POLICE HEALTH MANUAL

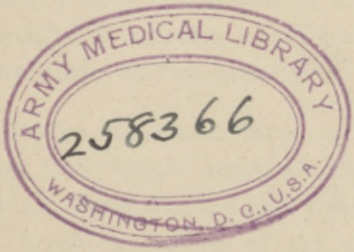
POLICE DEPARTMENT

CITY OF NEW YORK

HYGIENE, PREVENTION OF DISEASE AND FIRST AID

BY THE

NEW YORK POLICE SURGEONS



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INTRODUCTION

EDUCATION in matters of Hygiene and Disease Prevention offers rewards exceeding those to be won by similar activity in almost any other field of thought.

Yet, if we are to judge from every-day experience, the average person is rather poorly informed upon these important subjects.

This is greatly to be regretted, especially in view of the facts that increasing concentration of population in large centers and the rising complexity and speed of existence have enormously increased the hazards of life.

It is certain, moreover, that a widespread application of easily practicable methods of disease prevention, based upon the priceless discoveries of medical science, will obviate much human misery and add many years to the present average span.

The Surgeons of the Department, in their desire to place before their fellow members the best available information, have drafted the following pages containing a brief exposition of the principles of Hygiene and information concerning the causes and methods of prevention of the common forms of disease.

A policeman is frequently called upon to apply life-saving measures at the scene of an accident and

there has been added, therefore, a short treatise on First Aid in Emergencies. It is hoped that the efforts to achieve compactness have not caused the text to be anywhere too obscure, and that the few unavoidable technical terms used may require only occasional recourse to a dictionary.

In appreciation of innumerable acts of kindness to stricken members of the Police Department this small volume is respectfully dedicated to Police Commissioner Richard E. Enright.

NEW YORK CITY, DECEMBER, 1924.

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HYGIENE, PREVENTION OF DISEASE AND FIRST AID

PERSONAL HYGIENE AND SANITATION

Throughout the life of an individual there is a constant change taking place in all parts of the body. The cells, which are the microscopic forms of the material of which the different organs are made, increase in size, divide, multiply, cease their existence, and are eliminated from the body. Although the cells which make the different parts differ in the material of which they are made, they are all subject to the same laws of regeneration, reproduction, and decay. Upon these laws depend the growth of the body, the efficiency of its functions, its deterioration and decay. To attain proper growth, to prevent premature degeneration, to sustain the body in all its parts at its highest power are the purposes of all rules of health and right living. Too easily are habits of carelessness, thoughtlessness, and neglect acquired which are serious enough to make good health impossible and keep lowered the resisting powers to *disease*. During the formative period of early life is this especially apparent and such defects in mental or bodily development are corrected later only by great effort.

To a police officer there is little need to mention the value of *a sound mind in a sound body*. The special experience of his daily life, his recollections of the physical examinations he has had to pass, the knowledge of the strenuous physical training of his probation period, and the physical requirements necessary for promotion to higher ranks have convinced him early of this need.

The sound mind and body can not be sustained, can not functionate efficiently unless properly nourished. Upon the food which is *absorbed* into the blood, not simply *taken into* the body, does each individual cell thrive.

Foods are usually classified as:

Proteids, or meaty group, including meats, fish and eggs, etc.;

Starches, (Carbohybrates) or vegetable group, of which all the vegetables, the cereals, fruits, and bread are prominent members;

Fats, including butter, oil, cream, as well as fat of meat, and water and salt.

This classification of food-stuffs is made here because it represents the elements of the human system necessary for replacement. Hardly any food is entirely in one group, but is made of elements of two or more groups. No one group is sufficient. All are needed, though not in equal proportions. The amount required varies with the size of the individual and his physical work.

Foods may be taken into the body cooked or uncooked. Cooking may be regarded as a first step in the digestive process, and though it is usually a very important step it has some disadvantages. Too frequently it removes from the food certain active ingredients which are of utmost value. These substances (vitamins) exist in abundance in the fruits, vegetable, milk, etc., which may be taken raw and which impose very little burden on digestive organs. In the *mouth* the food must be thoroughly broken into fine particles between which the saliva finds its way, exercising its special chemical action, and through its moisture making easier the work of the stomach.

In the stomach the food is kept in motion, "churned" for hours, mixing all the while with the juices from the stomach walls. The length of time that food remains in the stomach is from one to six hours, depending on the food taken. Milk remains little more than one hour, vegetables two to three hours, eggs two to three hours, meats four to five hours, and pork five to six hours.

Taking another supply of undigested food into a stomach containing incompletely digested food, prevents the digestion of either portion and is a cause of serious digestive diseases. As the food is passed into the intestines, the bile from the liver and gall bladder, (nearly three pints daily) and secretions from other glands is also poured in. Digestion stops at once and absorption begins. As the intestinal contents worm their way along the twenty-five feet of its length, blood and lymph vessels of the intestinal wall take up the greater part of these contents and convey it to the general system. The part of the intestinal contents not so absorbed is passed to the rectum to await discharge from the body.

The simplest and most easily available standard of how much food the body needs and how much is actually going to the general system is the body weight.

The following is a table of the height, weight, and chest requirements for male candidates for the position of patrolman:

Height	Weight	Expanded Chest	Mobility Chest
5 ft. 7½ in.	140 pounds	36½ in.	3 in.
5 ft. 8 in.	140 pounds	37 in.	3 in.
5 ft. 9 in.	145 pounds	37½ in.	3½ in.
5 ft. 10 in.	150 pounds	38 in.	3½ in.
5 ft. 11 in.	155 pounds	39 in.	3½ in.
6 ft. 0 in.	160 pounds	39 in.	4 in.
6 ft. 1 in.	165 pounds	39½ in.	4 in.
6 ft. 2 in.	170 pounds	39½ in.	4 in.
6 ft. 3 in.	175 pounds	39½ in.	4 in.
6 ft. 4 in.	180 pounds	40 in.	4½ in.
6 ft. 5 in.	185 pounds	40 in.	4½ in.

(NOTE—Candidates whose height falls between any of the above figures must meet the requirements of the lower figure.)

Far more people eat too much than eat too little. Obesity (fatness), in the absence of actual disease, is a disproportion between the amount of food taken and the physical exercise performed. In plain language it is an expression of laziness.

It is hardly necessary to say that food should be pure, uncontaminated by foreign matter and free from the germs of disease and decay, and that it should be taken into the stomach at regular intervals, as ones duties permit. Too long a space between meals as well as too short a time are harmful. A full meal before going on tour, a very small lunch at the middle, another full meal two hours after that duty should be sufficient. When fatigued or about to retire for sleep a very full meal should not be taken. Foods which have been known to cause indigestion to the individual—highly spiced, greasy, or over sweetened, pastry, and creams or insufficiently cooked foods—easily disturb digestion. In summer time less food should be taken and that of the more easily digested kind. Uncooked, fully ripened fruits, uncooked vegetables, and salads are valuable—but any food in large quantities and frequently repeated are bad.

Water serves in the body fluids as the medium of transportation for nutritive materials to the tissues and as a means of carrying off waste products. It is essential to maintain the blood circulation, the respiration, and, in fact, the proper functioning of all tissue cells. The daily allowance of water should be from eight to twelve glassfuls, some of which might well be taken in the form of buttermilk or fermented milk. Large quantites of fluid should not be taken with meals—nor within two hours of mealtime. Teas, coffees, sweetened drinks, especially in summertime—are only harmless in very small quantities.

Bowel Regulation is closely associated with the question of food. Regular habits of evacuation are ordinarily acquired by slight effort. Most cases of constipation result from delay in responding to the natural desire for evacuation due to the descent of the intestinal waste into the rectum ; neglect in this regard throws into disorder the whole natural mechanism of evacuation.

The bowels should move satisfactorily once or twice a day. Favorable periods are shortly after arising from bed and after each meal—usually a habit is established for one or other of these periods. Fruits, cereals, and vegetables assist proper bowel action ; sweet milk and cheese are apt to cause constipation.

Obstinate cases of constipation require the use of cathartics, but they should not be used continuously except by direction of a physician.

Clothing

On account of the great variations in temperature and humidity in the climate of New York City clothing used during the course of the year is subject to many adjustments.

Underwear. In summer months the underwear should be light-weight durable cotton fabrics ; in winter months medium-weight wool suits. Underwear should be frequently changed.

Socks. Heavy woolen socks should be worn in winter. Proper care of the feet demands that the socks should be changed daily ; twice a day if feet are inclined to sweat excessively and become foul.

Shoes. The shoes should be modeled to conform to the last approved by the United States Army, the Munson last, or similar shoe. The shoes worn in the winter must be roomy enough to accommodate the feet clothed in heavy socks.

The outer garments, uniform and overcoat, are varied for the seasons according to the Department Regulations.

It is important, for sanitary reasons as well as for neatness, that the clothes be brushed clean regularly and stains carefully removed.

Dwellings

Sleeping rooms. Windows should be opened widely to permit a copious supply of fresh air to the sleeping occupants.

Living rooms. During the winter months overheating and underventilating are common faults. The temperature of the living rooms should not be allowed to rise above 72 degrees Fahrenheit. Habitually overheated living quarters will create a dangerous susceptibility to "colds."

Exercise

The policeman's occupation makes rather peculiar demands upon his physical equipment. For days at a time he is only moderately active, yet he must be prepared at all times for exertion of an extreme type. A fair amount of fitness can only be maintained with the help of exercise in addition to that incidental to a tour of patrol.

Daily setting-up and deep-breathing exercises are very valuable. When time permits regular sports, such as running, hand-ball, weight-throwing, boxing, baseball, soccer, and swimming, will be found immensely valuable for the man who desires to keep fit.

Sleep. An average of from 7 to 9 hours sleep per day is required to keep the human machine at the highest point of efficiency. Bed-clothing should only be sufficient to permit comfortable warmth and the bedroom should always be properly ventilated.

A heavy meal should not be taken within two hours of retiring.

Bathing

Certain parts of the body require extra care in the way of bathing because of the activity of the sweat glands in such areas. The armpits, groins, crotch, and feet should be well cleaned with warm water and soap daily, the feet often require bathing more than once a day.

The hands should be washed frequently, always before meals, because of the ease with which they may be contaminated and transfer infectious matter to eyes, nose, and mouth.

The general bath for cleansing purposes is most satisfactorily accomplished by the use of the warm shower, shampooing the body with soap lather; after the soap has been rinsed off with warm water, the bath should be terminated by a not-too-brief cold shower.

The cold shower counteracts the relaxing effect of the hot bath and renders the bather less susceptible to chilling and acute catarrhs.

The tonic bath, cold water applied by shower under good pressure for three to five minutes, followed by vigorous rubbing with a coarse towel, is invaluable as a preventive for "colds," and is an excellent daily habit.

