COLDS, CATARRH AND INFLUENZA

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COLDS, CATARRH AND INFLUENZA

Their prevention and treatment

By

A CIVIL SERVICE DOCTOR

CASSELL
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AND SYDNEY

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COLDS, CATARRH AND INFLUENZA

CHAPTER I

INTRODUCTORY

THE term cold is popularly given to inflammation attacking the delicate lining of the nose or upper air-passages, and before going on to consider this happening in detail, it is well to ponder a moment on the name itself. An objection to it is that it has grown up on the supposition that the cause of the trouble is exposure to cold atmospheric conditions. We shall go into the causes of colds in full in a later chapter, but that this view is a very debatable one is shown by the fact that Esquimos and northern people, as a whole, are singularly immune to colds, and that the members of Arctic expeditions such as those of Nansen, Scott, and Shackleton, have reported a remarkable freedom from colds in spite of the extreme climatic conditions they endured. The exposure theory of colds has, however, been accepted until recent times and has been responsible for what we may call the coddling attitude in the prevention and treatment of these maladies.

Coddling is an attempt to maintain a permanently artificial atmosphere for the body, whereas the modern view, as we shall see, is that the body's natural resistance should be strengthened to withstand wide variations of external conditions. The

old view reached a high peak in Victorian times when, combined with strong moral views on the indecency of bodily exposure, it was responsible for excesses of clothing in general and for particular precautions, in the way of mufflers and respirators, for the victims of a cold.

A quotation from a home medical adviser of the day runs:

> "The custom of leaving the thigh and legs uncovered in children is a bad one, the importance of protecting these parts is recognized in the case of adults but, curiously enough in those of tender years they are unhesitatingly exposed to the inclemency of the season. . . . The body should be completely covered with woollen undervests, drawers and socks."

With such sensitizing treatment it is little wonder that the elements were feared, or that, when in the novels of the day undue exposure to them occurred, the heroine is often described as suffering from a feverish chill in consequence.

Nowadays, knowing the health-giving value of sunlight and air, we have advanced far from the above maxims in our views on clothing, and have been rewarded, in the case of women at any rate, in whom the change has been most drastic, by a noticeable improvement in general health and physique.

Then, too, a hundred years ago there was universal fear of the special harmfulness of night air. In Jane Austen's "Emma," when talking about an evening dance, one of the characters says:

> "From the very circumstances of it (the room) being larger, Sir. We shall have no occasion to open the windows at all—not once the whole evening; and it is that dreadful habit of opening the windows, letting in cold air on heated bodies, which as you well know, Sir, does the mischief."

For this special fear, however, a reason existed which need no longer trouble us. The low-lying districts and fens, being imperfectly drained, were still infested with malaria-carrying mosquitoes; they caused the attacks of "ague" we read about, and now that they have practically disappeared the dangers of the night air have vanished with them.

The common cold is not in itself a dangerous malady, that is, we don't die from an uncomplicated cold in the head, but it may be the starting-point of so many more serious troubles that its importance must not be minimized. We often hear the expression, when people are talking of some illness, "It began with a cold," and it is certain that the cold, attacking what we might call the portals of the system—the nose and throat—by which most of the infecting bacteria gain entrance to the body, is capable of weakening a very important point of defence. Then, too, colds have a tendency to become chronic, when, as we shall see later in talking about catarrh, they may be the cause of persistent poor health.

If for no other reason, colds, on account of their frequency and discomfort, are worth studying with a view to prevention. The victim of an acute cold is a miserable picture; his nose runs or refuses to run alternately, his eyes water, his ears buzz, his voice is thick and those consonants whose sound production depend on a nasal note, such as "M" and "N," are distorted.

That colds are so common is, of course, due to their highly infective nature. Most infectious conditions, such as the common fevers, confer a certain degree of immunity on the victim, that is, you cannot

get one of them twice except at a considerable interval, and with some the immunity period is very long or, in the case of chicken-pox, lasts throughout life. With colds, however, the immunity given is so short as to be no safeguard; in fact, many people suffer from a series of colds during the winter months.

The economic aspect of this prevalence is a grave one, and it has been estimated that the common cold costs the nation £20,000,000 a year. The passing on of colds is of course increased by crowded conditions and poor ventilation, the infection being conveyed through the air by the breath or by germ-laden handkerchiefs.

Complete isolation for each victim is a method of treatment that suggests itself, but this, in the case of the ordinary cold, is not practicable, as, if such measures were taken in England during the winter months, public life would be entirely disorganized. *Our hope lies, therefore, in preventative treatment of the cold along general health lines* in which, as we shall see later, there is every reason to expect successful results.

CHAPTER II

HOW THE AIR-PASSAGES ARE AFFECTED

The Nose and its Communications

If we are to understand how what we call a cold affects the body, it will be necessary to obtain a mental picture of the air-passages, that tract which reaches from the nose to the lungs and is lined

throughout by a continuous mucous membrane. The diagrams, Figs. 1 and 2, will serve to show the main parts of the air-passages and their communications.

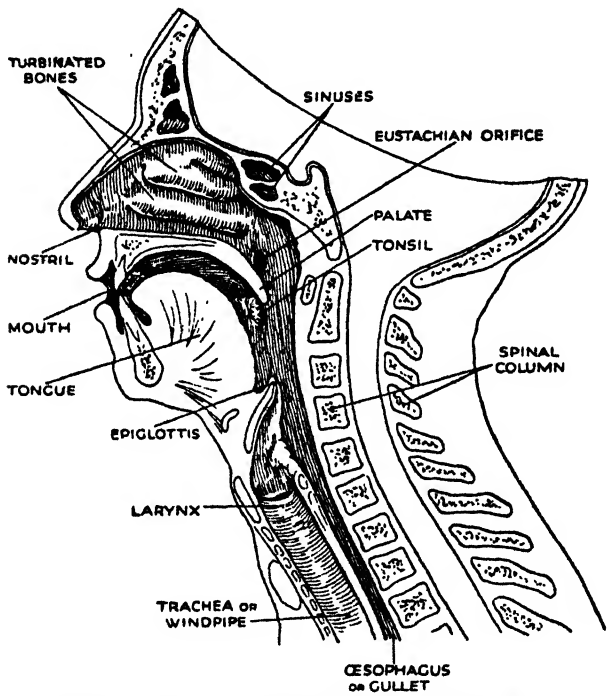

Fig. 1.—The upper part of the respiratory tract.

First, there is the nose, which is the most common site of a cold, and usually the first to be affected, though in some individuals a cold habitually starts as an inflammation of the air-tubes in the lungs and spreads upwards. In others the larynx may be the first part to be implicated. The nose

is divided into two cavities by a partition, the *nasal septum*. Opening in front on the face, the nasal cavities communicate behind with the upper or nasal part of the throat. (Fig. 1.)

So far, then, we have reached a space common to breathing and food intake through the mouth, but this is almost immediately divided into two passages—the front one, with which we are concerned, leading direct to the lungs, and the back one carrying the food to the stomach. During each act of swallowing, a flap-like structure, called the epiglottis, automatically screens off the front or lung passage from the throat and prevents food particles from taking the wrong course.

The constant swallowing of inflammatory discharge, such as may occur during a neglected chronic nasal catarrh, may lead to derangements of digestion and to poisoning of the whole system. For this reason, as well as for other equally important reasons, chronic catarrh should never be ignored.

Where Hoarseness Originates

Following the air-passage downwards, we come to the larynx or voice-box which, being in immediate continuity with the nose and throat, is early affected in any extension of the cold. The larynx is a vibrating chamber for the voice and contains the vocal cords. An early result, therefore, if the larynx gets inflamed, is that the stuffy voice of the ordinary cold changes into the real croak of laryngitis, and later, if the vocal cords become more swollen, the voice may be reduced to a whisper or even disappear altogether.

Coughing is a protective mechanism designed to prevent irritating particles from entering the lungs. It consists first of a breathing-in, or *inspiration*, the glottis is then closed, to be opened again forcibly

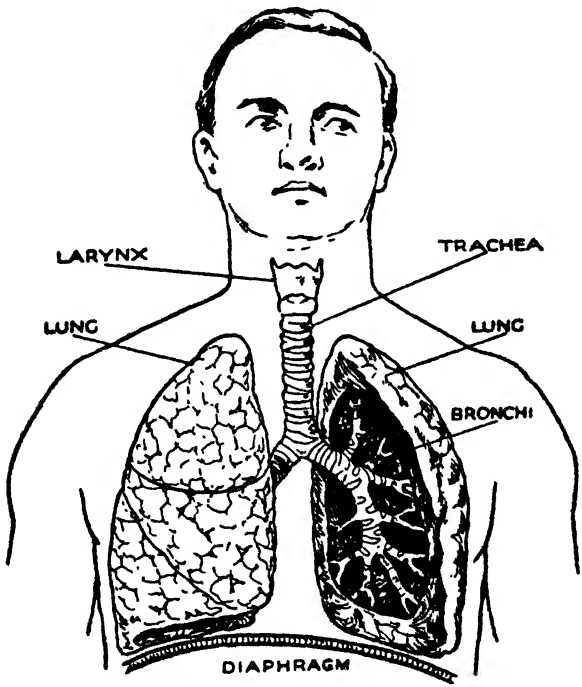

Fig. 2.—The trachea, lungs and bronchi.

by a violent breathing-out, or *expiration.* The sound of a cough is due to the breathed-out air rushing over the vocal cords.

Wind-pipe and Bronchi

The expansion of the larynx narrows to become the windpipe or trachea, which is the breathing

tube of the neck; it is kept open by hoops of gristle and these can be felt in the neck below the "Adam's apple," which indicates the position of the larynx. Entering the chest behind the breast-bone, the windpipe soon divides into two passages known as the right and left bronchi and leading to the right and left lungs respectively. (Fig. 2.)

In the event of these bronchi becoming inflamed, in the condition known as *bronchitis,* we can now, having located them, realize why one of the symptoms will be rawness and discomfort behind the breast-bone and a feeling of congestion in the chest. Irritation of the bronchi by inflammation brings about coughing, which clears the air-tubes and protects the lungs. Cough-mixtures, which check the body's natural defensive mechanism by stopping the cough are not, therefore, a good method of treatment. It is better to treat the underlying cause of the cough, namely the inflammation, by antiseptic inhalations. In prolonged inflammations of the air-tubes or lungs, however, when there is little phlegm to be got rid of and when the cough is causing exhaustion, such drugs as codeine or morphine are prescribed, but should only be taken under medical supervision.

When they reach the lung substance, the two bronchi divide and subdivide until they are microscopic tubes, through which the interchange of stale and fresh air takes place in the act of breathing.

The Hollow Bones of the Face

When we say "Oh, just a cold in the head," it would be well to bear in mind that the nose communicates not only with the stomach and the lungs,

but, as we shall see, with the ears, the eyes and the insides of the face-bone; it is also in close juxtaposition with the brain itself.

In the bones of the face there are hollow air-chambers, known as sinuses, which give resonance to the voice and lightness to the otherwise solid masses of bone. These air-chambers communicate with the nasal cavities on either side. The most important sinuses are situated in the bones of the cheek and forehead and may become centres of pain and discomfort in a severe cold. When infection spreads to them, we may get sensations of dull, throbbing pain in the forehead, which gets worse in a heated atmosphere and on bending, or, if the lower sinuses are infected, the pain will seem to radiate from the cheekbone on either side. If such a condition does not clear up with the cold, a chronic state of *sinusitis* may set in, leading to persistent headaches and the discharge of matter into the nose, and occasioning much ill-health. Germs multiplying in the sinuses may pour their poisons into the blood-stream and cause injury to such distant structures as the knee-joint or the great sciatic nerve of the leg. It has now become practically a routine measure in the treatment of rheumatism or neuritis to investigate the condition of the sinuses. (For more about Sinusitis, *see* page 60.)

How a Cold can Lead to Ear Trouble

Looking into the external ear as we know it on the surface of the body, we find the passage completely blocked by the membranous ear-drum, and it would seem, on casual observation, that there can be no connexion between the ear and the nose.

This isolated external part is, however, of little importance compared with the part of the ear which lies behind the drum. This part, the middle ear, is in close proximity to structures whose involvement in infection may lead to serious consequences; they are the hearing mechanism of the

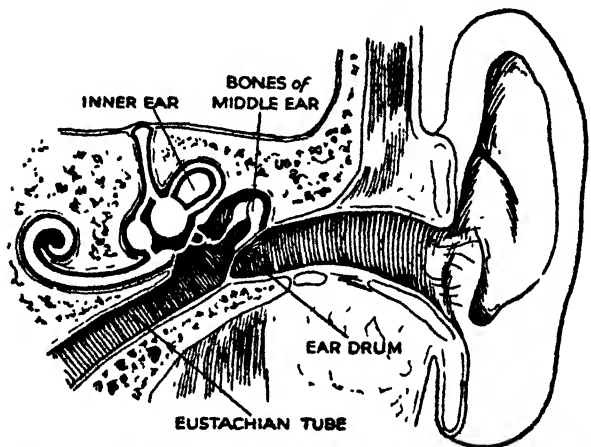

Fig. 3.—Diagrammatic section, showing the middle ear.

ear, the membranes of the brain, and the nerve controlling the muscles of the face. For our purpose, therefore, it is very necessary to note that a passage known as the Eustachian tube leads from the upper or nasal part of the throat to the middle ear. Its function is to allow air to enter the middle ear and permit vibration of the ear-drum which, as we have seen, separates the outer ear from the middle ear. Spread of infection from the nose and throat may therefore result in temporarily impaired hearing, which is due to blocking of the Eustachian tube, so that the drum cannot vibrate properly. (Fig. 3.)

