetite is bad, a little fish, *e.g.*, sole, lemon-sole or trout will tempt most; if not some of the extracts of meat, *e.g.*, Liebig's with a little toast or a rusk will probably be taken. Maltine should be given with or before breakfast, cod-liver oil afterwards. Some patients take oil without the least trouble, others gradually accustom them-

selves to it, others again are nauseated by it, cannot get rid of the taste, or suffer from eructations; in such cases the matter should be reported to the doctor; the oil may then be given up altogether or left off for a time. The morning should be made as cheerful as possible, the patient passing his time reading a paper or book or writing, and the nurse may do much to cheer him if she be so minded. If the patient has a good appetite he may have beef or mutton for his midday meal, with potatoes and green vegetable if the digestion be quite good; if unable to manage this he may be able to take fish, some chicken, or a cutlet, or may need to be tempted with a sweet-bread, or meat extract. Stimulants are of great value in these cases; they assist appetite and digestion and tide the patient over till they improve. The patient may with advantage be up in the afternoon, unless the temperature or hæmoptysis prevent it. For the evening meal bread and butter, with a lightly-boiled egg, or custard will suit most cases; arrowroot, cornflour, rice pudding, junket, custard pudding, etc., may serve as varieties. A basin of bread and milk, a glass of hot milk, or a cup of tea made with boiling milk, may be given the last thing at night, with any stimulant that may be ordered.

With a good digestion bacon in the morning is very useful ; where it can be obtained clotted cream is very beneficial and may be given two or three times a day.

The spit-cup should be emptied in the evening ; any cough linctus ordered may be given soon after the lights are lowered for the night, and the patient may be given some lozenges to suck, when he feels inclined to cough.

It will be well now to notice closely some special symptoms as to the best means of alleviating them.

Anæmia.—Sunshine and fresh air if possible, remembering that only recent severe hæmoptysis and inability to move preclude the patient's going out. Medicines containing iron should be given between meals, sweetened if necessary with sugar. Iron pills should be given at the same time ; if there be constipation aloes and iron pills may be ordered up to 2 three times a day—with any failure of digestion these medicines will probably be stopped.

Cough. — Probably the best remedy for cough is an inhalation, *e.g.*, of benzoin ; one drachm of compound tincture of benzoin to a pint of boiling water ; either the ordinary inhaler may be used, or a jug to the top of which may be fitted a funnel made by rolling

up a piece of thick paper; this inhalation usually checks the cough at once, and renders the expectoration much more easy; with foul breath and expectoration, eucalyptus may be used m xx to the pint. Liquorice lozenges are always useful. Morphia, camphor, or belladonna linctus, will usually check a cough. Remember that morphia linctus sometimes induces sickness, and notice the quantity of morphia contained in it. While giving belladonna linctus the patient may be having belladonna in other forms, *e.g.*, pill, medicine, or plaister; look out for belladonna poisoning, the symptoms are easily remembered. Dry mouth, dry skin, dilatation of pupils, diarrhœa and delirium—all beginning with d.

Hæmoptysis.—A severe hæmoptysis is, and must be, alarming. Two pints of blood may be lost in a very short time, with the consequent distressing changes in the appearance of the patient; or on account of blocking of the bronchi with blood, such an intense degree of cyanosis is produced as seems incompatible with life. A nurse who can keep calm and direct her efforts in the right direction will probably be able to save her patient's life, while a nurse who is incompetent or loses her head may see her patient die before other help can arrive.

First send for the doctor ; then place the patient in bed on the side of the disease, with his head over the side of the bed—if the nurse has not been told by doctor on which side the disease is present or more advanced, remember as stated before, that in men it is on the right side, in women on the left side ; this is done to prevent, if possible, flooding of the opposite bronchus with blood, which causes suffocation, the usual immediate cause of death. If permission has been given before, an injection of morphia, one-sixth to one-fourth, should be given immediately in the chest ; this quickly reduces the rapidity and force of the heart beat, and what is equally important soothes the terrified patient. The nurse must not show any alarm, but tell the patient he will soon be all right, ask him to cough out the blood if it is choking him, and wipe out his mouth and nose. Small pieces of ice may be given to the patient to suck—they will assuage his thirst and enable him to clear his mouth and pharynx of blood. As soon as respiration is no longer embarrassed, the patient may go to sleep and must be carefully watched. If the doctor does not do so the nurse should inform the patient's friends of the accident, which is very ominous. Death may occur a day or two later from recurrence

of the hæmoptysis or congestion of the lungs caused by the inhalation of the blood.