If the cold bath is not followed by a comfortable reaction, a feeling of general warmth, it should not be persistently used without medical advice.

Excellent shower baths are now regular installation in flats and station-houses and failure to use them is inexcusable.

Special bathing measures may be applied for the purpose of cleansing the eyes and nose, which are likely to be fouled with street dust, especially during tours on windy days. Borax solution (one teaspoonful of chemically pure Sodium Biborate to one cupful of warm sterile water) may be used in an eye-cup or sprayed into the nose by means of an atomizer.

Sanitary Rules

Devised for the use of the individual for the purpose of preventing transmission of infectious disease:

Spitting is prohibited except into vessels provided for that purpose or into toilet bowls. If spitting on the

street is unavoidable, use the sewer openings, or the gutter close to such openings. Tuberculosis, influenza, and probably infectious sore throat may be transmitted by sputum.

Do not cough or sneeze without covering the nose and mouth with a handkerchief.

Make a rigid practice of washing the hands carefully before meals.

Do not use towels, wash cloths, sponges, napkins, etc., that are used by others.

Avoid the use of drinking cups or glasses that are used in common.

Evacuation of bowels and voiding of urine must be confined to accommodations provided for such purposes.

When on vacation in the rural sections, be careful not to drink indiscriminately from springs, wells, or streams —these waters are often badly contaminated, typhoid fever or dysentery may result and cause many weeks of illness.

COMMON DISEASES AND METHODS OF PREVENTION

In the following discussion we have endeavored to throw some light upon the nature and causes of certain physical and mental disorders that are common in the region of New York City, or have proved to be prolific sources of temporary and permanent disability in the Police Department of that city.

The arrangement used groups the various affections as they are grouped for special treatment.

It must be kept in mind that the information presented can bear only upon the most important features of the diseases discussed, and that additional advice will be required in almost every case of illness.

Diseases of the Skin

Skin disorders may be due to a variety of external and internal causes. Numerous types of local infection, chemical and mechanical irritation, the presence of small parasitic insects, unsuitable foodstuffs, poisoning by internal use of certain chemicals, poisons of a number

of infectious diseases, are all common causes of skin eruptions.

Proper bathing habits will prevent many of the cases due to local infection; pimples, boils, carbuncles and some forms of eczema. (See the preceding section on Personal Hygiene.)

Pimples (Acne) usually affect the face, shoulders, neck and back. The ailment itself is too well known to require description. Mild cases are improved greatly by special attention to cleansing the skin of the affected area, by the use of salt laxatives and the avoidance of excessive eating. Severe grades will require appropriate treatment by a physician.

Boils (Furuncles; Furunculosis) is the name of an infection of the skin by a persistent germ that forms pus.

There is a decided tendency to the development of boils in some individuals, a constitutional state which renders them liable to infections due to pus throughout the whole system, and which may require special treatment with vaccines.

Commonly, boils are associated with unsatisfactory conditions in the bowels, intestinal fermentation and putrefaction and constipation. Chronically infected teeth have also been known to be, in an indirect way, the cause of a series of boils.

Recurring attacks of boils should lead to an examination of the urine, for it is frequently found that the victim is suffering from diabetes.

To prevent the formation of boils in those who have shown a tendency to this form of skin infection, careful bathing habits will be found helpful, also attention to conditions in the bowels and sensible eating habits, examination of the teeth, tonsils, and other sources of possible chronic infection, elimination if found, and, where desirable, the use of vaccine.

When an infection has occured and the boil is commencing to form, frequent application of ice-water compresses will often check the inflammation and cause the boil to subside without pus formation. The ice-water treatment should be supplemented by a brisk purge, solution of magnesium citrate or other form of "salts."

If it is obvious at the end of twenty-four hours that the boil is progressing, cold applications should be stopped and moist heat used instead. The application of moist heat will encourage pus formation, "ripening," and the boil will be quickly prepared for lancing.

The most acceptable plan for applying moist heat to a boil is by means of compresses of folded gauze wrung out in a very hot dilute solution of mercuric bichloride, a dilution of one part to 20,000, the compress being kept hot by a covering of oiled muslin or rubber cloth, with a hot-water bottle overlying the whole dressing.

When a boil has softened and been lanced, or if it has opened itself, great care is required to prevent the pus from infecting the adjacent skin, directly, or indirectly through soiled clothing, and initiating a new series of boils. The pus is known to contain the infecting germ in large numbers, and it not infrequently happens that a discharging boil, on the neck for instance, smears the collar of the tunic or overcoat and the pus reinfects the neighboring skin with painful results.

Carbuncle. This is an infection of the skin similar to that causing boils, but is more extensive and involves more or less of the tissues under the skin. It is a serious infection and is occasionally fatal.

Self-treatment for carbuncle is extremely dangerous; the condition requires special surgical attention, and the sufferer should place himself promptly under the care of a physician.

Eczema. Eczema, a superficial inflammation of the skin, may be either acute or chronic. It causes considerable discomfort by reason of the severe itching which is characteristic of the affection. When extensive and prolonged, it is possible for the sufferer to experience serious exhaustion by reason of the constant irritation and loss of sleep.

Eczema may be due to some form of local irritation, but probably is just as frequently due to poisonous substances derived from the food and carried to the skin by the blood.

Examples of eczema due to local irritation are the varieties caused by the itch-mite (scabies), eczema of the feet due to decomposing sweat, and eczema of the anus.

Examples of eczema due to substances derived from foodstuffs are the forms seen after the eating of eggs, cheese, milk, and meats. Victims of eczema of this class are individuals who have developed a constitutional state which gives rise to a reaction in the skin whenever one particular foodstuff is eaten, in one person eggs, in another, cheese, etc.

The prevention of eczema in those who exhibit a tendency to this affection requires careful investigation to learn if any particular article of diet is the offending agent, and the exclusion of such a substance from the diet if it is detected.

Certain local forms of eczema are common and exceedingly troublesome—eczema of the feet and eczema of the anus.

Eczema of the Feet. Involves the toes chiefly, particularly the webbing between the toes. It is a common affection in people who suffer from excessive sweating of the feet. The soggy sweat-soaked skin swarms with bacteria whose activity causes putrefactive changes and the formation of irritants that cause the eczema. The inflamed skin is easily removed, exposing the sensitive under layer, cracking and itching result, and infection may lead to deep inflammation of the foot.

If the feet perspire excessively, and particularly if there is a foul odor present, they should be bathed twice daily, socks changed, and a suitable dusting powder used to prevent the smell. In many cases it is necessary to provide also for a change of shoes during the day.

In addition to the use of dusting powders, measures should be taken to keep the toes apart, to prevent softening of the skin and removal of the under layers by inserting a thin layer of absorbent cotton between the toes after the foot bath. Other measures should be undertaken only by direction of the physician.

Anal Eczema. A frequent accompaniment of piles (Hemorrhoids.) The itching regularly occurs when one is relaxing for sleep and is frequently intolerable; the inevitable scratching results in the scraping and cracking of the skin and aggravates the eczema.

Supervision of the diet, daily use of "salts" for a week or so, and scrupulous care to cleanse the parts

about the anus with soap and warm water after each bowel movement, will often give complete relief. It is necessary in many cases to apply local treatments of various kinds before the condition is cured, but they can be applied by a physician only.

Eczema of the crotch and of the armpits are fairly common in people who perspire freely. They usually require only a little extra attention in the way of local bathing, and protection from friction by the clothing.

The "Itch" (Scabies) is a contagious skin affection caused by the presence of an minute insect, the itch mite. This insect gives rise to a peculiar form of eczema, beginning usually on the fingers. The disease is fairly common in school children and may be carried into the home to infect several members of the household. The itching is severe at times, but the disease is readily cured by appropriate treatment.

Louse Infestation (Pediculosis) is also a contagious affection of the skin caused by the presence of lice.

Three varieties of lice are commonly found upon the human, one infests only the hair of the scalp, another infests only the hair of the lower abdomen and the eyelashes, the third variety inhabits the seams of the underclothing. The insect causes great discomfort by means of its poisonous bites and the severe itching which follows.

Disinfection of clothing, clipping and shaving of the hairy parts, and the use of antiseptic washes of various kinds are the regular means of getting rid of this form of vermin.

The louse has been found to be the regular carrier of typhus fever (not typhoid) in much the same way that the mosquito carries malaria.

Erysipelas is a special form of infection of the skin in which there is general poisoning of the system, as indicated by chills, fever, and more or less prostration.

This condition is moderately contagious and is probably most often the result of hand contamination, the virus being conveyed on the fingers to some vulnerable point, most often the nose.

The form most frequently encountered is erysipelas of the face. This usually begins as a swelling at the root

of the nose, extending gradually out over the cheeks, forehead, and scalp, and perhaps farther. The swelling is boggy, slightly tender, and moderately reddened ; blisters are likely to form on the infected skin.

Erysipelas is a serious disease, sometimes invading the system and causing general poisoning and death ; it must, consequently, be carefully treated by a physician.

Repeated attacks of facial erysipelas usually indicate a persistence of the infection in the tissues of the nose and adjacent openings, and calls for special treatment.

Prevention rests upon measures that are taken to disinfect the hands if known cases of erysipelas have been handled, as may happen while on ambulance duty.

Skin Cancer. In early stages this appears as a small chronic ulcer in certain favored sites—in the margin of the nostrils, the cheeks, lower lip, nipples, and anywhere following a wart. Chronic ulcers in such locations must be considered cancerous until proven to be otherwise. Diagnosis is extremely important, and the early detection of the lesion will save much suffering and loss of life.

Sunburn. An inflammation of the skin caused by exposure to rays of the sun. Exposure of areas of skin usually covered by clothing, if only for a short time, may result in painful burns. Many of the worst cases of burn are acquired on cloudy summer days; the victims having neglected all precautions against sunburn under the impression that it could not occur to any great extent in the absence of strong sunlight.

Preventive measures are obvious. During the bathing season it is advisable to subject the exposed skin to a mild burn daily for a few days, establishing thereby a fair amount of immunity to the effects of prolonged exposure.

If one has suffered a burn it will be found that applications of ice or iced compresses for 15 to 30 minutes several times a day will give considerable relief. Between applications of ice one should rub on some cocoa-butter.

If the skin blisters to any extent the blisters should be punctured by nicking the raised skin with the point of a sterile knife or scissors.

It occasionally happens that the burned and blistered skin becomes infected. In such a case treatment with antiseptics and soothing ointments are required under the direction of a physician.

Chilblain and **Frost-bite** are skin disorders resulting from exposure to cold.