In more serious conditions, abscess formation may result if the infection spreads further into the middle ear itself (*see* p. 40).

How the Eyes may be Affected

That the nose and eyes are intimately connected is common experience. This connexion is the lachrymal duct, which runs from the inner corner of the eye to open in the nasal cavity on the same side. Tears are formed by a small gland in the outer corner of the eye and, when we cry, the tears which do not flow over on to the cheeks are conducted down the lachrymal tube, making the nose run. When not occupied in "crying," the lachrymal gland still secretes just enough moisture to lubricate the eye, and any excess is carried down the lachrymal duct in the same way, so that blockage of the duct, as occurs in a cold, may lead to watering eyes. This duct may also form a channel for the spread of inflammation from the nose to the eyes, and sore eyes are a common symptom of a cold in the head. If the eyes become inflamed they should be bathed with boracic powder and warm water.

The Tonsils and Adenoids

Because they have an influence on the severity or duration of a cold, we shall do well to note here the position of those highly controversial structures, the tonsils and adenoids. They are masses of glandular tissue whose size and condition vary considerably in different people. The tonsils are situated in the throat and, when enlarged, can readily be seen by inspection through the mouth, when they appear between the arches formed on

each side by the back of the palate and the throat. The adenoids are not visible to ordinary inspection. They lie in the nasal part of the throat just where it communicates with the nose, and it will be clear, therefore, that if they are enlarged in youth the result will be a blockage of the nose, and the child will develop as a "mouth-breather."

Enlarged and inflamed tonsils and adenoids are a common cause of head and throat colds and of chronic catarrh. They may also serve as a breeding-ground for germs and cause, thereby, injury to the heart, lungs, nerves, or joints. It is probable that repeated colds, in the first place, cause inflammation of the tonsils and adenoids, and they in their turn, by making the nose and throat unhealthy, influence the course of any infection attacking those parts.

CHAPTER III

BREATHING

EVERY cell in the body needs oxygen, and if deprived of it will die, just as a candle flame will go out when the proportion of oxygen in the air falls below a certain level.

To ensure that each cell throughout the body shall receive its proper supply, we are fitted out with a delicate and perfectly adjusted apparatus, consisting of the air-passages and lungs, and the heart and blood-vessels. Anything which interferes with the working of this apparatus impairs the supply of oxygen to the tissues and results in loss of vitality, ranging from the lassitude and

weariness of an ordinary head cold to the extreme breathlessness and collapse of severe pneumonia.

Thus blocking of the nose by catarrh, or of the great air-tubes by bronchitis, brings about discomfort and breathlessness on exertion. In inflammation of the lungs, such as occurs in pneumonia, part of the lung substance is "knocked out," and blueness and rapid breathing result. The heart has to beat more rapidly to try to make up for the poor oxygen supply, and is liable to become over-strained in consequence.

How the Lungs Work

The chest is a cavity enclosed by the ribs, which are hinged on to the spine behind and attached to the breast-bone in front; the floor of the cavity is formed by the diaphragm or midriff, a large domed sheet of muscle. When we breathe in, or inspire, we increase the size of the chest by raising the ribs, which carry the breast-bone upwards and outwards as they rise. At the same time there is a downward movement of the diaphragm. We then reverse the process and breathe out, or expire; the diaphragm now rises and the ribs and breast-bone fall, so that the space in the chest is once more reduced. The lungs are two elastic bags which follow the movements of the chest, that is when the chest enlarges they automatically expand to fill it up, and *vice versa*. In this way they act as bellows, drawing in air from the atmosphere as they expand and expelling it as they contract.

In the lungs the air from the atmosphere is diffused into microscopic air-spaces which are

lined with small blood-vessels. These vessels contain the gas carbon dioxide which they are carrying from the tissues, and which is a waste product of cell life to be got rid of during respiration. The carbon dioxide is drawn through the vessel walls into the air-spaces and expired as stale air. At the same time, the blood receives replenishments of oxygen from the air drawn into the lungs.

The respiratory system, though it is capable of being influenced by the will—we can, for instance, hold our breath voluntarily—is in the ordinary way under automatic control, and is very sensitively adjusted and may be influenced by a variety of conditions. Thus respiration automatically increases in depth when we are doing physical work or taking exercise, because the body cells then need more oxygen and produce more carbon dioxide. The heart, at the same time, beats more rapidly, so that a brisk flow of blood—the body's transport medium—may be driven through the lungs and through the muscles. Obviously, therefore, if part of a lung is incapacitated by, say, pneumonia, and the heart is already beating rapidly in order to send a greater quantity of blood through the sound lung, any exertion may prove fatal.

The Value of Exercise

In health, the good effects of exercise are largely due to the deep breathing which accompanies it. When we take a deep breath, the diaphragm, as we have already seen, descends into the abdomen. By so doing it massages the abdominal

organs, in particular the liver, and hastens the flow of blood through them, thus promoting good digestion and tending to prevent constipation.

The downward descent of the diaphragm, together with the increase in capacity of the chest and the contractions of the limb muscles, which occur in walking and running, squeeze and suck the blood back to the heart from the abdomen and the legs. In this way the whole circulation becomes more vigorous and the body receives a good supply of oxygen and nutriment—since the blood also acts as transport for food to the tissues. Stagnation of blood is prevented and toxins and end-products of cell life are washed away.

Prolonged sitting or standing and immobilization at work are an evil. Sedentary workers should, when the opportunity arises, "stretch their limbs" and take a few deep breaths with the head and shoulders thrown back. This prevents stagnation of blood in the head and upper air-passages, which, as we shall see later, so often precedes inflammation, or cold in the head.

The custom of keeping children seated like little statues for long periods at school was very injurious. Free activity is necessary for the normal development of all young creatures, and nowadays wise teachers give their charges every opportunity of free movement, preferably out of doors, in addition to their games and exercises.

Open-air exercise should be taken regularly every day by everyone. Walk to work whenever possible, if you are a sedentary worker, or failing that, do simple exercises at an open window.

Too often bad posture, round shoulders, and "lazy breathing" prevent proper expansion of the apices or upper portions of the lungs, which consequently fall into disuse, receive a poor blood supply and are rendered more liable to be attacked by tuberculosis.

How Raw Air is Prepared for the Lungs

According to circumstances, the air we breathe may be hot or cold, dry or damp, and, although it always contains impurities and germs, the extent and nature of these vary considerably. This we realize if we compare in imagination the atmosphere of a mountain health resort with that of an overcrowded railway carriage. The air-passages, however, are able, in health, to tone down these variations to some extent, and to present the lungs with air of a certain purity and temperature. The chief agent in this work is the delicate membrane which lines the respiratory tract throughout its course. This membrane has two important characteristics—it pours out a sticky fluid called mucin, and it is lined with minute hairs, or "cilia," which are in constant wave-like motion. Because of the first of these characteristics it is known as the *mucous membrane*.

Between them the mucin and cilia act as effective cleansers; germs are caught and destroyed in the sticky fluid, and then the rhythmical sweeping movement of the cilia clears away the debris of germs and impurities thus entangled.

The work of the mucous membrane is assisted by the small, coarse hairs visible in the skin at the entrance to the nostrils. These trap dust

and germs and act as the body's first line of defence. If these small hairs are few or absent, as is often the case in chronic catarrh, their growth can be encouraged by the application of vaseline. It has been suggested that the tendency of the human race during the course of its evolution to become increasingly hairless is from this aspect a disadvantage, and the absence of these small protective hairs may be a factor in the causation of nasal catarrh.

Blowing the Nose

The importance of correct nasal hygiene has been stressed by an experienced surgeon.* When the air is drawn in during inspiration, it passes along the upper part of the nose, near the "roof," as it were. Expired air passes out along the floor. The best way, therefore, to clear the nose of mucus with entangled germs and debris, is to breathe in deeply through the nose, with the mouth closed, sniffing slightly, thus allowing deleterious material to collect on the floor of the organ, then breathe out forcibly, holding one nostril shut. Repeat with the other nostril. Dust, germs and debris should first have been cleaned out of the entrance to the nostrils by the little finger enclosed in a piece of lint or old linen which can be burnt. This should be done night and morning.

The defensive mechanism of the nose is powerless to protect the body against the evil effects of constantly inhaled irritant dusts. It has been shown that certain dusts actually paralyse the

* "Care of the Nose, Throat and Ear," W. Stuart-Low.

cilia and so prepare the way for infection. Adenoids are said to be more common in dusty regions. Probably more harm is caused by indoor dust in badly ventilated homes and places of employment than by outdoor dust, and the remedy is open windows and hygienic methods of cleaning.

Except in circumstances of constant exposure to dust, the defensive mechanism of the nose is very efficient and, by the time the inhaled air reaches the throat, it is, normally, practically free from germs. In the throat it encounters the tonsils, which, when healthy, act as accessory germ traps. If, however, the lining of the nose or the tonsils become inflamed by a cold, their protective function fails and the body is more open to infection by the germs of more serious diseases.

Air passing through the respiratory tract also takes warmth and moisture from the body during its transit. The warming process takes place in the nose, where numerous vessels containing blood act as heating agents.

Mouth-breathing

Since the nose is so well designed as a filter, warmer and moistener of air, it seems only reasonable to conclude that mouth-breathing is bad, because it throws the lungs open to irritation and infection. Some authorities point out, however, that during violent exercise mouth-breathing is normal, the mouth being opened to allow in the extra supply of oxygen required by the work-

ing muscles, but this is only necessary in severe and prolonged physical exertion.

Mouth-breathing in children, nevertheless, should never be ignored. It may be due to a habit, arising from a continued series of head colds blocking the nose, and from faulty training in the use of the handkerchief. Attention to general health and the avoidance of infection are necessary in these cases, and the child should be taught to clear the nose night and morning, and encouraged by deep-breathing exercises to breathe through the nose.

Very often, however, mouth-breathing in children is due to adenoids and associated enlarged tonsils blocking the airway. These are to be suspected if the condition does not readily clear up with improved diet and fresh air. Medical advice should be sought, since the danger of deafness by spread of inflammation to the middle ear is very great.

CHAPTER IV

VENTILATION AND ITS BENEFITS

We were taught at school that the evil effects of bad ventilation were due to "excess of the poisonous gas, carbon dioxide" in the atmosphere of a room. Stuffiness was believed to be a kind of slight suffocation caused by the gradual using up of oxygen by the persons breathing in the room, and its replacement by unbreathable carbon dioxide from their lungs.

This, however, has been proved to be a fallacy, by the work of Haldane, Hill and others.

Thus we are told that: "There is never any diminution of oxygen or increase of carbonic acid in the air of crowded rooms that matters. The natural ventilation due to difference of temperature inside and out is so great through chinks and crannies of doors of rooms that the air never becomes seriously altered in chemical composition, and only in sealed-up places, like mines or submarines, does this happen, but ample ventilation is needed to *clear out infection and house dust* and to keep the air sweet. The most important effect of ventilation as far as comfort is concerned is a *physical one on the skin and lungs.*"*

A well-ventilated room is one in which there is free movement of air without creating an uncomfortable draught, and one in which the air is neither overheated nor too moist. It has been shown experimentally that people enclosed in a glass case felt no discomfort from the excess of carbon dioxide they were producing from their lungs, provided the air was stirred about with a fan. Cool moving air stimulates the skin and prevents the feeling of listlessness and oppression experienced in a stagnant atmosphere.

Body Heat

The internal body-temperature during health remains constantly in the region of 98° F. and yet, if we were to judge by our sensations at times, and the feeling of our skin, we should think that much wider variations occur: that they do not is

* "Common Colds," Hill and Clement. Heinemann.

due to the very efficient arrangements for heat regulation in the body, which are capable, in the ordinary way, of neutralizing outside influences.

Heat is produced inside us by cellular activity and muscular work, and it leaves the body through the skin by conduction, convection, and radiation.

Conduction.—Heat is transferred to substances in contact with the skin, such as the clothing.

Convection.—The air near the body becomes warm and therefore rises, carrying heat with it.

Radiation.—Heat waves flow out in all directions from the body surface.

The loss of heat in these ways depends on the amount of blood circulating in the blood-vessels of the skin at any one time, and this amount can be altered by nervous control. Thus when the skin becomes hot, little nerves contained in it transmit a message to the brain, which responds by relaxing the muscular walls of the skin blood-vessels, so that a greater volume of blood is exposed to the cooling process. On the other hand, if the surface of the body becomes too cold, the reverse takes place and the vessels contract so that heat loss is minimized. The complexion indicates these changes, a cool person being pale and a warm one flushed.

Man, in his struggle against the elements, has developed tremendous powers of resisting cold, which artificial overclothing tends to destroy.

Sweating

When the temperature of the atmosphere rises and the surroundings are hot, heat loss by

radiation, convection and conduction cannot come into play, and body heat is mainly lost by sweating. Nerve messages stimulate the sweat glands in the skin, and they pour forth moisture on to the surface of the body, where it evaporates and so brings about loss of heat. If the atmosphere is already overcharged with moisture, as in "muggy" climates or stuffy rooms, sweating cannot readily take place and serious discomfort results. Thus in a crowded room, where the body is enclosed in a stagnant blanket of moist air, held in by one's own clothing and by the bodies of the other people in the crowd, heat exhaustion may take the form of faintness, dizziness, nausea, and even loss of consciousness. Where these conditions are excessive, heat-stroke may occur. Sir Leonard Hill has pointed out that in many famous examples of "asphyxiation," as in the Black Hole of Calcutta or the tragedy of the *S.S. Londonderry*, the deaths occurred from heat-stroke and not from excess of carbon dioxide.

