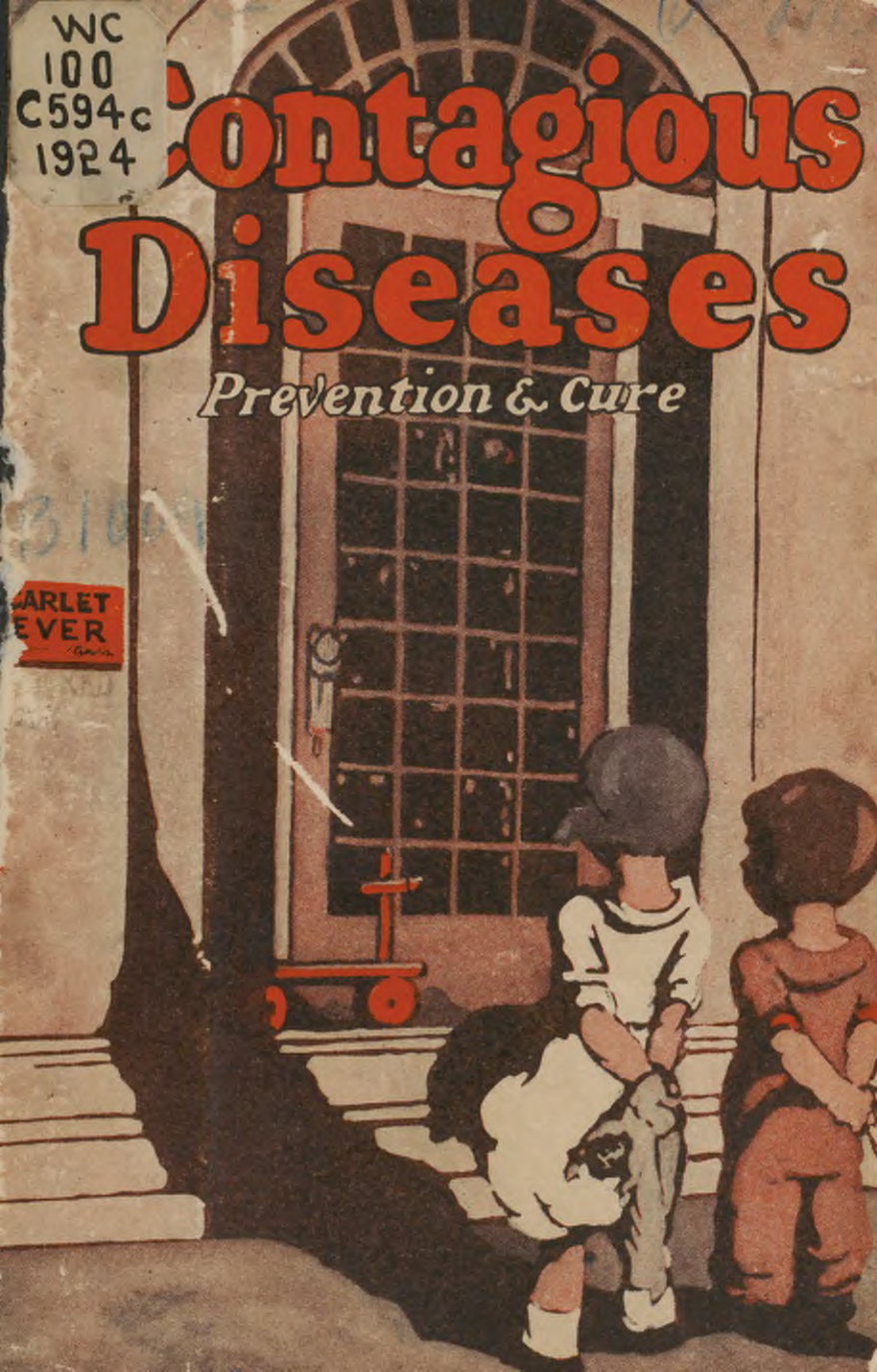
Contagious Diseases

Prevention & Cure



CONTAGIOUS DISEASES

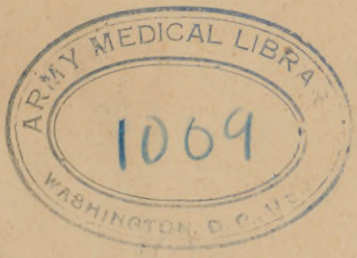
PREVENTION AND CURE

Small children are the most frequent victims of many contagious diseases.

CONTAGIOUS DISEASES

Prevention
and Cure

By
R. MANNING CLARK, M. D.



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Contents

Introduction

Disease epidemics are very expensive, both to the nation and to the individual. Their economic waste can never be estimated. This is recognized by all civilized nations, and intelligent efforts to combat these epidemics have greatly reduced this waste. Every community now has its local board of health, which is in touch with the state board of health, and this in turn is in connection with the national authorities. In recent years, many of our ablest statesmen have urged that the president's cabinet should have among its members one whose portfolio would be given over entirely to looking after the nation's needs along these lines. Undoubtedly this will soon be brought about.

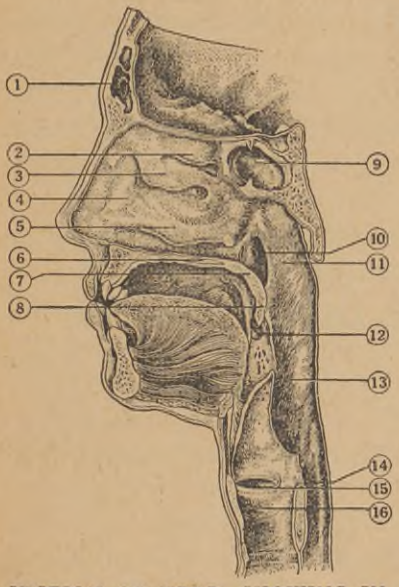
It is the patriotic duty of every citizen of any country to lend his support to such measures as the authorities may see fit to recommend or employ. He should be well informed upon such subjects, and take the best possible care of his physical well-being. Any course to the contrary is shortsighted, selfish, and inimical to the welfare of all concerned.

This little book is written in the hope that it may aid in the understanding of some of these conditions, and in that coöperation which should exist between individual citizens and those who are devoting their time to the study and control of the epidemics that have often become such calamities to the world.

Many of the public drinking fountains are far from sanitary.

I. Common Colds

COLDS, whether in the head or on the chest, are a germ infection, and are therefore preventable. An understanding of the causes and prevention of colds is certainly a fundamental matter, in which all should be interested. Much time, energy, and efficiency are yearly sacrificed heedlessly because of a lack of knowledge of the cause and prevention of this common malady.



SECTION OF HEAD, SHOWING INTERIOR SURFACE OF RIGHT HALF

1. Frontal sinus
2. Superior turbinate bone
3. Middle turbinate bone
4. Nasal cavity
5. Inferior turbinate bone
6. Bony palate
7. Soft palate
8. Uvula
9. Sphenoidal sinus
10. Orifice of Eustachian tube
11. Nasal pharynx
12. Tonsil
13. Oral pharynx
14. Esophagus
15. Right vocal cord
16. Larynx

Causes

A bacteriological study of the mucous secretion from the air passages of a person suffering of a cold, shows many germs present. Most common among these are:

Staphylococcus aureus
Staphylococcus albus
Streptococcus hemolyticus
Pneumococcus
Friedlander's bacillus

These germs are present on the surfaces of the air passages in everyone. They are rather dormant and inactive; and in health, the individual lives above them. That is,

the resistance of the body is greater than the invading power of the germ. As long as this is the case, there is freedom from colds, with a fairly normal condition of the air passages; but when anything occurs to reduce the vitality or resistance, either generally, or locally in the air passages, the germ at once becomes active and gains a foothold in the tissues. This results in inflammation, and other symptoms well known by all, such as chilly sensations, sneezing, discharge from the nose, inability to breathe well through the nostrils, dryness in nose and pharynx, headache, redness of eyes and nose, and general head discomfort. If the cold is "on the chest," there is a feeling of tightness in the chest, with cough; also hoarseness and discomfort in speaking. The cough is at first dry and hard; but it "loosens up" as the cold progresses, and purulent mucus is expectorated with the cough.

Influences That Help One to "Catch Cold"

We reduce our vitality and resistance in many ways. The following are some of these ways:

1. Loss of sleep.
2. Living and sleeping in poorly ventilated rooms.
3. Overwork.
4. Improper and irregular eating.
5. Poor hygiene.
6. Lack of exercise in the open air.
7. Any chilling of the surface of the body, as by—
   a. Perspiring freely and cooling off too rapidly.
   b. Improper clothing.
   c. Getting the feet wet.
   d. Sitting or standing inactively in a draft.

1. Loss of Sleep: Without sufficient sleep, it is impossible to keep vitality and resistance at par.

Sleep is a great energy builder and restorer. This is especially true in children. They should have eight to ten hours' sleep every night, and a short afternoon nap, until five years old. Many parents continually handicap their children by not enforcing necessary sleep habits. Adults are also prone to inflict the same handicap upon themselves, by working or playing until wee small hours; and then they wonder why they take cold. Without sufficient sleep, the heart force is greatly weakened; and on this account, the circulation of the blood in any part of the body is not up to standard, and ideal conditions for taking cold are created.

2. Poor Ventilation: Failure to have the largest available supply of fresh air is inexcusable. The air is inexhaustible in amount, and free alike to rich and to poor. "Cave dwelling" seems never to have gone out of fashion; for many still shut themselves in a "cave" about twelve by fourteen feet, and do the best they can to exclude what fresh air tries to get in.

Breathing over and over again the same air is very harmful. The body excretes through the lungs, by means of expired air, as well as through any of the other excretory organs. The substances excreted through the lungs are very toxic; and after a short period of rebreathing, air is surcharged with these toxic materials. As a result, the blood becomes impure, because it is unable to eliminate, owing to lack of fresh air; and the impure air, constantly rebreathed, is a great irritant to the membranes lining the air passages. Under these conditions, the germs that cause colds, easily gain a foothold.

Failure to have the largest available supply of fresh air is inexcusable. This little child, although living in a crowded city, is enjoying life in a window crib.

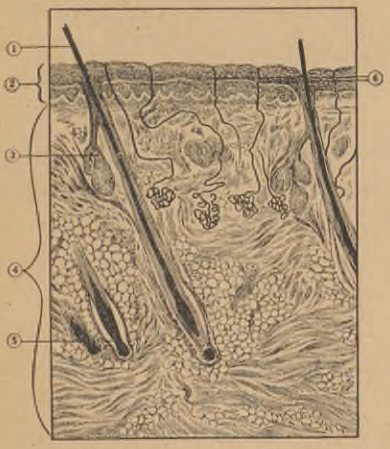
Good ventilation of sleeping rooms is clearly important, because during sleep, the heart and general circulation is much slower, and hence the ability to resist the attack of germs is lessened.

3. Overwork: We can be intemperate in our work the same as in eating, drinking, and other things. Overwork, with insufficient sleep, recreation, and mental relaxation, greatly reduces the body's resistance and vitality. Then one is more susceptible, not only to colds, but to any infection that may come along. Some people have repeated

or almost constant colds, because they live at so low a state of vitality and resistance that they can not rise above the infection.

4. Improper and Irregular Eating: This is a most prolific cause of colds. A person can get a simple sore throat from indigestion. The alimentary tract should receive constant attention from anyone who desires to live above colds. Eating between meals, eating too hurriedly, eating too much proteid, especially meat, overeating, and the use of strong condiments, are all direct causes of colds. Few people realize how much easier it is to take cold when fermentation and putrefaction are present in the tract.

5. Poor Hygiene: Poor hygiene, such as neglect to bathe and change the clothing often enough, is very "helpful" if you want help in catching cold. The circulation in the skin influences the circulation in other parts of the body; and to keep the circulation in the skin in a proper condition, cleanliness is essential. Not only this, but cold baths, salt glows, and mitten frictions are great tonics to the skin, and aid in conserving the vital forces of the body.



SECTION OF SKIN HIGHLY MAGNIFIED

1. Hair
2. Epidermis
3. Sebaceous or oil gland, and its duct
4. True skin
5. Roots of hair
6. Sweat glands

6. Lack of Exercise: We lose a great blessing, in this day of elevators, street cars, automobiles, etc., through failure to take sufficient exercise. Brisk walking in the fresh air, with deep breathing, increases the heart's action, strengthens the heart muscle, improves and equalizes the circulation, and thus tends to ward off colds.

7. Chilling of the Surface of the Body: This is the most common known means of producing congestion elsewhere in the body. The lungs and the respiratory passages are the greatest sufferers from this cause. Therefore care should be taken to prevent chilling of the surface of the body.

Perspiring freely and cooling off too rapidly is one of the surest methods of taking a cold; for the evaporation of the perspiration chills the surface of the body, and reflexly the surfaces of the air passages are congested. After perspiring, one should take a bath immediately, or if this is not possible, should wrap up well, and every surface of the body should be protected until the skin is dry.

Improper clothing is another source of chilling of the surface of the body, and consequent colds. Sleeveless and low-necked dresses worn in the open are prolific causes of colds, although this is often denied by those whose pride leads them to such indiscretions. When this same pride brings suffering upon children who know no better, the case is the more pitiable. Exposure of the knees of small children during the cold months of the year is inexcusable. Frequently one sees on the street a child coughing loudly and wiping mucous discharges from

its nose, and at the same time exposing bare knees that are blue with the cold, while the mother, walking beside it, is warmly clad and bundled up in furs!

We may contract a cold by coming in contact with some one who already has a respiratory infection.

Sitting or standing inactive in a draft is harmful. No one need fear a draft of fresh cool air; yet it may do injury by bringing on a cold. When a person is active, no draft is likely to cause him trouble; but when he is sitting or standing inactive in a draft, then trouble starts. When one is not active,

the heart action drops down to a minimum. The skin and the extremities then have the weakest circulation of the body; and some exposed part, as the back of the neck, being hit by the draft of air, is chilled sufficiently to prevent the proper circulation of the *minimum* amount of blood it was receiving. The result is lowered vitality, and congestion in some other part of the body. This opens the way for the ever-present germs; and inflammation starts, with its train of symptoms, so well known to the victim of colds.

The Contagious Cold

Even though we do nothing to reduce our vitality or injure our resisting power, still we may contract a cold. This is usually done by coming in contact with some one who already has a respiratory infection.

Any person with a cold should make every effort to protect others from his infection. He should stay away from crowds, and especially from closed rooms that are artificially heated, such as theaters and churches, where people congregate. Aside from this, he should not breathe in the face of anyone, and when coughing or sneezing, should cover his nose and mouth with a handkerchief. He should sleep alone, and be in the open as much as possible. In this way, he can prevent, in a large measure, the passing on of his cold to others.

On the other hand, the well should avoid contact with those who have a respiratory infection. Such infections are always obtainable in crowds; and for that reason, crowds should be shunned, particularly during the seasons when colds are more or less epi-

demic. Sleeping cars are also a prolific source of such infections.

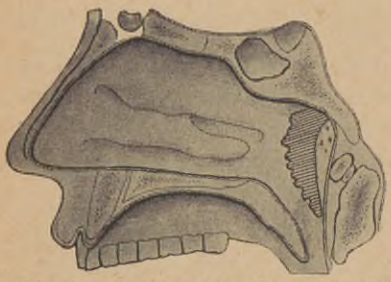
As already explained, although we may do everything in our power to maintain our vitality and resistance, yet this will not always keep us from "catching cold" from others. The reason is simple: as soon as the germs start active growth and propagation in the tissues of an infected person, they immediately become more virulent, and their invading power is greatly increased. At such a time, they are very different from the dormant germs always present in secretions from the air passages. This is why we can "catch cold" from one who is in the active stage of a cold, when we would not contract a cold in an ordinary way. In other words, the germ, by its growth in the tissues, has so increased its virulence that it gains immediate foothold in the air passages of the exposed person. Its invading power is beyond the resistance of the tissues upon which it falls.

Treatment

Surgery: Many people suffer of repeated and continuous colds, because there is something wrong locally in the nose or the throat. These people should go to a responsible nose and throat specialist and find out if there is local trouble.