Mild forms, resulting from exposure to dampness and moderate degrees of cold, usually affecting the hands and feet are known as chilblains. Chilblains appear as reddened patches of skin that burn and itch.

Severe forms, affecting the ears, nose, cheeks, fingers, and toes, and appearing as more or less extensive blanched patches of skin, are termed frost-bite. The frost-bitten skin is insensitive; it is only when the inflammation of the stage of reaction begins that the victim complains of pain.

It is possible for the freezing process to affect considerable tissue to an extent that results in ulceration and gangrene of ears, nose, toes, and fingers.

During severe winter weather ear-laps should be worn to protect the ears; the feet should be kept warm and dry with woolen socks and weather-proof shoes or boots.

A word of caution in the matter of winter foot-gear: the shoes must be large enough to accomodate the feet encased in bulkier socks *without undue compression;* shoes that are even moderately snug may check the circulation in the feet sufficiently to invite a frost-bite.

If chilblains or frost-bite have occurred, the proper treatment is massage with cold application, for instance snow or cold water, until circulation is normal. *Heat in any form must not be applied.* When the circulation is restored, dress the part in cotton wool and place at rest in a comfortable position. Any ulceration of the frost-bitten area requires surgical treatment.

DISEASES OF THE EYE, EAR, NOSE, AND THROAT

Defective, Diminished, or Impaired Vision

The most common cause of impaired vision is distortion of the tissues within the eyeball that are concerned with focussing images upon the retina. These

are the cases in which the unconscious effort to obtain satisfactory clearness of vision brings on the condition known as "eye-strain."

Eye-strain is a frequent cause of headaches, dizziness, styes, and chronic congestion of the eyelids.

The impairment of vision described above falls into three classes, near-sightedness, far-sightedness and astigmatism, all three of which require correction with glasses, except the very mild cases.

Other forms of impaired vision are due to diseased conditions affecting the tissues in the interior of the eye-ball—lens, retina, etc.—and disease of the optic nerve, and are usually discovered through the examination of the eye that is undertaken when a patient complains of impaired vision of a type that can not be ascribed to errors of refraction.

Syphilis, rheumatism, chronic nasal infections, gout, chronic Bright's disease, tobacco, and alcohol, may cause the various types of vision impairment due to disease of the eye.

It is a curious fact that impairment of vision in one eye may progress to an extreme degree without being detected by the patient.

Much of the general need for corrective glasses is due to downright abuse of the eyes. The following rules will be found of great assistance when using the eyes for close work: Avoid too little or too bright illumination; sit so that the light falls on the work from a source above and to the rear of the head; avoid reading very fine print unnecessarily; lift eyes from the printed page every ten minutes and relax the accommodation of the eyes by looking at a number of distant objects; do not read newspapers while riding in moving vehicles.

Cold in the Eye (Conjunctivitis) is an acute inflammation of the membrane covering the eye-ball and the inner surfaces of the eyelids, ordinarily due to infection. The infectious matter may be street dust; poisonous matter conveyed to the eye by soiled fingers, handkerchief or other linen; or the eye may be infected by extension of an inflammation of the nasal passages during the course of a "Cold."

The inflammation may affect one or both eyes, and is accompanied by more or less discharge, swelling of the lids, and varying degrees of pain.

Some cases quickly become serious, and occasionally the damage caused by extension of the inflammation to the deep structures results in complete loss of the eye.

Prevention depends largely upon care to avoid infecting the eye through contact with soiled fingers or contaminated linen.

Slight irritation due to street dust or similar particles may be overcome by the regular use of bland eye-washes.

It is very unsafe to attempt any method of "home treatment" for eye inflammation. Report to a physician for advice.

Foreign Body in the Eye. Very fine particles of street dust may lodge in the eye on windy days without causing anything more than slight irritation; large particles of coal, stone, wood, ash, etc., may enter the eye and give rise to great discomfort and may even be responsible for considerable damage.

The pain caused by a foreign body in the eye is practically wholly due to friction of the particle against the sensitive cornea. If this be remembered when the particle enters the eye, one can usually ease off the discomfort by rolling the eyeball to a position where the irritation is not severe, and then proceed to remove the offending fragment.

Rubbing the eye must be avoided at all costs because such a procedure is fairly certain to embed the particle in the lid, where every movement will cause it to scratch the cornea; or, what is worse, to embed it in the cornea where more or less damage is sure to result from the efforts necessary to dislodge it.

If non-professional assistance is not successful in removing the particle from the eye, or if there is any uncertainty as to its complete removal, one should seek the services of a physician.

An excellent method for relieving the slight irritation caused by fine street dust is the use of a borax eye-wash. A teaspoonful of chemically pure Sodium Biborate dissolved in a cupful of warm sterile water and applied to

the eye by means of an eye-cup once or twice a day will be found to be very comforting.

Styes. An infection of the hair follicles of the lids, usually terminating in the formation of minute abscesses.

Styes are frequently associated with eye-strain and are also known to occur as part of the same tendencies associated with the eruption of boils.

Constipation, intestinal fermentation, diseased tonsils, chronic infections of the nose, abscesses of the teeth have all been designated as causes for styes as well as for boils.

Ear

Wax Accumulation (Impacted Cerumen). The wax-like substance that is secreted in the canal of the ear is sometimes formed in excessive quantities and fails to drop out as it ordinarily should. The accumulated "wax" may completely stop up the canal and cause considerable deafness on the affected side, the patient sometimes being unaware of defective hearing until both ears are affected.

The cerumen is sometimes actually packed into the canal through misdirected efforts to clean the ear by using the corner of a towel or wash-cloth. Quite frequently the "wax" dries and hardens into a stone-like mass that may cause dizziness and ringing in the ears through pressure against the drum membrane.

One should never attempt to remove the wax from the ear by using scoops, tooth-picks, hair-pins, or similar weapons, for serious damage to the canal or drum may be inflicted. The only permissible method is syringing with a warm solution of borax or sodium bicarbonate in water (two teaspoonfuls of either to a cupful of warm water); a soft rubber syringe with a soft rubber nozzle should be used, syringing forcibly, but with care to keep the nozzle of the syringe to one side of the ear canal so as to allow free egress of the water.

If cerumen regularly accumulates and plugs the ear it is a good plan to syringe the ears once every three or four weeks.

Hardened masses of cerumen may be softened by dropping ten or twelve drops of warm olive-oil into the ear an hour or more before syringing; it may not be

possible otherwise to remove the plug without using instruments. Quite often it is necessary to resort to a physician to have the cerumen removed.

Earache (Abscess of the Middle Ear). Earache is the outstanding symptom of acute inflammation of the (middle) ear. This middle-ear inflammation is usually a complication of acute catarrhal inflammations of the nose and throat, especially those of influenza. The inflammation regularly results in the formation of an abscess which, if left to run its course, will rupture the drum of the ear and discharge by way of the canal.

During the bathing season of the summer months many cases of middle-ear abscess arise from the entry of contaminated water into the ear by way of the nasal passages.

It must be remembered that the water of the beaches within easy reach of any city is sure to be considerably fouled by sewage. Diving and other manouvers that carry the head under the water are sure to force water into the nasal passages, from which one is inclined to attempt to expel it by violent blowing, thereby forcing it through the Eustachian tube and into the middle ear. It is probable that diving may also induce ear inflammation through sudden variations of pressure upon the ear-drum when the head is plunged forcibly under water. The use of plugs of non-absorbent cotton in the ear canals or bathing caps that cover the ears is advisable when bathing, particularly when diving. It is also important to avoid violent blowing of the nose to dislodge water which has found its way into the nasal passages.

Occasionally an abscess of the ear develops quickly and ruptures through the drum within a few hours, but ordinarily this is not the case. Unless lanced, the drum will remain intact for several days, damming back the pus and greatly increasing the danger of an infection of the mastoid cells and the formation of a mastoid abscess.

The gravity of an acute infection of the ear rests upon the possibility of infection of the mastoid and important neighboring structures, and when these are involved the results are not infrequently fatal.

Avoid violent nose blowing when suffering from an acute catarrh of the head or sore throat, also avoid the

use of nasal douches that cause even slight pressure when treating an acute inflammation of the nose.

An earache should not be allowed to persist for more than a few hours before being reported to a physician.

Chronic Discharging Ear (Chronic Inflammation of Middle Ear). This is usually due to persistent chronic inflammatory conditions in the throat and nose, with or without marked obstruction of the nasal passages. There is nearly always a history of an acute abscess of the ear which has been allowed to rupture.

The discharge is more or less intermittent, but the infection of the ear is always present and the danger of mastoid infection is equally persistent.

Special treatment of the ear and nose is required and should not be neglected.

Deafness. Deafness may be caused by the stoppage of the ear canals by "wax"; by chronic pus formation in the middle ear (chronic discharging ear); by disease of the nerve of hearing; but most frequently it is caused by a peculiar chronic inflammation that is associated with chronic catarrh of the nose and throat.

Much deafness can be prevented by the proper treatment of chronic nasal catarrh, particularly in the early stages.

Boils in Ear (Furuncles in Canal of Ear) are infections of the skin lining the canal of the ear, usually resulting in the formation of abscesses. This is a very painful condition and one to which certain individuals seem particularly liable.

Hot irrigations and the application of alcohol to the skin of the canal will ordinarily give relief; in some cases it is necessary to lance the boils under an anesthetic.

Repeated attacks indicate a chronic source of infection, tonsils, teeth, nose, etc.

Nose

Nosebleeds — Hemorrhage from Nose (Epistaxis). Hemorrhage from the nose, in addition to the varieties caused by injuries to the nose and skull, are caused by acute congestion of the nose, ulceration in the nose, and the rupture of diseased blood-vessels.

An isolated nosebleed usually is of no great significance; as a rule it is due to a temporary congestion and serves automatically to relieve the condition.

Repeated attacks require investigation; they may be caused by the high blood-pressure of Bright's disease, or by arteriosclerosis—hardening of the arteries; less important causes of repeated hemorrhages are simple ulcers and varicosities (dilated blood-vessels).

Moderate hemorrhages may be checked by the application of iced compresses to the face and by avoidance of any efforts to clear the nasal passages of clots for an hour or so. Severe hemorrhages may require treatment of the bleeding points and the use of packing—measures that can be applied only by a physician.

Chronic Nasal Obstruction is caused by a deformity or overgrowth of structures within the nose, or by the presence of new growths. A chronic inflammation of the mucus membrane of the nose always accompanies this condition, and deafness regularly results from it.

Persistent recourse to operative treatment is the only remedy.

Hay Fever is a more or less severe inflammation of the air passages and the eyes caused by air-borne dust (pollen) derived from certain plants during the flowering season. It afflicts individuals who are peculiarly subject to the affection.

In the region of New York City the disease occurs from the latter part of May to about the middle of October.