How the Body can Generate Heat

The heat the body produces, which we have seen is due to muscular and cellular activity, also varies during normal health. When we are cold, all the muscles undergo an involuntary contraction which generates heat. Shivering is an accentuation of this process, but here muscular contraction becomes so exaggerated as to be recognizable, though it is still out of control of the will. Voluntary movements, however, play their part too when we are cold, as we usually assist the heat generation by stamping, and waving the arms.

Thus exposure to cold increases the tone and activity of the muscles, deepens the breathing, increases appetite and improves digestion.

Hygiene of the Skin

A normally functioning skin is capable, as we have seen, of adaptation to pronounced changes in environment. If, however, we over-protect the skin, its power of reacting will become weakened. Thus a "coddled" person is more susceptible to draughts, wet feet, and changes in the weather than one whose skin is trained and kept active by sensible habits and hygiene.

It is clearly important, for instance, to wear suitable clothing which allows free circulation of air next the skin so that the moisture and heat given off is removed and does not clog its activity. Open necks and sleeveless dresses among women achieve this end, as does loose, cellular underwear. Then, too, bodily exposure to the air and sun should be practised whenever possible. Exposure to wind and air has a bracing effect on the whole system.

Baths are another important factor in skin hygiene, because they keep the skin free from clogging impurities, maintain its activity and enable it to respond to rapid changes of temperature. Cold baths are especially useful in this respect, if the subject is young and vigorous, as they stimulate an immediate response in the blood-vessels of the skin, which contract strongly to prevent heat loss and, after the immersion is over, dilate once more and flood the skin with blood, causing the familiar healthy afterglow.

Effect of Atmosphere on the Lungs

The air leaving the lungs is saturated with moisture by fluid evaporating from the respiratory membrane. The drier the surrounding atmosphere, the more active this flow of fluid, which tends to cleanse and protect the air-passages from infection. The cool air of out-of-doors or a well-ventilated room is comparatively dry and therefore takes up more moisture from the lung lining. The flow of blood through the lungs is increased, in order to make good this loss of fluid, and thus further protects them against disease (*see* Chapter VI on Inflammation). In the same way, walking against a cold wind makes the eyes and nose run, a perfectly normal, healthy reaction, which does not mean that the individual has "caught cold."

The cool dry air of mountain resorts is healthy largely because of this effect on the respiratory passages. It is also comparatively free from germs and irritating dusts.

How to Ventilate an Ordinary Living-room

An open gas fire with a good chimney, and windows open to such an extent that the temperature of the room is maintained at about 60° F. is all that is necessary in the ordinary way. The fire should be placed in such a way that the floor level is kept warm. Warm feet and cool air blowing round the head prevent congestion and catarrh of the air-passages. The use of gas, coke, hard anthracite, and electricity for all domestic purposes is infinitely preferable to the present

custom of burning soft, smoke-producing coal. Smoke, owing to the presence of sulphur acids and other irritating substances, causes injury to the air-passages of city dwellers. The healing rays of the sun are cut off, and town children tend to become rickety as a result. Light is cut off by heavy fogs and our eyes strained by the constant use of artificial light during the winter. Factory chimneys are not alone to blame—the domestic fire plays a large part in the production of the "smoke nuisance."

Good Ventilation and Disease

An ample supply of fresh air and good spacing-out of beds in school dormitories, in hospitals and in soldiers' camps have been shown to decrease the spread of colds and other respiratory infections. During epidemics of influenza special attention should be paid to ventilation and to the spacing of desks in offices, etc., so that each worker may obtain his share of fresh, germ-free air. Concentration of germs at close quarters, and not cold air, as we shall see in the next chapter, is responsible for the spread of colds.

CHAPTER V

HOW WE CATCH COLD

THOUGH we never say we have "caught a bilious attack," we speak of "catching cold," just as we "catch" measles or scarlet fever. Thus we distinguish between a disorder of functioning and a

disorder which is the result of invasion by outside agents. These agents are bacteria, or, as they are often called, germs, and the cold is a bacterial or germ infection.

If a microscopical examination is made of the front part of the nose, it will be found, even in a healthy person, to contain numbers of bacteria of different varieties; farther back in the interior of the nasal cavities, however, no bacteria will normally be found, owing, as we have seen, to the cleansing and disinfecting power of the mucous lining. So we see that bacteria are always on the spot, but that in the ordinary way, that is in a state of health, the nose can resist them. Why then, it may be asked, can we not sit back at our ease and leave everything to this protective mechanism?

To answer this we must imagine that the two opposing forces, the infective agent or germ on the one hand and the body on the other, are in the balance against each other, and that a little weight added to or removed from either side of the scale may decide the issue between them.

How the Attacking Forces are Strengthened

The delicate state of balance which exists between the infective agent and the body, may be upset in favour of the former in two ways. We weigh down the infection side of the scale by frequenting unhealthy atmospheres such as are found in crowded indoor gatherings.

In these circumstances, the organisms present are multiplied and their variety and virulence increased, while contact between individuals is so close that conversation is accompanied by a regular

cross-battery of germs. Think, for instance, of the propulsive power that may be used in the pronunciation of the letter "P" and, still more, that behind a cough or sneeze. Handkerchiefs are full of the germs of infection, and carelessness in this respect is responsible for much infection. That this is not generally realized is shown by the ready way adults will offer children their handkerchiefs. Recently at a children's entertainment one of the performers asked his whole audience to wave their handkerchiefs as a sign of approval; this was done with great enthusiasm, and it is a pity that results could not be followed up to see how many colds this unique scattering of germs was responsible for. The free use, during a game of blind-man's buff, of a germ-laden handkerchief was responsible in the author's experience for one case of middle ear infection, one of sinusitis, and the absence from school of almost an entire form of children.

Kissing is a common way of conveying infection. The membrane lining the mouth and throat is continuous with that covering the lips, and therefore, when an infected person kisses another on the mouth, conditions for the implantation of infective germs are ideal. A kiss on the forehead or cheek is of course less dangerous.

Adults who habitually kiss the babies they meet as a demonstration of their delight in them, weigh the odds heavily against the baby. This is so because many grown-up people have some sort of infection in their mouths such as catarrh, septic tonsils, a decayed tooth or inflamed gums, whereas the infant's mouth will be in a relatively pure condition. The needless exposure of young children

to such infection is selfish and stupid. A baby is already exerting all its forces in the tremendous task of growing, developing, and adapting itself to a new and strange world, without having the added work of having to combat infection. A cold, in a very young child, may bring about loss of weight or failure to gain normally, and often results in temporary flabbiness of the muscles.

How a Cold may Result from Lowered Resistance

The other event which may cause the issue to be decided in favour of the invading germ is a weakening of the body's powers of resistance. A high standard of health and vitality is our first line of defence, and resistance to attack by germs of infection will be lowered by any serious impairment of this, such as may be brought about by unhealthy habits of life. Over-fatigue, faulty diet, neglect of local sepsis in the nose or throat, prevent the body from putting up a good fight.

Local lowering of resistance to colds is brought about by anything which irritates the mucous lining of nose or throat. Dust and fog, as we have seen, or chemical fumes can do this. It also occurs with excessive smoking. The excessive use of strong condiments or irritation by too hot food are believed to lower resistance to germ invasion.

Cold and Damp

Then there is the question of damp and exposure.* The first point to be clear about in this

* An account of investigations into this subject is given in the works of Sir Leonard Hill and his co-workers, e.g. "Common Colds" (Hill and Clement); and "Health and Environment" (Hill and Campbell).

connexion is that damp or cold air cannot by itself cause a cold. An indispensable factor in the catching of a cold is the presence of germ infection and, whatever hardships or exposure we undergo, they will not result in an ordinary head cold provided the air is free from infective germs. This has been well borne out in many ways; Arctic explorers have remained entirely free from colds during their arduous adventures, and have only fallen victim to them on returning once more to civilization. Esquimos also, in the ordinary way, are free from colds, but are liable to epidemic outbreaks after visiting ships that have brought infection.

Experimental evidence confirms what has been frequently observed in polar climates. Investigators in the cause of science have exposed their naked bodies to direct draughts at freezing point, having first attained an overheated condition by means of violent exercise, and yet, though the experiment was tried over prolonged periods, the result which might have been expected, viz., a cold, did not appear.

At this point the reader will probably begin to object that, even if low temperature is not in itself responsible for colds, yet it is beyond question that colds are largely a winter malady. But, on examining this fact more closely, we see that winter months also entail more herding together in closed spaces. People visit places of entertainment more, they walk less, crowd together in public vehicles, and altogether lead a more communal life. It is these habits which are largely responsible for the increase of colds, by increasing the opportunities

for transmission of infection at a time when poor ventilation and a more sedentary life have lowered the vitality of the air-passages and the system generally. Possibly, also, the lack of sunlight in the winter months is a factor, not only because of its direct effect on the body's well-being, but because of its influence in diminishing the vitamin-content of dairy produce (*see* Chapter X).

There is, however, a way in which bad weather conditions can play a more definite part in cold causation, and that is when they are *alternated* with unhealthy atmospheres. If we get thoroughly chilled, with wet feet, and then go into confined surroundings and sit or stand in these conditions, we are in a fair way to catching a cold. This is because the blood is diverted from the cold extremities, where the arteries are contracted, to the head, which tends to become relatively congested. This congestion, which is increased by the hot stagnant air surrounding the head, causes the mucous membrane of the nose to become unhealthy and swollen, and lowers its resistance to the germs of infection which now surround it. If the feet were first warmed by a change of shoes and stockings and by brisk massage, the body would become more evenly heated, and, though the atmosphere would still be an unfavourable one, less harm would result.

Therefore, although we can abandon the old attitude towards exposure, we must still safeguard ourselves with commonsense rules; and we can sum up the facts by saying that, whereas healthy consistent exposure to outside conditions, with exercise, will strengthen our resistance to colds, these

habits, if spasmodic and alternated with muffling, unhealthy atmospheres, and neglect of removal of wet clothes, may predispose to infection.

CHAPTER VI

THE INFLAMMATORY PROCESS IN A COLD

THE symptoms which cause so much discomfort, and perhaps, in severe cases, pain, in the course of a common cold, are essentially the effects of inflammation. Inflammation as a whole is an interesting phenomenon and, in its particular relation to colds, its characteristics are well worth a little notice, in that it will help towards an understanding of what happens during a cold and how these symptoms may be alleviated.

We are inclined to think of inflammation as being connected with and rather limited to redness of the skin such as we visualize when talking about an inflamed finger; we may describe a man, too, as being "inflamed with passion" when his face assumes a dusky-red appearance.

Inflammation, however, though redness may be one of its distinguishing signs, is a much more extensive happening than this. If we cut ourselves, inflammation is set up in the skin surrounding the cut, and if we catch pneumonia the lung-tissue becomes inflamed. We must, therefore, find a definition to include these two conditions and the best thing, perhaps, is to call it "the body's reaction to injury."

Inflammation occurs locally in the part injured, and also in the system as a whole, which, as it were,

adapts itself to assist as far as possible in helping the local reaction. Thus, if the local attack is severe the body temperature rises and the patient shows all the signs of a general illness.

Though inflammation may cause such uncomfortable symptoms that we look on it as an evil in itself at the time, we should be helpless against attack if it did not occur. If, for example, a germ invasion of the body is very sudden and virulent, the patient may go downhill with very few signs of reaction and ultimately succumb to it. Or, again, if the patient's powers of resistance are low, the same result will occur; thus an attack of pneumonia in an old person may be quickly fatal, and there will be few signs of inflammatory response during the illness.

The Fight

First of all, the little blood-vessels or capillaries supplying the injured part dilate, and thus more blood is brought into the area. The next happening can be observed through a microscope and is very dramatic to watch. To understand it we must know that blood is composed of a fluid substance in which float two types of cells, the red and the white. The white cells, or "leucocytes," are the fighting forces of the blood, and they are now brought into action. As we watch, the blood circulating in the dilated vessels begins to flow more slowly, and the leucocytes line up in ranks along the vessel walls. They next thrust themselves through these walls by active movements and descend on the invading germs. The battle now begins: the white warrior cells have the

power of killing the germs by seizing and engulfing them. The germs, however, have also a weapon of defence—they manufacture poisonous substances or "toxins" which kill the body tissues and cause heavy casualties among the soldier cells. In order to dilute these toxins and render them less harmful, a fluid called lymph, which ordinarily circulates in little accessory channels near the blood-vessels, is poured on to the scene of action; lymph also contains "anti-toxins" to neutralize the germ poisons.

At this stage the defences may overcome the germs present; and the resulting debris, which consists of the dead germs, the tissue cells which have been destroyed by them, and those of the white cells that have died during the struggle, will be removed from the scene. This is the work of the small lymph channels, which carry the debris to the nearest glands, where it is destroyed. Repair of the broken blood-vessels and damaged tissue now starts by a multiplication of the healthy cells which surround the area, until the part once more assumes its normal appearance.

If the germs are victorious, the struggle will continue longer, and matter or pus will be formed. Pus is, as you know, yellow and thick in consistency, and when it is present we talk of the condition being septic. There is good reason for this, as pus is really a concentrated mass of germs and the cells which have been killed by them, most of the latter being of the white "fighting" type. When pus forms, the body cannot dispose of it as it does in the case of the simple inflammatory debris, but it succeeds, as a rule, in localizing it, and when

this happens under the skin a boil or abscess results. Localized pus always works towards the surface of the body so that it can escape by discharging; this, in the case of a boil, may be a long and painful process, and recovery can be hastened and pain relieved by lancing. When an abscess forms inside the body the pus is not so readily got rid of, and there is a danger of it discharging internally and spreading infection.

Symptoms of a Cold

Now that we have seen how the body reacts to attack, we can understand the symptoms of the common cold.