Adenoids and tonsils are the same in character and tissue. Everyone has them normally; but under certain circumstances, they become infected and inflamed. They are then swollen and enlarged, and contain pockets of pus, from which poisons are absorbed into the blood. Their increased size makes

them out of proportion to the air passages in which they are situated. This condition sometimes becomes so serious as to occlude the pharynx entirely, and prevent any breathing through the nose. Such a condition must result in heavy congestion of the mucous membranes of the air passages. All manner of germs are harbored in pus pockets, and the child suffers of one cold after another, or is never free from a cold. In these cases, the adenoids and the tonsils should be removed on the advice of a competent surgeon. Complete freedom from colds can often be obtained in this way.



The shaded portion shows the position of adenoids in the passageway between the nose and the throat.

A deflected septum can cause colds and much local trouble. The dividing partition between the nostrils is sometimes pushed to one side, causing pressure on blood vessels, which results in chronic catarrh of the nose. This deflection may be due to accident, as a blow on the nose, and should never be neglected. Its correction is sometimes very important in stopping the tendency to colds.

Good Hygiene: Nothing is of more importance in prevention or cure of colds, than intelligent care of the body. Neglect of frequent baths and change of clothing is a great handicap to those fighting a cold. Besides the bath for cleanliness, frequent cold

baths, with vigorous rubbing till the skin is red with reaction, are very beneficial in keeping up vitality.

Good Ventilation of all living and sleeping rooms is a vital matter. Without it, your cold will last much longer. One can not recover well from a cold and constantly rebreathe the highly poisonous air that has been exhaled from the lungs. At night, we should have good, warm beds, and plenty of covers; but we should sleep in a cool room—much cooler than the living rooms for daytime—with every aperture thrown wide open to welcome an inexhaustible supply of fresh air.

Attention to Diet is a great help toward recovery from a cold. The first thing of importance in this respect is to eat lightly. Overeating is harmful at any time, but especially during a cold. The old adage, "Stuff a cold and starve a fever," is wrong as far as the cold is concerned. When a person eats lightly, the entire digestive tract is rested, and the digestive juices and secretions get a fresh start. Also the work of the eliminative organs is lessened, and this is a direct help to the system in throwing off a cold. There should be reduction in hearty foods, as peas, beans, bread, potatoes, etc. If meat has been eaten, it should be stopped entirely until the cold is cured. Milk makes a good substitute for these foods at such a time.

Fruits should be liberally increased, and fruit juices should be taken freely, the juices of lemon, orange, and grapefruit especially being taken copiously and often. In the acute stage of a cold, it is good to drink a glass an hour of hot lemonade or

orangeade. If there is no sensation of chilliness, these beverages may be taken cold.

Sometimes a "fruit day" goes well. By this is meant a day on which nothing but fruit is eaten. In such a case, fruit should be taken every hour, or at least every two hours. Fruit is laxative, and assists in elimination, both from the bowels and from the kidneys. It also reduces fermentation and putrefaction, and is generally beneficial.

A Simple Cathartic, such as castor oil, is helpful, particularly if there is a tendency to constipation, or if the patient has recently eaten heavily. It should be taken at the beginning of a cold, and should not be repeated too many times, for habitual use of cathartics is objectionable. Following this, the diet should be light, and such as has before been suggested.

Simple Treatments

Very strong gargles, sprays, and washes are not the best. The simple ones are better. A solution of common salt, one teaspoonful to a pint of hot water, is a very good gargle. It should be used often.

Throat Antiseptics: The hot gargle should be used every two hours, following which it is well to spray the throat with some oily preparation, by the use of an atomizer. A simple and common prescription is as follows:

℞

Oil eucalyptus ..... gr. 5
Oil menthol ..... gr. 5
Liq. petrolatum ..... oz. 1

Use freely in an atomizer, following a gargle of hot salt water.

Three times a day, after the gargle, swab or spray the throat with fifteen per cent argyrol, instead of using the oil spray.

Hydrotherapy

Fomentations to the face are an excellent means of helping to combat a cold in the head. For these, a large bath towel should be used, being wrung out of very hot water and applied to the entire face. By lifting the towel a little, a space may be bridged out at the end of the nose for breathing. The towel should be extra large, and should be applied much the same as a barber applies a hot towel before a shave. Renew the application several times, and after fifteen or twenty minutes of the hot applications, bathe the face freely in cold tap water for two or three minutes. After thorough drying, plenty of talcum powder should be applied. Much help is derived from a repetition of this treatment every three hours.

Hot Foot Baths: These assist by equalizing the circulation and drawing the blood to the extremities. This relieves congestion in the head and the chest.

The foot bath should be taken in a deep bucket or pail, to bring the hot water as high up the ankles as possible. The addition of mustard or other medicines contributes nothing to the value of a hot foot bath. The heat is what does the work. This treatment should be taken often. Every three or four hours is a good interval for repeating it. When the feet are taken out of the hot water, they should be dashed with cold water thoroughly before drying.

Hot Packs to the Chest: If the cold is "on the lungs," heat should be applied to the chest three times a day. This can be done with an electric pad, which can be screwed into any electric socket. If this is not available, hot packs applied by wringing cotton flannel out of hot water and changing at frequent intervals will be found beneficial. Specific directions for these remedies are given in the chapter on "Home Treatments," under the heading "Fomentations." When heat is applied to the chest, hot camphorated oil should be rubbed on both before and after the application.

II. Tonsillitis

TONSILLITIS is inflammation of the tonsils. It is a disease that is only slightly contagious. Yet it does at times assume the epidemic form; that is, during the winter season, when it most frequently occurs, it is sometimes communicated from one member of the family to another.

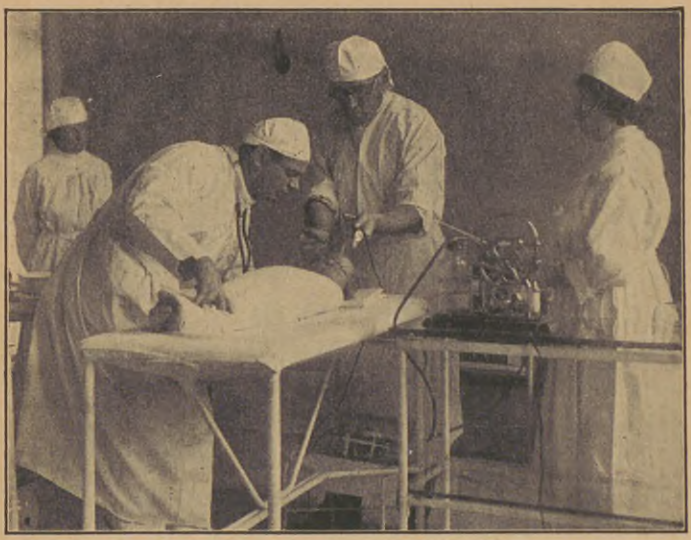
Symptoms

The first symptom of the disease is a chill, with rising temperature following. The fever usually rises to 103, and in severe cases, to 104. There is an achy feeling in the muscles and the bones and the back. Headache also is a quite prominent symptom. Locally, in the throat there is soreness, and the tonsils become enlarged, and have a red, angry look. Then after a few hours, there appear on the tonsils white patches, which increase in size until in some instances the tonsils are practically covered. The membrane has a grayish, dirty look. This membrane never appears on any other surface than that of the tonsils. A membrane seen on any other part of the throat than the tonsil, is a serious matter, and requires the immediate care of a trustworthy physician.

In tonsillitis, there is difficulty in swallowing, and usually the lymph glands on the side of the neck enlarge enough to be felt. This is especially true in children.

Complications

It is not at all uncommon, in tonsillitis, to have complications in the middle ear. The reason is that the infection travels up the Eustachian tube, which



A membrane seen on any other part of the throat than the tonsil, is a serious matter. A patient is here shown undergoing treatment for diphtheria by means of an electric suction pump. The throat is nearly closed, but this instrument helps to keep the child breathing, and the life is saved.

opens in the throat, very close to the tonsil. Whenever there is inflammation of any kind in the throat, earache should receive expert medical attention at once; for if pus gathers in the middle ear, it demands the services of an eye, ear, nose, and throat specialist without delay.

As mentioned before, the lymph glands on the side of the neck may enlarge in tonsillitis. This enlargement is usually slight; but the glands may assume threatening proportions, and have to receive special attention.

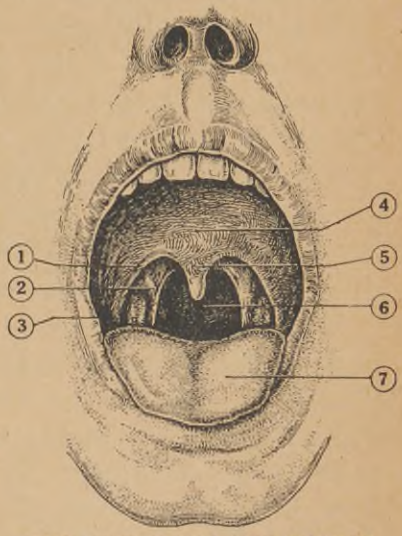
A Self-Limited Disease

Tonsillitis is a self-limited disease; that is, if the patient has good hygienic care, and lives intelligently, the ailment will disappear of itself. There are, however, many things that can be done for the ease and comfort of the patient, and that will also hasten recovery.

Treatment

As soon as the nature of this malady is known, a mild cathartic should be given, to empty completely the stomach and bowel tract. Following this, only liquid foods should be allowed, until the fever is gone. Failure to regard this precaution makes the attack more severe. The patient should get into bed and remain there, drinking abundance of water, and especially of lemonade.

Apply hot packs to the throat every three hours. (Directions for the giving of hot packs will be found in the chapter entitled "Home Treatments.") A hot foot bath in a deep bucket should be given at least three times a day. This relieves con-



THE MOUTH AND THE THROAT

1. Anterior pillar of fauces
2. Posterior pillar of fauces
3. Tonsil
4. Soft palate
5. Uvula
6. Back wall of throat
7. Tongue

gestion in the throat and helps to combat the inflammation.

Local Treatment of the Throat: Strong gargles are not advisable. They do almost as much injury to the tissues as to the germs causing the infection. Milder gargles have been found to be the best. A teaspoonful of common salt to a pint of hot water is very good indeed. If preferred, the same amount of common baking soda to the pint of hot water may be substituted. One or the other of these gargles should be used every two hours. It should be as hot as it can be held in the mouth without burning. Following its use, swab the tonsils and the throat with a twenty per cent solution of argyrol. Any competent person of the household can do this by depressing the tongue with a spoon handle and applying the medicine with a swab of cotton on the end of a stick. The swabbing should be done after the gargle with the hot salt water, so as to leave the argyrol in contact with the throat until the next gargle is due, two hours later.

The Heating Compress: Following the last hot pack to the throat at night, place on the throat a heating compress, to be worn throughout the night. This is done by wringing out several thicknesses of gauze from cold water. The compress should be put clear around the throat and covered *thoroughly* with flannel. (More specific directions for doing this will also be found in the chapter on "Home Treatments.") The next morning, resume fomentations or hot packs to the throat, and continue them every

three hours throughout the day, with the heating compress at night, until the patient has recovered.

If it seems necessary to give any medicines, because of the fever, or to take anything internally in the way of medicines during the illness, a competent physician should be called before such a step is taken.

The concentration of large bodies of troops, as in times of war, has always been favorable to the spread of epidemics.

III. Influenza

THE concentration of large bodies of troops, as in times of war, has always been favorable to the spread of epidemics of various infectious diseases. Perfection of hygiene, sanitation, bacteriology, vaccination, etc., has in the past practically wiped out these scourges that followed in the trail of great armies. However, after the unprecedented mobilization of armies in the recent world war, there broke out an epidemic of influenza which science has been unable to control. It has encircled the globe, and in the United States alone has caused 400,000 deaths.

This epidemic made its first appearance in the United States at Chelsea, Massachusetts, on August 28, 1918. Its progress over the country was rapid, despite frantic efforts on the part of those in authority to check it. Influenza has proved itself to be a disease of middle adult life, the extremes in age suffering less mortality from it than others. The epidemic is not causing as much comment and attention as formerly, because we have grown used to it; but it is still present with us. In fact, since its beginning, most of the respiratory infections seem to have many of the characteristics of influenza.

Symptoms

Influenza is an acute febrile disease, characterized by a somewhat sudden chill followed closely by rise of temperature, achy muscular pain, headache, backache, and severe prostration. Probably the most prominent symptom, in the minds of people in

general, is the aching pains in the entire body. As the temperature goes up, the patient suffers intensely from pains and aches in the muscles, especially in the back, legs, and head. These come on after a chill, and run in direct proportion to the severity of the fever. The patient is flushed in the face, and frequently has cold extremities although the fever may be high.

Cough is a persistent symptom; for in a great majority of cases, the infection is in the respiratory passages. The cough is quite annoying and distressing to the patient. The material raised by the cough is usually a white, rather frothy mucus. The cough, in most instances, continues for some time after the subsidence of the acute symptoms that come with the onset of the disease. Sore throat is commonly present. There is difficulty in swallowing and talking if the throat becomes very sore. Generally the throat looks very red and angry.

Complications

Influenza does not always attack the respiratory system alone. It sometimes attacks the stomach and bowel tract. This gastrointestinal type oftenest occurs as a complication of the first infection in the air passages. The patient becomes ill in the regular way; and as the infected mucus that is raised by coughing is swallowed, the stomach and bowel tract becomes infected with the same germ. In most of these cases, the fever is higher than when the onset of the disease is in the air passages. The abdomen becomes very painful and tender. There

is a great deal of gas and distention, and there may be either constipation or diarrhea. It is possible for this condition to occur as the original infection, but it oftener comes as a complication to the respiratory type.

Pneumonia is probably the most common and dangerous complication. It may occur in the lungs from the very beginning of the disease, or as a later complication at any stage before the patient's recovery. The symptoms pointing out its occurrence are, more severe pain in the lungs than before, increase in cough, spitting up of blood-tinged sputum, a more toxic appearance of the patient, with more rapid and shallow breathing.

Inflammation in the middle ear is by no means an uncommon complication of influenza. It is caused by the infection traveling up the Eustachian tube from the throat, and starts with aching in the ear, which increases to well-nigh unbearable pain. It may be in one or both ears.

Tuberculosis can hardly be regarded as a complication of influenza. It is more rightly an after result. Large numbers of people contract their first tuberculosis infection in an attack of influenza. Hence good care of influenza cases is of the utmost importance. Even though the attack may seem a mild one, and the patient may feel strong and robust, and able to get along without "paying much attention" to the malady, it is not wise to adopt such a course, for a simple attack of influenza is capable of resulting in a tubercular condition which will develop as the months go by.

Prevention

When this epidemic first broke out in the United States, but little was known about it, and many bizarre and useless measures were put into effect in various localities in an effort to stem the tide of the disease. However, but little that was done had any effect. The most common and most discussed regulation related to the wearing of the mask. This was quite generally enforced, but definite statistics compiled by health departments have proved conclusively that the masks as worn during the epidemic were not effective. For instance, New York City did not wear the mask, but had a lower death rate than any of the other large cities of the country.

Avoiding crowds is a measure of prime importance if you desire to escape influenza.

The final conclusion regarding the wearing of masks is that they are ineffectual, and not worthy of consideration *except* by those who are in immediate attendance upon persons suffering of this malady. Nurses and others can wear them with a certain degree of protection while in the presence of the patient. At all other times, they should be laid off. Even this is an optional matter, and is not enforced by any state department of health, so far as the writer is aware. It is, however, voluntarily adopted by many in attendance upon influenza patients.

Avoiding crowds is a measure of prime importance if you desire to escape influenza. This malady is a "crowd" disease, and being in crowds is the surest way to contract it. During the big epidemics, churches, theaters, and even schools were closed, in an attempt to control the infection. This seemed to have very little influence upon the death rate, because of the carelessness of individuals in refusing to stay away from crowds, private parties, etc.

Sneezing and coughing in public during the time of an epidemic, is inexcusable. This is particularly true of one suffering of a cold. If sneezing or coughing is necessary, it should be done into a handkerchief that will completely cover the nose and the mouth and prevent droplets of saliva from flying in every direction. "Droplet infection" is conceded to be the most common method of spreading this disease. On this account, it is well to avoid those who have any symptoms of a cold.

Utensils used in the sick room should be carefully scrubbed and boiled before use elsewhere. All

articles should receive some kind of disinfection before anyone else uses them, for it is possible for the disease to be spread by knives, forks, spoons, dishes, and handkerchiefs and other toilet articles.