Pain in the Side.—For this symptom strapping the chest may be ordered. The nurse should remember in doing this to make the strips overlap, and go an inch or two beyond the middle line both in front and behind. A hot fomentation or turpentine fomentation is useful—remember in the latter not to use too much turpentine. Belladonna plaisters are of service, also painting with iodine, not forgetting the irritating effect of the latter.

Laryngitis.—Inhalations if ordered for this must not be too hot. Benzoin vapour is very good. Morphia powder should be applied by means of an insufflator or a spill made with paper—note the quantity used. Cocain is often ordered to be painted on the back of the pharynx and epiglottis before food—have a good light shining in the mouth; the strength will be 4 to 6 per cent.

Sweating.—Give the patient a flannel night-gown, wipe him over with a dry towel when wet; sponging him may make him feel much more comfortable. The sweating is nature's method of reducing temperature and getting rid of products of septic absorption: it always ceases when the patient improves. Remedies

ordered for the relief of this symptom are usually given at night. Great care should be taken to gauge the effect produced.

The late stage of consumption is that in which there are larger or smaller cavities, more or less numerous, in the lungs. Though cure is not to be hoped for, the nurse must not in consequence be despondent, and fancy her work will be futile. Life may be prolonged for months with careful treatment and nursing; and the end instead of being a miserable one, may be rendered happy. On coming under the nurse's care the temperature, pulse, respiration and weight should be carefully taken and charted. Look out for œdema of the feet or back. Take the earliest opportunity of examining the urine, discover if there is or has been diarrhœa. Notice the quality of the voice, and find out if there is any pain or difficulty in swallowing.

If the patient feels well enough let him have a hot bath; any sign of faintness should be met with a dose of brandy. Warn the patient not to soil his handkerchief with expectoration, and always insist on the use of the spit-cup. Notice if the breath or sputum has a foul smell, and inquire if there is any sweating at night. If the patient has a good appetite he has a great deal in his

favour ; he is then able to take a sufficiency of nourishment, which will enable his tissues to resist the spread of disease ; he will also be able to take tonic medicines without delay, which will help him still more to combat the mischief in his lungs. If the appetite is bad every effort must be made to restore it. Brandy, eggs, extract of meat, beef-tea, raw meat, peptonised milk, or beef-tea etc., must be relied on till the result of medicine and nursing has shown an improved appetite. The temperature when there is infection of the contents of the large cavities with the organisms of suppuration and putrefaction is often intermittent, the so-called hectic temperature. As the health improves and the contents of the cavities are expectorated and the resistance to absorption is increased, the temperature may fall to normal, but will generally be varied by gradually increasing and decreasing waves of fever. The cough may be very disturbing, lasting day and night ; inhalations of benzoin several times during the day and night will be most soothing. Belladonna linctus may be used, but morphia linctus will probably be discarded ; the strength of the patient needs to be helped by plenty of stimulant. The patient's wishes about getting up had better be consulted and

acted upon, it is better if possible for him to be up. If there be diarrhœa due to tubercular ulcers in the intestines bismuth and opium will probably be ordered. With tenesmus, or a complaint of diarrhœa by the patient, a starch and opium enema, if sanctioned by the doctor, had better be given, as the symptom is very distressing and may rob the patient of all sleep at night.

In favourable cases where the symptoms subside, or diminish in severity, the patient will probably put on weight week by week, even when the disease is considerably advanced. Such cases, however, had better not be sent away to the country or sea-side unless to relations, for the slightest mishap may cause a rapid recurrence of the disease, and the patient has little or no strength in reserve. A quiet life under the best attainable conditions is to be aimed at—to send such cases to a health resort will only hasten the end. The patient if leaving the supervision of doctor, or nurse, should be warned to be strictly careful as to the disposal of the expectoration.