The offending plants include several varieties of grasses and the ragweeds.

Some people are attacked in the early weeks of the summer, some only in the early fall, while others again are afflicted during both periods.

The symptoms are smarting and redness of the eyes, flowing of tears, sneezing, coughing, discharge from nose, and occasionally attacks of bronchial asthma.

Preventive vaccines are now in common use and those who suffer regularly from this disease can obtain more or less relief by vaccine treatment during the three or four weeks *preceding the usual onset of the attack.*

Chronic Nasal Catarrh. This is characterized by a swelling of the membrane lining the nose and by an excessive secretion of mucus, acting together to cause more or less of an obstruction of the nasal passages.

The condition is very common in New York City and is ascribed to the irritating effect of inhaled street dust, tobacco smoke, the prevalence during winter months of contagious colds, the humidity of the climate, the excessive heating of dwellings and work-rooms, and an excess of sugars and starches in the diet.

The seriousness of the affection rests upon the fact that it is really a chronic infection of the nose and may at any time give rise to troublesome inflammations of an acute nature by affecting the neighboring structures, the middle-ear, the mastoid sinus, accessory sinuses of the nose, etc.

Deafness may also be an indirect result of a chronic nasal catarrh through chronic affection of the middle-ear, as already noted.

Prevention depends chiefly upon the routine cleansing of the nose effectively to remove street dirt and infectious matter that have been inhaled during the day. This cleansing is best accomplished by the use of a mild alkaline solution applied in the form of an atomized spray. A solution of chemically pure Sodium Biborate, one teaspoonful to a cupful of warm sterile water; or Alkalol diluted with an equal part of sterile water, may be used without causing irritation of the nose.

Nasal douches are not advisable because of the possibility that the pressure of the douche or incidental gagging may drive infectious matter into the middle-ear and cause an abscess.

The proper regulation of temperatures in living rooms and places of business will help materially in the prevention of chronic nasal catarrh. There is good reason for believing that gastro-intestinal fermentation (heartburn) from excessive eating of starches and sugars plays considerable part in causing chronic catarrh of the head.

The treatment of chronic nasal catarrh requires special skill. Self-treatment with various advertised cures is

dangerous, especially because of the many complications that may, and usually do, exist in cases of long standing.

Pimples in Nostrils (Furunculosis of the Nostrils). This is caused by infection of the hair-follicles of the nostrils. It is common in late winter and in spring months. The condition is an expression of the constitutional tendency which is common to skin boils, styes, boils in ear, etc.

Careful cleansing of the nostrils, especially if there is a tendency for nose secretions to crust about the hairs, and the prompt use of yellow mercurial ointment if signs of hair-follicle infection arise, are usually sufficient to prevent the development of the pimples.

If infection gets well under way great relief will be experienced through the use of ice-water compresses, spraying the nostrils with Alkalol in half dilution, and the application of generous amounts of the mercurial ointment (yellow oxide of mercury ointment, 2%). The mercurial ointment should be continued for a week to ten days after the inflammation has apparently subsided.

Throat

Enlarged Tonsils (Hypertrophied Tonsils). Enlarged tonsils are the result of chronic infection; are, in fact, chronically infected tonsils. The enlargement of the tonsil may cause considerable disturbance because of mechanical interference with nasal breathing, but by far the greater damage to the afflicted individual is caused by chronic poisoning through absorption from the infected cavities.

Chronic infection of the tonsils frequently gives rise to attacks of acute inflammation of the throat, poisoning the system and possibly causing inflammation of the joints, heart, kidneys, nerves, or causing abscesses of the skin and various organs.

Chronic infection of the tonsil practically always originates in youth. Prevention consists in careful treatment of the acutely inflamed tonsil incidental to acute infection of the throat.

The proper treatment for the condition, when it is once established, is the removal of the tonsils at the earliest practicable date.

CANCER

The actual cause of cancer is unknown at present, although much has been learned concerning the conditions under which it is liable to develop, the points of attack, and the varying degrees of malignancy and cure.

The most favoring cause of cancer, *chronic irritation*, on the contrary, has been well understood. Recognizable chronic irritation is usually present far in advance of the appearance of the cancer, preparing the soil for the growth of the characteristic cancer cell.

Abrasions from the clay pipes of former days, repeated minute burns of the lips, scratch wounds of the cheeks and lips caused by sharp edges of decayed and broken teeth, chronic ulcers of all kinds, scars of old burns, constant smoking, inhalation of ground stone or flour in certain occupations, simple warts and moles subjected to frequent irritation, and the prolonged presence of foreign bodies in the tissues, all frequently result in cancer.

Many other forms of chronic irritation have been known to precede the development of cancer, but it would be impossible in the limited space available to present a more complete list of favoring injuries.

The commonest sites for the growth of cancer in men are the mouth (lips, gum, and tongue); the skin of face, scrotum, and extremities; the bones; the stomach and intestines; the bladder; lymph glands, and the central nervous system.

The commonest sites in women are the breast, womb and nearby organs, stomach and intestines, and the bladder.

Preventive measures consist solely in the elimination of the various chronic forms of irritation outlined above.

Every chronic ulceration or small tumor should be considered as possibly cancerous, and every means, including the use of the microscope, should be exercised to establish the innocent or malignant character of the injury.

Although X-rays and radium have been found to be of great value in the treatment of cancer, by far the main reliance as yet is surgery, and surgery applied before the cancer has reached an advanced stage.

The only hope for successful treatment of cancer rests upon early diagnosis. Apply for medical advice promptly if suffering from a persistent ulceration of skin or mouth, or from tumor formations in any location.

Stomach cancers give rise to persistent pain and loss of weight; cancers of the intestine cause pain and the passage of blood in the stools; cancer of the bladder causes painful urination and the passage of blood in the urine.

DISEASES OF THE MOUTH

Decayed Teeth are traceable to several causes—defective diet, ill health in childhood, but chiefly to the constant presence in the mouth of fermenting and putrefying food fragments. The process begins as a slight erosion of the tooth (Fig. 1) which in time extends through the enamel (Fig. 2) and attacks the softer tissue beneath, invading the pulp (Fig. 3).

FIGURE ONE

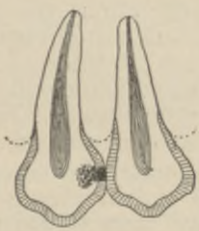

FIGURE TWO

FIGURE THREE

If unchecked the tooth crumbles and breaks until nothing is left but the roots embedded in the gum.

Putrefying food lodged in the cavity of the decayed tooth swarms with bacteria that cause irritation and inflammation of the soft tissues in the immediate neighborhood—pulp of tooth, nerves of the roots, and the gums—resulting in acute and chronic abscesses about the tooth roots and in pyorrhea.

Decayed teeth also give rise to various types of digestive disorders through the inability to chew the food properly and through the swallowing of putrefying particles dislodged from cavities.

To prevent tooth decay it is absolutely essential to free the teeth of particles of food lodged around and between them after meals. It is true that many individuals possess teeth that are very resistant to bacterial products and seem able to neglect them to almost any extent without causing decay, but this is far from true for the average man.

The best practise is to use a serviceable tooth-brush on arising, after each meal, and before retiring. A tooth-powder or paste, with chalk as the chief ingredient, will serve to remove the discoloring film from the teeth.

It should not be forgotten that a tooth-brush wears out after a time and may become practically useless as a cleansing agent.

If food regularly lodges in wide spaces between the teeth, dental floss should be used twice a day to clear it away. Toothpicks should not be used for this purpose as they are likely to scratch the thin membrane of the gums near the teeth and permit infection.

In spite of all precautions the average person will suffer from a certain amount of erosion of the teeth, but with careful attention at intervals of six months the erosions may be checked while still insignificant and the teeth saved from serious decay. One should report to a competent dentist twice a year for an inspection of the teeth and the treatment of whatever cavities may be found. At a small annual expense the foregoing plan will be found to give large returns in health, comfort, and freedom from burdensome dentists' bills.

Chronic Mouth Infection. Neglect of the mouth resulting in tooth decay, if continued, is sure to result in a form of mouth infection known technically as chronic oral sepsis. In this condition we usually find numerous infected areas about the teeth, the most common and troublesome of which are pyorrhea and chronic root abscesses (apical abscesses.) The gravity of these conditions rests upon the proved fact that by invading the general system the bacteria derived from the abscesses may cause acute and chronic inflammations of the joints, heart, kidneys, nerves, and other organs.

Examination by X-ray is essential for the detection of root abscesses and should be utilized in every case of

pyorrhea. Mouths that contain crown and bridge work of some years standing, even if apparently in good condition, should be X-rayed at intervals to determine whether or not any root infection is present.

Chronic oral sepsis requires vigorous and persistent treatment by a competent dentist.

Cancer of the Mouth. The most frequent sites of cancer of the mouth are the lower lip, side of tongue, and less frequently the gums and the inner surfaces of the cheek.

There is usually a history of irritation from the sharp fragment of a decayed tooth or the friction of a pipe stem, but *cancer may occur without any such history of irritation.*

The cancerous growth may begin as a small ulcer, or it may start as flat wart-like patch which ulcerates later, and progresses as a chronic ulcer upon an indurated (hard) tumor mass.

Chronic ulcers of the mouth, persisting for more than a month, or chronic patches on the tongue or cheek, should be reported to a physican for careful observation, and should be considered as cancerous until proven otherwise. The treatment is surgical.

DISEASES OF THE LUNGS

Pneumonia and Pulmonary Tuberculosis are discussed in the section on Infectious Diseases.

Bronchitis

Acute Bronchitis is an acute inflammation of the membrane lining the bronchial tubes. It is due to infection, and is practically always an extension of similar inflammation from the nose and throat as part of an acute catarrhal "cold."

The symptoms are cough, expectoration, and "soreness" about the upper chest.

Bronchitis is serious only because the infection may extend to the lung tissue proper and result in pneumonia; a condition that happens fairly frequently in older persons.

The prevention of bronchitis depends upon prompt care of acute catarrhs of the nose and pharynx.

Chronic Bronchitis. As a result of frequent attacks of acute bronchitis or because of some chronic affection of the lung tissue the lining membrane of the bronchial tubes may be damaged to an extent that permits a chronic infection. Victims are usually over forty years old; they are rarely free from a distresssing cough except during the summer months.

Many people with chronic bronchitis also suffer from chronic disease of the heart, chronic Bright's disease, or gout. Chronic diseases of the nose and throat, chronic nasal obstruction, enlarged tonsils, etc., may favor the development of chronic bronchitis.

A tendency to chronic bronchitis should prompt a careful physical examination to exclude the possibility of a pulmonary tuberculosis. Such an examination will also disclose the presence of conditions mentioned in the last paragraph that might favor the persistence of a chronic infection.