Isolation of the patient is a very important measure. In fact, many state boards of health depend upon this as the best weapon for fighting the epidemic. Influenza, in most states, is a reportable disease; that is, the physician or the head of the house is required by law to report cases of influenza to the health department. Complete quarantine is usually not required. The patient is simply isolated in a separate part of the house, and other members of the family are allowed to continue their work, provided they stay out of the sick room. It is, however, within the power of most boards of health to enforce a full quarantine if they deem it necessary. If every case of influenza were strictly isolated, epidemics would be much more successfully controlled.

Wilford H. Kellogg, M. D., secretary and executive officer of the California State Board of Health, in a pamphlet issued after the epidemic, has the following to say regarding isolation:

"It has already been stated that early isolation of cases is the most effective method known for preventing the spread of the disease, and it is here stated further that the application of this measure depends more upon the individual citizen than upon the health officer. The California State Board of Health has, in its printed instructions distributed throughout the state, placed emphasis upon the responsibility of the individual. The board has advised every person suffering from a cold to remain at home and to take every possible precaution not to come in contact with other persons. Many people suffering from so-called colds are in reality suffering from influenza in a mild form. Many severe cases of the disease have undoubtedly been

These children are taking the sun and fresh air cure, and allowing nature to guide them back to physical perfection. Large numbers of people contract their first tuberculosis infection in an attack of influenza.

contracted from persons suffering from such colds. If each individual were to realize his personal responsibility in this matter, more good would be accomplished in the reduction of the prevalence of influenza than in any other way."

The following is a copy of instructions put out by Dr. L. M. Powers, health commissioner of the city of Los Angeles, California, during the epidemic:

"Instructions to Patients and Householders Where Influenza and Pneumonia Exist

"No quarantine card is posted, but in cases where the orders of the health commissioner are not complied with, the department may, if necessary, enforce full quarantine.

"Patient must be *isolated* until recovery, and care exercised to prevent the spread of the disease.

"If any member of the household is handling food, he must remain away from premises until patient has recovered.

"All children in the household are excluded from school until patient has recovered. (Normal temperature five days.) This includes all persons in attendance at universities, public or private schools, as pupils or employees.

"If well children are removed to another address, they are excluded from school for a period of five days from last exposure.

"School permits:—When last case in the household has recovered (normal temperature five days) children will present a note to that effect from their physician, . . . and health department physician will issue school permit card.

"In apartment houses or hotels, only children of the immediate household or those coming in direct contact are excluded."

The following pages are reproductions of copies of instructions prepared by the New York and Massachusetts state departments of health. The latter was adopted by many states throughout the nation during the epidemic of influenza. They contain much valuable advice and information, and if followed, would be of great assistance in keeping down influenza.

NEW YORK STATE DEPARTMENT OF HEALTH
ALBANY, N. Y.
HERMANN M. BIGGS, M. D.
COMMISSIONER

EPIDEMIC INFLUENZA

A highly infectious disease of unknown origin, spread by dissemination of discharges from the nose and throat chiefly through coughing and sneezing, and through physical contact between the sick and the well.

How to avoid it

Keep as far as possible from those who are coughing and sneezing unguardedly.

Do not come in contact unnecessarily with those who may have the disease.

When influenza is prevailing, avoid crowds.

Do not use drinking or eating utensils used by others unless they have been washed in boiling water.

Keep yourself in good condition by living and sleeping in rooms which are comfortably warm, but well ventilated.

If you have it

Call a physician. GO TO BED IMMEDIATELY in a warm and well ventilated room. If the services of a physician cannot be immediately secured take a laxative (tablespoonful of castor oil for an adult), and adhere to a liquid diet.

Uncomplicated cases recover in a few days. *If you would avoid complications, stay in bed at least three days after you feel perfectly well.*

For the protection of others cover your face when coughing or sneezing.

If you are caring for a patient

If there is a catarrhal discharge, see that it is received upon handkerchiefs and these promptly placed in water and boiled, or better still, furnish pieces of soft cloth which can be burned. Paper bags may be used temporarily to collect soiled cloths.

Wash your hands with soap and water immediately after handling the patient or anything soiled with discharges.

Avoid, if possible, close proximity to the patient when he is coughing or sneezing.

If more than one patient is being cared for in the same room, remove them as far as possible from each other or separate their beds by hanging sheets or placing screens between them.

While caring for patients avoid contact or association with other susceptible members of the household so far as possible.

FORM C D-29 2-26-23-2000 (20-4146)

INFLUENZA!

How to Avoid It! How to Care for Those Who Have It!

The following suggestions of the California State Board of Health may prove of immeasurable value to any man or woman who will read, remember and act upon them in the present great emergency. The counsel here set forth has been prepared after consultation with some of the ablest medical men in America. If you will follow the dictates of this official bulletin, you will be doing your duty to your fellow man and to yourself.

What to Do Until the Doctor Comes

If you feel a sudden chill, followed by muscular pain, headache, backache, unusual tiredness and fever, go to bed at once.

See that there is enough bed clothing to keep you warm.

Open all windows in your bedroom and keep them open at all times, except in rainy weather.

Take medicine to open the bowels freely.

Take some nourishing food such as milk, egg-and-milk or broth every four hours.

Stay in bed until a physician tells you that it is safe to get up.

Allow no one else to sleep in the same room.

Protect others by sneezing and coughing into handkerchiefs or cloths, which should be boiled or burned.

Insist that whoever gives you water or food or enters the sick room for any other purpose shall wear a gauze mask, which may be obtained from the Red Cross or may be made at home of four to six folds of gauze and which should cover the nose and mouth and be tied behind the head.

Remember that these masks must be kept clean, must be put on outside the sick room, must not be handled after they are tied on and must be boiled five minutes and thoroughly dried every time they are taken off.

To Householders.

Keep out of the sick room unless attendance is necessary.

Do not handle articles coming from the sick room until they are boiled.

Allow no visitors, and do not go visiting.

Call a doctor for all inmates who show signs of beginning sickness.

The usual symptoms are: Inflamed and watery eyes, discharging nose, backache, headache, muscular pain, and fever.

Keep away from crowded places, such as "movies," theaters, street cars.

See to it that your children are kept warm and dry, both night and day.

Have sufficient fire in your home to disperse the dampness.

Open your windows at night. If cool weather prevails, add extra bed clothing.

To Workers.

Walk to work if possible.

Avoid the person who coughs or sneezes.

Wash your hands before eating.

Make full use of all available sunshine.

Do not use a common towel. It spreads disease.

Should you cough or sneeze, cover nose and mouth with a handkerchief.

Keep out of crowded places. Walk in the open air rather than go to crowded places of amusement.

Sleep is necessary for well-being—avoid over-exertion. Eat good, clean food.

Keep away from houses where there are cases of influenza.

If sick, no matter how slightly, see a physician.

If you have had influenza, stay in bed until your doctor says you can safely get up.

To Nurses.

Keep clean. Isolate your patients.

When in attendance upon patients, wear a mask which will cover both the nose and the mouth. When the mask is once in place, do not handle it.

Change the mask every two hours. Owing to the scarcity of gauze, boil for 5 minutes and rinse, then use the gauze again.

Wash your hands each time you come in contact with the patient. Use bichloride of mercury, 1-1000, or Liquor Cresol compound, 1-100 for hand disinfection.

Obtain at least seven hours' sleep in each twenty-four hours. Eat plenty of good, clean food.

Walk in the fresh air daily.

Sleep with your windows open.

Insist that the patient cough, sneeze or expectorate into cloths that may be disinfected or burned.

Boil all dishes.

Keep patients warm.

For Copies of this Publication Apply to

California State Board of Health, Sacramento

(Prepared by Massachusetts State Department of Health)

Treatment

A person suffering of influenza should immediately go to bed, and remain there from three to five days after the last rise of temperature above normal. This rule is imperative, and should not be slighted. Failure to observe it, may mean the difference between a simple case of influenza and one complicated by pneumonia.

If the illness starts with a hard chill, as it does in the majority of cases, extra covers should be placed over the patient, and hot drinks, such as lemonade, should be taken freely until the chill is over and light perspiration is induced. He should then be cooled off gradually and the normal amount of covering left over him.

A dose of castor oil (1 tablespoonful for adults) should be taken at once. There is no other cathartic as successful in emptying the canal or as helpful in such a time as this. During the stay in bed, the patient should remain on a liquid diet. That is, he should take no solid food. The best foods are milk, soups, broths, strained gruels, fruit juices, malted milk, yogurt, buttermilk, etc. While on such a diet as this, the patient should be fed every two hours regularly, excepting during the sleeping hours at night.

The taking of fluids is of the utmost consequence; it is impossible to drink too much. Aside from the fluid taken as food, the patient should drink a glass an hour of water or lemonade during the acute stage of the fever. This is most beneficial in helping to reduce the fever, and also helps to keep the body flushed out. It acts as a safeguard

to prevent the high fever from injuring the delicate tissues of the body. The drinking of pure water is a remedy the value of which is appreciated by but few.

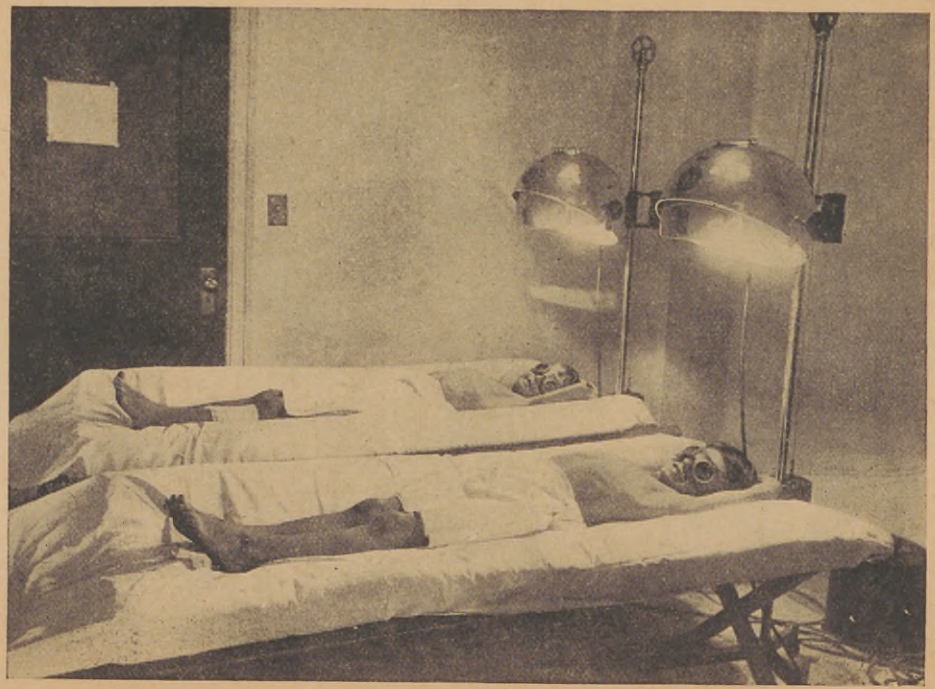
Isolation of the patient is necessary from several standpoints. First, it saves the patient the irritation and excitement of having others around; and in the case of a very sick patient, this is an important matter. Secondly, it saves others from the danger of contamination. Those whose work does not bring them in contact with these cases, should stay away entirely.

A glance at the little sheet put out by the New York Department of Health (page 39), and the one originated by the Massachusetts Board of Health, and put out by several states (page 40), will show how essential state boards of health consider isolation.

A hot foot bath in a deep bucket is very beneficial, to relieve cough, soreness in the throat, and congestions in the lungs. It therefore is a curative measure, and should be employed regularly in these cases. Instructions for the giving of hot foot baths will be found in the chapter on "Home Treatments."

Hot packs to the chest, both front and back, are also very helpful. These should be given every three hours, and the patient should be rubbed with hot camphorated oil before and after. Specific instructions for this treatment also will be found in the chapter on "Home Treatments." In the case of infants and small children, it is rather difficult to give these treatments. In such a case, the little patient should be rubbed with hot camphorated oil, and then have a copious application of warm anti-

Tubercular children of the Minneapolis public schools receive their "sun baths" indoors by electricity on rainy days. The rays of the sun are great germ killers.



phlogistine applied to be worn overnight. This should cover the chest front and back. Details regarding this are given in the chapter on "Home Treatments."

A gargle of hot salt water (one rounding teaspoonful of common table salt to a pint of water) should be used every two or three hours, as both a mouth wash and a gargle. If the throat is especially sore, it should be swabbed three times a day with fifteen per cent argyrol. This should be done following the gargle with hot salt water.

If it is necessary to administer any medicines internally, a physician should be in charge of the case. The indiscriminate giving of remedies recommended by well-meaning friends and neighbors, without the advice of a physician, is dangerous and should not be practiced.

IV. Measles

MEASLES is an infectious, contagious disease. The special symptoms characterizing it are, slight inflammations in the air passages, with discharge from the nose, and a little cough, a moderate fever, and an eruption of red papules appearing about the fourth day of illness. Measles is also called rubeola.

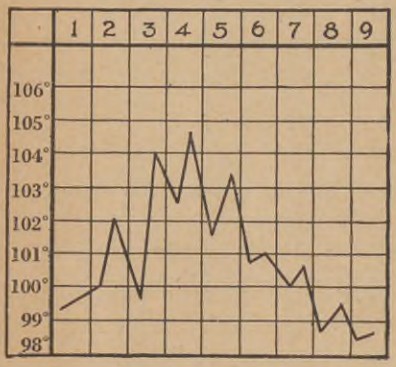
Incubation

A person who has been exposed to measles is not free from the danger of contracting the disease until fourteen days have elapsed. The average length of time is about eleven days. This is one of the most highly contagious diseases known. As a rule, immunity is acquired by one attack; when a person has had measles once, it is not likely to recur. The infection is communicated by the "droplet method" mainly; that is, by coughing, sneezing, breathing, talking, etc., the patient ejects little particles of secretions, which are borne to other individuals. It is also carried by dishes, toilet articles, clothing, bedding, and other objects. This, though, is usually because these articles have become contaminated with the excretions from the body, chiefly sputum.

Symptoms

A measles patient may come down with a sharp chill, fever rising rapidly afterwards; but more commonly the disease starts gradually with a "little running at the nose," watering of the eyes, and a slight cough. In most cases, there is some hoarse-

ness and sneezing, and light is painful to the eyes. The cough increases as the disease progresses, and it becomes quite hard and dry. Fever is a constant symptom. As stated before, it usually develops gradually; 102 or 103 is the usual temperature, although it is not an alarming thing for a child to have a temperature of 104 at the height of the disease. Generally the highest temperature is reached just before the patient breaks out with the eruption and one day afterwards. One week is the ordinary length of time for fever.



Fever Chart in Measles

The eruption appears three or four days after the patient becomes ill. It first breaks out around the hair line, and on the ears, the neck, and the forehead. From here it spreads to other parts. The eruption is slightly raised and has a dusky red appearance. It is quite characteristic, and having been once seen, is easily distinguished. In severe cases, the eruption becomes so profuse sometimes as to run together and form blotches that have irregular edges. It may also break out in the mouth. This mouth eruption occurs in ninety per cent of the cases. It consists of little bluish white specks surrounded by an area of quite red-appearing inflammation.

The eruption usually lasts three or four or even five days. The week following eruption, there is a peeling of the skin. This is due to the fact that the inflammation in the skin has destroyed the life of the skin, and this comes off in little scales that are described as "branlike." Most patients improve rapidly after the disappearance of the rash, and at the end of ten days, feel as well as ever. It is not uncommon, however, for the severer cases to take two weeks or longer.

Complications

The most serious complication is pneumonia. As was explained under "Symptoms," a little catarrh, cough, and other symptoms of irritation in the lungs and the air passages, are present from the beginning of the disease. Because of this tendency of measles to irritate the air passages, there is always danger of its being complicated with pneumonia. When this happens, there is increased pain in the chest, increased cough, and the patient looks and feels worse from a very definite hour.

Abscess in the middle ear is another very frequent complication. The infection travels from the throat through the Eustachian tube into the middle ear, causing pus to form. This requires the attention of a specialist.

It is also common to have complications in the eyes; that is, inflammation may develop there as a result of the irritating secretions during the height of the fever. On this account, strict attention should be paid to the instructions given under "Treatment," for the care of the eyes.