If after three or four weeks a patient with careful feeding, treatment and nursing shows no improvement ; if the cough, wasting, sweating and diarrhœa continue, the case is probably hopeless ; all that can then be done

is to make the patient's life as comfortable as possible. Let the patient have his own way where it can be managed. Endeavour to check the cough. Treat the pain and diarrhoea carefully according to orders. Try to give him as much sleep as possible. If morphia is being given, take great care not to exceed the amount ordered by the doctor. The nurse should gratify any demands, if she can, with all the cheerfulness she can summon up. The patient will probably want to be frequently moved in bed. The mouth should be frequently washed or wiped out, especially after taking food ; if any ulcers or thrush are seen in the mouth it should be reported to the doctor. Small pieces of lint should be kept by the bedside to wipe away sputum, etc., if the patient is too weak to expectorate into the cup. The "*spes phthisica*" or hope of consumptives, so often spoken of, is no real conviction on the part of the patient, but simply a well-sustained effort on his part to delude himself he is going to get better, and a wish to hear the doctor or nurse agree with him ; if the nurse cannot find it in her power to agree with the patient, she need not contradict him. A consideration of the anxious and appealing look, in the patient's face and eyes, will prove to any one that the patient

knows there is no truth in what he says ; and he will cling fondly to any words of hope that may be given him.

The complications occurring in a case of consumption are numerous. The nurse must always be ready to detect the slightest change in her patient, and think no detail too trivial to note and report to the doctor. Every well-trained nurse knows, of course, that she should report not what she thinks is the matter with the patient, but any change made evident to the hand, or eye, or by the use of the thermometer.

COMPLICATIONS.

Hæmoptysis.—A few ounces to two pints : a dangerous complication of bad omen, which can never be foretold, and may happen in any case of phthisis.

Pleurisy.—Occurs in all cases ; may be dry, or accompanied by effusion, the latter being of benefit as it compresses the lung and checks the spread of the disease. The patient may complain of pain or difficulty of breathing, or the nurse may notice one side of the chest is not moving so well as the other.

Pneumonia.—Shown by rise of temperature

which is maintained, pain in the side, rapid and difficult breathing, duskiness and rusty-coloured sputum, generally flushing of the cheek on the side of the disease.

Congestion.—If extensive produces the most intense cyanosis.

These two latter are dangerous in proportion to the amount of lung involved by phthisis, and pneumonia, or congestion respectively.

Meningitis.—The first complaint is usually of neuralgia or headache. It has been already described. Children are more liable than adults.

General Tuberculosis.—Shown by the exaggeration of the symptoms, hurried breathing, cyanosis, delirium, etc., as previously described.

These last two complications cannot be guarded against, they may occur in any case of consumption. The first is invariably fatal; the second generally so.

Pneumothorax.—Occurs generally in advanced cases; it is produced by rupture of the lung, allowing air to escape into the pleural cavity. The signs are cessation of movement, on the side effected—bulging of the intercostal spaces, displacement of the heart, and cyanosis proportional to the amount of disease in the

opposite lung. Fifty per cent. of such cases die of the accident.

Emphysema, or dilatation of the alveoli of the lungs, with thinning and rupture of their walls, is often brought on by the coughing ; it is advantageous rather than the contrary.

Laryngitis.—As before stated this may occur early in the disease ; but more commonly occurs quite late ; the cough and pain occasioned help to a great extent to hasten the end in advanced cases. The accumulation of mucus and sputum hinders the free entrance of air, and the patient is wakened up at night, at longer or shorter intervals, to clear the air-way by coughing. The pain may be constant, or only when the patient swallows ; there is seldom actual difficulty in swallowing food, but the dread of pain caused by the act keeps the patient from eating. The vocal cords may be ulcerated or œdematous ; they may be paralysed by destruction of the cartilage into which they are inserted, or by infiltration of the muscles with inflammatory products.

Empyema requires to be kept in mind as a possible sequence of pleurisy ; unless an examination is made a collection of caseous or purulent fluid may take place and cause death by exhaustion, etc. This will be indicated by pain in the side, hectic temperature, increas-

ing anæmia and debility, and perhaps a local swelling or redness.

Fistula in ano following an abscess sometimes occurs.