First there is discharge from the nose, accompanied by a feeling of stuffiness which is only temporarily relieved by blowing. This is caused by inflammation of the nasal mucous membrane in its response to germ invasion. In the early stages the ordinary inflammatory fluid appears, formed by lymph and white cells attacking the germs. As the membrane is on the surface, this discharge flows freely down the nostrils. It is sticky because of the presence here of the characteristic mucin which, as we have seen, normally helps to protect the membrane against infection.

As the cold progresses, the discharge becomes thicker and may be yellow. When this happens the second stage of inflammation has been reached and pus is present. The pus, too, can escape down the nostrils so that there will be no symptoms of abscess formation.

A complication of the cold may, however, occur if the sinuses or hollow air-chambers communicating

with the nose become involved. Simple discharge forming in them will drain freely through the nose, but, when it becomes thicker, escape through the restricted communication becomes difficult and a painful abscess may form.

The stuffiness felt during a cold is due to swelling of the nasal membrane and blockage from the discharge. The inflammation also necessitates an increased blood supply to the area, and this contributes to the general feeling of congestion and may cause a red nose, which is a minor but disfiguring symptom.

The eyes are affected in a cold because the lining of the duct which drains their moisture into the nose becomes the seat of inflammatory swelling and loses its function, so that the moisture now overflows on to the face. Or actual inflammation may spread from the duct to the transparent membrane covering the eyes, and they become red and "bloodshot."

Smell, which is dependent on the little nerve-endings in the lining of the nose, is impaired when the membrane becomes swollen. Taste is intimately connected with smell, so that, when smell is lost, there is some alteration of taste and altogether a diminished acuteness of what we may call the finer sensitivities of the mouth and nose.

CHAPTER VII

DEVELOPMENTS OF THE COLD

THE common cold in its mildest and simplest form may be almost entirely confined to the nose, but

not infrequently, as has been pointed out, if the infection is of a very virulent type or the resistance of the subject becomes lowered in any way, spread of the inflammation may occur to such structures as the middle ear, the larynx, or the lungs themselves.

In this chapter some of the complications of the common cold will be discussed more fully and indications given as to the way to deal with them.

Middle-ear Disease

In the description in Chapter II of the air-passages, it was explained that the "middle ear" lying on the inner side of the ear-drum communicates by means of the Eustachian tube with the nasal part of the throat.

This tube is lined by mucous membrane which is continuous with and of the same nature as that lining the upper air-passages. It is easy to see, therefore, how infection in the neighbourhood can spread along it. The result may be a sudden acute illness or a gradual chronic spread of inflammation from the nose and throat which will ultimately result in impaired hearing.

Acute middle-ear disease is a more startling happening than this chronic spread referred to above. It may come on as a sequel to an ordinary cold, and it is a common complication of measles and scarlet fever. It attacks children more frequently than adults, and the story of sudden ear trouble occurring during a mild illness and assuming grave proportions is a familiar one. The first symptom is severe pain in the ear, which increases

steadily while the patient becomes feverish and restless. The pain is caused by the pus which forms in the middle ear as a result of rapid inflammation. The Eustachian tube is at the same time closed by swelling of its lining membrane, and the pus, being confined in a small space, causes acute pain by pressure. Deafness or roaring in the head are usually present.

A doctor should be consulted at once. He can, by noting the degree of redness and bulging of the drum, which is pushed out by the pus, decide whether it is necessary to make an incision and so liberate the contents of what has now become practically an abscess. This small operation is followed by immediate relief of pain, and the clean cut of the surgeon's knife usually heals in a straightforward way, leaving no harmful after-effects.

If no operation is performed, the imprisoned pus may itself break through the ear-drum and discharge through the ear. It would seem that this, too, might be satisfactory, and sometimes indeed it is, the inflammatory products being dispersed and the ear-drum healing up. But more often than not, a path of infection having been opened up by this more haphazard procedure, a chronic inflammation supervenes which manifests itself by a persistently discharging ear.

This condition, if allowed to continue, will cause permanent injury to hearing and may also, by extension, threaten vital structures in the neighbourhood, such as the bones of the skull and the membranes of the brain. Sometimes, in mild cases, raising the child's resistance by general health methods and change of air, combined with anti-

septic applications via the external ear, will cure the trouble, but if it is more severe the doctor may advise operative measures to clear away unhealthy tissue and prevent dangerous complications.

All this shows us the far-reaching effects that may occur as the result of simple nasal infection and the importance of seeking early medical advice when ear trouble arises.

Deafness is a very distressing affliction, and one that it is practically impossible to cure. In the great majority of cases, however, it is wholly preventable by attention to the health of the nose and throat in childhood. A careful watch should be kept during the course of such infections as measles and scarlet fever for any involvement of the ears, and children's resistance to "cold in the head" should be built up by fresh air and correct diet (*see* Chapter X).

Tonsillitis

The tonsils are small masses of glandular tissue whose function is to fight bacterial invasion. Unfortunately, they themselves often succumb to the attack and become diseased. A condition of chronic tonsillitis then results, the tonsils losing their protective function and becoming, instead, permanent germ-harbourers.

Acute tonsillitis may at any time attack tonsils whose resistance to infection has been weakened. Not infrequently it occurs in the course of a cold, or it may arise during the progress of one of the common fevers. In all cases the onset is sudden and marked by a painful throat, severe headache and high temperature.

Swallowing is difficult on account of the swollen tonsils, and these can, as a rule, be readily seen on examining the throat. As the trouble progresses the surface of the tonsils becomes covered with little yellow spots of inflammatory discharge. At the same time the lymphatic glands behind the jaw enlarge, the better to fight the infection reaching them from the tonsils, and this increases the difficulty of swallowing. Generally, the worst of the trouble is over in four or five days; sometimes, however, the inflammation is so virulent that an abscess forms round one or both tonsils, and quinsy results, with a consequent increase in the general discomfort and fever. It now becomes difficult to open the mouth at all.

When the quinsy bursts or is lanced by the doctor, there is immediate relief.

Home Treatment of Acute Tonsillitis

Rest in bed in a room whose atmosphere is fresh and pure is the first essential. Open windows should be the rule, the temperature of the room being kept at about 62° F. A gas-fire is useful, as it helps ventilation and makes it easier to adjust the temperature of the room. The body is in this way kept warm in bed while cool air circulates round the head. Because of the fever and consequent loss of appetite, and the extreme difficulty in swallowing, the diet should consist largely of milk, though the milk may be made palatable in a variety of ways, such as by the addition of a little tea, cocoa or chocolate. Milk foods, such as Allenbury's, Benger's, etc., will "slip down" easily, or arrowroot and thin custards may be

preferred. Fruit juices, barley-water and plenty of cold water to drink are all useful in allaying the feverish thirst. As the disease is of short duration, the question of nutrition and building up tissues need not be considered, and the patient's tastes may be given the first consideration.

A purge of a grain of calomel should be given *once*, at night, at the onset of the condition, to be followed in the morning by a dose of Epsom salts, ½ teaspoonful in half a tumbler of water. Any subsequent constipation may be treated by an aperient such as liquid cascara sagrada. Ten grains of aspirin may be taken at night to allay the general discomfort and induce sleep. Gargles of potassium chlorate may be used three times a day, and hot fomentations or poultices applied to the neck.

It is advisable, however, to consult a doctor at the beginning of the throat condition to exclude the diagnosis of *diphtheria,* which is liable to be mistaken for tonsillitis. Diphtheria is a much more serious disease, and delay in obtaining treatment by inoculation may be dangerous.

Laryngitis

A cold frequently extends to the larynx in its last stages, and the relief of head congestion which occurs as the extension proceeds may be followed by a dry laryngeal cough.

Apart from extension of the cold, fog or irritating vapours may cause a temporary laryngitis, and over-use of the voice by public speakers tends to bring on a chronic form.

Rest, general and local, are the first rules in

the treatment of any inflammation, and, as in laryngitis the vocal cords are attacked, the patient *must not speak*. In an acute attack, with fever, he should be kept in bed on the type of diet suggested for influenza (*see* p. 58). Frequent inhalations of friar's balsam will help to relieve the inflammation. An easy home method of doing this is to place a teaspoonful of friar's balsam in an earthenware jar, add boiling water (about a pint) and inhale the steam, with a towel over the head and over the jam-jar.

The condition usually disappears in a few days.

Chronic Laryngitis

The patient should talk as little as possible and give up smoking. Attention to general health, such as avoidance of fatigue, sensible diet, and care of the bowels, is indicated. Any unhealthy condition of the nose or mouth must be investigated and treated. Massage of the neck, and a suitable strychnine-and-iron tonic, such as Easton's syrup, will help to improve the local and general condition.

Bronchitis

Bronchitis means inflammation of the lining membrane of the bronchus, which is the main air tube to each lung (*see* p. 11). It is more common in infants and elderly people than in young adults or the middle-aged, and in childhood may develop during the course of measles. In the last instance the inflammation frequently extends to the lung tissue surrounding the minute terminations of each bronchus, with serious or even fatal results. Faulty

health habits, such as confinement in warm, stuffy rooms and too much "muffling-up," predispose to bronchitis; but more important than these is faulty diet. It has been shown, experimentally and clinically, that lack of the anti-infective vitamin A, which is present in dairy produce and in green vegetables (*see* Chapter X), lowers the resistance to bronchitis, and all types of catarrhal infection.

The symptoms of acute bronchitis are pain and a feeling of tightness in the chest behind the breast-bone, with difficult breathing which is sometimes noisy or whistling in character. The cough, at first, may be dry and painful, but later is accompanied by much phlegm. The temperature rarely rises above 101° in severe cases, and in slight cases there may be hardly any fever or discomfort beyond the cough and slight breathlessness. The duration of the attack may be anything from a few days to three weeks, but in children, severe cases may be fatal in about nine days. It is essential that a doctor should be consulted if a cold "settles on a child's chest."

"Chesty" people should avoid sources of infection, since bronchitis is largely due to the germs of the common cold; and a disease which, in one person, manifests itself by a "running nose," may, in another with a bronchitic tendency, cause acute illness. If contact is unavoidable, a mask of several layers of butter muslin may be worn.

Treatment of Acute Bronchitis

The patient should be kept in bed in a well-ventilated room at a temperature of 62° F. The windows should be wide open in fine weather,

but damp and foggy air must be excluded because of their irritating effect on the bronchial tubes. The diet depends on the appetite and the amount of fever. Fluid diet (*see* p. 58) should be given if the temperature is raised and the appetite poor, but during recovery or in less severe cases, a more solid and nourishing diet, as indicated in the recovery from influenza (*see* p. 58) should be given. The bowels should be kept open—by means of aperients if necessary.

Warm fomentations to the chest, if there is a sensation of tightness, will give relief but should not be used for children unless medically advised. Inhalations of friar's balsam will help to cleanse the air-passages. Cough mixtures should not be taken except under medical advice, as the type of drug which will give most relief depends entirely on the nature of the cough. Thus, if there is little phlegm, drugs which stimulate the pouring out of fluid from the lungs will be prescribed, but if there is much phlegm a cough mixture of this kind might be dangerous, and drugs which dry up the air-passages will be ordered.

Chronic bronchitis is common in elderly people, in whom it may recur regularly every winter. In chronic bronchitis the lining membrane of the air-passages is diseased and does not react normally to cold air, which, on healthy lungs, has such an invigorating effect. Also old people do not usually possess sufficient powers of heat generation to respond well to cold atmospheres. The only way to attack this diease is by general health measures such as attention to diet, care of the bowels and the removal of any septic focus. Cod-liver oil is

an excellent tonic for these cases, largely, no doubt, because of its high vitamin content.

A warm climate gives relief to those bronchitis victims who are lucky enough to be able to move to or, at any rate, winter in such conditions.

City fogs are particularly irritating and suffocating to the sufferer from chronic bronchitis, and should so far as possible be avoided even by those who are not wealthy enough to winter in the south.

Pneumonia

Pneumonia is a bacterial infection, and what has been said earlier about the causation of colds applies to pneumonia in that it cannot result from exposure alone without the presence of the infecting germ. The pneumonia germ, however, is present in the mouth of many normal people, and in these, if resistance is lowered by unsuitable diet, fatigue or careless exposure, it may obtain foothold. Over-crowding and poor ventilation, by intensifying the infection and causing unhealthy air-passages, increase the number of cases. The poisons of chronic alcoholism definitely predispose to infection by pneumonia and render the outlook less hopeful for the patient.

Instances have been recorded of outbreaks of pneumonia in buildings, institutions, and whole villages, and in such cases poor sanitation, over-crowding, and faulty nutrition were most probably the cause.

Pneumonia is largely a winter malady in this country, and this is due rather to the over-crowding associated with the winter months than to cold weather, as a high incidence of this disease is found

in hot countries where overcrowding is common and the standard of hygiene is low.

Since apparently healthy people may be infectious, the only real safeguard is care of the general health.

The Onset

The disease frequently starts with a violent shivering fit, or *rigor*, due to an upset of the heat-regulating centre in the brain; the temperature rises to 102, 103 or 104°, and the patient feels ill, does not want any food, and may vomit. He may complain of pain in the head, the body, or the chest over the affected lung. Sometimes he may have acute abdominal pain and think he has appendicitis. Breathlessness and a slight cough with the so-called *rusty sputum* (yellow or russet-brown phlegm) may develop early. The patient should be put to bed and a doctor summoned at once.

What Happens in Pneumonia

Pneumonia is an inflammation of the lining cells of the small air-spaces in the lungs through which the exchange of gases occurs during respiration. These cells become swollen and throw out an inflammatory fluid consisting of attacking cells, dead cells, bacteria, etc. (*see* Chapter VI). The fluid later changes to a fibrinous mass, and when this happens the part of the lung attacked loses its character of an air-containing sponge and becomes heavy and solid.