One of the greatest dangers following measles is, that if the patient has not had proper care, he may develop tuberculosis in the months following. Today most of those who contract tuberculosis under twenty years of age have done so as a result of measles, whooping cough, or influenza. It is a grave mistake to say, "Oh, well, it is only measles," and let the children go without proper attention. Intelligent care during the progress of this disease may mean escape from the "great white plague" which can so easily follow.

Treatment

A person with measles should be placed in a well-ventilated room, but free from drafts. The temperature of the room should be about 70 degrees. No matter how light the attack, keep the patient in bed at least ten days. The eyes are too irritable to stand bright sunlight, therefore the room should be darkened sufficiently to prevent any discomfort from the light, in the eyes. If possible, keep a teakettle of hot water boiling in the room, to provide moisture in the air. This greatly lessens and eases the cough.

The diet should be principally liquids. In the case of infants, their milk should be diluted much more than ordinarily. In addition to liquids, older children and adults may have raw eggs, soft eggs, cornstarch pudding, plain custard, junket, fruit juices, and hot drinks of any character. Water should be taken very freely.

It is very seldom advisable to do much about the fever. If something has to be done for it, tepid sponging is best. Anything beyond this should be

prescribed by the family physician. There is no treatment for the eruption except to increase the drinking of hot fluids and try to get the patient to perspire if eruption is delayed. In many cases, a hot bath is given, after which the patient is surrounded with hot water bottles in bed and caused to perspire. This assists greatly in bringing out the rash. Following this, if there is itching, olive oil may be used on the skin, for relief.

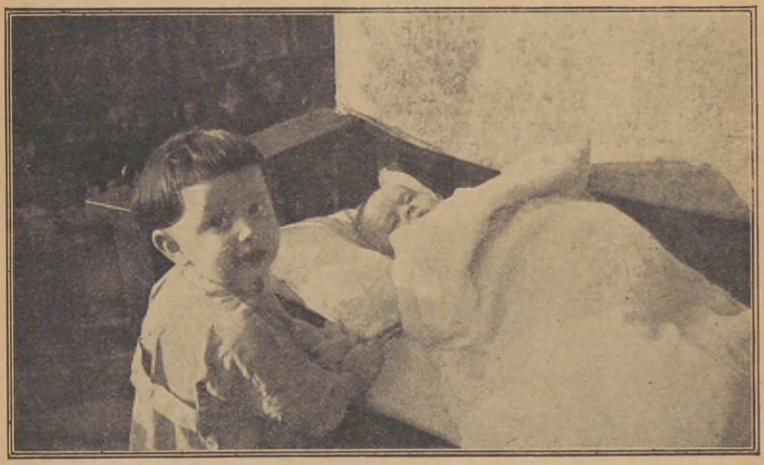
The eyes should be washed frequently (every two hours) with a saturate solution of boric acid. If the lid is pulled away from the eyeball, the solution can be washed under the lids by the use of a medicine dropper. This will prevent any complications or permanent injury to the eyes. Bathing or washing out the eyes to remove the secretions is of more importance than darkening the room. If the room can not be darkened sufficiently for comfort, the patient may wear dark glasses.

If the bowels do not move properly, enemas are better than cathartics during the length of time the patient is in bed. If the cough becomes bad, fomentations to the chest will relieve it a great deal. The hot foot bath also may be used to good advantage.

Quarantine Regulations

Measles is a disease of cold weather, and epidemics oftenest occur in the middle of the season and of the school year. Control of such epidemics is very essential, and all regulations laid down by local health boards *should be strictly observed.*

Most boards of health require that the patient remain in quarantine seven days after the appearance of the rash, and until the discharges from nose, ears, and throat have disappeared and the cough ceases. Some of these may hold a patient in quarantine for a long period of time. Discharging ears especially do this. But these instructions should be obeyed.



V. Mumps

MUMPS is an acute and highly contagious disease. It is especially characterized by inflammation and swelling of the salivary glands. The period of incubation is about eighteen days. The disease is highly contagious, and spreads with great rapidity in institutions where people congregate. It is not transmitted by a third person; direct contact is necessary. The infecting germ is probably contained in the saliva. The most common ages for mumps are between five and fifteen years. One attack usually confers immunity from the disease; that is, it is seldom contracted twice.

Symptoms

Mumps starts gradually. The patient usually feels somewhat chilly, with slight fever for a day or two, at the end of which time swelling starts in the parotid salivary gland. As soon as this occurs, there is aching, tenderness, and pain. The disease may affect only one side of the face; but in most instances, both sides are affected. One side may start the trouble two or three days later than the other side. The site of the swelling is much higher than is ordinarily supposed. It comes well up in front of the ear, to a point nearly level with the top of the ear. From here it goes down below the angle of the jaw. If the swelling extends to the submaxillary and sublingual glands, it reaches to the center underneath the chin.

Injecting serum in a tubercular patient. Most of those who contract tuberculosis under twenty years of age have done so as a result of measles, whooping cough, or influenza.

The tasting of sour substances, such as lemon juice or vinegar, causes an excessive flow of saliva, accompanied by pain. Sometimes chewing or talking, or anything that requires movement of the jaw, is painful. The fever seldom goes very high. In many cases, it never goes above 100 degrees; and 102 is considered a high fever for mumps. The average attack lasts about two weeks. The fourth or fifth day is as a rule the worst time; from this on, it quite rapidly subsides.

Complications

The complications are few. The most frequent is an inflammation of the testicle or the ovary. The germ of this disease seems to have a special tendency to cause inflammation of these glands. For this reason, persons having mumps should stay off their feet, remaining quietly in bed, or at least not do much walking nor take much exercise of any kind. It is also important to avoid taking cold, getting the feet wet, or committing any other indiscretion that might bring about such a complication.

Treatment

The patient suffering of mumps should remain in bed until the fever and the swelling are gone. Since it is painful to chew, he should have a liquid or very soft diet. A dose of castor oil to empty the alimentary tract should be the first remedy administered. Fomentations applied over the entire side of the face and jaw and neck will afford a great deal of relief from the pain in the glands. Hot foot

baths also relieve the pain somewhat, because they draw blood from the head. In case of such a complication as inflammation of the testicle or ovary, a physician should be called. Isolation and quarantine of the disease by health authorities should have full support from a family or individual afflicted.

The usual restrictions hold the patient in quarantine until two weeks after the appearance of the disease, or until there is no swelling left.

VI. Whooping Cough

WHOOPING cough, or pertussis, is a contagious disease characterized by inflammation of the respiratory tract, with a peculiar spasmodic cough, at the close of which there is a "whooping" sound. The cough comes in paroxysms and frequently ends in vomiting.

Incubation

The period of incubation varies. It is never less than two days nor more than two weeks, the average being five days to a week. Whooping cough affects both sexes equally, and oftenest attacks children from six months to seven or eight years of age. It is contracted by direct contact with the patient. There is doubt as to whether a third person can convey the disease; but toys and other small articles that are likely to be placed in the mouth of a child, may convey it. One attack usually confers immunity for life.

Symptoms

Whooping cough is a rather slow disease, and may continue for several months. Generally it begins with symptoms of an acute cold, a little chilliness, redness of the eyes, sneezing, a dry cough, and if the case is a severe one, some fever. All these symptoms increase until finally it is discovered that the cough comes in paroxysms, or brief attacks.

From this on, the patient suffers mainly from the severity of these attacks of cough. A paroxysm may be precipitated by laughing, crying, shouting, exercising, etc. Often a child, upon recognizing the approach of a paroxysm, will run to some person

or object for support. The cough starts with a series of short, rapid expiratory efforts at coughing. No breath is drawn in between these coughs. This may continue so long that the child turns blue, the veins of the face and neck become enlarged, and on the whole, a very distressing picture is presented. At last, there is a long-drawn inspiration, which produces the peculiar noise that gives the disease its name.

The mucus that is raised is very tenacious and clings to the throat. It is this that gags the child and causes him to vomit with these paroxysms. The condition may become so serious as to interfere with the child's nutrition; that is, the frequent vomiting makes it difficult to keep enough nourishment in his stomach to prevent emaciation. The severity of these paroxysms of coughing will be realized when it is understood that often urine and feces are forced from the little patient.

In mild cases, the characteristic "whoop" does not always develop; but usually there are sufficient symptoms for a diagnosis. Gradually it is observed that the paroxysms are less violent; the patient becomes better able to control himself during an attack of coughing, and does not vomit so frequently; the cough becomes looser and the mucus more easily raised. Whooping cough lasts from six weeks to three months, and neglected or severe cases may continue for four months or more.

Complications

The gravest complication of whooping cough is pneumonia; and to prevent, if possible, this compli-

Toys and other small articles that are likely to be placed in the mouth of a child may convey the germs of whooping cough.

cation, all whooping cough cases should be very carefully guarded against exposure, or taking cold, or anything that would reduce the vitality.

Tuberculosis sometimes follows whooping cough. The vitality of the patient is greatly reduced during this long drawn out malady, the vomiting interferes with the nutrition, and the respiratory tract becomes an excellent field for a tubercular infection. On this account, it is very important that the patient be kept as well nourished as possible.

Vomiting may be so severe as to constitute a real complication. What to do for it will be discussed under "Treatment."

Treatment

Fresh air, sunlight, warm clothing, proper protection, and plenty of nourishing food constitute the fundamental treatment for whooping cough. It is a mistake to keep the patient in bed or even closely confined in the house, especially after the onset of the disease is over. He needs the fresh air and sunlight; and the paroxysms will be less violent than if the child is housed up all the time. He should be kept from violent exercise of any kind, or anything that would bring on the paroxysm.

The diet should be very rich in milk, eggs, and fruit juices; and plenty of vegetables also should be given, with practically no meat at all. If the vomiting becomes worse, the number of feedings daily should be increased, to make up for the loss of food from this cause. In such a case, the feedings should be smaller. If much trouble is experienced along this line, predigested foods, such as malted milk, should be used.

Any child suffering of whooping cough should be excluded from attendance at school.

Hot foot baths, and fomentations to the chest and back, are of great assistance in warding off paroxysms, and also in lessening their severity. After these treatments, the mucus is much more easily raised, and the sleep at night is less disturbed.

Serums and vaccines have become of considerable value in the treatment of this disease, and are now used with good results by many physicians. They should not be administered except upon the advice of a physician.

It is the duty of the health officer to maintain a certain quarantine for whooping cough cases until there is no more cough and all discharge from nose, mouth, and ears has ceased. This may be a long time, and may work a hardship on the child because he loses so much time out of school; but the measure is absolutely necessary.

It is the duty of persons in charge of any school, including Sunday schools, etc., to exclude from attendance any child suffering of whooping cough.

For parents to try to cover up the true nature of mild cases, in order to permit their children to attend school, is a very unwise policy, not only because of the injury it does to the other children of the school, but doubly so because of the danger to the little patients themselves. Proper care is impossible while they are attending school, and the danger of pneumonia as a complication is much greater. Moreover, the danger of a chronic tubercular infection following the whooping cough is greatly increased. Good care is the first line of defense in this matter, and should not be neglected.

VII. Scarlet Fever

SCARLET fever, or scarlatina, is a contagious and infectious disease, the principal symptoms of which are high fever, sore throat, and a diffuse rash of a scarlet color. This disease has a great tendency to produce nephritis (inflammation of the kidneys) and inflammation of the middle ear.

Incubation

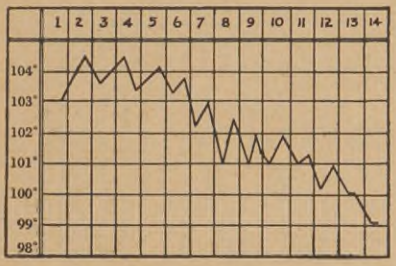
The period of incubation varies. In severe epidemics, it may be but one day. In milder cases and under some conditions, it may be as long as eight days. The average is from two to four days. Those who have been exposed should be excluded from contact with all persons for one week. If they do not come down with the fever at the end of that time, they may be once more permitted to continue with their work or school.

Scarlet fever is most epidemic in fall and winter. It is a virulent infection, and one regarding which the greatest caution should be exercised. It is contagious from the very beginning, at the onset of the fever. It is, however, most contagious during the time that the patient is broken out. Patients can communicate this disease as long as there is any discharge from the nose and throat and ear passages, or as long as there is any peeling of the skin. Thirty days or longer from the onset of the trouble is required to get the average case free from the infecting agent or from danger of communicating the disease. It can be communicated by direct contact

Scarlet fever is a virulent infection. It can be communicated by direct contact with the patient, or by articles of any nature, such as toys, bedding, clothing, etc.

with the patient, or by articles of any nature, such as toys, bedding, clothing, laundry, toilet articles, etc.

Children between the ages of one and fifteen years are most susceptible to this malady, although it may attack any person from one year of age upward. The disease is very rarely contracted by a child younger than one year; there appears to be a certain immunity up to this age. Negroes seem less susceptible to scarlet fever than white people; and among East Indian and Japanese peoples, the disease is very rare.



Fever Chart in Scarlet Fever

Symptoms

The onset of scarlet fever is quite sudden in most cases. There is somewhat heavy chilling, with sudden rise of temperature; and vomiting is a very early symptom. Vomiting may start with the chill. General prostration and bad feeling obtain from the first; and sore throat, with headache, develops rapidly after the fever is established. This disease usually presents a high fever, ranging from 103 to 104. The fever continues rather steady until the eruption begins to grow less. After this, the fever will gradually decline, taking three or four days to disappear after the eruption begins to grow less. The fever lasts from seven to ten days if there are no relapses nor complications.

The pulse in this disease is rapid, as in fact it is in any disease that has fever; but in scarlet fever, it is out of proportion to the fever; that is, the pulse is more rapid than one would expect it to be, judging from the degree of fever.

The eruption may begin to appear on the first day, but it more commonly starts at the end of the first twenty-four hours. It is first noticed on the throat and upper chest, and from here spreads, in severe cases, to the entire body. It is a rash of bright red color, which gives the disease its name; though it may be dusky or even bluish. Ordinarily there are little red points scattered through the rash, that are a slightly darker shade of red than the background of the rash. Pressure with a plain piece of glass will make the red color disappear and leave a white skin, but it returns immediately upon removal of the pressure. Itching is always present, and in some cases, is quite annoying. Generally the eruption reaches its height about the fourth day and disappears at about the seventh or ninth day.

As soon as the rash or redness of the skin disappears, peeling of the skin (desquamation) begins. The patient must stay in quarantine until this is thoroughly accomplished, although it sometimes takes a tedious amount of time. On the palms of the hands and the soles of the feet, where the cuticle, or outer skin, is very thick, the skin is peeled off in large flakes. Where the skin is thin, the peeling is more slight. In very severe cases, the hair may be lost entirely, and even the nails have been known to be shed. However, these return in due time.

Sore throat is an early and constant symptom. Swallowing and talking are painful, and the throat is badly swollen. There is no membrane present, but the throat is very red and angry-looking. In most instances, the soreness subsides about the same time as the rash.

Complications

Inflammation of the middle ear, with abscess formation, is very common in scarlet fever. This is because of the inflammation in the throat, which can so easily travel up the Eustachian tube. Whenever pain in the ears complicates this disease, they must receive immediate attention by a skilled specialist.

Acute nephritis (inflammation of the kidneys, or acute Bright's disease) is a complication that frequently occurs in scarlet fever cases. The germ, or infecting agent, causing this disease, seems to have a special tendency to lodge in the kidneys, where it starts up a severe inflammation. This is one of the reasons why a competent physician should be in charge of every case of scarlet fever; for although the attack of fever may be light, the damage to the kidneys can be very serious.

Treatment

Rest in bed is a little more essential in scarlet fever than in most of the fevers. Even though the attack is a very mild one, it is dangerous for the patient to be out of bed, on account of the increased likelihood of complications in the kidneys.

Water should be taken very freely. It not only serves the purpose of relieving the thirst incident to

the high fever, but it helps in a measure to reduce the fever itself; and most of all, it is of great assistance to the kidneys, lessening in a marked degree the danger of complications in them. This is an important point, and one that should not be neglected. Water drinking is of the utmost importance.

A dose of castor oil should be taken in the beginning, to empty the bowels; but other than this, all cathartics should be avoided, and if something is necessary to move the bowels, enemas should be used.