Individuals who suffer from chronic bronchitis are particularly susceptible to body chilling. They should therefore exercise great care to insure proper protection during the cold damp months of the year.

Vaccine treatment is often of great benefit, in conjunction with other methods.

Unchecked cases of chronic bronchitis result ultimately in serious affections of the lung tissue.

Asthma

Asthma is an affection of the bronchial tubes characterized by paroxysms of difficulty in breathing.

The labored breathing (dyspnœa) is present whether the patient is moving about or is at rest; the victim is distressed by inability to take in or expel the air from the lungs satisfactorily; in moderately severe attacks he is compelled to rest in a sitting posture—lying down increases the difficulty.

There is usually more or less cough; the expectoration is thick and tenacious, and difficult to dislodge.

Bronchial asthma is sometimes confused with attacks of difficult breathing that are due to diseases of the heart and kidney. While the dyspnœa of heart or kidney disease is usually brought on by exertion and asthma is not, yet the diagnosis is difficult at times, and is important enough to demand the best judgment of a physician.

The exact cause of many cases of asthma must often remain in doubt, but it is known that a number of cases are caused by the inhalation of plant dust (pollen—hay-fever asthma), animal dust (stable dust, dust from woolen blankets, feather pillows), smoke and trade dusts, bacterial infection of the bronchial tubes, and the eating of certain foods by individuals who are peculiarly susceptible to particular proteins.

To determine the cause of any one case of asthma requires patient research, as yet too often rewarded by complete disappointment.

Bronchial asthma due to the inhaling of pollen and to bacterial infection are greatly relieved by vaccine treatment.

Cases due to the inhaling of dust, animal and trade, can be prevented by avoiding exposure to such irritants.

The asthma arising from sensitiveness to certain foods (protein) is best relieved by omitting the offending food from the diet. The food responsible for these cases may be determined by resorting to simple skin tests—eggs, milk, pork, crab meat, fish, and other food substances have been found to be the cause in various cases.

A family tendency to bronchial asthma has been frequently noticed.

Pleurisy

Pleurisy is an inflammation of the delicate tissues (pleura) surrounding the lung.

Acute Pleurisy is characterized by a stabbing pain in the chest aggravated by movements of the chest during breathing.

Pleurisy, for the sake of safety, should lead to the suspicion of pneumonia or tuberculosis in every case. It is a common experience that the inflammation that affects the pleura almost always involves the lung tissue beneath it.

Repeated attacks of acute inflammation of the pleura are very certain to be tuberculous in origin.

Pleurisy is accompanied by an accumulation of fluid in the chest on the affected side; if this fluid is pus, the condition is known as empyema (abscess of the lung).

The bacteria that cause the infection and inflammation of pleurisy are those that cause pneumonia and tuberculosis, and the attack is usually hastened by exposure and chilling.

Chronic pleurisy is practically always a tuberculous process.

DISEASES OF THE HEART AND BLOOD-VESSELS

High Blood-Pressure and Arteriosclerosis

The flow of blood in the vessels throughout the body is maintained by a more or less constant pressure, the product primarily of the pump action of the heart.

This normal pressure is higher in men than in women and increases slowly with age.

The arteries of the body are capable of expanding under various influences, thereby diminishing the resistance to the flow of blood and lowering the blood-pressure; on the other hand contraction, either temporary (spasm) or permanent (sclerosis), of the small arteries increases the resistance to the flow of the blood and raises the general blood-pressure.

There is no great need for discussing low blood-pressure; high blood-pressure, on the contrary, is a topic of tremendous importance.

During the early stages the sufferer from high blood-pressure (hypertension) rarely complains of significant symptoms, the condition is discovered during the course of a general physical examination. In the more advanced stages the patient complains of chronic headache, shortness of breath on exertion, dizziness, and rapid physical exhaustion at ordinary daily tasks.

Poisonous substances derived from the food, chiefly the meat elements, are responsible for blood-vessel spasm and increased tension of the arteries; immoderate eaters and drinkers, especially heavy meat eaters, form the greatest percentage of victims of hypertension.

A very injurious form of high blood-pressure is observed in cases of Bright's disease of the kidney, and very often is the first clue obtained of a fatal affection.

Long-standing cases of hypertension are certain to develop a disease of the arteries throughout the body commonly known as "hardening of the arteries" (arteriosclerosis).

Arteriosclerosis may also be due to the action of certain poisons circulating in the blood and may itself be the *cause* of a very intractable form of high blood-pressure.

Excessive eating and drinking, alcohol, syphilitic and other chronic infection, and metallic poisons are the chief causes of "hardening of the arteries."

The symptoms of arteriosclerosis vary a good deal and depend largely upon the organs that happen to be most extensively involved. Degeneration of the small arteries of the kidneys gives rise to a malignant form of Bright's disease—headaches, disturbances of vision, emaciation, vomiting, loss of appetite, uremic convulsions, and coma. Disease of the small arteries that supply the heart-muscle causes neuralgia of the heart (angina pectoris) and heart-failure. If the small arteries of the brain are involved the patient complains of headaches, dizziness, rapid fatigue by brain effort, disturbances of speech, ultimately weakness or paralysis of limbs or face.

Prevention of arterial hypertension and arteriosclerosis requires temperate habits of eating and drinking, the abstaining from excessive use of alcohol (this means complete abstinence for many individuals), avoidance of excessive use of tobacco, and the removal of any syphilitic or other form of chronic infection.

Owing to the subtle character of hypertension and the necessity for early detection of arteriosclerosis, blood-pressure readings should be made at least once a year in all persons over thirty-five. The instrument required for this purpose is in general use and has become almost as indispensable as the clinical thermometer.

Treatment of high blood-pressure and of "hardening of the arteries" requires special attention to diet and supervision of innumerable details of the patient's daily routine; it taxes the best efforts of the physician.

Angina Pectoris is a grave heart affection caused by contraction and hardening of the small arteries that supply the heart-muscle. The disease is characterized by agonizing attacks of pain about the heart, the left shoulder, and the arm.

The disease may run a very rapid course resulting in complete heart-failure in a few weeks or it may last for several years. In between attacks of pain there are usually definite symptoms of heart trouble, pulse irregularity and shortness of breath on exertion.

Valvular Heart-disease. Inflammation of the lining membrane of the heart causes distortion of the heart valves, rendering them incapable of their normal action and increasing, to a varying extent, the work required from the heart to maintain efficient circulation.

Infection with bacteria is the cause of the inflammation and the organisms chiefly responsible are those that cause acute rheumatism of the joints, syphilis, scarlet fever, tonsilitis, pneumonia, septic poisoning (poisoning from the absorption of pus), and gonorrhoea.

Valvular disease of the heart in the early stage also fails to give rise to symptoms that would warn the victim of his predicament, it can be detected only by a careful physical examination.

When the disease has progressed to a point where the efficiency of the heart mechanism is seriously diminished, the patient complains of symptoms of heart-strain (palpitation, irregularity of pulse, and discomfort or pain in the chest). There are evidences that the general circulation is disturbed (faintness, dizziness, shortness of breath on exertion, swelling of legs), and chronic congestion of the lungs causes a persistent cough.

Repeated physical examinations are extremely valuable for the early detection of valvular disease of the heart, and any one who has suffered from one or more attacks or acute articular rheumatism (rheumatism of the joints) should report for careful physical examination of the heart once or twice a year.

There is one reassuring fact about valvular heart-disease and it should be made known to all those found to be suffering from this condition: it is that the heart may sustain a very serious valve injury and yet may

succeed in adjusting itself to the extra work required and to a degree that will permit the patient to pursue a practically normal existence in safety for a great many years.

There is no justification for the hysterical attitude of the average man toward valvular heart-disease.

When the physical examination reveals a heart with one or more defective valves, the patient should be frankly informed of the condition, and instructed to avoid excessive eating and drinking, and the use of alcoholic liquors, and tobacco in excess, all of which are likely to damage the heart-muscle; he should also be told to avoid strenuous exertions, competitive athletics—weight throwing, tug-of-war, rowing, etc.—and instructed in the saving qualities of sufficient physical rest.

If there have been repeating attacks of rheumatism, the teeth, tonsils, appendix, etc., should be scrutinized for a possible source of repeated infections. If the patient has had syphilitic infection in the past, careful investigation is demanded to determine the possibility of a persistent chronic syphilis.

The problem of prevention of valvular disease of the heart is practically the same as that for the prevention of the infectious diseases of which it is a complication and result, chiefly acute articular rheumatism and syphilis. (See Infectious Diseases.)

Affections of the Nervous Mechanism and the Muscle of the Heart

Alcoholic Heart. Acute poisoning of the heart by alcohol causes a rapid pulse and of shortness of breath on exertion. Continuous use of alcohol causes degeneration of the heart-muscle and hardening of the vessels of the heart—chronic myocarditis—and in advanced cases results in heart-failure of a hopeless type.

Tobacco Heart. Tobacco poisoning of the heart is exhibited in two common forms in adults—irritable heart with fluttering and irregular heart action, and shortness of breath on exertion and neuralgia of the heart characterized by attacks of pain in the region of the heart.

Heart of Obesity. The heart-muscle is weakened by fat deposits; moderate exertion causes rapid pulse and shortness of breath.

Influenza Heart. The poison of influenza, less commonly other infectious diseases, frequently attacks the heart-muscles and causes a severe grade of muscle weakness and irritability. For weeks and months after the patient is convalescent from his attack of influenza, slight exertion causes a marked rapidity and irregularity of the pulse, and a sense of breathlessness.

Preventive measures for the foregoing conditions are obvious.

Treatment in all cases calls for measures to relieve the heart of all strain and to restore the soundness of the heart-muscle by measures appropriate to each type of disorder, abstaining from alcohol and tobacco, and treatment for removing excess fat.

In connection with the disorders due to the poisonous effects of alcohol and tobacco it is necessary to understand that the poisonous dose of either is very variable. In some, the heart-muscle is badly affected by very trifling addiction. The rule for any one man is not the measure necessarily for any other.

DISEASES OF THE STOMACH AND INTESTINES

Acute Indigestion (Acute Dyspepsia) is characterized by a group of acute symptoms originating from the inability of the stomach to accomplish the normal digestion of its contents.

Distention of the stomach, caused by gas from fermenting contents, and irritation of the lining membrane of the stomach, caused by poisonous substances produced in spoiled food, give rise to pain in the abdomen ranging in severity from mild discomfort to agonizing colic.

Efforts of the stomach to rid itself of the offending material cause the familiar nausea and vomiting. When the stomach is emptied by vomiting the pain and nausea usually subside.