The result is deficient oxygenation of the system as a whole, and a patient with pneumonia suggests this condition by his appearance. Breathing is

rapid and the nostrils are distended in an attempt to increase the air entry. One of the dangers of pneumonia lies in its adverse effect on the heart, which is now faced with the increased task of pumping blood through the congested lung, and is also itself weakened by cellular degeneration of its muscular walls consequent on the general poor condition of the patient.

Typical pneumonia runs a definite course of eight to ten days, during which time there is high fever. If ending favourably, the disease terminates in a crisis at the end of this period, when the temperature falls and the general condition takes a turn for the better.

Treatment

The outlook in pneumonia depends to a very great extent on the nursing. A professional nurse should be engaged if possible, but failing this, an inexperienced person who will conscientiously carry out the doctor's instructions and devote herself to saving the patient every possible exertion, can do much towards deciding the issue.

Absolute rest and freedom from mental anxiety are most important for the patient. He should be kept in bed in a cool, well-ventilated room, which should be plainly furnished and contain no bright mirrors or striking pictures which might excite him in the event of his becoming delirious. Heavy bedclothes which will fatigue him are to be avoided, but the extremities should be kept warm. At the height of the disease the patient should be propped up on pillows or a bed-rest, and should literally not have to lift his hand to help himself

to a drink of water. Washing of the patient must be done very carefully—one portion of the body at a time, the rest being covered by a blanket. To make the bed, the underblanket and undersheet must be rolled towards him and gently eased under his body, then rolled out on the other side.

A diet similar to that indicated for influenza is given. Minced chicken and steamed fish are allowed if the patient likes them and can tolerate them, but meat only after the temperature has come down.

The nurse should watch for and report any indication of blueness, which will be treated by the doctor with oxygen.

It is stated that in cases nursed in open-air wards the blueness and difficult breathing are less and the duration of the illness lessened. The patients are said to sleep better, an important feature, since rest is so essential.

During recovery every effort is made to build up the patient's strength by foods which have not been robbed of their vitamins, and by tonics.

CHAPTER VIII

INFLUENZA

THE common cold, if the attack is severe, is often raised to the dignity of influenza by its victims and sometimes, too, by the doctor in attendance.

Mrs. Machin in Arnold Bennett's novel "The Card" did not share this view. She says:

> "You can call it influenza if you like, there was no influenza in my young days, we called a cold a cold."

Admittedly there are few diseases which show such wide variations at different times and in different individuals as influenza, and for this reason the name is stretched to form a convenient cover for a host of minor complaints which may present some of its symptoms.

Influenza, if carefully observed, is found to be quite distinct from the feverish chill. It is in fact, in the majority of cases, due to a particular organism. The discovery of this infective agent has been a difficult task, as it is a germ so very minute that it cannot be identified even with the aid of the microscope.

The most impressive characteristic of influenza is its tendency to occur in periodic world epidemics which affect a great proportion of the population. Thus in the great epidemic of 1918–19 there were 20 million deaths from the disease, a higher figure than the total casualties of the war. Generalized epidemics of the same nature can be traced by their typical features back to the early centuries, though it was not till the eighteenth century that the term influenza (from the Italian) was introduced into England. There is not at present discernible any law determining the incidence of these waves of infection, and the cause and origin of each remains unknown. The greatest epidemic, that of 1918, was attributed to the war, but its ravages were too widespread for this explanation to be completely satisfactory. It is probable that the high mortality was due in some measure to the impaired resistance of a large section of the community consequent on diminished food supplies and over-crowding in cantonments, etc.

In addition to these world outbreaks of influenza there is a constant succession of smaller localized outbreaks which occur, as a rule, during the winter or spring months.

Influenza is infective in the same way as the common cold; that is, the microbes are conveyed through the air from person to person during talking, sneezing, coughing, etc. and from drinking-utensils and handkerchiefs. One attack does not confer any lasting immunity, and many people catch the disease regularly whenever there is infection in the neighourhood.

The Influenza Picture

The common type of influenza which affects the respiratory tract is accompanied by symptoms with which most people are familiar. The onset is sudden, though the disease may have been incubating for two to five days. A person who leaves his bed comparatively well in the morning may have to return to it in a state of prostration at midday. The temperature goes up rapidly, giving rise to a feeling of chilliness and, often, fits of shivering. There is a general feeling of discomfort and aching of the back and limbs. The throat is dry and may be catarrhal and there is usually a cough. There is an unpleasant taste in the mouth, and the tongue is furred and swollen. The condition is similar to that at the onset of pneumonia and may be mistaken for this disease. After three or four days the temperature falls and the patient, though weak, begins to sleep, eat, and take an interest in his surroundings once more.

Any part of the respiratory tract may become

inflamed as a complication of this type of influenza. Thus the inflammation of the nasal membrane, which always occurs, may spread to the sinuses (*see* page 13) and, more rarely, to the middle ear (page 40). Extension of the infection results in inflamed tonsils in a fair proportion of cases and laryngitis or bronchitis in others. The most serious complication of influenza, however, is pneumonia, a sequel which, fortunately, can usually be prevented by timely attention. The advent of pneumonia is shown by the patient's condition becoming markedly worse and the appearance of the typical symptoms, i.e. rapid breathing, pain in the chest and troublesome cough. The high mortality of the 1918 epidemic was largely due to the development of pneumonia.

In addition to the usual respiratory type of influenza there is another type which affects the digestive tract, the so-called "gastric flu," and in some epidemics this type predominates. The symptoms are abdominal pain and sickness accompanied by the typical influenzal prostration. When this type appears as an isolated case, perhaps before the presence of an epidemic is recognized, it is hard to diagnose and is sometimes mistaken for appendicitis or other abdominal conditions.

Lastly, there is a type of influenza which has a marked effect on the nervous system; its symptoms, which may be prolonged for some time after the attack, are general depression and mental instability. The latter occasionally becomes so severe that a suicidal tendency develops and these are the cases which we read of as post-influenzal in the coroner's verdict.

How to Prevent or Avoid Influenza

During an epidemic, the spread of influenza can be checked by effective isolation of the victims. That influenza is only caught by contact with infected people is shown by the fact that when institutions have isolated themselves from the general community during epidemics they have escaped infection. Thus, during the severe 1918 wave, a sanatorium in Massachusetts instituted a rule that none of its patients should take leave of absence and that no visitors should be allowed access to the building, with the result that its inmates remained free from influenza during all the early part of the epidemic. Towards the end, however, the rule was relaxed and in a few days thirty cases of influenza occurred.

What can be done in institutions, however, is not feasible in ordinary circumstances, and the obvious course of isolating ourselves from infected crowds is out of the question. It remains for the infectious patients themselves to be segregated as completely as possible from the rest of the community, and the influenza victim who insists on going about his work to the danger of his fellows should be regarded as a public nuisance rather than as a hero.

The uninfected portion of the population should avoid crowded gatherings as much as possible and take every advantage of sunlight and fresh air. The value of this policy has been illustrated in tuberculosis sanatoriums where it has frequently been found that patients undergoing a sun and air cure escape during an epidemic, while the staff and the remainder of the patients are attacked.

People, therefore, who, apart from recognized epidemics, fall victim to influenza each year, should bear this fact in mind. Sun-bathing during the summer and a course of artificial sunlight in the winter months may, in such cases, prevent the annual attack.

Those who have to nurse cases of influenza should wear face-masks made of several layers of butter muslin to prevent an assault of germs from the patient's saliva. Such masks have been worn with good results by persons who, during an epidemic, had to frequent crowded places.

Regularity of meals, a sufficiency of sleep, and the avoidance of mental and physical strain or over-fatigue will all tend to keep up resistance during an epidemic. Sound diet (*see* Chapter X) is most important. Persons who know they have been in contact with an infectious case should gargle with a disinfectant such as hydrogen peroxide in water, or suck disinfectant tablets.

Inoculation for influenza has been tried but the results are varied and inconclusive, so that this method of prevention cannot as yet be relied upon to any great extent. Important research is being done, however, along these lines.

Treatment of Influenza

The treatment of influenza is similar to that of the other febrile conditions we have discussed. Patients must remain in bed during the feverish period and for twenty-four hours after the temperature has fallen. In hospitals these cases do best when nursed in an open-air ward, but at home, where such conditions cannot be available,

a warm, well-ventilated room with wide open windows is a good substitute. A gas fire is preferable to a coal fire, which is smoky and dusty and liable to irritate the patient's air-passages. It also gives the nurse a lot of unnecessary work. The only advantage of a coal fire is that on it can be burnt the pieces of lint or paper handkerchiefs used by the patient. Paper handkerchiefs and sputum (phlegm coughed up) can, however, be disinfected with any ordinary household disinfectant (one containing carbolic acid is best) and disposed of down the lavatory.

Aspirin may as a rule be given with safety up to ten grains, each night, during the early stages. It diminishes the severe pains and the general discomfort of the fever and induces sleep. The doctor may prescribe some such drug every four hours, but it is unwise to take this amount without medical advice because of the tendency to prostration which follows influenza. The bowels should be kept open by an aperient such as cascara sagrada. Provided it is a mild one, the patient should be allowed to take whatever aperient he "swears by," as the psychological effect is so important during illness.

Salicin, a drug allied to aspirin, is said to abort an attack of influenza in a few days. Large and rapidly repeated doses are necessary and it should therefore only be taken under medical supervision. The results claimed for it are very striking.

After a severe influenzal attack, a period of rest and fresh air is very advisable so that subsequent general and nervous debility may be avoided.

Diet During a Febrile Attack

It is a mistake to force the patient's appetite, and his tastes and preferences should be consulted. The diet will consist largely of milk (two or three pints a day) in small amounts at a time. Some of the milk may be flavoured with coffee or cocoa, or if not easily digested it may be mixed with barley-water or soda-water.

Plenty of fluids should be provided, such as water and fruit juices, especially orange juice, home-made fruit drinks, weak tea, barley-water.

The following are allowed: custards, junkets, milk jellies and milk puddings, eggs (one to three a day, beaten in milk or lightly poached or boiled). Bread and butter, mashed potatoes, sieved vegetables, minced chicken and steamed fish are gradually introduced if the patient can tolerate them and feels hungry, but are not essential.

The food as a whole should be given in small amounts about 6 to 8 times a day.

A generous diet, calculated to ensure an adequate supply of vitamins, should be gradually built up with the fall of temperature. It will be found that mutton and veal are slightly more digestible than beef to begin with. Pork should not be taken during illness.

CHAPTER IX

CATARRH, HAY FEVER, ASTHMA

THE word "catarrh" means a flow. Nasal catarrh is therefore a flow from the nose and is one of the

first symptoms of the common cold, influenza, bronchitis and certain acute fevers. It usually clears up before, or at any rate with, the termination of the infection.

Catarrh is, however, popularly used to describe a condition of chronic discharge from the nose, which exists in some people almost without intermission. The symptoms which accompany it may not be as violent as in the common cold, but it can occasion much ill-health and discomfort. It is to the chronic type of catarrh that we shall refer in this chapter.

So prevalent is catarrh that it has come to be considered by many sufferers as a necessary evil. This is the wrong point of view—catarrh is never incurable, though in persistent and long-standing cases the cure may be protracted and difficult and may involve operative treatment. But a cure is always worth while, and the energy and effort needed to bring it about should not be grudged, for though catarrh is in one sense a minor ailment, it has, like any other chronic inflammation, a harmful effect on the whole system, and the catarrh victim cannot be a healthy person. Moreover, catarrh, if untreated, may lead to permanent deafness.

Causes of Catarrh

Any long-standing inflammation in the neighbourhood of the nose is liable to cause catarrh by constantly reinfecting the nasal mucous membrane until a state of chronic discharge sets in. Such danger spots may arise from sinus infection, septic tonsils or adenoids, middle-ear disease or decayed teeth.

In previous chapters we saw that the sinuses, which are hollow air-chambers communicating with the nostrils on either side, may become acutely inflamed during the course of a cold in the head. This is more likely to occur if the individual's resistance is lowered by faulty diet and poor hygiene, or if the infection is a particularly virulent one. Acute infection of a sinus is accompanied by thick yellow discharge from the nose and severe pain of a throbbing, bursting character in the eye and cheek or brow. There is often swelling to he inner or outer side of the eye.

Such a condition, unless medically treated, is liable to give rise to chronic discharge of yellow and foul-smelling pus from the nose, an extremely unhealthy and unpleasant state of affairs for the sufferer and highly infectious, even in the chronic form, to other people. A person with sinus disease should avoid using the same towels, cups and so on, as other members of the household.

The tonsils, if enlarged and inflamed, are a frequent cause of nasal catarrh. Less often, but in a fair number of cases, a septic mouth may bring about inflammation of the pharynx and thence of the nasal mucous membrane. Thus decayed teeth or inflamed gums may be a source of catarrh.

Sometimes a discharging ear, not severe enough to make the sufferer seek treatment, may, through the Eustachian tube (*see* p. 14), give rise to chronic nasal catarrh which the sufferer thinks has arisen in the ordinary way, as a primary condition.

Catarrh in young children is usually due to adenoids, though a blood-stained foul discharge from one nostril may be caused by a bead or

button or some other object which the child has pushed up his nose.

Obstruction of the Nasal Air-passage

When catarrh is due to adenoids the condition is aggravated by the fact that the adenoids block up the back of the nose and restrict air entry.

This factor of restricted air entry will, indeed, of itself be sufficient to predispose to catarrh, and for this reason it is more common in people with long high noses in which the air passage is narrow than in those whose nostrils are low and broad.