The diet should be very largely milk. Junket, kumiss, ice cream, strained gruels, and fruit juices also may be used. The citrus fruits, such as oranges, lemons, grapefruit, tangerines, etc., provide the best juice for the use of these patients. The sore throat should be treated by use of a hot gargle of salt water (one rounding teaspoonful of common table salt to one pint of water). If the child is too young to be able to gargle, it is best not to attempt to have him do so.

If the fever gets very high, control it by tepid sponging. Immersion in a tub for ten minutes, with the water at 105°, is very beneficial to reduce the high fever, and is also very quieting to the patient, and enables him to rest much better afterwards. The itching is best allayed by the use of cold cream, cocoa butter, or carbolized olive oil.

No drugs or medicines of any kind should ever be given these patients except by the prescription of a reliable physician. This is true in any disease, but is especially true in scarlet fever.

Quarantine and Control

On account of the ease with which this disease is spread, measures for its control are a little more strict than for other contagious diseases. All local health boards require that either the patient be removed to a contagion hospital or else the entire premises be quarantined. A placard is placed on the house, and no one is permitted to come and go except the physician and nurses or those who are needed to care for the sick.

The California State Board of Health has put out a very interesting pamphlet regarding the control of this disease. The matter could not be stated more concisely or accurately than therein. Rule 3 from the law as quoted in this pamphlet is herewith reproduced:

"Rule 3. Instructions to household.

"It shall be the duty of the physician in attendance on a person having scarlet fever, or suspected of having scarlet fever, to instruct the members of the household in precautionary measures for preventing the spread of scarlet fever.

"NOTE 1.—Scarlet fever is spread by the secretions from the noses and throats of patients and also by discharges from the ears or suppurating glands. . . . It is probable that unrecognized mild cases and carriers play a large part in the spread of the disease. If milk is contaminated by a person having scarlet fever the disease may spread to the people who drink it. In this way serious epidemics are sometimes caused.

"NOTE 2.—The following instructions are required by Rule 3:

"1. If the patient is not removed at once to a hospital, he shall have a separate bed in a room screened against flies.

"2. All persons, except those having the necessary care of the patient, shall be excluded from the sick room.

"3. Animals shall be excluded from the sick room.

"4. The room should be kept well aired and clean. It should be freed from unnecessary carpets, draperies, and furniture before the patient is placed in it. Dust must be avoided by frequent moist cleansing of woodwork and floors.

"5. The person caring for the patient shall avoid coming in contact with any other person within the household or elsewhere.

"6. The person having the care of the patient shall wear a washable outer garment and shall thoroughly wash the hands with soap and water after handling the patient or any object which he may have contaminated. On leaving the room in which the patient is isolated, the attendant shall take off the washable outer garment and leave it in the room until disinfected.

"7. All discharges from the nose and mouth, ears and suppurating glands shall be burned or disinfected. It is recommended that these discharges be received on pieces of gauze or other soft cloth and be dropped in a paper bag which is conveniently placed. The bag and its contents can be easily burned.

"8. Objects which may have been contaminated by the patient shall be disinfected before being removed to any place where they might become possible sources of infection.

"(*a*) Clothing and bedding, including the washable outer garment of the attendant, should be boiled in water or soaked for one hour in 5 per cent phenol or 10 per cent formalin solution, before being sent to the laundry.

"(*b*) Dishes and other utensils should be boiled in water or soaked for one hour in 5 per cent phenol or 10 per cent formalin solution.

"(*c*) Remnants of food should be burned, or, if liquid, disinfected by boiling, or adding an equal volume of a 5 per cent phenol or 10 per cent solution of formalin and allowing to stand for one hour."

VIII. Chicken Pox

CHICKEN POX, or varicella, is an acute fever. It is infectious and contagious, but is a very trivial disease when compared with smallpox and with many of the other children's infectious diseases. It is of short duration, and is characterized by a vesicular eruption which comes in repeated crops.

Incubation

The period of incubation is about two weeks. Young children are the most susceptible to chicken pox, and it oftenest occurs between the ages of one and six. Direct contact with one suffering of the disease is the most frequent source of infection, although a third person, or objects carried from the sick room, sometimes give it. This malady may be conveyed from the first onset of symptoms until after the disappearance of any scabs and of any scaling from the site of the pocks. It bears no relation whatever to smallpox, and provides no immunity from that disease. It protects against second attacks of itself, but smallpox can be contracted just as easily as though the patient had not had chicken pox.

Symptoms

The fever with chicken pox is very light. In fact, the patient may not know there is anything wrong with him, until he sees the eruption. In some instances, there is a slight chill, with loss of appetite and general bad feeling, before the breaking out; but these symptoms are usually slight. The eruption consists of little hard papules, or pimples, that

One child in a group of this size, with the germs of a contagious disease, could cause great havoc. However, measures for the control of disease are becoming more strict. It is within the power of most boards of health to enforce full quarantine if they deem it necessary.

are red in color. These appear first on the back and on the face, after which, if the disease is severe, they spread to other parts of the body, especially *over the trunk*. The arms and the legs are affected very little, and the palms of the hands and the soles of the feet, in most cases, escape entirely. After the first day, the little hard papules of the eruption turn into vesicles; that is, the inside of the papule breaks down into a fluid. This fluid is transparent and clear as crystal. The size of the pocks varies greatly; they may be very small, or as large as a pea. At the end of the second day, the fluid in the papules contains pus, and is no longer transparent. Their surface then becomes puckered, dries up into bluish scabs, and sloughs off, leaving reddish marks on the skin, showing the site of the pocks.

It is possible to see these pocks in all stages of progress, because they come in successive crops. New ones will start up each day for several days, so that when those which first came are clearing up, there are fresh ones just starting.

This disease may be very slight, with not more than three to a dozen pocks; or it may cover the body. There is ordinarily some itching with it, and in a few cases, it breaks out on the mucous surfaces, as the mouth and the pharynx. A week is the usual length of time for these cases; but severe cases may last for three weeks.

To differentiate chicken pox from smallpox is sometimes a rather hard problem, and may confuse even the physician for a time. It is of the utmost importance, however; for chicken pox is a mild dis-

ease, with no serious consequences, whereas smallpox is a very grave one, requiring stringent measures both for its treatment and for its control in quarantine. Whenever there is doubt about the matter, the community at large should have the benefit of the doubt. Any patient suffering of this malady, should be excluded from all contact with other persons, and the case should be reported *at once* to health authorities for their decision. To neglect any of these precautions is a great wrong to the community in which one is living.

A discussion of the main points of difference between these diseases, that will assist in determining of which the patient is suffering, is given on page 82, following the discussion of smallpox.

Treatment

Absolute rest in bed should be enforced. This is sometimes difficult with small children, but nevertheless it is imperative. The child should be kept in night clothes and held strictly in bed until the malady is entirely over. The diet should be nutritious, and rich in milk, raw or very soft eggs, cereals, and fruit juices, especially orangeade and lemonade. Encourage water drinking, and give plenty of starchy foods, mainly cereals.

If there is pain in the back, hot fomentations should be given, directions for which will be found in the chapter on "Home Treatments." If there is vomiting and nausea, the patient should be allowed to swallow small pieces of ice, and be kept very quiet until this stage passes. In case the fever reaches a height requiring attention, cold sponging, with ice

bag to the head, is the best treatment. During the stage when pus appears in the vesicles, it is sometimes necessary to wrap the patient in a cold wet sheet, renewing the moisture in the sheet as it dries out from the heat of the body.

If the patient breaks out in the mouth, Dobell's solution should be used for washing the mouth. When this is not available, a two per cent solution of boric acid should be used as a gargle and mouth wash every hour.

Keep the eyes clean by frequent washing with boric acid; and if there is any eruption in them, or distress of any kind, apply hot boric compresses over them for thirty minutes three times a day. This is done by wringing a thick pack of gauze or cheesecloth out of hot saturate solution of boric acid, and placing it over the eyes and the forehead, renewing it every few minutes, to keep the compress as hot as the patient can bear. To relieve the itching of the eruption, it is best to use a compress of cold saturate solution of boric acid. This can be renewed as often as is necessary. The patient should be prevented from scratching the pocks, because this increases the scar left behind.

Quarantine and Control

The patient should be quarantined and isolated as soon as the nature of the malady is known. The case should be reported to health authorities, and all rules laid down by them should be rigidly observed. Quarantine is maintained until all crusts and scabs are removed and the skin is smooth. After this, the patient should have a bath with an antiseptic soap,

be dressed in fresh clothes from the skin out, and be allowed to go about the affairs of life as usual. The room in which the patient was kept, along with all articles used by him, is then fumigated according to the instructions given by the local health officer. Although chicken pox is a mild disease, observance of strict rules is essential on account of the close resemblance it bears to smallpox.

A father afflicted with smallpox, holding his young son, without danger to the child, who has been vaccinated.

IX. Smallpox

SMALLPOX, or variola, is a very acute and highly infectious and contagious disease. Its duration is from two to three weeks. It starts with an abrupt chill, vomiting, headache, and pain in the small of the back. It is characterized by an eruption that passes through the stages of papule, vesicle, pustule, and crust, successively. There is a high fever, which goes down after the eruption first comes out, and rises again during the stage when pus is in the eruption.

Smallpox has existed as long as history has been written by men, but it did not occur in severe epidemics until about the sixth century. It was brought to America by the Spaniards in the sixteenth century; and in the eighteenth century, Lady Mary Wortley Montagu discovered that it could be prevented by inoculating the arm from the pocks of one suffering of the disease. This, however, was a rather deadly form; but Jenner, in 1798, discovered true vaccination with the virus of cowpox as a real and harmless protection against the disease. Before his discovery, smallpox destroyed two hundred thousand lives every year in Europe. It was the most dreaded disease that had ever attacked mankind. But it has since been brought "within bounds," and is now a negligible disease wherever vaccination is enforced.

Probably no single discovery can compare with Jenner's as a blessing to mankind. It is harmless to the individual, and need be feared by no one. There

has been propaganda against it in recent years, but this arises from those who do not know the facts regarding its use nor fully understand the terribleness of this scourge before vaccination controlled it. Fathers and mothers should have no hesitancy in the vaccination of their children, and should comply with the regulations of the local board of health regarding this matter. One successful vaccination may protect a person for life; but it should be repeated every four or five years, and always during any threatened epidemic of the disease. If immunity still exists, the vaccination will not "take." If immunity does not exist, there will be a "take," and you are again protected.

Incubation

The average period of incubation is about twelve days. Its limits are from about eight to twenty days. Smallpox is highly contagious from the onset until all crusts are detached and the skin is smooth once more; and greater care should be exercised regarding quarantine in this disease than in any other.

Symptoms

The patient comes down with smallpox with marked suddenness. There is a chill, violent headache, and vomiting. The pain in the small of the back and in the lower extremities is always very severe, and the patient feels as though his "back would break." The temperature is rather high, ranging from 103 to 104, and may be 105. It subsides as soon as the eruption breaks out, and may go even to normal. It returns, however, as soon as pus

appears in the vesicles. It often remains up for a week or more, depending upon the extent of the eruption.

The eruption of smallpox begins with small red pimples. They occur first on the forehead and the wrists, spreading rapidly to arms, trunk, legs, and feet. The breaking out is most marked on the exposed surfaces. The original pimples soon develop into larger ones, which become hard, and feel like shot under the skin. After two or three days (the fifth or sixth day of the disease), these pimples turn into vesicles; that is, they have a fluid in the points. Around these vesicles, there is a red ring; and after the fluid has formed in a pimple, or papule, there is a depression in the center of it, called an umbilication. On the sixth day of the eruption (the ninth day of the disease, or thereabouts), these vesicles become infected and turn into pustules. Fever returns or goes higher at this time. Pain and distress at this stage of the disease are usually severe. About the eighth day of the eruption (the eleventh day of the disease), the drying up process starts, and all that is left is crusts or scabs. It takes from one to two weeks from the setting in of this drying up process for the crusts to disappear entirely. During this stage, the itching is worst. Great care should be taken to prevent scratching and digging at the crusts, because the tearing away of these scabs at this time is what causes the permanent pock marks on the skin. Slight marking may occur even though the patient does not remove the crusts by scratching them, but it is much less than when this care is not

exercised. Following severe attacks, both hair and nails sometimes are lost, although this is rare.

The different varieties of smallpox are dependent upon the character of the eruption; that is, discrete smallpox is that where each pock remains separate. Confluent smallpox is that where the pocks run together in large masses. Hemorrhagic smallpox is a form of the disease in which hemorrhages occur into the skin and the mucous membranes. This is a virulent type.

Complications

It is not uncommon, in the pustular stage, for the pocks to turn into real abscesses; that is, the pus of the pocks gets under the skin, forming an abscess, and the site of the pocks has to be lanced to let the pus out. This is not a grave complication, provided it receives proper attention. In more severe cases of smallpox, the heart is sometimes affected by inflammation, causing endocarditis. This is an inflammation inside the heart, which leaves the valves of the heart leaking. In some epidemics, the disease tends to affect the ear. In this case, pus is formed in the middle ear, and the attention of a specialist is necessary to prevent permanent deafness.

The outlook for those contracting smallpox is serious even in the present day, when knowledge regarding its care is at the best. The death rate is about thirty per cent in spite of the best care. The disease is practically fatal to pregnant women, and abortion and premature birth are the rule. It may attack those of all ages, but it is especially fatal under five years of age and in very old persons. It

sometimes occurs in people who have been vaccinated many years previously but have not been revaccinated. In these cases, usually it is very mild and runs a light course.

Treatment

As soon as the patient becomes ill, he should be put immediately to bed, and placed on a liquid diet, with plenty of water to drink. The sick room should be a light, airy, well-ventilated room, with every window screened. The temperature of the room should be 68° to 70° F. The importance of drinking abundance of fluids, such as orangeade, lemonade, and water, can not be emphasized too much. When the patient is past the severe stage of the disease, eggs, cream, and well-cooked cereals may be added; and after these have been handled well and the fever has disappeared, baked potato and other light vegetables may be eaten.

Hot foot baths, and fomentations or hot packs to the small of the back, provide the best relief for the intense pain that occurs in the early stages of smallpox. Mustard plasters should not be used, because the pocks occur in masses on surfaces irritated by the application of mustard plasters. The patient should be allowed to swallow cracked ice, as it helps with the vomiting.

The treatment of the fever should be managed by cold sponging and the application of ice bags to the head. If the fever is high, this treatment can be almost continuous, and affords great relief. The cold sponging does no harm to the eruption. The

secondary fever that comes when pus is in the eruption, is best controlled by cool or tepid packs; that is, the patient can be covered by or wrapped in a sheet which is kept moist. The drying of the sheet by the atmosphere produces a marked cooling of the body and relieves the fever.

The eruption frequently occurs in the nose and the mouth. On this account, some solution should be used for cleansing both these cavities. Dobell's solution is good, or plain salt water (one teaspoonful to each pint of water) will do the work. Two per cent solution of boric acid is also commonly used. The mouth should be washed and rinsed often, and the nose should be sprayed with these solutions or gently swabbed. This is done to keep all secretions cleaned away, and it adds greatly to the comfort and well-being of the patient. The eyes should be washed out frequently with boric solution, and hot boric acid compresses should be applied to them. Directions for giving these will be found in the chapter on "Home Treatments."

The burning and itching with the eruption are best relieved by applications of cold, either by the ice bag or by cold compresses of gauze or cheesecloth. Cold compresses of boric acid should be kept over the face. These can be changed as often as is necessary. Medicines to relieve the itching should not be used without the order of a physician. When the acute stage of the disease is past and the patient is waiting for the crusts to drop off, the itching may be relieved by an application of cold cream or olive oil. This also hastens the removal of the crusts.

Characteristics Distinguishing Between Smallpox and Chicken Pox

It is of the utmost importance that an accurate diagnosis be made in smallpox. It is not so important in chicken pox, because the disease is not so serious. On account of the similarity between these two diseases, it is sometimes difficult to distinguish between chicken pox and a *mild case* of smallpox. One mild case of smallpox left without quarantine or isolation may be responsible for a widespread epidemic. An epidemic is expensive to any community, and it is the patriotic duty of every citizen to have a care regarding these matters. The accompanying page is taken from "Special Bulletin No. 36," issued by the California State Board of Health. This bulletin is cleverly arranged by Dr. Allen F. Gillihan, and is given over entirely to the points of difference between chicken pox and smallpox. It is certainly a page of condensed knowledge, and is worthy the study of any person. It will greatly assist those who desire to know these distinguishing points.