In some cases an active catarrhal inflammation of the stomach is set up by the offensive contents. Such an inflammation, more or less serious, is called gastritis.

The common causes of acute indigestion are:

Eating hastily, without properly chewing one's food.

Eating excessive quantities of food, especially before retiring.

Eating a meal while the stomach contains remnants of a previous meal. A four-hour interval is advisable after a meat meal.

Improperly cooked foods (greasy, fried meats and vegetables, freshly baked breads, etc.)

Spoiled foods. (Cold meats, shellfish, crab meat, soup stock, etc., spoil easily in warm weather.)

Chilling of stomach at meals or during digestion (ice cream, iced water and other cold drinks.)

Excessive use of sugar in various forms at meal or during digestion.

Excessive use of coffee and tea.

Eating of certain foodstuffs difficult of digestion for certain individuals (pork, veal, cooked cabbage, pastry, etc.)

Stomach constantly fouled by indulgence in candies, fruit syrups, and other vehicles of sugar (common "acid stomach.")

Excessive use of sweet milk at meat meals and as a beverage between meals.

Arrest of digestion as result of emotion, anxiety, anger, grief, etc.

Preventive measures consist in avoidance of unreasonable abuse of that long-suffering organ, the stomach. The man who can "eat anything, at any time," and demonstrates liberally, always finds it necessary, sooner or later, to dance to another tune. (See section on Personal Hygiene, Foods.)

When an attack of indigestion begins the stomach should be emptied by vomiting promptly. Several glassfuls of tepid water and tickling the throat with the finger tips will usually start the process nicely (a teaspoonful of English mustard flour added to a glass of water will add considerably to its effectiveness.)

Semi-starvation for a few days after a dyspeptic attack will be found of great assistance in restoring the stomach to normal ability.

Acute pain in the region of the stomach requires careful consideration to distinguish between the pain of acute indigestion and the pains of ulcer of the stomach, acute appendicitis, gallstones, heart affections, and inflammation due to certain poisons.

Gastritis

Gastritis is an inflammation of the lining membrane of the stomach. (The Greek word for stomach is "gastron.")

Acute Gastritis. The acute form of inflammation of the stomach may develop subsequent to an attack of acute indigestion; from acute alcoholic poisoning; from the eating of contaminated foods (stale milk, spoiled soups, etc.); as part of a general infection; from influenza; and occasionally as the result of metallic poisoning (criminal cases.)

Chronic Gastritis (Chronic Catarrh of the Stomach) is a chronic inflammation of the lining membrane of the stomach. The symptoms are loss of appetite, fermentation of the stomach contents, and more or less nausea in the morning.

The commonest cause of chronic gastritis is strong liquor—whiskies, brandy, rum, and gin.

Diarrhoea

The symptoms of diarrhœa are bowel evacuations of a fluid type caused by inflammation of the lining membrane of the lower bowel.

The inflammation of the bowel may be due to the presence of irritants in spoiled food; to infection of the bowel by bacteria present in contaminated foods and drinks, or to infection brought about by the chilling of the abdomen.

The inflamed and irritable bowel hurries the fluid contents through to evacuation, resulting in the frequent fluid stools characteristic of the condition. The stools may occur at intervals of a few minutes for hours in severe cases; in mild cases the affection is often relieved after the expulsion of one or two stools.

Colicky pain is a common incident during the attack and varies greatly in frequency and severity.

The need for precautions against the eating of spoiled food and contaminated foods and beverages is obvious. During the summer months, especially the later weeks, sleeping without sufficient body covering is responsible for many cases of diarrhœa.

As soon as the nature of the attack is realized valuable time will be saved by taking an adequate dose of castor-oil, sufficient to empty the intestine thoroughly—one and a half to two ounces; there is, however, nothing to be gained by resorting to a whole series of assorted cathartics.

For twenty-four hours after taking the castor-oil, food should be taken very sparingly—one quart of boiled milk, or a similar quantity of butter-milk is enough.

If the diarrhœa persists beyond twenty-four hours, a physician should be sought for advice.

Gall-Stones

This disease is produced by the formation in the gall bladder of "stones" derived from the bile.

In studying this disease and its causes we once more cross the trail of the "hearty eater"; gall-stone disease is very rare in people of temperate table habits.

The typical pain of the condition, gall-stone colic, is caused by the passage, or attempted passage, of the stone from the gall-bladder to the intestine. The attack of pain is usually severe; it affects the region of the stomach and right upper abdomen, recurring at intervals for a day or two, during which time the sufferer is completely incapacitated. The pain is accompanied by nausea and vomiting, and frequently is followed in a day or so by an attack of jaundice ("yellow janders").

The presence of stones in the gall-bladder disposes this organ to inflammation and occasionally results in the formation of an abscess that causes symptoms and involves dangers very similar to those of appendicitis.

A tendency to gall-stone disease must be combated by moderation at the table, by attention to the bowels, and by following the very good habit of drinking water.

The treatment of gall-stones is largely surgical.

The Stomach

Ulcer of the Stomach (Peptic Ulcer) is an ulceration of the lining membrane of the stomach. (Ulceration of the lining membrane of the small intestine, close to its junction with the stomach, gives similar symptoms and is caused by the same conditions that cause the stomach ulcer.)

Many people with peptic ulcer are found to be suffering also from concealed chronic infections, teeth abscesses, infected tonsils, chronic appendicitis, etc., and apparently the ulcer of the stomach is a remote result.

The use of very hot foods and drinks, spices, and the habit of taking food at very short intervals, have all seemed to predispose to ulceration of the stomach.

The pain characteristic of this affection occurs from two to four hours after meals; it is boring in type and is relieved sometimes by taking food; but it is important to know that peptic ulcer may run its course with practically no pain.

Another characteristic symptom is the vomiting of blood, either fresh blood or "coffee ground" material, and the passage of tarry masses of altered blood in the stools.

Persistent pain of the type described above, or the occurrence of a hemorrhage of the stomach, calls for immediate physical examination to ascertain the nature and extent of the lesion—an X-ray examination is almost indispensable.

Perforation of a peptic ulcer may occur and result in peritonitis, confronting the victim with a grave surgical emergency.

The treatment of any but the most simple, uncomplicated types of ulcer is surgical.

Chronic gall-bladder inflammation and cancer of the stomach are sometimes confused with peptic ulcer.

Cancer of the Stomach probably in all cases develops upon the site of chronic ulcer of the stomach.

The symptoms vary a good deal according to the particular location of the cancer, but chronic dyspepsia, loss

of weight, more or less constant pain in the region of the stomach, vomiting of undigested food and flakes of altered blood, and vomiting of blood are common symptoms.

An early diagnosis is essential for successful treatment and any two or more of the above symptoms occurring in a man over the age of forty demand a most careful and rigid examination to exclude the possibility of cancer.

The prevention of cancer of the stomach is summed up in the measures cited for the prevention of ulcer of the stomach. The treatment of stomach cancer is surgical.

Appendicitis

This is an inflammation of the vermiform appendix, a small off-shoot of the intestine located ordinarily in the right lower section of the abdomen. The inflammation may be acute or chronic.

Acute Appendicitis begins very suddenly as a rule with pain about the navel or on the right side of the abdomen. The pain may be colicky at first, later boring in type. The right side of the abdomen becomes tender; there may be vomiting; chills and fever are regularly present, though slight in some cases.

Inflammation of the appendix is caused by infection with various bacteria; the attack is often preceded by a period of constipation. In some cases there is a history of tonsilitis or acute catarrhal cold just previous to the onset of the appendicitis.

The acutely inflamed appendix may become gangrenous in a few hours, or may perforate, in either case peritonitis results and only the most energetic surgical treatment will save the victim's life. Treatment other than surgical is very risky; the delay may, and frequently does, carry the patient far past the point of safety.

An early diagnosis, within twenty-four hours, is urgent.

Preventive measures consist in careful regulation of the bowels.

Acute appendicitis is sometimes mistaken for gallstone disease, acute gastritis, ulcer of the stomach, etc.

It is possible to have brief attacks of inflammation of the appendix so mild that they pass unnoticed by the patient, until repeated and increased severity result in a chronic inflammation.

Chronic Appendicitis. The symptoms are moderate tenderness of the abdomen in the region of the appendix with more or less pain. The symptoms are intermittent, and usually assert themselves during or after a bowel upset, intestinal indigestion, diarrhœa, or constipation, and when generally fatigued.

A persistent chronic appendicitis is dangerous for many reasons—an acute gangrenous or perforating inflammation may occur at any time and progress with great rapidity; peritonitis of a chronic type causes bowel adhesions in the region of the appendix which may ultimately cause obstruction; or the chronically infected appendix may serve as a port for general infection of the types that cause chronic arthritis, valvular disease of the heart, and stomach ulcer. Treatment is surgical.

Constipation

By this we mean the failure of the bowel to discharge waste matter promptly and completely.

Constipation is caused by the habitual use of foods that leave small amounts of residue after digestion (meats, breadstuffs); by foods that have a peculiar constipating effect (milk, cheese); by the habitual neglect in responding to the call to empty the bowel; by the presence of pain about the anus; by neglect to drink adequate quantities of water; by abuse of cathartics, and by drug habits.

Correction of a tendency to constipation requires persistent efforts to invite bowel movements at favorable periods—shortly after arising and after each meal; drinking two to three quarts of water a day (8 to 12 glassfuls); increasing the amount of vegetables, fats, cooked and uncooked fruits, and gelatine dishes in the diet; treatment of hemorrhoids, fissures, eczema, fistula, and boils about the anus to permit painless movements; avoidance of milk, cheese, iron preparations, and medicines containing opium.

If laxative medicines are required they should be taken according to the directions of a physician.

Treatment of severe types of constipation may require bowel irrigations, abdominal massage, and other measures.

Piles (Hemorrhoids)

By this name we refer to a swollen condition of the veins in the lower part of the bowel (internal piles), and about the anus (external piles).

Bleeding Piles are caused by the rupture of small swollen veins in the lower end of the bowels (the rectum).

Inflamed piles are hemorrhoids in which the blood has clotted and the vein inflamed. Internal piles may be squeezed out past the cut-off muscles at stool and strangulated, a condition of maximum discomfort.

Itching Piles are caused by cracks in the skin about the anus. Many of these cases are misnamed, as there may be no swollen, or varicose, veins present.

Hemorrhoids are due to an obstruction of the blood circulation in the lower bowel; a result of constipation, diseases of the abdominal organs, heart-disease, and, in women, pregnancy.

Prevention rests largely with measures to insure the satisfactory operation of the bowels.