Disposal of the Sputum.—This should be collected in a metal cup with a cover acting on a simple hinge; about an inch of 1-20 carbolic, or creolin (Jeyes' Fluid) should be added before it is given to the patient. In small quantities it may be mixed with sawdust and burned; in large quantities it should be placed in an iron vessel, which can be placed over a fire or furnace, and heated till the sputum is incinerated and destroyed.

CHAPTER VI.

THE NURSE'S CARE OF HERSELF.

NO nurse, with a family history of phthisis, should enter a hospital for consumption, or undertake the care of a patient suffering from the disease; the importance of this advice cannot be over-estimated; for a nurse with near relations dead, or suffering from phthisis, to take charge of a consumptive, is simply to court disaster. A nurse who is anæmic, or has a cough, should likewise shun the nursing of consumptives, which indeed should be done only by those who are really robust. A nurse, engaged in the care of consumptives, should have at least four hours off-duty every day, which, if she is wise, she will spend out of doors whenever possible. Her diet should be more varied, and of better quality than that which is so often considered good enough for a nurse. Her clothing should be always suitable to the time and season. While on duty she should wear a washing cotton dress, the sleeves buttoned just below the elbow, the

forearm being covered with lawn oversleeves. She should never run the risk of catching a cold by omitting to put on a shawl or jacket, even if it does necessitate the trouble of going upstairs for it. In short, she should lead a life which shall conform as nearly as possible to the ideal, in order to maintain a high standard of health. It is essential to have had breakfast before going on duty. While in the ward or sick-room, the air should be kept as pure as possible, while a moderate temperature is maintained. Cutting the finger with a broken spit-cup will be avoided by having them made of metal. Inhaling dust bearing germs will be best obviated by good ventilation, careful sweeping, and scattering damp tea leaves or a little carbolic lotion where the dust lies heaviest. The nurse must never give the patient the chance of coughing in her face; if her fingers are soiled with sputum they should be washed at once with carbolic; if her dress gets soiled it should be allowed to soak for twenty-four hours in carbolic before being sent to the wash. The bedroom for the nurse should be large and light. A day off once a month, and a long day on alternate Sundays, will enable the nurse to get change of air and scene. A late pass to enable her to visit a theatre occasionally

should be granted. If long engaged in nursing consumption a fortnight's holiday twice a year should be allowed. A healthy nurse conforming to the rules of health, and attending to the few details above enumerated, need have no fear at all of contracting phthisis.

RULES FOR THE PATIENT'S RELATIVES.

Let as much air, and especially as much sunshine, as possible into the house. The furnishing of the patient's room should be as simple as is consistent with comfort. The patient must have a room to himself. A wife or husband must not sleep with a patient who is consumptive; this latter is the surest way of contracting phthisis. Children should spend very little time in the room with the patient, and had better be sent away altogether. Endeavour not to let the smell of cooking enter the patient's room. Articles of food which have been taken into the patient's room, if taken out again, should be destroyed and not given to any one else. If the patient is up and about one or two spittoons may be placed in convenient situations. They should always first contain some

carbolic acid, and be emptied at least once a day. The dust swept up in the sick-room should be burned. Any one taking part in the nursing of the invalid should read the chapter devoted to the nursing of consumption. Persons brought into close contact with a consumptive, should endeavour by regular out-of-door exercise, and obedience to the ordinary rules of health, to maintain as high a standard of health as possible. Remember that the danger lies in the inhalation of the bacilli set free from dried sputum, and that any departure from good health lowers the resistance, and predisposes to the disease. If, when without help, a patient has an attack of blood-spitting, lay him down on a sofa or bed with the head low and near the side, and send immediately for the doctor.

CHAPTER VII.

PROPHYLAXIS.