Quarantine

As soon as it is determined that any member of the household has smallpox, the local health officer is required to place a placard in a conspicuous place at the principal entrance to the house, unless the patient is removed to a contagion hospital. This placard is left in place until the attending physician notifies the health officer that the patient is well, that all scabs or crusts are cleared off the skin, and that

Important Diagnostic Differences Between Smallpox and Chickenpox.

SIGNS	SMALLPOX	CHICKENPOX
DISTRIBUTION OF RASH.		
1. Location of Rash	Prefers Face and Extremities—Usually on the extremities the further away from the trunk the more profuse is the rash.	Prefers trunk.
2. Regions Preferred by Rash	Exposed Surfaces—Outer surfaces preferred to inner, does not like protected places, such as arm pits, groins, sides of chest, abdomen.	No Preference—Except that usually on the extremities the further away from the trunk the less profuse is the rash.
3. Effect of Local Irritation—Such as burns, scratches, sores, bruises, poultices, etc.	May Modify Distribution—Nearly always there is a decided increase of the rash over irritated places.	Occasionally a slight increase of rash over an irritated place.
4. Comparison of Exposed and Protected Surfaces—Seat patient in a good light, strip him to the waist, stand in front of him and observe rash.		
(a) Cross arms over chest, bend head well down	In this position rash shows prominently.	Rash hidden
(b) Bend head well back, extend arms over head	In this position rash does not show.	Rash exposed.
5. Distribution of Scanty Eruption.		
(a) Count spots on both upper extremities	Many spots	Few spots.
(b) Count spots on trunk	Few spots	Many spots.
APPEARANCE AND GROWTH OF RASH.		
1. General Appearance	All spots in one area are very similar in size, in shape, and in age.	Spots in one area variable, in size, shape and age.
2. Where Rash First Appears	Usually on face and forehead	Usually on trunk.
3. Growth of an individual spot	Slowly—Requires several days to reach full size.	Rapidly—Full size reached in a few hours.
4. Spreading of rash	As a wave, traveling from face to feet.	New spots appear indiscriminately, scattered among older spots or on new area.
HISTORY OF CASE.		
1. First evidence of illness	Sudden sharp illness for several days, then feels better, then rash appears.	Rash appears.
2. In those recently successfully vaccinated	Does not occur	Does occur.

Signs of No Relative Value in Diagnosis.

1. Prodromal rash	Rarely occurs	None.
2. Secondary fever	Depends on extent of rash	Fever with rash.
3. Umbilication of pustule	May not occur	May occur.
4. Shot-like feel	May not be found	
5. Effect of puncturing vesicle	May collapse	May not collapse.
6. Rash on palms and soles	May not occur	Occasionally found.

Facsimile of Special Bulletin No. 36, issued by the California State Board of Health, giving points of difference between chicken pox and smallpox.

all scars are completely healed. When this is done, the health officer removes the placard and disinfects the house.

However, all unvaccinated persons are required to remain in quarantine for twelve days after the termination of the quarantine for the patient. When this time has elapsed, they have passed the danger of contracting the disease, and are in turn released.

One state board of health that is very active in the control of smallpox has put out the following instructions to the household:

"Rule 4. Instructions to the Household.

"It shall be the duty of the physician in attendance on a person having smallpox, or suspected of having smallpox, to instruct the members of the household in precautionary measures for preventing the spread of smallpox.

"NOTE.—The following instructions are required by Rule 4:

"(1) If the patient is not removed at once to a hospital, he shall be isolated in a room screened against flies.

"(2) All persons except those having the necessary care of the patient shall be excluded from the sick room.

"(3) The persons caring for the patient shall be vaccinated with fresh smallpox vaccine immediately prior to assuming such care.

"(4) The persons having the care of the patients shall wear washable outer garments and shall thoroughly wash the hands with soap and water after handling the patient or any object which he may have contaminated. On leaving the room in which the patient is isolated, the attendant shall take off the washable outer garment and leave it in the room until disinfected."

Exercise in the open air builds up the vitality of the child.

X. Infantile Paralysis

INFANTILE paralysis, or acute poliomyelitis, is an acute disease that is infectious and communicable. It occurs chiefly in epidemics, but may break out sporadically. Children are the most frequently attacked. Its most prominent symptom is an acute stage of fever, followed by paralysis of certain muscles.

In the past twenty-five years, there have been very serious outbreaks of this disease. They have been especially severe in Norway, Sweden, Australia, and the United States. The worst epidemic known occurred in the United States in 1916. During this epidemic, thirty thousand persons were affected.

Symptoms

The disease comes on suddenly. There is seldom much evidence of chill, the fever rising from 100 to 103 degrees at the onset. The little patients are generally quite drowsy. A good many of these cases have vomiting. There may be convulsions, but these are not a common symptom. The bowels are usually constipated, although diarrhea sometimes occurs. *Sore throat* is always present, and there is aching in head, back, and legs. As soon as these symptoms begin to subside, which may be any time from twelve hours to four or five days, the paralysis will be observed. Muscular weakness comes on first, and there is staggering in the gait, which progresses to an actual paralysis. The location of this paralysis is varied. It is oftenest in the legs. It may affect one leg, both legs, both legs and one arm, or all four

limbs. The arms, however, are not as much affected as the legs, and are never affected alone.

The paralysis in these cases develops to a certain stage and then stops. The permanent paralysis is never as much as it appears to be at the height of the disease; in other words, the paralysis is exaggerated during the acute stage of the illness, and the permanent injury to the patient is never as much as it threatens to be. In some cases, complete recovery occurs. This recovery draws out over a year or a year and a half.

The more rapidly the paralysis disappears, the better the outlook is for the patient's recovery; the more slowly it disappears, the less hope there is for a complete recovery.

Treatment

It is of the most urgent importance that the local board of health be notified of every case of infantile paralysis in the community, in order that proper precautions may be taken. Failure on the part of anyone in this matter is criminal. The sick should be isolated from contact with any person. Their rooms should be screened against flies and other insects. The period of this isolation is never less than two weeks. Children who have had an intimate contact with a patient should be excluded from schools and public assemblies until it is fully demonstrated that they are not coming down with the disease. All discharges from the patient, especially those of the nose and the throat, should be disinfected with the utmost thoroughness, since these discharges carry the infecting agent. It is also highly probable that

the disease finds entrance to the body through the mucous membranes of the air passages. Monkeys can be very easily inoculated in this way.

These patients should be put to absolute rest in bed. Hot packs and hot baths of about 100° F. are very beneficial. They should be given about twice a day. Various serums have been tried in the treatment of this disease, and excellent reports are given regarding their use. However, it is not yet advanced to a stage where accurate directions can be given.

The diet of these patients should be entirely liquid. Milk is an ideal food. It should be given in small amounts and often until the acute symptoms of the disease are past. The mildest of cathartics should be used to overcome the constipation. Drastic purgatives are very harmful.

The limb or limbs affected by the paralysis should be wrapped in cotton and supported in a normal position. Do not let the limb fall into an unnatural position because of the paralysis. This puts a strain on muscles not affected by the paralysis, and increases the deformity after the child's recovery. For instance, the feet are likely to be pressed over to one side by bedclothes, and then the position of the legs will be unnatural. They should be wrapped in cotton, and supported by pillows or any other comfortable support.

After the acute symptoms are over, at the end of three or four weeks, active treatment to the paralysis may begin. This consists of massage and passive movements; that is, the one administering the treat-

ment should take hold of the limb, bending the joints, and putting them through gentle exercises that simulate normal movements as nearly as possible. The patient should also be urged to place the mind upon these movements, and constantly try to move the affected part.

Electricity is another form of treatment. The faradic current is the best, but the galvanic current also may be used. The weakest current that will possibly cause a muscular contraction must be used. Otherwise, harm may be done. If the paralyzed muscles can not be made to contract without pain to the patient, the electricity should be discontinued, and dependence placed upon the massage, etc.

After a year or more has gone by, and as much recovery has occurred as is possible, the patient should be taken to a surgeon; for much can be done to correct the deformity if the patient is in the hands of a surgeon who is especially skilled along this line.

XI. Typhoid Fever

DEFINITION: Typhoid fever is an acute infection caused by the *bacillus typhosus*. It is characterized by long continued fever, diarrhea or constipation, marked emaciation, also rose-colored spots on chest and abdomen, before a final remission of the fever. The patient lies generally six weeks in bed.

Historical: The first account of anything like typhoid fever, was furnished in 1643 by a man named Willis. He described an epidemic among soldiers, which appears to have been very similar to typhoid. He explained that it could be carried from one to another. He also told of a case that was fatal, probably because of perforation. Nothing further was written regarding the disease until about the eighteenth century. At that time, there was marked interest in the subject. Louis, a French physician, wrote extensively on it. A pupil of his, Gerhard, of Philadelphia, came back to America, and published papers that very clearly set forth typhoid fever as a specific disease.

A man by the name of Murchison was the first to suggest that the infection was contained in the fecal matter of the patients; and in 1856 and 1860, Dr. Budd, of England, insisted that the fecal matter should be disinfected, and that in this way, the disease could be stopped. This man was on the right track; and in 1880, Eberth discovered the typhoid bacillus as we now know it. He was able to grow it in the laboratory, and demonstrate that it was the

real cause of the disease. The discovery of this bacillus was a wonderful service to the world, for it has enabled mankind to combat typhoid successfully.

The Typhoid Bacillus

The typhoid bacillus is so small it can not be seen except with a high-power microscope. It is found only in man; in other words, it is a parasite. However, it can live in the soil and in water, but it only gets there through contamination with the discharges of the human body. It is most frequently carried by water, and can live as long as three months in rivers, ponds, etc. Where streams have been contaminated, and the source of contamination has been definitely known, the germ has been discovered as far as eighty-five miles downstream. The chief source of contamination of streams and lakes is fecal matter, and other discharges of the human body. This comes mainly from campers, hunters, and others who are careless about these things.

It has been plainly shown that the typhoid bacillus will live as long as five months in privy vaults. When this material is spread on the ground as manure, it lasts only about two weeks, because of its drying up, and of the action of the sun's rays, which are a powerful bactericide.

In the body, this little germ is found in the blood, the feces, and the urine. On account of its being confined to these three locations, the great danger of contamination is in the fecal matter and the urine of the patient suffering of typhoid. There is therefore urgent need that these discharges from

the human body, and especially from the body of a typhoid fever patient, receive the strictest attention.

Carriers

It is possible for a person to have typhoid fever and so far recover as to feel perfectly well, but still harbor the typhoid bacillus within the body. In these cases, the bacillus seems to live in the gall bladder, and is discharged with the bile into the intestinal tract, so that persons may be fully recovered, and yet be what we call carriers of the disease. Their body discharges may be loaded with the bacillus; and hence they can contaminate water, milk, and various other articles, causing widespread epidemics. Examples of how this may be, will be given later, in the discussion of "Epidemics and How They Are Started."

Epidemics and How They Are Started

Water: Typhoid fever is primarily a water-borne disease. Other sources of infection have been discovered, but water is blamable for most epidemics. This has been thoroughly demonstrated where large cities have been supplied with water that is safeguarded in every respect, and therefore have remained practically free of typhoid fever.

One of the most common methods of infecting the water of a city is through leakage from sewer pipes. This gets into the soil, and drains into water pipes and reservoirs, thus infecting a large number of people. Again, rain washes discharges down from the sides of hills into creeks and rivers, whence they find their way into the cities' reservoirs. It is

Typhoid fever is primarily a water-borne disease. The water supply for the home as well as for the city should be safeguarded.

of the utmost importance, therefore, that cities protect their water supply from such contamination.

A German doctor named Schuder has studied 638 typhoid epidemics, and reports that seventy-one per cent of these were attributable to infected water. The city of Hamburg used to obtain its water from the river Elbe. From 1885 to 1888, a period of three years, there were 15,804 cases of typhoid fever in that city. Soon after this, a new water system, properly protected, was installed; and typhoid fever has almost totally disappeared from the city. In Chicago, in years past, there was a heavy annual epidemic of typhoid fever. This was because the sewage from that city was discharged into the same body of water from which the water supply was received. When this matter came to be understood, and a proper water supply was provided, typhoid almost wholly disappeared.

Plymouth, Pennsylvania, is a town of about eight thousand inhabitants. Their water is obtained from two sources, the Susquehanna River, and a reservoir fed by a mountain stream. A short while ago, they were overtaken by a severe epidemic of typhoid fever, developing as many as one hundred new cases a day, the total number of cases being 1,104. Investigation showed that the families who had typhoid fever had received their water from the reservoir; and those who received water from the Susquehanna River had been entirely free from the disease. Upon further investigation, a case of typhoid fever was found in a house very close to the shore of the stream from which water was run

into the reservoir. The discharges from this patient's body had been thrown upon the surface of the soil and into the stream. As soon as this practice was discontinued, the epidemic was stopped.

Milk

After water, milk is one of the worst offenders; and the most common source of the infection of milk is some person who has had typhoid fever and is fully recovered, but still gives off the bacillus in the discharges of his body. He may work about a dairy, or live near one. He may wash cans and bottles, or handle the milk. When the cause of a typhoid epidemic can not be found in the water, usually milk is the next thing that is investigated.

The city of Washington, D. C., in 1908 had an epidemic of typhoid fever, running about 665 cases. Many of these cases were traced to milk infection. The United States Public Health Service of that city investigated the milk supply, and found on a near-by farm that supplied milk to certain stations in the city, a woman who had had typhoid fever eighteen years previously, and was still a carrier. The discharges of her body were loaded with typhoid germs. When the use of milk from that farm was stopped, the spread of typhoid fever in the city ceased. This good woman had been entirely unaware that she was doing any harm to anyone, yet unwittingly she had been the source of a great scourge.

Ice Cream

Freezing does not destroy the typhoid bacilli. On this account, typhoid fever may be carried by ice

Ice may carry the typhoid bacillus and cause an epidemic.

cream, if the milk used therein is infected. This, however, is the same problem that has been discussed under "Milk"; so, if good milk or Pasteurized milk is used, there is no danger of typhoid fever from ice cream.

Ice

Ice may carry the typhoid bacillus and cause an epidemic. In Ogdensburg, New York, a small epidemic in an institution was demonstrated to have been brought about by infected ice. But the ice supply of all cities is now very carefully protected.

Flies

There are many dangerous animals on earth; but lions, tigers, wolves, and bears sink into insignificance compared with the common housefly. Where these other predatory animals have killed their thousands, the housefly has killed its hundreds of thousands. It is an enemy against which we can not be too strict. The fly is especially dangerous in camps and in rural communities where fecal matter is kept in open latrines and privy vaults. Here the flies have access to the material infected with the *bacillus typhosus,* and after becoming contaminated, may alight upon food that is to be consumed by human beings. It has been demonstrated that a fly may carry the germs as long as twenty-four days after resting upon infected material.

The only successful way to combat flies in such a menace as this, is to have all fecal matter completely protected from flies. In addition to this, all dwelling houses, and particularly dining rooms and

kitchens, should be securely screened against this terrible enemy, not only because of the food, but because the presence of the fly is dangerous to everyone concerned.

Contact

Aside from these sources of infection, it is possible to get typhoid fever by contact with a person ill of this disease, by handling the patient, the bedclothes, the night clothing, linen, catheters, thermometers, or, in fact, anything that has come in contact with the patient. These should be disinfected and cared for under the direction of a person who understands this sort of thing. Any case of typhoid fever should be thoroughly isolated, and in the hands of a competent nurse and physician, in order that the patient may be properly cared for; but it is more important that the rest of the community be protected from the infection, by intelligent care of the patient, and of those utensils around the sick room which might carry the infection.

Prevalence of Typhoid Fever

Records show that any city which supplies its people with clean water, and makes proper disposal of its sewage, wipes out typhoid fever. These two things are absolutely essential.