If the piles strangulate, squeeze past the cut-off, or sphincter, muscles and swell, they should be gently urged back into place. Replacement should be attempted as soon as the bowels are found to have pushed out. The method is to apply a generous coating of vaseline, followed by compresses of iced water for a few minutes, then the mass is pressed back through the opening gently until it has passed the cut-off muscle. If the patient himself is unable to accomplish replacement after a few efforts, he should report to a physician for treatment.

Avoidance of constipation is the chief element in the treatment of piles; local applications should be attempted only upon advice of a physician. In advanced cases the treatment is surgical.

Remember that hemorrhage from the bowel is not always due to "bleeding piles," various ulcerative conditions may cause it.

Fistula (Fistula in ano)

This condition describes a small discharging canal extending from the lower bowel, past the sphincter, and opening upon the skin surface usually close to the anus. It forms as a result of local inflammation, usually persisting after an abscess.

The symptoms are constant moisture about the anus, skin irritation, and intermittent soreness due to a recurring inflammation along the route of the fistula. Treatment is surgical.

Fissures of the Anus and Eczema

The skin immediately about the anus is subject to eczema as a result of local irritating conditions.

Under such conditions the skin splits readily when the parts are stretched during a bowel movement and such cracks or fissures tend to persist indefinitely.

The fissures give rise to intolerable itching, almost continuous in severe cases, and are especially aggravating after stool and upon retiring to bed.

The pain accompanying one's efforts at stool when fissures are present causes more or less spasm of the cut-off muscle, and this in turn results in constipation, congestion of the veins of the rectum and hemorrhoids; the eczema and fissuring are thereupon made worse, and the whole day of the victim is one round of trouble.

The eczema, fissures, constipation, and spasm of the cut-off muscle may all require treatment before the patient is satisfactorily relieved.

Mild cases yield to laxatives and extra care to insure cleanliness about the anus; other cases require considerable local treatment by a physician.

Rupture (Hernia)

Hernia as ordinarily observed, is a varying sized tumor under the skin of the abdomen in either groin, about the navel or about the scar of an abdominal operation, or in the scrotum.

The tumor is composed of intestine or other abdominal tissue that has forced its way through an opening in the deep layer of muscles in the abdominal wall. When

the patient lies down the tumor tends to disappear, spontaneously or with slight pressure, owing to the return of its contents to the abdominal cavity—the tumor in this case is said to be "reducible."

A hernia that can not be "reduced" is the more dangerous variety because it is more liable to result in "strangulation."

Strangulation of a rupture means that the intestine in the hernia is obstructed and its blood supply shut off by pressure at the point where it passes through the abdominal muscle. If unrelieved by prompt and suitable surgical measures the contents of the rupture become gangrenous and the patient dies from blood poisoning and exhaustion.

Supposed ruptures should be reported as soon as noticed so that appropriate examination may determine the nature of the tumor.

The treatment of hernia is surgical by choice; trusses are advisable only when heart-disease or other organic trouble renders an operation too hazardous.

DISEASES OF THE KIDNEY AND BLADDER

Examination of the urine is invaluable in the diagnosis of diseases of the kidney and bladder, characteristic findings being present even in the very early stages of disease.

In Bright's disease the urinary findings frequently disclose the disease before the patient complains of any symptoms that may be referred to kidney disorder, and the fortunate patient is enabled to take measures necessary to cure, or at least check, the disease in the most favorable stage.

(Diabetes also may be detected by an examination of the urine long before complaints characteristic of the disease indicate the condition.)

The grave disability due to Bright's disease when in an advanced stage and the hopelessness of efforts at curative treatment emphasize most forcibly the necessity for periodical urine examinations at stated intervals. Certainly

everyone over the age of forty should arrange for a careful examination of the urine twice a year; younger individuals should have the examination made once a year at least.

Bright's Disease of the Kidney (Acute and Chronic Nephritis)

An inflammation of the kidney, may be either acute or chronic. The chronic cases are by far the more important because many of them escape detection until they are far advanced; the gland tissue of the kidney is destroyed to a greater or less extent, and the kidney is unable to eliminate various poisonous substances that form in the body.

Sufferers from advanced Bright's disease complain of persistent headaches, nausea and vomiting in the morning, swellings of the face and extremities, defective vision, and shortness of breath upon exertion.

Pain in the back is rarely present although this common complaint is exploited in advertisements for various patented "kidney" remedies.

Bright's disease is caused by the action upon the kidneys of bacteria, their products, and other poisonous substances that may circulate in the blood.

The poisons of various infectious diseases, scarlet fever, pneumonia, septic sore throat; poisons absorbed from chronically infected tonsils, teeth roots and appendix; lead and alcohol poisoning, are all recognized as causes of Bright's disease.

Exposure to cold and dampness are important contributing causes; excessive eating of meat is probably also a contributing cause.

Prevention of Bright's disease calls for the avoidance of alcohol and excessive meat in the diet; the use of clothing that affords suitable protection during the cold damp months of the year; treatment of infected teeth, tonsils, and appendix; and regular examinations of the urine.

If Bright's disease is detected in any stage, careful treatment by rest and diet under a physicians supervision is required.

Kidney Stone

Stones of various sizes may form in the sac of the kidney, known as the pelvis, ranging from fine sandlike material, ordinarily called "gravel," to single hard masses as large as a peach pit.

The formation of stone, in the kidneys is favored by the high concentration of urine, a condition noted regularly in those who eat heavily of meat and neglect to drink sufficient quantities of water. There are other factors in the formation of kidney stone but they are not closely related to the habits of the individual.

Gravel and small stones regularly find their way into the bladder and may be passed in the urine. The descent of the gravel or stone into the bladder gives rise to characteristic attacks of pain known as kidney colic (renal colic.) Renal colic occurs as severe cutting pains, intermittent, starting in the flank that corresponds to the affected kidney, and shooting down toward hip and thigh. It frequently causes nausea and vomiting, and is accompanied by more or less aching of the side between the attacks. During the attacks of colic there may be an urgent desire to urinate at short intervals.

Large stones often give rise to attacks of congestion of the kidney, usually indicated by soreness in the flank and possibly also by the passage of urine of a muddy brown color (caused by the presence of blood).

The habit of drinking an abundance of water, two or three quarts daily, is an excellent preventive of stone formation, especially when combined with a diet that contains a very moderate amount of meat.

Catarrh of the Bladder (Cystitis)

An inflammation of the lining membrane of the bladder, which may be acute or chronic, is called catarrh of the bladder.

The characteristic symptom is the passage of cloudy urine. In the acute cases urination may be extremely frequent and painful; in the chronic cases the frequency is more noticeable at night, disturbing the sleep.

From time to time it is advisable to note the character of the urine passed and to report to the physician any

variations noted—for instance, the passage of urine in exceptionally large quantities; painful urination; frequent urination; the passage of cloudy, foul, muddy brown, or blood-tinged urine; the passage in the urine of gravel-like fragments, blood clots, or jelly-like masses.

Cancer of the Bladder

Cancer of the bladder is uncommon in persons under forty-five. The prominent symptoms are frequent painful urination, and the passage of blood-tinged urine and blood clots.

The occurrence of any of the above symptoms, especially in an individual of forty-five or over, should lead to a careful examination.

DISEASES OF NUTRITION

The weight of the body is the practical indication of the state of nutrition. Marked departures from a standard weight-for-height scale are classed as over or under nutrition.

Normal nutrition depends primarily upon the complete digesting and absorbing of appropriate food. (See the section on Hygiene.)

Cases of over-nutrition range from moderate cases of over-weight to obesity (fatness). Inasmuch as a consideration of obesity will cover the points involved in the lesser cases these will not be specified.

Obesity

With few exceptions fatness is due to gross over-eating, especially of starchy foods and fats.

The accumulation of fat is often very gradual at first, and may be a source of great self-satisfaction to the individual, but in a short time a dislike for physical activity is exhibited and the weight mounts rapidly.

Life insurance companies have learned to know the fat man as a bad risk, experience having taught them that he is apt to develop diabetes, Bright's disease, gout, diseases of the heart and blood-vessels, and the numberless complications that attend these serious ailments.

The general physical inefficiency of the fat individual is increased enormously by the development of crippled feet—painful flat feet—caused by the strain of bearing the excessive weight.

Preventive measures are obvious. A man should balance food quantities and exercise so that his weight will not rise above a reasonable figure.

Treatment of obesity means more exercise and less food. It does not make much difference how the food is cut—diminished rations of fats, starch, and sugars; a general cut in the quantities of all foods used; the substitution of bulky cereal and vegetable foods of low nutritive value; or treatment by cathartic—each of these methods act by diminishing the amount of food products available in the intestine.

It is advisable to note here that there are isolated cases of a rapid increase in body weight not caused by the accumulation of fat. Cases of advanced Bright's disease, heart disease and cirrhosis of the liver frequently show a rapid increase in weight due to accumulations of fluids (dropsy).

Undernutrition (Malnutrition)

Loss of weight below reasonable limits as indicated by weight-for-height standards is termed malnutrition.

Malnutrition is practically always secondary to other diseased conditions, such as chronic diseases of the stomach and intestines, tuberculosis, diabetes, Bright's disease, cancer, thyroid poisoning, chronic alcohol and drug addiction.

The important point to remember is that continuous loss of weight may be a symptom of a serious disease; hence one should not delay long before consulting a physician as to the cause.

* * * * *

There are two diseases that must be considered at this point, gout and diabetes, because they are directly associated with diet and nutrition.

Gout

Gout is a chronic poisoning of the system caused by an accumulation in the blood and tissues of substances derived from meat.

The term is ordinarily applied to attacks of inflammation of the small joints, but this is really only one of the disturbances that may be caused by the poisoning; gout is also shown by chronic headaches, skin eruptions, neuralgias, and neurasthenia.

Excessive meat eating by persons who lead inactive lives is the usual cause of gout, especially if alcohol also is used. It is recognized that some individuals are particularly susceptible to gout and develop symptoms even when taking only a moderate amount of meat.

Preventive measures depend upon the restricted use of meat, moderation in the quantity of all food taken, abstinence from alcohol, regular exercise, and the proper regulation of bowel action, using cathartics by advice of the physician when necessary.

Diabetes

The characteristic symptom of diabetes is sugar in the urine. The sugar which is present in the urine is a normal product of the digestion of the starch and sugar in the food, but which, owing to a diseased state, can not be properly utilized by the tissues, accumulates in the blood, and is thrown out by the kidneys as waste.

Diabetes is caused by the failure of a ferment in the body which normally changes the sugar into a substance that is stored in the tissues; this ferment is known as insulin.

Unless the disease has been discovered in the early stages by a timely urine examination, the patient usually complains of the passage of large quantities of urine, severe thirst, increased appetite, weakness and loss of weight in spite of taking large quantities of food.