THE necessity for measures to prevent the spread of the disease was indicated in the first chapter; about one-seventh of mankind die of phthisis, from which nearly 70,000 deaths occurred last year in England and Wales. Georg Cornet of Berlin, taking statistics of the causes of death amongst nurses, found that 63 per cent. died of phthisis. An estimate made in one case showed that the number of bacilli expectorated by a chronic consumptive varied from $1\frac{1}{2}$ to $4\frac{1}{3}$ billions in twenty-four hours. The sputum if allowed to remain in railway carriages, in trams, in the streets, on mats, bedclothes, handkerchiefs, etc., dries, and as a very fine and impalpable dust, alone or adherent to organic particles, is carried in every direction. The bacilli thus set free may be inhaled, and, indeed, it is in this way that the disease most commonly spreads. It has been proved that the bacilli in the dry state retain their vitality

and power of harm for six months, and they may do so for longer periods. The ideal measure is the segregation of consumptives in sanatoria, and special hospitals, in order that they may not come in contact with their healthy fellows ; this, as public opinion stands at present, is absolutely impossible, though it is to be hoped that in a few years it may be an established fact. The next best method, difficult but possible, is to make the nature and symptoms of consumption widely known throughout the land, so that victims of the disease may bring themselves under medical treatment before it is too late ; that having received advice they may adopt measures to prevent the spread of the disease, and that the friends of patients suffering from consumption may learn how to protect themselves from contagion. Gymnastics should be given as important a place in schools for pupils of all ages as reading ; the respiratory organs would then be properly developed ; the aeration of the apices of the lungs would no longer be deficient, the tubercle bacillus would no longer find a resting-place there, and the resistance to its development would be so great, that consumption would become well-nigh impossible. If the nature and possibilities of the disease were better known, men and women

would be careful not to unite themselves in marriage to a person suffering from consumption, or with a family history of the disease ; such a union is indeed a sin which descends upon the children. If the parties to a contract of marriage were obliged to produce a doctor's certificate of health, much misery and disease might be done away with. If regular inspection, cleansing and disinfection of work-rooms, work-shops, factories, compositors' shops, etc., could be carried out, and the necessity of much more light and air considered essential and enforced, the loss of many lives from consumption might be prevented ; the disinfection or destruction of houses long inhabited by consumptives would materially assist this end.

CHAPTER VIII.

CLIMATIC TREATMENT OF CONSUMPTION.

IT is absolutely necessary for a patient to consult a physician on the choice of a health resort, and having received advice it should be strictly followed. Owing to the infinite variety in the local and general conditions of different patients, each case requires individual attention, and treatment according to the indications afforded to the physician, by the history of, and by an examination of the patient. For this reason it is most unwise to follow the advice of an acquaintance, who may have been cured or much improved at some health resort; for a climate, beneficial to some sufferers from consumption, may be injurious to others. The time of year to go should be decided by the physician, the time of return will be regulated by necessity, or by the advice of a doctor at the health resort; a report of the patient's condition, or a diagnosis and diagram of the extent, etc., of the disease should always be taken, for which the nurse accompanying a case should be responsible.

The climate chosen is regulated chiefly by the stage and extent of the disease ; early cases are best treated at high altitudes, later cases are sent to dry and warm climates. Only when the disease is detected early can a cure be expected ; but later, even with cavity formation, very great benefit may be derived, and it may become almost or completely quiescent. The belief in the advantages of high altitudes for early consumption has been steadily gaining ground, and has now few opponents, each year becoming fewer. The change of scene and mode of life, the altered diet, rest and quiet obtained at health resorts, are valuable psychical adjuncts to the change of climate. The cases most benefited by treatment in high altitudes are those early cases with catarrh, and consolidation at the apex, the earlier the better. Patients must be sufficiently robust to take out-door exercise, for the results detailed below do not follow in cases confined to bed ; they are these :—

- (1) Slowing of the pulse—due to improved quality of the blood and stronger heart-beat.
- (2) Decrease in the number of respirations—on account of deeper inspirations of rarified air, and larger amount of lung brought into use.

- (3) Increased circumference of chest—increased depth of inspiration to compensate for the rarification of the air.
- (4) Conversion of hæmoglobin into oxy-hæmoglobin easier—the oxygen at high levels has stronger chemical affinities.
- (5) Rarity of hæmoptysis—explained by the increased facility with which the blood flows through the lungs.

In addition to these results certain changes occur in the lungs; râles, or moist sounds in consolidated areas get fewer and drier, and gradually disappear—the saturation of expired air remains nearly as it was at low levels, while the inspired air is much more dry—for this reason also pleural effusions rapidly disappear. Cases in which the pulse and temperature are not reduced, nor the circumference of the chest increased after six weeks will probably not improve.