MacLaughlin, of the United States Health Service, gives the annual death rate of typhoid to one hundred thousand population, in 1909 and 1910, as follows:

RATE OF TEN LARGE EUROPEAN CITIES

Stockholm	3.2
Christiania	1.6
Edinburgh	.75
Vienna	3.3
Hamburg	3.7
Berlin	3.5
London	2.7
Paris	7.
Frankfort	1.2
Atwood	1.7

This gives an average annual mortality to this group, of 2.86 to one hundred thousand population. This group of European cities have made a long study of this problem, and have the best sewerage systems and water supplies possible for their cities. MacLaughlin makes comparison with ten American cities of similar size, that have not been able to reach the same state of excellence in water supply and sewage disposal. The list of American cities and their percentages are as follows:

RATE OF TEN AMERICAN CITIES

Chicago	13.2
Washington, D. C.	28.7
New Orleans	29.9
Minneapolis	39.8
St. Louis, Mo.	16.6
New York	11.8
Philadelphia	19.9
Boston	12.6
Kansas City, Mo.	41.8
Los Angeles	15.2

This is an average mortality of about twenty-three to one hundred thousand population, or eight times that for the European cities listed. This is a demonstration of what can be done along these lines. In 1917 and 1918, these same American cities made a much better report. After having this matter called to their attention, and thoroughly understanding it, they reduced the rate to 7.6. This is very gratifying, and a monument to the intelligence and industry of the people who have corrected the condition. These figures provide the best evidence of what can be done toward combating typhoid fever.

It is commonly said that typhoid kills more soldiers in times of war than do bullets. This is undoubtedly true. During our own Civil War, there were 75,000 cases of typhoid fever, with 27,000 deaths. In the Franco-Prussian War, there were 73,000 cases of typhoid fever, with 8,700 deaths. In the Turko-Russian War of 1877, the Russian army on the Danube had 25,000 cases of typhoid, with 7,800 deaths, while the loss in battle was slightly less than 5,000. The American army in the Spanish War, with 107,973 men engaged, had 20,738 cases of typhoid fever, with 1,580 deaths. The total loss of life in battle was only 243.

The following figures taken from the record of the United States army in the World War, show the advances that have been made in combating typhoid fever. The average strength of the army in the United States from September 1, 1917, to May 2, 1919, was 1,130,052; and the total number of deaths from typhoid fever in the army was only 51. In

the American expeditionary forces during the same time, with an average strength of 991,334, there were only 162 deaths from typhoid fever. Certainly this was a wonderful victory over that great marauder; and it is due entirely to the intelligent management of camps.

Vaccination

Typhoid vaccination is now required in all armies, and statistics of the recent World War prove its efficacy. During the first two years of that war, there were only 1,501 cases of typhoid in the British army, with several million men in the field. Of these cases, 993 occurred among unvaccinated soldiers, leaving only 508 cases among the vaccinated. These figures may be compared with the record of 57,684 cases in the English army in the Boer War, with a strength of only 380,605 troops.

The use of typhoid vaccination in the American army is also deserving of special mention. It became routine in 1911. During the fiscal year ending June 30, 1918, 297 cases of typhoid comprised the entire list for the American army. When this record is compared with that of the Spanish-American War, where, in one division of 10,759, there were 4,422 cases, it is certainly conclusive proof of the value of typhoid vaccine.

Symptoms

Typhoid fever is a serious disease; and let no one hope, from the slight consideration here given, to be able to care for a case without skilled help. However, a brief discussion of the symptoms will enable persons in outlying districts to detect the disease.

The period of incubation is about two weeks. During this time, there are prodromal symptoms, which are shown first in a sense of fatigue, headache, loss of appetite, and disturbed sleep. There is also backache and chilliness, and sometimes abdominal pain; and a little cough may appear, also temperature. These symptoms are followed by nosebleed, and possibly a little diarrhea, or constipation.

During the *first week* of the disease, the patient has severe headache, is feverish and thirsty, and becomes apathetic and very restless. The temperature rises, during this week, to 103° or 104°. It reaches its height generally before the end of the first week. The temperature is also somewhat lower in the morning than in the evening. This change of temperature occurs daily. The tongue remains moist, but has a heavy whitish fur on its surface, and the breath is very fetid. The cough may continue, but does not amount to very much. In most cases, the abdomen is distended, and a light pressure reveals tenderness and pain in the lower right side. There is usually constipation or diarrhea, the stools sometimes being described as resembling pea soup. During the first week, the mental processes become slowed. They are confused, the hearing is dulled, and the patient is not acute in his perceptions in any way.

In the *second week*, all the symptoms of the first week are aggravated. The temperature remains high, and holds a steady course, with the exception of the slight morning remission. The tongue tends to become dry and red. There is enlargement of the

spleen, which sometimes can be felt in the abdomen. During this week, there is likely to be delirium. Early in the week, a characteristic rash, known as rose spots, appears, especially over the abdomen and the chest. It comes in successive crops, going away and reappearing. These rose spots may be few in number—three or four—or may be very profuse and cover the body.

In the *third week,* the symptoms are the same as in the second week, but there is an increased gravity about the situation. Weakness and emaciation overtake the patient, and are prominent features. There seems to be a profound toxemia. The temperature continues high, and the pulse is rapid and feeble. The tongue is dry and brown, and becomes fissured. Other nervous symptoms, such as trembling of the limbs and twitching of the muscles, also set in, especially if the case is a grave one. Diarrhea may be a very severe and constant symptom during this week, and the abdomen may become considerably distended. It is during the third week that perforation and hemorrhage of the bowel are most dangerous.

In the *fourth week,* the ordinary case shows a gradual improvement. The fever drops until it is normal or even subnormal. The mouth and the tongue clean up, the appetite returns, and the patient begins to gain a little strength. This usually continues until full recovery. However, there may be a recrudescence of the fever several times during recovery, which is slow and tedious. Strict attention to dietetics during this period is an important matter.

In cases which prove fatal, the fourth week, instead of showing improvement, shows continued advancement of symptoms; and in spite of anything that can be done, the patient becomes unconscious, and sinks into stupor, from which he does not rally.

Irregular Cases

Among the problems in every epidemic are the cases which are not regular; that is, which have symptoms other than those generally recognized. These cases oftenest take the form of what is known as "walking typhoid." The patients do not feel ill enough to go to bed, but by sheer force of will power, keep at their work. This is very dangerous, as they have typhoid fever just as truly as any of the very sick patients. They are disseminators of the germs, and are a menace to themselves, and to all with whom they come in contact.

On careful observation, most cases of walking typhoid manifest all the symptoms that other cases have; but these symptoms are so mild that they escape detection. The patients, for the greater part, are persons of very strong will power, who are determined not to give up, but to keep around. Many of them go through a regular case of typhoid, without stopping their work. Most of them have a light fever, and a little pain and tenderness in the abdomen, and some enlargement of the spleen, and upon close examination, a few rose-colored spots upon the abdomen. They may have also a little diarrhea, or constipation. It is a thought to bear in mind, that these people are carriers and disseminators of germs, and spread the disease.

Relapses from typhoid fever are not uncommon. That is, after the temperature has reached normal, or nearly so, it may again shoot up to a high level, and many of the distressing symptoms reappear, such as diarrhea, hemorrhage, headache, nosebleed, etc.

Typhoid fever patients are very sick; and after being in bed so long, with such a high temperature, they are very weak. When they begin to recover, they are anxious to get along faster than is possible. This is one of the reasons for relapses. Overexertion must be scrupulously avoided, and the diet very carefully regulated, during recovery; for overdoing and errors in diet are often causes of relapse. It is best always to take plenty of time for complete recovery. This is one of the instances where the quotation applies, "The shortest way home is the longest way around."

Complications

The most frequent complications of typhoid fever are hemorrhage from the bowel, perforation of the bowel, and pneumonia. Little tinges of blood in the bowel movement are not rare in these cases; but when there is much hemorrhage, it is a serious matter. The patient falls into severe shock, the pulse becomes very rapid, and the diarrhea increases, sometimes until the discharge is almost clear blood. This condition requires constant attention on the part of physician and nurse. The symptoms of hemorrhage are, pallor, rapid pulse, great thirst, shock, and, in some instances, unconsciousness.

Perforation

Perforation is a result of ulceration of the bowel. The ulceration may become so deep as to go through all the coats of the bowel, and let all the contents out into the abdominal cavity. The symptoms of this complication are sudden intense pain in the abdomen, much more rapid pulse than usual, great distention, and increased temperature. The patient also has severe shock, and looks very much more ill.

Pneumonia

Pneumonia sometimes occurs as a complication of typhoid fever. There is a little cough all along in cases of typhoid; but when pneumonia is threatened, the temperature goes higher, the cough increases, and the patient begins to spit bloody sputum. Pneumonia is not so common a complication as perforation and hemorrhage; but indications of any increase of the cough, pain in the chest, or blood in the sputum, should receive attention at once from the physician and nurse in charge of the case.

Treatment of Typhoid Fever

Under this heading, we should discuss prevention of typhoid fever, as this is of the greatest importance. If all the bacilli could be destroyed as they leave the body, there would be no more typhoid fever. It is therefore essential that the patients know they are well before they go about their customary duties. Most boards of health require that cultures be made of the stools and the urine, and that these be found entirely free of the typhoid germs before the

patient is discharged. If this precaution could be strictly carried out, the disease might be better controlled than it is at the present time.

In New York, before a person can obtain employment as a handler of food, he has to get a certificate from the board of health, stating that he is free from typhoid fever and other like diseases. This is a great protection to people who are eating in hotels and restaurants.

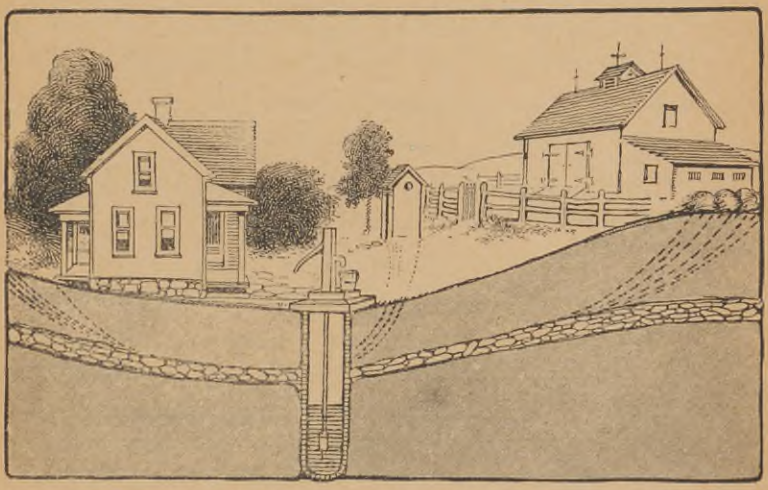
Disinfection of Stools, Urine, Hands, Linen, Clothing, etc.

The simplest means of disinfecting stools and urine is to add a five per cent solution of carbolic acid, break up the stools thoroughly, and permit them to stand for several hours. After this, they may be buried or put into the sewer. From a pint to a quart of this solution should be used for each discharge.

If no solution can be had at the time, the stools and the urine should be put into two quarts of boiling water, and allowed to stand one hour. After this, they are fairly well disinfected, and can be disposed of in the regular way.

Those in attendance upon the patient, as nurse and physician, and others who have to go into the room, should scrub their hands to the elbow, with strong soap and water, for ten or fifteen minutes after working over the patient. Following this, hands and arms should be rinsed thoroughly, and then go through ninety-five per cent alcohol. Or, after the scrub, creosol or chloride of lime may be

used, one teaspoonful to the pint of water. Carbolic acid solution also, one teaspoonful to the pint of water, may be used for the same purpose. Merely dipping the hands for a moment in a strong disinfectant will not effectually disinfect them. The preliminary scrubbing with a brush and strong soap



Pollution of water is often a result of carelessness in locating the well.

must not be neglected. This is often omitted by the busy people who are working about a patient; but it should be gone through vigorously, and the disinfecting solution used afterwards. Bedding, towels, underclothing, etc., that have to be disinfected, should be placed in a solution of chloride of lime, two ounces of powder to one gallon of water. Here they should be allowed to stand for some length of time. If they are boiled, one half hour is sufficient; but if

they are to be washed in the usual way, they should stand in the solution several hours before they are taken out.

Water and Food Supply

Whenever there is any doubt as to whether there are typhoid germs present in the water or food supply, all water that is to be used should be boiled, and every care should be taken with the food, to insure its freedom from possible infection, especially from flies. Not only should food be screened from flies, but typhoid patients should be carefully screened, so that flies can not carry the infection from the patient to the food.

Vaccination

Although vaccination has been discussed already, it should be mentioned here under "Treatment"; for all who come in contact with these cases should be vaccinated, even though they have previously had typhoid fever. This measure has not been in use long enough to enable the authorities to determine exactly how often it should be repeated; but the men in the United States army are now revaccinated yearly. Vaccination is of great value to those having the care of typhoid cases; and all should submit to it who are exposed to the disease. Persons who have been vaccinated, and have taken typhoid subsequently, have had it very lightly.

Hospitalization

It is no longer practical to care for typhoid fever cases in the home. The patients do not get along

as well; and the danger to the community is much greater.

Hospitals have every facility for the care of patients, and laboratories for the study of the stools and the blood; and trained attendants are always present, who know the symptoms of complications. A resident physician is at call, and the isolation of the patient is more thorough. So in every way, it is best that patients suffering of typhoid have hospital care.

The expense of going into a hospital is no more than that of employing nurses in the home; and success is so much greater at the hospital, that treating patients in the homes is not worthy of consideration. As soon as it is determined that a person has typhoid fever, he should be transferred to a hospital where there is a physician who understands his care; and the authorities should be notified at once, in order that the source of infection may be found and other people protected from it. This is not only necessary for the protection of the life of the patient, but it is a duty which every citizen owes to the community in which he lives.

XII. Home Treatments

THERE are many things that can be done at home in the treatment of disease, that are very helpful. It is unwise to attempt the administration of medicines, without the advice of a physician; but members of the family can do much that will greatly assist nature in fortifying the recuperating powers, and healing congestions and inflammations that may have started in the body. A few simple treatments are described in this chapter, in sufficient detail to enable any intelligent person to carry them out without danger to the patient.

The Foot Bath

Foot baths should be given in as deep a bucket as can be obtained, in order that the water may come high up on the calves of the legs. The bucket should be large enough to permit both feet to rest comfortably in the bottom of it.

The bath should be prepared of plain water, without any medicinal ingredients placed in it, and should be of a moderate heat, so that the feet may be put into it without discomfort, no matter how

The hot foot bath assists by equalizing the circulation and drawing the blood to the extremities.

cold they are. After the feet have been placed in the bath, add hot water until the temperature has been raised several degrees and the patient's feet and ankles are red as a result. Before additional water is put into the bath, the feet should be lifted out, to avoid any possibility of burning the skin.

The bath should last about fifteen minutes. To continue it longer than this is not beneficial, because it leaves the blood vessels of the feet heavily dilated, and unable to regain their normal tone as rapidly as they should. To finish the bath, lift the feet out of the hot water and dash thoroughly with cold tap water. They should then be rubbed vigorously with a Turkish towel, and dried as rapidly as possible, and the patient returned to bed.

Such a procedure as this, may well be repeated about every three hours, or every two hours if it is desired to push treatment. Cold should be applied to the head during this treatment, by means of either an ice bag or a towel wrung out of ice water. This should be renewed frequently during the treatment.

Fomentations

Fomentations are a means of applying heat to any limited surface of the body, such as the chest, the throat, the abdomen, or the back. They are a valuable measure for combating inflammations and congestions, as well as excellent help in providing relief from pain. They are also of great assistance to the forces of nature which are always at work in the body to combat disease processes.

The description given below will apply to fomentations for any part of the body, since the procedure

is identical in all instances. The only changes necessary for other parts of the body relate to the size and shape of the materials used. For instance, to give fomentations to the throat, one could not use cloths as large as for the abdomen.

The following description of fomentations, cold compresses, and heating compresses, is taken from "The Home Physician and Guide to Health," a book published by the Pacific Press Publishing Association, of Mountain View, California. The author knows of no better description of these simple treatments than is found in that book. The following is taken verbatim from its pages:

"A fomentation is a local application of moist heat by means of cloths wrung from hot water.