Lack of symmetry in the nostrils is another cause of deficient air entry, and it occurs when the nasal septum is deflected to one or the other side. Anything which leads to obstruction of air entry into the nose brings about congestion, an unhealthy mucous membrane, and a liability to infection. This effect is increased in stagnant, indoor atmospheres, but whereas the person with a normally constructed nose may escape, the one with an anatomical defect "catches cold after cold" till, finally, a condition of chronic catarrh is set up. In many cases susceptibility to nasal catarrh is due to anatomical abnormalities in the interior of the nose, the result of some minor accident of childhood or early youth.

Nasal polypi are another cause of obstruction. Polypi are small pendulous sacs of inflammatory tissue formed as a result of irritation of the mucous membrane. These polypi hang down into the nasal cavity, causing varying degrees of blockage and catarrh according to their size. They can only be detected by expert examination of the nose.

Other Causes of Congestion

Cases of chronic catarrh have been traced to eye-strain and gastric disturbances. Both conditions tend to produce congestion of blood in the nose and predispose to invasion by infection.

Nervous Catarrh

A form of catarrh associated with thickening and overgrowth of the nasal mucous membrane and giving rise to the feeling of a permanent cold in the head, but without much flow from the nose, is to be found in highly-strung people. It may cause mouth-breathing and snoring, and the subject is constantly trying to blow the nose without much success. Attention to general health and mode of life is the proper treatment for this condition, as it is for all neurasthenic states. If the condition does not improve, medical advice should be sought with regard to possible sources of sepsis or the advisability of having the mucous membrane cauterized.

General Measures for Catarrh

By its nature, catarrh must be treated by a combination of general and local measures. The most important factors in general treatment are purity of atmosphere and the keeping up of natural resistance. The catarrh victim should develop the characteristics of a "fresh-air fiend," gradually accustoming himself to all conditions of exposure so that he is not driven indoors by bad weather. Crowded indoor gatherings and stale atmospheres should at all times be avoided.

A healthy morning routine which will do much

to mitigate catarrh in the otherwise normal subject is as follows:

Take a hot, but not too hot, bath. Follow this by a cold shower or sponge. Rub the body briskly all over, starting with the extremities. Finish by deep-breathing exercises, air being drawn in as the arms are raised forward above the head and breathed out as they are lowered sideways to the body.

Sea-bathing is excellent for the catarrhal subject, but the same cannot be said for the indoor swimming bath, which too often proves an actual source of catarrhal infection, and should be avoided.

Nasal Douches

In considering the use of lotions in the treatment of catarrh, the first point to bear in mind is that syringing is harmful and should never be practised. The action of the syringe is much too forcible, and there is great danger that the discharge may be driven into accessory passages in the neighbourhood of the nose, causing sinus or even middle-ear infection. Lotions may, however, be very gently sniffed up from the palm of the hand and are often beneficial. Strong antiseptics must not be employed as these injure the lining of the nose.

A suitable lotion consists of sodium bicarbonate, borax, common salt, and white sugar; 5 grains of each, dissolved in 3 or 4 ounces of warm water. If desired the chemist will make up these ingredients in the form of a tablet. The solution is bland and soothing.

Operative Measures

There remain those cases of catarrh which are incurable except by operation. Cases of anatomical obstruction of the nose fall into this category as, if the nasal passages are blocked, cure by other methods of treatment will fail owing to the restriction of normal breathing through the nose.

People in whom one nostril has become narrowed due to deflexion of the nasal septum can have this condition remedied by a good surgeon and the operation will cure the associated catarrh.

Polypi can be removed very simply under local anæsthesia.

Bad adenoid growths in children, which combine an obstructing and an infecting element, should be removed.

Mild cases of sinus or tonsil infection may yield to the general non-operative treatment already described, but persistent inflammation in one of the sinuses will necessitate artificial drainage.

To sum up, therefore, we may say that catarrh caused by mild inflammatory conditions, or that associated with a chronic succession of colds, is amenable to ordinary treatment; but that in cases where this proves ineffective a doctor should be consulted, because frequently some defect, which may be quite minor in character, stands in the way of a real cure.

Hay Fever and "Watery" Catarrh

Hay fever is a form of violent nasal catarrh brought on in certain sensitive people by inhaling the pollen of grass, which is carried about by the wind during the months of May, June and July,

and those subject to it are prevented from enjoying the countryside at the best time of the year.

The sufferer from hay fever is a pathetic spectacle, with red streaming eyes and a profusely flowing nose, which no amount of mopping or blowing can check; indeed, it only seems to aggravate the flow. Every now and then his conversation is interrupted by a shattering sneeze. He is not as a rule ill enough to go to bed and must carry on with his job under very trying conditions.

Sometimes the attacks are associated with asthma or with skin eruptions of the "nettle-rash" variety.

Though true hay fever is always due to grass pollen, or less commonly to plant pollen, similar attacks of watery discharge from the nose can be provoked in persons with a sensitive nasal lining by breathing in various irritating substances. Stone dust, coal dust, emanations from horses, dogs, and other animals, or the perfumes of flowers may bring on an attack, or even, in some instances, too much face powder. Household dust has been known to cause a "running" nose, and so, too, have road dust and the inhalation of tobacco dust. Exposure to bright sunlight or to a cold wind after leaving a warm room can aggravate matters when the lining of the nose is chronically congested and irritable.

Dust in any form should be avoided by persons suffering from this type of catarrh. The source of the irritation in any particular case can often be traced and eliminated by the victim himself, but where this is impossible, the lining of the nose can be protected, before being exposed to irrita-

tion, by applying a little warm vaseline to the inside of the nostrils. Often susceptibility is due to a nasal defect (*see* p. 61), and in such cases treatment of the defect will result in a cure.

Hay fever subjects in whom pollen is observed to be the cause of the trouble, by the fact that attacks only come on during the first half of the summer, should avoid the country in the hay-making season. A seaside holiday or, better still, a sea voyage will prevent an attack.

Good results in hay fever have been obtained by injections of a watery solution of the pollen to which the patient is sensitive. This "desensitization," as it is called, is, however, a somewhat tedious procedure, since it has to be carried out for three or four weeks at intervals of a few days. Nevertheless, if other forms of treatment are unsuccessful, desensitization should be tried.

For relief of an attack of hay fever a drug called *ephedrine* is widely prescribed, either in the form of tablets to be taken by mouth or as a nasal spray.

It has already been pointed out that stimulation of the skin, good posture and deep breathing invigorate the circulation and prevent nasal congestion. The morning routine, therefore, of hot bath, cold shower, and deep-breathing exercises already suggested for catarrh is of value in hay fever and other types of watery nasal discharge. This could be followed by arm-swinging exercises calculated to promote circulation in neck and shoulders, and by friction of the neck with the palms of the hands.

In some cases the condition may be due to a

defect of the eyes, such as an error of refraction which has gone uncorrected, and which by nervous irritation leads to congestion of the nose.

Games and forms of exercise which improve the circulation and "develop" the chest, such as basket-ball, swimming, rowing, or, failing these, attendance at an evening gymnasium class, will prove beneficial.

Attention to diet is important (*see* Chapter X) since catarrhal subjects are often anæmic, or suffer from lack of calcium (lime).

Fortunately this "watery" type of catarrh is not infectious.

Asthma

More distressing than hay fever, but essentially the same type of disease, asthma is characterized by breathlessness due to spasm of the muscular walls of the air-tubes, accompanied by swelling of their mucous linings. An attack often comes on at night and the sufferer wakes up "wheezing," and with a feeling of inability to breathe. He may thrust his head out of the window in an attempt to get more air, or clutch hold of the mantelpiece or the end of the bed to give support to the breathing muscles which run from the chest to the upper arms. An attack of asthma, fortunately, is very rarely fatal and may in most cases be cut short by means of suitable drugs (*see* p. 70) which relax the spasm and dilate the air-tubes.

Dandruff, human or animal, cat fur, or birds' feathers may bring on an attack in a person who is "sensitized" to any one of these irritants. Some people, on the other hand, are sensitive in the

same way to a particular kind of food, as, for instance, fish, strawberries or other fruit, eggs, or cereals.

Allergens

True hay fever and some forms of asthma, as well as certain forms of urticaria (nettle-rash) belong to a definite group of diseases in which the sufferer is, in some way, sensitive to irritant substances called *allergens*. There is a marked hereditary tendency in this condition; one member of a family may get an attack of asthma on inhaling animal hair, another may break out in a rash after eating strawberries, another develop a streaming nose during the hay fever season. Tests can be carried out to discover the offending irritant, by making extracts from pollen, foods, animal hairs, etc., and injecting them in turn into the patient's arm. If a red, inflamed area appears around the site of one of the injections, the cause of the asthma or urticaria or hay fever has been discovered. The patient can then either avoid the irritant in future or, if necessary, he can have a course of injections designed to desensitize him. The procedure in hay fever has already been referred to; in asthma the actual discovery of the irritant is not always possible. Some asthmatics are sensitive to three or four kinds of irritant, and several hundreds of test materials are available for use in investigation. In many asthmatic cases the irritant responsible has so far defied discovery, but is believed to be a mould present in the household dust of low-lying, damp and sunless districts. This explains why many asthmatics are perfectly

free from attacks if they move to high, sunny and dry regions.

Asthma not due to Allergens

A commoner type of asthma, in this country at any rate, is caused by an inflammatory irritation actually situated in the body. These cases show no reaction when tested with injected substances. The source of the trouble may be some abnormality and infection of the nose such as adenoids, crooked septum or sinus disease; or it may be due to poisoning from septic tonsils, appendicitis, decayed teeth, or chronic constipation.

Prevention of Attacks

The general health of the sufferer is the first consideration. Attacks are often precipitated by mental and physical fatigue, heavy and indigestible meals—in particular a heavy supper is to be avoided—or anything which causes indigestion, such as too much smoking. A sensible, regular mode of life, with open-air exercise and suitable holidays, must be the rule.

Household dust should be dealt with hygienically by use of the vacuum cleaner and the moistening of any surface before sweeping is started.

An observant patient can often find out what particular irritant is his especial bugbear without having to undergo tests by injection, and can stop keeping cats or eating strawberries or sleeping on a feather pillow—a kapok pillow is safe—or going near horses, as the case may be. From personal experience it may be found that sea air or country

air, or in some instances town air, is good or bad as regards precipitating attacks.

The local health of the nose, throat and lungs should be investigated, and also possible sources of irritation in the teeth, stomach or intestines.

The question of desensitization by injections should be discussed with one's medical adviser.

During an Attack

Every effort should, of course, be made after an attack to prevent the occurrence of another, and to remove the cause of the disease. The use of drugs, however, is necessary to cut short the actual spasm which occasions so much anxiety to the sufferer and to his friends. A method much in use is to burn paper which has been saturated with a solution of nitre and inhale the fumes, or to smoke cigarettes containing the drug stramonium. These will give relief in many instances, but continued treatment by inhalations, it is believed, tends to cause bronchitis.

Some people find ephedrine, taken by mouth, very efficacious. One of the most certain methods of stopping an attack is by the injection of adrenaline, and many practitioners prefer this drug. It is unwise for the asthmatic constantly to treat himself with any drug. Medical advice should be sought to eliminate, if possible, the cause of the disease or to indicate the most suitable drug in any special case.

CHAPTER X

PREVENTION BETTER THAN CURE

Our everyday world, unlike the pure air of the Arctic regions, teems with potential infection, which it is almost impossible for us to avoid. No matter how fond we are of fresh air nor how conscientious about not spreading our own germs, we may have to travel to business in a hermetically sealed railway carriage opposite someone who, by sneezing and wafting his handkerchief about, subjects us to a perfect barrage of microbes.

What are we to do about it? In Samuel Butler's "Erewhon" the sneezing man would probably be clapped into prison! But since we cannot deal thus forcibly with him, our only hope lies in keeping up the highest possible standard of resistance.

Diet

One of the most important factors in maintaining the body's general well-being and resistance to infection is the right choice of diet.

The study of food as an exact science is comparatively new. Originally it was thought that, provided the diet of the so-called normal person contained sufficient quantity of food the purposes of nutrition were adequately served. We now know that the diet of many people who eat ordinary amounts of food may be unbalanced or lacking in essential ingredients, and that in these cases a condition of chronic poor health may persist for

years without its cause being suspected. Taste, inclination and habit are not sufficient guides with regard to choice of food in our modern artificial age.

Why We Need Food

The body needs food to build and repair its tissues and to provide it with heat and energy. The first of these functions, viz. to replenish the tissues, is performed by protein foods, of which meat is an example. Other important sources of protein are fish, cheese, milk, eggs, and certain vegetables such as the legumes—peas and beans.

The second function of food, to act as fuel for the body, that is, to be burnt up by the tissues and liberate heat and energy for muscular work and other activities, is performed mainly by carbohydrates (starches and sugars) and by fats and oils (animal and vegetable).

Three other substances are needed. They are water, mineral salts and, last but not least, vitamins.

The Average Diet

The average diet contains enough tissue-building and energy-providing material to maintain the weight of the body and supply it with energy for its normal activities. Certain quite common types of diet are, however, definitely faulty, erring in the direction of too much protein, particularly in the form of meat, or of too little protein and too much carbohydrate.

Too Much Protein

Excessive consumption of protein is more common among the well-to-do than among the

poorer classes, as protein food, especially in the form of meat, is relatively expensive. The spread of the restaurant habit in recent years has tended towards excessive consumption of protein foods. The dearer hotels and restaurants provide meals with a considerably higher protein content than is the rule in domestic catering. The typical hotel breakfast may include porridge or other cereal, with milk; followed by fish and by bacon and eggs, or kidneys or sausages; while both luncheon and dinner furnish protein in a variety of forms, *e.g.* fish, meat, poultry, cheese and, usually, eggs and milk.