The most desirable resorts for an early consumptive are Davos-Platz and the neighbourhood or the Upper Engadine. They may be visited for residence both in summer and winter. The cost from London for the journey is about £7 in either case; daily expenses will be eight to ten francs or more a day, according to the accommodation, etc., selected amounting in the aggregate to a sum

varying between £150 and £350 for the whole stay.

A patient going to Davos or the Upper Engadine should take both winter and summer clothing to be prepared for the sometimes sudden changes of temperature. Special care is necessary in the matter of underclothing: woollen material is essential. Of late years the manufacture of woollen underwear has received special attention, so that now pure wool garments to wear next the skin can be obtained quite free from any irritating qualities. Of the numerous pure natural and sanitary woollen productions, Jaegers are best known. Cellular clothing is believed in by many as a preventive of chills. A combination garment covering the trunk and limbs is best for both sexes. Ladies are advised to wear knickerbockers replacing petticoats, one or more of which may be added if required for warmth, as being much more suitable and comfortable than the latter, in a climate where walking will occupy a large part of each day. Men will find a flannel shirt most comfortable and convenient for general use. For outside garments serge is best for both sexes, as it can be obtained of any thickness and weight desired, an alternative being white flannel. For night-wear sleeping suits of flannel are most healthy.

The following articles of convenience and necessity should also be taken : a small lamp for burning methylated spirit, and kettle ; a few cakes of soap, some boxes of wax matches, and perhaps an india-rubber bag to be used for hot water ; a pocket compass may be found useful. The names of some of the best-known high-level resorts will now be given, and one or two described, remembering, however, that the physician must make the choice. Patients may reside all the year round in these high-level resorts, but should reach them in the summer in order to accustom themselves gradually to the cold of the winter. The cure of course costs a good deal, so that poor patients are unfortunately quite debarred from the benefits, but any one who has been cured will consider it cheap at any price. Andermatt, Hospenthal, Wengen, Leuk and Grindelwald ; in the northern and north-western part of the Grisons are Arosa (6208 feet), Davos-Platz (5200 feet), Davos-Dorfli (5100 feet), Frauenkirch Wiesen (4771 feet), and Parpen. In the Engadine are Samaden, Pontresina (6000 feet), St. Moritz (6111 feet), Silvaplana (5300 feet), and Maloja. Zermatt, Saas-Fee, Evolena and Kisoze on the Monte Rosa Mountains. Montanvert near Chamonix on the northern side of Mont Blanc. All the above combine

with high elevation, pure air, beautiful scenery, and a maximum of sunshine.

St. Moritz.—(Engadine Valley.) From London to Paris, thence *via* Bâle and Coire, 505 miles in thirty hours—cost from London, £7. The village is the highest in the Engadine. Organic impurities so few that the air is practically aseptic. Smallest rainfall in Switzerland. Snow lies from November to March, but patients can sit in the sunshine which is quite warm for hours a day.

Davos-Platz.—(Grisons.) Route to Coire as above, thence by train to Landquart close to Davos—fare under £7. Air pure and rarefied. Radiating solar thermometer rises to 110° F. in mid-winter. Here as at other high-level resorts the bacterium termo (putrefaction) is practically non-existent, so that lung cavities if putrid become non-infective, if pure they remain so. Tubercle bacilli are not found in the air, probably because it is too thin to float them; if expectorated they quickly die in the sunshine. It is of course very cold in the shade, and patients should take great care to avoid catching cold.

The climates above mentioned afford the ideal treatment, but some physicians send early cases for cure to lower levels, *e.g.*, Gorbersdorf and Falkenstein. The latter is

near Homburg, in the Taunus range of mountains—1800 feet—it is well sheltered ; a systematic cure is conducted called the “Curanstalt Falkenstein”. Attention to detail is the leading feature. Everything is carefully regulated—food, exercise, rest, occupation of mind and body. Ten per cent. of cures are claimed, resulting probably more from great care and hygiene than from the locality.