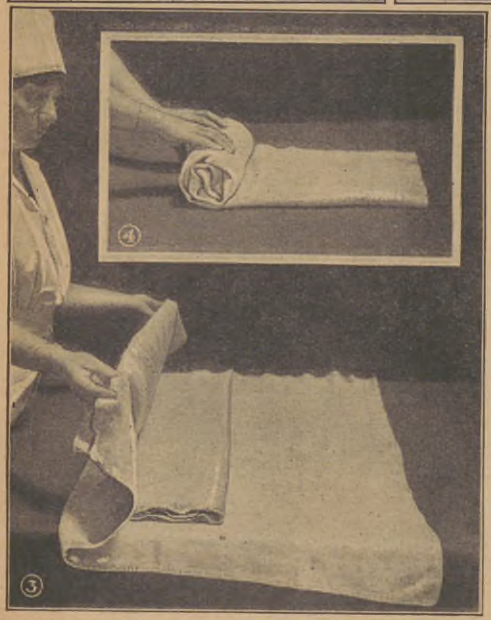
"*Requisites:* A deep dish pan or large kettle of water should be kept actively boiling over the fire. A large cover will be helpful in holding the heat. A set of six fomentation cloths, a Turkish towel, a hand towel, a sheet, and a bowl of cold or ice water are needed.

"*The Patient and the Bed:* See that all clothing is removed, or at least bare a larger area than the part to be treated, and protect the clothing with large Turkish towels. See that the feet are warm, and kept so during treatment. If they are cold, a hot foot bath should be given, or hot water bottles applied. Protect the bedding by a blanket or sheet folded lengthwise and placed under the patient. After applying a fomentation, cover it with a dry cloth or newspaper, in order to protect the bedding over the patient.

"*The Fomentation:* Prepare a set of six fomentation cloths, thirty to thirty-six inches square. Four of these may be cut from a single blanket. The material should be half wool. Three cloths are necessary for one fomentation where they are to be very hot—one for the dry covering, and two to be wrung from boiling water for the inside wet part. Where less heat is required, one inside cloth may be sufficient. Two such fomentations are necessary, if the best results are to be obtained. Spread out on the table the cloth for the dry covering. Fold together in three thicknesses so as to make a long, narrow piece, the cloth or cloths to be used inside. Twist this as in wringing clothes, and immerse the entire cloth, except the two ends, in the boiling water. The ends may be held out of the water by applying the cover tightly over the kettle. Leave until thoroughly soaked with the boiling water, then wring quickly by firm twisting until water no longer runs from it. If held up by one end, the cloth will quickly untwist to its original one-third width. Place this across the middle of the dry fomentation cloth already spread out on the table. Fold the dry ends over the wet center, and then fold the dry outer cloth about the wet one. In the folding, the fomentation may be made the right size and shape for the part to be treated.

"If the surface of the fomentation to be applied to the patient is again doubled together or rolled, it can be carried with less loss of heat. The fomentation should be large enough to cover a much larger area than the part affected.

The APPLICATION



1. Spread out on the table the cloth for the dry covering. Fold together in three thicknesses so as to make a long, narrow piece, the cloth or cloths to be used inside. Twist this as in wringing clothes, and immerse the entire cloth, except the two ends, in the boiling water. The ends may be held out of the water by applying the cover tightly over the kettle. Leave until thoroughly soaked with the boiling water.

2. To wring, grasp the dry ends, twist the cloth several times, then stretch out. This wrings out the boiling water without burning the hands.

3. Place the hot cloth on a dry one that is large enough to fold over well.

4. Roll it up to retain the heat while carrying it to the patient.

of FOMENTATIONS

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5. After placing a towel over the area to be treated, apply the fomentation, tucking it in well; then, to protect the bedding from dampness, adjust another towel over the fomentation cloth. Keep an iced cloth on the head, changing whenever it becomes warm.

6. With a dry towel wrapped about the hand, reach under the fomentation and towel already on the patient, and wipe off all moisture. The patient can endure a hotter fomentation if the moisture from the preceding one is wiped off.

7. To change the fomentation: Have another rolled and ready to apply. Then put the hot fomentation, ready to unroll, in place as the old one is taken off. When the fomentations are finished, wipe off the area with a cold wet towel; then dry. Three fomentations are called a set. More may be given if necessary to relieve pain.

"*Procedure:* The fomentation should lie closely in contact with the skin, and be renewed in five or eight minutes, or in case of pain, as soon as it becomes comfortable. If unbearably hot, rub with the hand the part under the fomentation, or remove the moisture by firm rubbing once or twice with a Turkish towel wrapped about the hand. The fomentations may be applied over a towel in order to temper the heat. Always be careful to protect from chilling the area being treated, by keeping it covered with the fomentation cloth or a towel.

"To renew the fomentation, prepare another similar one, and apply immediately after removing the moisture occasioned by the first. Never apply another fomentation until this is done, as the water on the skin makes it more difficult to endure the heat of the newly prepared fomentation. The second fomentation should be ready to apply before the first is removed. The removal of the inside cloth from the outer for purposes of renewal does not give the best results, although careful attention to details may still make the treatment very effective.

"Unless otherwise indicated, three successive applications are made. In all cases, however, they should be continued until the desired effect is obtained. After the last one, the part should be immediately cooled by a wet hand rub, a cold compress, or a rub with a cold wet towel. Dry thoroughly, and cover at once to prevent chilling. In some cases of pain, the part should be dried without the cold applications. All changes should be made quickly, and the part treated should never be left uncovered.

"*Precautions:* In cases of unconsciousness, paralyzed sensation, diabetes, or dropsy, great care must be taken to avoid burning. Each application should be tested by the back of the hand or by the face before being applied to the patient. In fomentations to the face or other sensitive part, gauze should be placed next to the skin.

"In case of general perspiration, a general cold friction, a wet hand rub, a wet towel rub, or an alcohol rub should be given.

"Sensitive surfaces, especially bony prominences, such as the hip bones, the edge of the ribs, the collar bone, or the shoulder blade, may need to be protected by extra coverings of flannel or Turkish towel.

"When the patient is liable to congestion, and always in case of fever, apply cold compresses to the head, and also to the neck if needed. The same should be done where two or more different applications of heat are made at the same time, or general perspiration is induced. In heart disease, usually in fever, and with rapid pulse from any cause, an ice bag should be placed over the heart.

"In order to relieve pain, the fomentation must be very hot, as hot as can be borne, and renewed as soon as it becomes comfortable. In some cases of pain, the cold application at the close should be omitted, the part being dried and immediately covered with flannel or other dry covering.

"*Effects:* A test of the efficacy of such a treatment is the redness of the skin after removal of the fomentation. The fomentation is used to relieve pain, remove congestion, or as a preparation for cold

treatment. Applied to the throat and the upper chest, it helps in relieving sore throat, tonsillitis, cough, bronchitis, and lung congestions. When applied to the throat only, it should be folded so as to be about eight or ten inches wide, and as long as the full length of the cloth. To protect the lower part of the face, a towel may be placed across the neck, under the fomentation, which should be tucked close

A patient in position for fomentations to the chest and side in pleurisy.

up below the ears. For the chest only, the fomentation should be folded nearly square, and as large as possible. For pleurisy, it should be applied to the chest under the arm of the affected side, from breastbone to spine; for the kidneys and for lumbago, across the small of the back. For the spine, it should be long and narrow—about six inches wide. Fomentations to the spine help to promote sleep, and for this purpose should be only moderately hot. For a joint, as the knee, the cloth may be folded as for the spine; and being drawn under the knee, the two

ends are wrapped about the front of the knee, one above the other.

"Where a patient must apply his own fomentations, it may be best to use a hot water bottle placed over a wet compress, first covered with one piece of flannel so as to retain the accumulated heat. This is not as efficient as a properly applied fomentation, but trying to be both patient and nurse is never wholly satisfactory.

"For such parts as the eye, a wound, or an infected part, hot compresses of cotton cloth, gauze, or cheesecloth are better than wool. Because they will usually be smaller, and because they are of cotton, the heat is not retained as long as with wool, and so they must be changed oftener."

"Cold Compresses

"A cold compress is a local application of cold by means of a cloth wrung from cold water. Hand towels or ordinary cotton cloths may be used. These should be folded to the desired size, and wrung from cold water or ice water. The wringing should be just sufficient to prevent dripping. They will be colder if taken immediately from a block of ice. As a continuous cold application, the compress must be very frequently renewed, always before it is warmed to any great extent. The thicker the compress, the less frequently will it require renewal. A set of two compresses should be used, and renewed at intervals of from one to five minutes, depending on the thickness of the compress and the result to be obtained. Cold compresses may be applied to the head, the

neck, over the heart or the lungs, to the abdomen, the spine, *et cetera.* When applied to the head, they should be pressed down firmly on the surface treated, especially over the forehead and the temporal arteries. The pillow should be protected by rubber cloth covered by a towel. When compresses are applied to the abdomen in typhoid fever, the bedding and the patient's garments should be protected by Turkish towels. Unless the compress is very thick, and always when it is left longer than three to five minutes, the nature of the application changes, and it becomes a *heating compress.*"

"Heating Compresses

"A heating compress is a cold compress so covered that warming up soon occurs. The effect is therefore that of a mild application of moist heat.

The heating chest pack. Left: the wet compress. Right: the dry covering.

"A heating pack or compress consists of an application of heat to the body by means of three or four thicknesses of gauze or one of linen or cotton cloth wrung from cold water, and so perfectly covered with dry flannel, or mackintosh and flannel, as to prevent the circulation of air and cause an accumulation of body heat. In case warming does not occur promptly, it should be aided by hot water bottles. It is usually left in place for several hours, between other treatments, or overnight. If left on overnight, it should be dry by morning, unless an impervious covering, such as mackintosh or oiled silk, is used. On removal of the compress, the part should be rubbed with cold water, and dried with a towel."

Hot Boric Compress

A saturate solution of boric acid is needed for the compress. To make this, water is poured over boric acid crystals and left standing until all the boric acid has been dissolved that the water will put into solution. The clear water from the top is then poured off and used for the hot compresses.

About one quart of this solution should be placed in a large pan and brought to the boiling point. The compress should be made of a small towel or a pack of gauze or cheesecloth of corresponding size. This is wrung out of the hot boric solution by the ends, in the same manner as is explained under the heading of "Fomentations." This hot pack is then placed over the eyes or whatever part of the body it is desired to treat with boric compresses. As this compress is much smaller than the fomentation cloth,

and loses its heat more rapidly, it has to be changed much oftener. The application should last about thirty minutes. Before it is discontinued, the skin should be red as a result of the heat.

Antiphlogistine to the Chest

In the case of very small infants, where fomentations and other hot treatments are not practical or are very hard to give, antiphlogistine properly applied is very beneficial in bronchitis, cold on the chest, cough, pneumonia, etc.

The application is made as follows: Pieces of cloth are cut out to fit the chest, front and back, somewhat like an underwaist. These are spread out on a flat surface, and the warmed antiphlogistine is applied to them much as butter is spread on bread, and should be from a quarter to a half inch thick. (The antiphlogistine is warmed by setting the can in hot water.) The cloths with the antiphlogistine on them are then applied to the chest, both front and back. A shirt or some other garment is put on over these and securely fastened. Additional wrappings may be placed wherever it is necessary to have the antiphlogistine thoroughly covered. These may be of flannel or cotton flannel. This treatment is given at night; and in the morning, after the cloths are removed, the child should have a warm bath, then be dried thoroughly and rubbed briskly. A woolen shirt should be worn during the day, and the application repeated at night as many times as necessary.

Flies are the greatest carriers of disease that we have to contend with. Magnified as he is in this picture, does not this creature appear guilty of the charge?

XIII. Hygiene

IN epidemics, as in most cases of disease, those who are uncleanly, or who live in surroundings that are not sanitary, are most affected. Unsanitary and unhygienic conditions are *not* identical with poverty. Any of us may have unhygienic surroundings if we do not give intelligent attention to our living conditions.

Ventilation

Poor ventilation is a menace to anyone. This is true of living rooms, but is especially true of sleeping rooms. Rebreathing of the air in small rooms soon brings about a condition that is injurious to the health. Fresh air is in abundance everywhere; and to be deprived of it, is a great handicap.

Bed coverings should be sufficient to maintain the body heat and keep the sleeper comfortable when all windows are thrown wide open, so that the freest possible circulation of air may be had. Failure to have plenty of fresh air while sleeping may be a direct cause of tuberculosis, poor circulation of the blood, or cold hands and feet. It may also be an indirect cause of indigestion, general lassitude, and anæmic conditions of the blood.

Personal Cleanliness

Cleanliness in everything we do is of prime importance. Bathing of the body should be practiced at frequent intervals. During the hot months, a bath should be taken daily. During the colder months, this is still beneficial, but not quite so neces-

sary. Bathing promotes the circulation in the skin, improves the heart's action, and is an aid to every activity of the body. Those who neglect to bathe often enough are much more subject to disease than they otherwise would be.

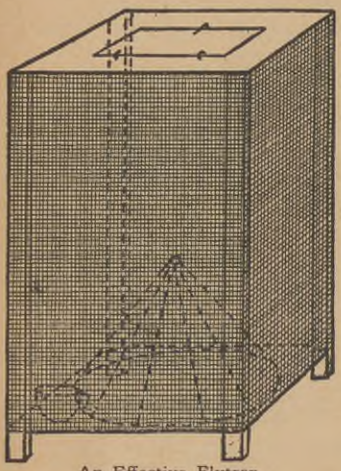
Cleanliness in the home is also of great importance. Where dirt and dust collect, the air is constantly contaminated, and its impurities are breathed into the lungs, and are a menace to those who live in such surroundings. Beds and bed linen that are not kept clean, and also unclean clothing, harbor disease germs, and are never tolerated by those who intelligently desire to keep themselves in the best of health.

Cleanliness of Food

Cleanliness with regard to the handling of food can not be emphasized too strongly. Persons who have communicable diseases, especially tuberculosis, should use separate dishes, which should be boiled each time they are used. This prevents the danger to others which the use of such personal articles as spoons and dishes always causes.

The food should not only be kept clean, but should be kept in coolers or refrigerators, to prevent decay, fermentation, and other deteriorating processes. The eating of food not properly cared for produces great irritation to the digestive organs. It is within the experience of almost every person to have eaten some small quantity of partially spoiled food, and as a result, suffered of a severe diarrhea for a day or more. Such carelessness regarding food should never exist among intelligent people.

Another important point in relation to foods is that they should always be protected from flies and other insects. Flies are the greatest carriers of disease that we have to contend with. They light on all kinds of refuse and germ-laden materials. Millions of bacteria may be recovered from the feet of a fly; and if flies are allowed to light on food, the resultant contamination may be a very serious matter. The exclusion of flies from our dwellings is of more consequence than the rugs on the floor or the paint on the house. Screens should always be provided; and if economy has to be practiced, let it be in some other line than this. Keeping flies from contaminating our food supply is essential from the standpoint of protecting the food from spoiling as a result of the germs left upon it by the flies; but it is more essential from the standpoint of definite disease. The fact is now well established, that both tuberculosis and typhoid fever are transmitted by flies. Not only these diseases, but many others, are carried in this manner.



An Effective Flytrap

Expectoration

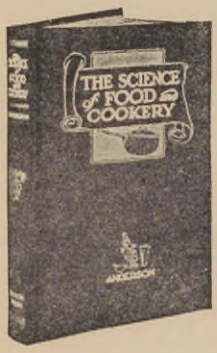
In days gone by, careless expectorating was a menace to the health of many; but thanks to the

good work of the various boards of health, and of others who are interested in the public welfare, there are now very few people who do not understand that this filthy habit should not exist. Spitting upon the sidewalks, and upon the platforms of street cars and carriages, is prohibited by law, as indeed it should be. There is, however, no law to prevent a man from being careless in this respect in his own home. It hardly seems necessary to discuss this subject, since so much publicity has been given it that the practice is well-nigh wiped out. Still, it is yet possible to see ignorant loafers carelessly expectorate in such a manner as to endanger themselves and all around them.

Care of the Teeth

As a matter of personal hygiene, the care of the teeth should receive constant attention. A good dentifrice, recommended by a reliable dentist, should be used for brushing the teeth after every meal as well as upon arising in the morning. This prevents decay of the enamel, and helps to prevent pyorrhea.

Before handling food in its preparation for the family, and also before sitting down to the table to eat, one should always wash the hands thoroughly, to guard against contamination from germs and dirt that are always likely to be on the hands.



The SCIENCE *of* FOOD *and* COOKERY

by HANS S. ANDERSON

Dietitian and Food Expert

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