Since the substances resulting from the burning up of meat in the body tissues are dealt with by the liver and kidneys, excessive meat-eating throws a severe strain on these organs. They gradually fail to function properly and poisons are retained in the system. Meat or fish once a day is sufficient for average requirements.

Too much Carbohydrate

At the other end of the scale, people of small means usually tend to stint themselves of protein and substitute an excess of starchy foods. The children of the very poor especially rarely get sufficient protein for the needs of their growing bodies. Instead, they are "filled up" with carbohydrate—a fuel food. It has been pointed out by dietitians that when the family income is small, the wage-earner receives the available protein, whereas he could do muscular work on carbohydrates, and the children get bread and jam, but need eggs and meat. The mother,

who may be pregnant or nursing, is similarly deprived of body-building foods and is fed on "filling" but, from her point of view, un-nourishing starches and sugars. In cases of extreme poverty it is often, indeed, the mother who suffers from deprivation of all classes of food.*

Excess of carbohydrate means that not only is less protein eaten, but less fat, less green stuff and less fruit; all of which are essential since they contain the indispensable vitamins.

Quite apart from the instance cited of poor children, many of us, from false economy, laziness or vitiated tastes, eat meals largely composed of cakes, pastry, white bread or puddings made from over-refined grain of various sorts, and, though satisfying our appetites, actually suffer from vitamin starvation.

Vitamins

The word vitamin, which means essential to life, is familiar to all of us from the fact that it appears in the majority of food advertisements and that, of late, so-called vitamin cafés and restaurants have sprung up in our midst. Thirty years ago, however, vitamins were unknown, and the discovery of these essential substances—a deficiency of any one of which in the diet militates against health and well-being—is comparatively recent.

That their importance is being gradually realized by the general public, is shown by the recently adopted practice in several large firms of issuing

* Excellent menus for very limited incomes are given in "Food, Health, Vitamins," R. H. A. and Violet Plimmer.

daily doses of vitamin preparations to their workers as a precaution against colds.

Vitamin A

Vitamins, as each was discovered in turn, were distinguished by letters of the alphabet. Probably the most important, from the point of view of colds, is Vitamin A. Present in animal fats, such as cod-liver oil, suet, egg-yolk and milk fat (butter, cream), it exerts a marked influence on the body's resistance to disease, including infections of the lungs and respiratory passages generally. It has been aptly christened the "anti-infective vitamin." Vegetable oils, such as olive oil, at one time so much in vogue for "feeding children up," are practically devoid of Vitamin A, though the pigmented part of vegetables is a valuable source; thus the green, outer portion of a cabbage or lettuce is more nutritious than the white heart.

Vitamin-A Deficiency

Mellanby and Green have found that animals fed on diets deficient in this vitamin develop pus in the middle ear and nasal sinuses, a condition comparable to severe middle-ear disease and sinusitis occurring in humans (*see* pages 40, 60). Puppies on low vitamin A diets showed a marked tendency to broncho-pneumonia.

The pasty, flabby child fed on excess of starchy and sugary foods, and therefore without appetite for vitamin A foods, is "wheezy" and "chesty," and readily catches cold. Excess of carbohydrate, which cannot be utilized by the body for fuel, is changed into fat in the tissues and stored there.

It is common knowledge that the "fine, fat" child does not stand illness so well as the "wiry" one, the explanation being lack of vitamin A.

Sea plants, like land plants, contain vitamin A, and the rich stores of this important food factor found in cod-liver oil are derived originally from the microscopic green algæ of the Northern Seas. People who are always catching colds benefit by a course of cod-liver oil. The dose is one teaspoonful a day increased to a teaspoonful night and morning during the winter months. A vegetable from the vitamin A list should be included in the daily diet.

The winter is a bad time for infections of all sorts, not only because of the "herding together" already referred to, but because at this time of the year domestic animals are stall-fed, and therefore cow's milk, butter and cream contain less vitamin A, since the cows are not now grazing upon the fresh, green, sun-enriched grasses. It is important to note that bacon fat contains practically no vitamin A, nor does lard, since pigs are not often fed on green-stuff.

A marked deficiency of vitamin A in the case of children, who, it is believed, require a larger supply of vitamins than adults, has a retarding effect on growth, and results in a serious form of eye inflammation, which may, in severe cases, end in blindness. This extreme condition is very rare in England, though 17 cases of "xerophthalmia," as it is called, and an allied condition "night-blindness" were seen in the course of a year in the eye department of a North of England infirmary. "Treatment with adequate doses of cod-liver oil, butter and

milk was uniformly successful. This observation (Spence, 1931) may indicate a latent deficiency of vitamin A among our population which is more widespread than is usually recognized." *

Some observers have noticed that where cases of xerophthalmia are common the death-rate from respiratory infections is high.

Mammalian liver (ox and sheep) is rich in vitamin A and might be included from time to time in the diet as a cold preventative. It is interesting to note that Hippocrates (born 460 B.C.) used ox liver, raw and dipped in honey, for the treatment of night-blindness.

Though it is vitamin A which is directly concerned with the body's resistance to colds, the other vitamins B, C and D might be described as indirectly concerned with this function, because of their influence on general health.

Vitamin D

Present also in animal fats but not in green vegetables, this food factor is necessary for the proper formation of bone and teeth in growing children. It controls the balance between lime salts and phosphates in the body—bone is largely made of lime phosphate. Children subsisting on a diet deficient in vitamin D develop rickets, a disease characterized by soft "bendy" bones. Knock-knee, bow-leg, and "pigeon-chest" are typical rickety deformities. The various chest deformities to which the rickety child is liable are often further accentuated by bronchitis or broncho-

* "Vitamins. A Survey of Present Knowledge." Medical Research Council, 1932.

pneumonia, which prevent sufficient air-entry into the chest. A poorly developed chest and bad teeth naturally predispose the child and, later, the adult to infections of the air-passages.

Ultra-violet Rays and Vitamin D

It has been discovered that the ultra-violet rays of the sun, shining upon the body, have the power of manufacturing a substance called ergosterol under the skin. Ergosterol is known as the precursor of vitamin D, that is, in the body it is converted into vitamin D and prevents and heals rickets. Hence arises, in part, the value of sun-bathing for children.

By irradiating with ultra-violet rays foods containing ergosterol, substances of very great potency in healing rickets are obtained. Such preparations are now on the market, but should only be taken under doctors' instructions, as it is possible to take an overdose.

Cod-liver oil is an excellent source of vitamins D and A and, so long as the subject is not suffering from acute rickets or from inability to digest fats, is suitable for ordinary requirements. Care should be exercised to select a reliable brand and one that has not an unpleasant rancid, fishy taste. It should, if put up in a colourless glass bottle, be kept away from the light.

Vitamin B

Concentrated supplies of this food factor are derived from yeast preparations; and good supplies are obtained from nuts, dried peas and beans, egg-yolk, internal organs such as liver, and whole

grain, whether in the form of wholemeal bread or breakfast cereals or brown rice. Vitamin B seems to be largely concerned with healthy digestion and a healthy bowel. Lack of appetite, indigestion, constipation, and diarrhœa, followed by the absorption of poisons into the system, are said to arise from an inadequate supply of this vitamin. Some authorities claim that a form of chronic rheumatism is caused by germs making their way through the inflamed walls of the bowel and attacking other parts, and treatment by vitamin B foods has had good results in such conditions.

Vitamin C

This vitamin is found in fresh fruit, vegetables and salads. Lack of it causes scurvy, which is uncommon among adults in the British Isles, though cases are known to occur "chiefly among solitary unemployed bachelors who live on such fare as bread, tinned meat and tea." * It is occasionally seen among bottle-fed babies.

Though actual scurvy is unmistakable, borderline cases are not so easily diagnosed and are possibly the cause of much ill-health and lowered resistance to disease. "Perhaps the earliest sign is a change in the complexion. The skin becomes sallow and muddy. There is a loss of vigour and of the sense of well-being; fatigue is felt after slight exertion. Fleeting pains in the limbs and joints may be mistaken for rheumatism. Another sign is the lowered resistance to infection and the slow healing of any wound." †

* "Recent Progress in Medicine and Surgery," Cowell.
† "Food Health, Vitamins," R. H. A. and Violet Plimmer.

Vitamin C is the most readily destroyed of all the vitamins. Ageing, drying, cooking are all injurious. Prolonged cooking of vegetables, as in the preparation of stews, is particularly bad, and so is cooking with soda.

Mineral Salts

These are always present in a suitably mixed diet and will look after themselves if we take the foods rich in vitamins. Mineral salts supply us with iron from which the red colouring matter of the blood is made; iodine which is necessary for the proper working of the thyroid gland; and calcium which is necessary for the formation of bone and is an essential constituent of blood. Some cases of chronic catarrh are traceable to lowered blood calcium.

Water

Water prevents accumulation of poisons in the system by washing away waste materials; it helps to prevent constipation and is also valuable in lowering high blood-pressure. Nearly all of us drink too little water. Much of the good gained at spas where invalids go to drink the waters is due to the cleansing action of the water alone rather than to any particular characteristics it possesses in certain districts.

Roughage

In addition to these food elements a certain amount of coarse debris is necessary in the diet. This is the so-called "roughage," consisting of the skin and rough parts of fruits and vegetables which are not absorbed during digestion.

Roughage stimulates the contraction of the bowels and so is valuable in preventing constipation.

Sunlight

We are apt to think that sun-bathing for health is a modern cult. It was, however, practised by the Greeks many centuries before Christ. Hippocrates, the Father of Medicine, used it as a cure for all ills, and his patients "sun-worshipped" for health in the temple of the sun god at Cos.

In the "dark ages" the sun cult came to be associated with pagan rites and fell into disrepute, and it is only since the latter part of the nineteenth century that it has revived. Nowadays, the value of sunlight is becoming widely known and there have been, in consequence, many sun-bathing societies formed to break down the old prejudice against exposing the body. Open-air classes have become common in the schools and there is a growing tendency towards more sensible clothing for school children, which will at any rate give them open necks and bare limbs.

Though a very great proportion of the general public is convinced, and rightly so, that sunlight is good, there is still among experts considerable indecision and controversy as to how, exactly, these good effects are brought about.

Mention has already been made of the manner in which ultra-violet rays manufacture vitamin D under the skin and so prevent or heal rickets, and this effect is probably the one concerning which we have the most accurate scientific knowledge.

Children exposed to sunlight in gently increasing doses not only grow straight strong bones and

good teeth, but their appetite improves, and they sleep better and are altogether happier, brighter and more intelligent. The tonic effects of sunlight on both children and grown-ups is possibly in part due to the control exerted by the ultra-violet rays over lime and phosphorus in the body. Lack of calcium may, as we have seen, predispose to chronic catarrh. Many cases of poor health and "run-downness" are, however, caused by an inability of the body to *deal* with calcium properly, even though it is present in sufficient quantities in the food. This type of person benefits from a course of artificial sunlight during the winter.

Ultra-violet rays are arrested by ordinary glass, and in many schools vita-glass, which allows their passage, is installed. Vita-glass, however, can only function in a clear atmosphere. Neither it nor anything else can let through rays which have already been cut off by smoke and dust.

How to Sun-bathe

The best time to sun-bathe is in the early clear light of the morning before smoke has cut off all the healing rays. No advantage can be gained, and harm may result, from "grilling" oneself in the midday blaze. "It must be borne in mind that the bright skyshine is a source of ultra-violet rays, affording more (from the whole sky) than the high sun affords directly." * The cool air at the same time tones up the muscles and improves the appetite. It is partly in this combined effect of cool air and ultra-violet rays that outdoor sunlight is to be preferred, when obtainable, to artificial

* "Common Colds," Hill and Clement.

kinds. Unfortunately it is seldom obtainable in its complete form.

For a baby, an exposure of one minute front and back is sufficient to start with. This can be increased very gradually, five minutes at a time, till the front and the back are each exposed for ten minutes. Eyes, head, and nape of neck should be shielded. The redness of the skin which occurs four hours later should be carefully watched. If there is soreness or blistering, the treatment should be discontinued till this disappears and then recommenced more slowly. Adults can, of course, stand longer exposures but should "go carefully" nevertheless. Dark people need not be so careful as the fair and the freckled. Fatigue, sickness, headache or fever after sun-bathing mean that the exposure has been too long. Sunlight in proper quantities increases the power of the blood to destroy germs. If the dose is too long, this good result is entirely absent.

Undoubtedly the greatest benefits are to be obtained from sun-bathing without any clothing at all, but unfortunately, except in the case of young children, this is not always feasible.

If it is absolutely necessary to wear clothing for a sun-bath, this should be of as open a mesh as possible. The stuff of the garment does not matter. If a loosely-woven garment is worn, however, the ultra-violet rays can penetrate through the holes between the fibres of the cloth.

"The general sunbath acts on the mind and body. Properly applied it stimulates and invigorates. . . . It induces a sense of gaiety, liveliness and well-being. If pressed to excess it

intoxicates and exhausts. Not only is the vivacity of the sunbather increased, but it has been demonstrated that his mental capacity is raised and his resistance to infection increased." *

Sun and Air

Wonderful work is being done in this country at Alton and Hayling Island in restoring to health those crippled by tuberculosis of joints and bones. There much importance is attached to the combined action of cold air and sunlight. Sir Henry Gauvain says: "The effects on the appearance and well-being of the patient are remarkable. Muscles atrophied from disuse or disease swell out and become firm and strong. In effect the patient is undergoing exercise and being massaged while still recumbent and immobile. . . ."