For patients in whom the disease has passed the early stage, or those who are unable to go to a high-level resort, a dry, sunny climate must be chosen. The physician must decide on the locality, and the distance which the patient may safely travel. The resorts suitable for winter residence, for consumptives with the disease moderately advanced, are so numerous that only a few can be mentioned. Chief among them are Mentone, Eaux Bonnes, Cauterets, Aix les Bains, Milan, Mont Doré, San Remo, Torquay, Falmouth and Penzance in Europe. The islands of Madeira, south of Portugal, Tangiers, Algiers, Tunis, Egypt, and the Cape in Africa: California and Florida in America. As a general rule, with much cough and expectoration, and debility, a warm seaside resort will be best. With fair health, the patient

should visit a place with the greatest amount of sunshine, and least of rain. A few places will now be briefly described as types.

Mentone.—London *via* Dover and Calais to Paris, thence by P. L. & M. Railway ; cost nearly £8. Though like all the Riviera, is probably best of all as a health resort. The climate is the mildest on the coast. There are no fogs. Average rainfall, eighty days a year ; sky cloudless during 214 days. The part of the town on the eastern bay should be chosen, being more sheltered from the east wind.

Cauterets.—From Paris, Orleans R. R. *via* Bordeaux to Pierrefitte, then drive seven miles ; from London £7. Altitude 3050 feet, rather damp. Season, May to October.

San Remo.—From Paris, *via* Ventimiglia ; £8. Sunny two-thirds of the year. Faces south, well-sheltered climate, much like that of Mentone.

Madeira.—From Southampton, five days. The climate is warm, with few changes ; a good winter resort. It is moist from being surrounded by the sea.

Egypt.—Cairo and Luxor are the best-known resorts. They afford practically a second summer. Rain is very occasional, the average humidity is little more than half the

figure representing it in England. Egypt 53, England 91. The temperature usually ranges between 60° and 70° ; there is no sudden fall of temperature in the evening. The season is from November to March inclusive. There are occasionally dusty winds.

Route.—From Gravesend by P. & O. steamer to Ismailia, thence rail. Fare, first class, £21 to Cairo. From Liverpool to Port Said, £14.

Take moderately warm clothing (suitable for English autumn). A pair of smoked glasses may be taken with advantage.

Algiers.—The climate much resembles that of Egypt. The air is not quite so dry, sixty days rain a year. The dust storms are occasionally troublesome. Quarters should be chosen in as elevated a site as possible.

Route.—London, Paris, Marseilles. Fare (Circular Tour) both ways, *via* Calais, first class, £16; three days from London.

Patients making either of these journeys are advised to combine saving trouble with economy, by taking tickets to their destination from Dr. Lunn or other agency.

California, Florida and the Cape afford a young man with early consumption a prospect of obtaining a living when convalescent. A book from the pens of the *élite* of the

medical men practising in Cape Town will be published shortly, indicating what cases may profitably be sent there, as the mistake is so often made of sending cases too advanced. At the Cape the prevalence of dust is an important item. The benefits derived from a long sea voyage are well known. Consumptives both in the early and middle stages improve enormously ; a three months' voyage, *e.g.*, Australia and back or Japan, costs about £105 by P. & O. In a sailing vessel the rates are much cheaper, though the accommodation is not so good.

For consumptives in the later stages of the disease, a long journey is most inadvisable. When there is considerable excavation of the lung with hectic fever and much debility the patient should remain at home or go to the nearest convenient seaside resort ; among the best are Falmouth, Torquay and Penzance ; there is seldom frost or snow, the average fall of temperature at night is 7° , and the amount of sunshine at Falmouth is the highest attainable in Great Britain ; the humidity is considerable, but suits advanced cases well, especially when cough is a prominent feature. Patients should keep out in the sunshine as long as possible, but never fatigue themselves by walking or staying out too long. Every

precaution must be taken against catching a cold, *e.g.*, by damp bedclothes, wet boots, sleeping in a draught, omitting to put on overcoats or wraps after sunset, etc., for the slightest neglect may produce a most disproportionate result.



ICHTHYOL IN THE TREATMENT OF PHTHISIS.