Of the beneficial effects of cold air an account has been given in earlier chapters. On the mornings when the sun does not come out, a short air bath should not be missed as it keeps the skin in training. It is better, for normal people, if combined with exercise.

Though natural sunlight is best, on the whole, it may be necessary for debilitated persons to supplement it during the dark months by artificial baths. These should only be taken under the supervision of a qualified person.

Clothing

We have seen, in discussing sunlight, how health can be improved by exposing more of the body to the sun and air, and it is a fact that most people

* "Recent Progress in Medicine and Surgery," Gauvain.

wear too much clothing and, besides missing these benefits, sensitize their bodies and weaken the resisting power of the skin. People who accustom their bodies to healthy exposure need have no fear of catching cold from draughts.

Underclothing should be of an open mesh material which ensures circulation of air next the body. This will allow the skin to function healthily by preventing stagnation of its excretions, and will give increased warmth owing to the fact that air is a non-conductor and does not remove heat.

Providing this point is observed it does not very much matter from what materials underclothing is made. Wool has the advantage of being non-absorbent of moisture and so of not clinging to the body when damp or wet, but it should be of the open, fleecy variety. Heavy woollen undergarments, especially those which have become close and blankety from constant washing, lose this advantage and are less healthy than Aertex cotton.

Bed-clothing should be chosen on the same principle as personal clothes. Blankets can now be obtained which are woven in an open mesh and so give increased warmth whilst at the same time losing the heaviness of ordinary blankets. Warmth without weight is the ideal in all body covering.

Exercise

Exercise improves the circulation in all parts of the body and thus waste substances are eliminated more completely from the system.

It increases heat production and acts as an appetizer and tonic, and it prevents constipation. Deep breathing in the open or before an open

window is a particularly valuable exercise in increasing resistance to colds and catarrhal infections, as it promotes circulation in the lungs and increases the protective secretions of the respiratory tract.

Exercise is, of course, always more beneficial out of doors, and in cold weather should take the place of heavy clothing in warming the body.

Games and strenuous exercises should be taken at as frequent intervals as possible so that the body is kept in condition, and not subjected to violent strains at long intervals.

Walking is an exercise which is available to all; it should be taken at a steady, moderately fast pace with the head and shoulders back and the abdomen drawn in.

Self-Poisoning

There is another cause of general poor health and diminished resistance to infection and that is poisoning from inside the system. This may be caused by any tissue which becomes chronically inflamed, from a septic tooth to chronic appendicitis, and, if debility persists in spite of healthy living, medical advice should be sought to investigate such a possibility.

Chronic constipation acts in the same way by causing poisoning from uneliminated waste products, and chronic ill health from this cause is extremely common. A healthy diet will, as we have seen, prevent constipation, vitamin B, which we can obtain from wholemeal bread, being of special value. Roughage too should be supplied by coarse vegetables, porridge, etc.

Often an increase in the daily amount of water drunk will cure long-standing constipation.

Regularity in emptying the bowels depends much on habit, so that the attempt should be made at a regular time every day and should never be put off or neglected.

Local Preventative Treatment

We have now discussed ways in which resistance to colds can be strengthened, and there remains the question of local resistance in the air passages. These can, as we have seen, be kept in a healthy condition by the ordinary habits of life, among which fresh air and the avoidance of unsuitable atmospheres are perhaps the most important.

There may, however, be local sepsis in the nose or throat which will prevent a response to such measures. We saw that chronic catarrh or sinus infection would provide such a focus, and we now come to consider tonsils, which are perhaps the most common cause of local weakness.

There is much divided opinion on the tonsil question so we must examine the facts clearly.

First of all the tonsils are protective lymph tissue designed to trap and kill germs, and as such they are part of the body's defence against infection. They may, however, yield to the attacking organisms in which case they are no longer antiseptic in character but become instead filled with little collections of pus which have resulted from their losing battles with the germs. In this state they are large and spongy and, on being squeezed, drops of pus appear on their surfaces. This pus is absorbed into the system and causes a general

poisoning. Its presence also exposes the locality to attacks from other germs, so that colds and sore throats occur in constant succession in such cases.

Therefore it is generally agreed that where tonsils are in a badly septic state they should be removed by operation, just as pus in any other part of the body, such as, for example, a chronic abscess, needs removal. In these cases the question of robbing the body of a protective mechanism does not arise, as tonsils so badly diseased will not regain their protective power.

There is no doubt, however, that lesser inflammations of the tonsils can be cured, and for this reason operations can sometimes be not only unnecessary but actually harmful. Treatment for these cases is on general health lines, and a vitamin-providing diet and fresh air are the most important. One method of cure advocated in otherwise healthy people is fasting periods during which only fruit juices are taken, and good results have been known to follow this procedure, but prolonged fasting should only be done under medical supervision. Artificial sunlight is now used on inflamed tonsils, and here, too, the results have occasionally been dramatic in their success.

CHAPTER XI

HOW TO THROW OFF A COLD

THE advice which has been given in the foregoing pages may be summed up in the simple injunction: Keep well and you will not catch cold

Excellent counsel as this may be, however, it leaves unanswered the problem of the cold which, since we cannot always control our surroundings nor our state of health, has been caught.

Accordingly, this, the final chapter, will be devoted to the sufferer who feels himself going down with a cold or afflicted with one in full career.

To actors, teachers, broadcasters and business people a cold can cause much discomfort and embarrassment. For such people as professional tea- and wine-tasters, even a slight head cold may be a serious inconvenience. Indeed, in every walk of life, to be attacked by sneezing, coughing and a running nose, even if one does not feel acutely ill, is incapacitating and disagreeable.

It goes without saying that a person who lives a sensible life, breathing fresh air and eating the right food, will, even if fatigue and bad surroundings temporarily overcome his resistance, put up a good fight and rapidly throw off the infection.

During the actual course of the attack, rest, good ventilation and plenty of fluids to wash the poisons out of the system are the best means of helping the body's efforts in recovery.

At the onset of the cold, anything which promotes a brisk sweating action of the skin and thereby increases the elimination of toxins is of value. Similarly, anything which ensures a long and comfortable night's sleep—since rest is so essential—will assist in cutting short the attack. A hot bath and early to bed, with a hot drink, will, in many instances, turn the scale.

There is no infallible drug for colds as there

is, for instance, in the case of malaria, where attacks can be cut short by quinine. People exhibit remarkable variations in the way a cold attacks them and, therefore, in the way they respond to medicines. The average cold victim pins his faith to some particular "cold remedy" and will argue quite hotly in its favour. It may do actual good in his case, or on the other hand it may be largely "faith cure." The number and variety of these "cures" is further proof that there is no specific drug for the condition.

For the type of person in whom a cold always starts in the nose, a remedy which is frequently successful in checking the disease is as follows:

Obtain from your chemist a mixture of *paraffinum molle* and *paraffinum liquidum* in proportions of 1 to 4. Allow one or two teaspoonfuls to run down a funnel, drop by drop, into either nostril in turn. The patient will manage this better if he lies on his back and gets someone else to carry out the treatment. It should be done three times a day if a cold is "coming on." The mixture, if desired, can be swallowed when it trickles into the throat and will act as an aperient. If experience shows that the aperient action is too strong, the mixture can be spat out.

It has already been said that there is no specific cure for the cold, but medicines are taken and will continue to be taken in bottlefuls by cold victims, and there is no denying that some of them help to allay symptoms in individual cases. It will be useful, therefore, to discuss some common remedies obtainable, and classify them according to the amount of good or harm they may do.

First of all let us consider the time-honoured home remedies. Of these, the mustard bath is perhaps the most universal. Its action is to increase elimination through the skin, and for this we can give it a high place in the list. The stimulating feeling of warmth and comfort induced by it is also of value to the fretful, uncomfortable patient.

To prepare a mustard bath of ordinary size, 12 ounces of mustard should be rubbed into a smooth paste with cold water and then added to the prepared bath, which should be taken at a temperature of about 98° F.

While dealing with medicines which help elimination, we must mention the popular drug, aspirin, which is undoubtedly useful in the early stages of a feverish cold. Its action is on the heat-regulating centre of the brain, and results in sweating and consequent elimination of toxins, and a fall of temperature. It also diminishes sensations of pain and discomfort and induces restful sleep. Ten grains of aspirin, that is two 5-grain tablets as supplied in the ordinary way by the chemist, may, with benefit, be taken at night at the beginning of an attack. The dose may be repeated the following night. Continuous dosing with drugs which bring down the temperature, however, does not cure the cold, since fever is the natural reaction of the body to infection and will disappear itself when the germ invasion has been overcome.

Several different types of aspirin have lately been put on the market, but it is doubtful whether they possess any advantage over the ordinary brand. Care should be taken, however, that the aspirin is from a reliable source and bears

the name of a reputable firm of manufacturing chemists.

Certain individuals complain of uncomfortable symptoms after taking aspirin, and these will naturally avoid it. But even so, in the dosage given, it need not be considered a dangerous remedy. Asthmatics, however, should not take aspirin, as in some 4-per-cent. of asthmatic cases this drug has a very unpleasant reaction.

Quinine, which acts with such certainty in malarial attacks, has no such special effect on the cold. It has gained its reputation by the fact that it diminishes heat production inside the body and so lowers the temperature and removes temporarily some of the uncomfortable symptoms which accompany fever. It may be taken in the form of ammoniated quinine, of which the dose is a teaspoonful. However, as with aspirin so with quinine—certain people show a marked intolerance to its action and experience headache and noises in the head after ordinary doses.

Chlorodyne is sometimes taken for colds and coughs because of its soothing effects. It is not, however, a safe drug to take without doctor's advice and should not therefore be used in home treatment of a cold.

When a cold develops there are several local preparations which will help to alleviate the nose and throat symptoms.

An ointment composed of 10 grains of menthol made up with soft white paraffin will relieve stuffiness if a little of it is placed inside each nostril. Menthol can also be used externally in cases where neuralgic pain in the face accompanies a cold. In

these cases a menthol cone rubbed on the skin will often give relief.

Eucalyptus, which is antiseptic and soothing, may be used alone or combined with menthol as an inhalant. Menthol is a constituent of many sprays and inhalations, and is useful in nose and throat conditions because it relieves irritation and, at the same time, inhibits the growth of germs. Menthol crystals melted over a fire in a teaspoon and the vapour inhaled constitutes a simple means of treating cold in the head.

A useful vapour for inhalation which combines the two remedies is:

Eucalyptus oil	2 drachms
Menthol	20 grains
Liquid paraffin to one ounce	

A teaspoonful of this in a pint of boiling water to be inhaled.

For a cold which starts in the throat, a gargle containing thymol or potassium chlorate is of value, and potassium chlorate tablets may be sucked.

A useful gargle consists of:—

Potassium chlorate	1½ drachms
Glycerin of borax	4 drachms
Rose-water to	8 ounces

The required amount to be diluted with an equal quantity of warm water.

Gargling should be done two or three times a day.

One of the most pleasant and efficacious solutions for gargling consists of ordinary glycerin of thymol made up according to the British Pharmacopœial Codex, and obtainable at any chemists' shop.

For the irritating throat and cough which often follows the onset of a cold, inhaling friar's balsam will give relief. A teaspoonful in a pint of boiling water is the correct strength.

If the cough extends downwards and there is difficulty in getting rid of the catarrhal products from the large air-passages and lungs, the following mixture will be helpful:

Sodium bicarbonate	10 grains
Potassium nitrate	5 grains
Ipecacuanha wine	10 minims
Compound tincture of camphor	15 minims
Water to half an ounce.	

A tablespoonful to be taken every four hours.

A home remedy, at one time in great favour, is to rub the chest or throat with camphorated oil. The slight irritation and reddening of the skin which results causes, by a nervous message, an increased flow of blood, with its healing constituents, to the parts beneath.

In the counter-irritant effect represented by the action of camphorated oil lies the value of all warm applications, poulticing, and the well-known practice of tying a stocking round the neck. The last, though it has an element of sense, is not so effective as using a piece of warm flannel or cotton-wool for the same purpose.

Things to Avoid

It must not be forgotten that the use of too many medicines will, of itself, make the patient ill. It should not be necessary to point out that only one remedy is to be taken at night to induce sweating and only one type of inhalant or gargle used.

The best cures in the world are rest, light diet and clean sunny air.

The "hot whisky in bed" cure is bad. Alcohol lowers resistance to disease and may result in a downward extension of the cold to the lungs.

In spite of prejudice to the contrary, "stuffing" with food is the worst possible treatment during a cold. There is seldom a desire to eat while the symptoms are pronounced, and this natural instinct against food should not be overriden.

A habit which is responsible for prolonging many colds is that of using the same handkerchief repeatedly. When this is done it becomes a germ colony and is responsible for continuous re-infection of the nasal mucous membrane. A handkerchief should never be taken up again after an interval, as may happen, for example, if it is put away in a coat pocket and used again when the coat is next worn, perhaps on the following day. The pocket itself may indeed become a source of re-infection from the handkerchief habit, and a chronic cold has been known to disappear when a new suit of clothes was required. It is not necessary as a rule, however, to go to these lengths, as the danger will be overcome if paper handkerchiefs are used. These are cheap and can be immediately destroyed.

Vaccination for Colds

People frequently ask if vaccination is any use as a method of attacking a chronic series of colds, and on this point the evidence is rather conflicting. It has been experimented with at St. Mary's Hospital and some improvement as regards susceptibility to colds has been claimed. Tests done in schools,

however, have been inconclusive, and, on the whole, it may be said that the benefits conferred by this method of treatment are at present too uncertain to make its adoption worth while.

Fresh air and sunlight are the best general tonics for the ordinary cold, and in the winter a course of artificial sunlight will often cut short a catarrhal cold and strengthen the body against its re-occurrence.

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