A CHANGE of climate being impracticable for many persons affected with pulmonary tuberculosis, and the employment of cod-liver oil or creosote being often unsuccessful—since many patients cannot bear the latter, and the former frequently giving rise to intestinal disturbances and anorexia (particularly in summer)—Dr. M. Cohn (*Deutsche med. Woch.*, XX., p. 330), Dr. Le Tanneur (see *Gazette des Hosp.*, 5th Jan.), Dr. Branthomme (see *La France Médicale*, 12th Nov., 1897) and Dr. Scarpa (see *Brit. Med. Jour.*, No. 1787, p. 51) conceived the idea of trying Ichthyol, owing to its well-known antibacterial action and its favourable influence on the digestive functions. They have treated more than 400 cases with this remedy in a little over two years, and never have observed any ill by-effects. The cure in cases in which the symptoms of the disease passed away after this treatment (which must be continued for at least a year) is attributed by the authors to the remarkably increased nutrition brought about by this medicament. Cohn and Scarpa prescribed it as follows:—

Ichthyol	}	
Distilled Water	}Equal parts.

Branthomme gives the

Ichthyolate of Ammonia.....	10
With Alcohol (65°)	20
In water.	

They began with four drops, three times daily, gradually increasing the dose to forty drops; to children five to twelve years of age, half these doses were given. The remedy is best taken before the meals and some black coffee drank after it, on account of its taste. The increase of the dose is about one drop for every day. The drug should be taken well diluted with water (from a wineglass to half a tumblerful).

According to Dr. Tanneur and Fraenkel the Ichthyol is best given in the form of keratin—coated pills or capsules, Ichthyol Co., Cordes Hermann & Co., 20 High Holborn, London, W.C. The remedy was also of great value in bronchitis, dilated bronchi, and paroxysmal cough.

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In 1000 grammes are contained (counted as free from water):—

<i>Constituent Parts.</i>	<i>Oberbrunnen, Fresenius, 1882.</i>
Bi-carbonate of soda	2,152,184
„ „ lithia	0,013,041
„ „ ammonia	0,000,668
Sodium sulphate	0,459,389
Potassium sulphate	0,052,829
Sodium nitrate	0,006,000
„ phosphate	0,000,064
„ chloride	0,176,658
„ bromide	0,000,782
„ iodide	0,000,005
Bi-carbonate of lime	0,438,257
„ „ strontium	0,004,421
„ „ magnesia	0,474,004
„ „ ferrous oxide	0,005,706
„ „ manganous oxide	0,000,856
Silicic acid	0,030,750
<hr/>	
Total of solid ingredients in grammes .	3,815,614
Number of cubic centimetres of perfectly free carbonic acid in 1000 cubic centi- metres of water	985,11

BAD SALZBRUNN, IN SILESIA—*continued.*

The effects of the water are assisted by the refreshing, dust-free air of the place, which lies more than 1356 feet above the sea level, and by the extensive sheltered and woody pleasure grounds and promenades, in extent more than 200 acres. A milk and whey establishment, under the direction of a chemist, supplies sterilised milk; goats', sheep's and asses' milk; wheys of all sorts; koumis, ferruginous whey and ferruginous koumis prepared on a special plan. The course of baths includes whole and half baths, medicinal baths, douches of all kinds and cold water. The pneumatic inhaling room (system of Göbel, Ems) affords accurately regulated inhalation of condensed medicated air and exhalation into rarefied air, and there is also excellent equipment for massage and gymnastics under medical guidance.

Remarks: In connection with the general course of treatment and its corresponding completion the Bad Salzbrunn has shown its excellent qualities in a number of diseases: principally in all cases of catarrh of the respiratory organs—the throat, larynx, trachæa, bronchial tubes and lungs, in emphysema, bronchial asthma and catarrhal inflammation following pleuro-pneumonia. Further, in catarrh of the stomach and bowels, diseases of the liver (especially gallstones), in bladder complaints, gout, chronic diseases of the kidneys, corpulency and diabetes, the results of the Oberbrunnen are well known.

Houses are in sufficient supply, and to be had with all requisites. Hotels—Kurhaus, Preussische Krone, Sonne, Deutscher Adler and Schwert.

As physicians of the bath there are the Sanitäts-Rat Dr. Nitsche, Staff-Surgeon Dr. Pohl, Dr. Determeyer, Dr. Montag and Dr. Ritter.

There is a great mass of literature about Bad Salzbrunn and the Oberbrunnen, including analyses made by Fresenius of Wiesbaden, by Liebreich of Berlin, by Valentiner and many others.

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