Inasmuch as practically all cases of diabetes exhibit a tendency to heavy eating, sometimes with starch and sugars in the lead, the important "ounce of prevention" is moderation at the table, especially in the matter of bread-stuffs and sugar.

Periodical urine examinations are as valuable in the early detection of this disease as they are for Bright's disease, sugar ordinarily being found in the urine in small quantities long before the disease becomes serious.

DISORDERS OF THE LEGS AND FEET

Varicose Veins of the Leg. The veins of the legs just below the surface of the skin are apt to become permanently swollen in persons whose occupations require them to work for many hours on their feet.

The swollen veins operate very poorly and the circulation in the leg and foot is more or less injured.

In moderately severe cases it is impossible for the affected person to work more than a few hours on his feet before swelling of ankles and vague pains in the feet are noticed.

Swelling of the ankle and foot caused by varicose veins is usually confined to one foot, but may involve both feet if both legs show such veins. The swelling disappears during the night's rest.

The defective leg circulation due to the presence of varicose veins regularly causes the skin of the leg to become irritable and thinned, so that slight wounds result in infection and ulcers.

When this tendency to chronic swelling of the leg veins is noticed, steps should be taken to give the veins extra support. In early cases it may be sufficient to resort to a stockinet roller bandage which is wrapped like a wound puttee before leaving home. In marked cases firmer support will be required—elastic thread stocking—or the veins may require removal by surgical means.

Chronic Leg Ulcer is most commonly due to the infection of a slight scratch on the unhealthy skin associated with varicose veins of the leg. It may, however, be due to certain chronic types of infection, of which syphilis and tuberculosis are the most important.

Great care must be taken to avoid injury to any patches of withered skin on legs that exhibit swollen veins; and if any scratches occur they must be carefully cleaned with dilute peroxide solution, and a clean antiseptic ointment applied.

A chronic leg ulcer of any extent requires complete rest of the leg as the first measure of treatment, and

whatever applications are made must be under the advice of a physician. In very obstinate cases vigorous surgical treatment is necessary.

The Feet

The bones, joints, and ligaments of the foot are arranged in the form of two arches, a longitudinal arch (lengthwise of the foot), and a transverse arch (in the line of the bases of the toes).

These arches, as may be seen from a study of the normal foot-print, afford a three-point weight-bearing base, the heel, the ball of the great toe, and a broad cushioned area composed of the bases of the three outer toes and the nearby outer margin of the sole.

The arches are reinforced by the muscles of the foot and by tendons extending from certain muscles in the calf; they are very "springy" in the normal foot, and together with the fat under the skin of the sole, constitute a very effective "shock-absorber" which eases the load on the bony structure during the acts of walking, running, and jumping.

The numerous joints of the foot permit of considerable flexibility so that the sole may be adjusted to inequalities without weakening the duties of the arches.

FIGURE ONE

Bad habits in posture and incorrectly shaped shoes have a bad effect upon the normal freedom of the foots giving rise to deformitie, that may become permanent.

The strongest type of feet are those that are formed so that the line of pressure, in the act of walking, passes vertically through the center of the ankle, mid-point of heel, and the base of the second toe. Foot gymnastics, walking exercises and shoe design should all aim at development of feet of this type. (Fig. 1.)

During the act of walking the body weight is borne alternately by each foot, and if the foot action is correct the thrust of the weight is passed successively through the ankle to the heel (rear point of arch), to the forward part of the outer border of the sole and the bases of the outer toes (outer point of transverse arch), and to the ball of the great toe (forward point of arch), the foot finally being raised from the ground and the body propelled forward by a thrust of the great toe.

Toeing out (a) FIGURE TWO Toes straight ahead (b)

Footprints made of the right foot at different angles. Note in (a) how when the toes are turned out, the Longitudinal Arch is strained to such an extent that it touches the ground, while in (b) when the toes are correctly thrown straight ahead, the arch is relieved of the strain and does not touch the ground.

When standing at rest the toes are ordinarily turned a few degrees outward and the foot eased off by relaxing the arch ; in weakened conditions of the foot this position is easily exaggerated and further disability invited. (Fig. 2.)

Normal foot action depends upon correct anatomical relations of the bones; sound condition of the bones,

FIGURE THREE

Showing the incorrect way of walking, toes turned out. Note that the Longitudinal Arches have practically disappeared.

FIGURE FOUR

Correct method for standing and walking.

joints, ligaments, tendons, muscles, and other soft parts of the foot; and upon normal action of the ankle joint.

The most frequent causes of disordered foot action are habitually incorrect use of the feet in standing and walking (Figs. 3 and 4), weakness of the muscles of the legs and feet due to general debilitating conditions, improperly shaped and ill-fitting shoes, rheumatic and gouty ailments of the feet and ankles, sprains of the small joints, fractures of the bones of the foot, obesity, varicose veins of the leg, painful ailments of the feet—corns, callouses, bunions, blisters, ulcers, cracks, and "ingrowing" toenails.

Prolonged use of feet deformed by ill-shaped shoes, or feet used in abnormal positions in an effort to avoid the discomfort of painful ailments, will result in acute and chronic foot strain, flat-foot, and neuralgia of the ankle.

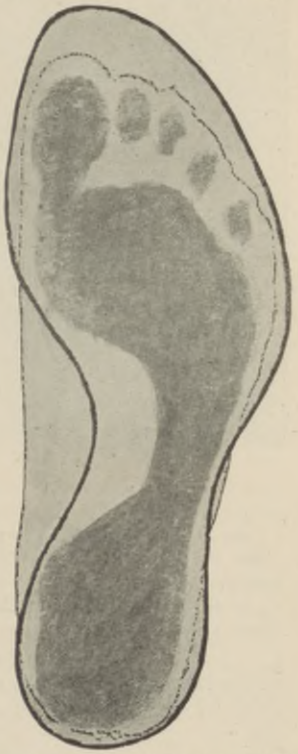

FIGURE FIVE—Sole shaped for a normal foot. (Whitman.)

Shoes

It might be appropriate at this point to state a few rules by which one may be assisted in the choice of a correctly fitting shoe.

Sole, should be sufficiently thick and rigid to protect the foot from inequalities that might cause "stone-bruise"; should be shaped so that the inner border nearly parallels a line drawn touching the inner surface of the heel and the inner surface of the ball of the great toe (to allow for full play of the great toe) (Fig. 5); should extend forward to a little more than a fingers-breadth beyond the tip of the great toe; should have sufficient width to extend beyond the outer border of the foot, when the foot is fully spread in bearing the weight of the body.

Upper, should be fitted while the feet are bearing the full weight of the body ; must be long enough to extend a fingers-breadth beyond the tip of the great toe ; spacious enough to allow for the lateral spread of the foot without discomfort and at the same time not loose enough to permit the formation of heavy creases that might chafe the toes. The material should be easily pliable ; should

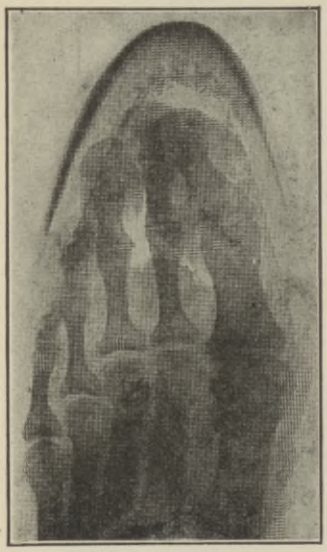

FIGURE SIX

An X-Ray picture showing the foot in a pointed shoe.

Note how cramped the toes are.

X-Ray showing the foot in an orthopedic shoe. Note the straight inner border and the broad tip of the shoe, enabling the toes to spread out normally.

fit the heel comfortably, and should be laced. A Blucher style of upper permits of better fitting than any other cut.

Shank, should not be rigid.

Heel, should be broad and should raise the heel about one-half an inch.

Acute Foot Strain. Feet that are crippled by improperly shaped or fitted shoes, or by painful local conditions, or feet that are weak and unaccustomed to bearing the weight for any lengthy periods, will develop symptoms of acute foot strain from comparatively moderate use.

The feet become increasingly painful after a few hours of patrol duty, the pain usually affecting the region of the instep and sometimes involving the calf of the leg. The pain lets up when the feet are put at rest, but the feet are found usually to have stiffened and need to be "limbered up" when walking is again attempted.

If proper measures are not taken, and the conditions causing the acute foot strain continue, chronic foot strain results.

Chronic Foot Strain (Painful Weakfoot). The pain and the stiffening under chronic foot strain are quite pronounced; attempts at a normal use of the feet in walking are so filled with discomfort that the victim assumes an unnatural gait, walks off the side of his foot to avoid the pain caused by strain of the structures of the long arch, rolls the ankle in and eventually suffers a break-down of the arch and flat-foot. Sufferers regularly describe this condition as "rheumatism of the feet."

Prevention of acute and chronic foot strain depends upon the use of proper shoes in the first place; relief of painful local affections of the foot (corns, callouses, bunions, "ingrowing toe-nails," etc.); walking exercises to correct improper walking habits; and foot gymnastics and baths to strengthen the structures of the foot.

Foot-baths. Tonic foot-baths to relieve symptoms of foot-strain should be used twice daily, spraying the feet alternately with hot and cold water. The bath should continue for twelve to fifteen minutes, and should be followed with a massage of the foot, using cocoa-butter or olive-oil.

Walking Exercises. (1) Walk at a brisk gait with the feet in a parallel position or with toes slightly turned in; rise on toes in a slightly exaggerated way at the end of each step. (2) Walk with heels kept just clear of the

ground, walking with an exaggerated ankle action, bending the foot at the ankle to the limit of flexion and extension.

Foot Gymnastics. Remove shoes and socks; with legs extended turn soles of feet strongly towards each other (Fig. 7); turn soles strongly outward, away from each other; describe circles with great toe in as wide an arc as possible; flex toes strongly as if in the effort to grasp an object; extend toes forcibly, pointing up; stand with feet parellel and lift the body on the toes (Fig. 8); stand with feet parallel and lift toes from floor carrying weight of body on heels; rock foot sideways so that weight rests on outer border (Fig. 9). Repeat.

FIGURE SEVEN

Turn the foot so that the sole faces as far as possible inward.

Standing at Rest. To diminish the amount of strain resulting from the use of weak feet one should sit at frequent intervals, taking the weight off the feet, and relax the legs and feet. If unable to relieve the feet by resting in a sitting posture, some relief may be obtained by standing with the toes slightly pointed in, rolling the ankles outward a trifle so that the weight of the body is resting chiefly on the outer borders of the feet, a

position that will be found comfortable for fairly long periods.

FIGURE EIGHT

Stand with bare feet on a firm level surface with toes pointing inward. Rise as far as possible on the toes and stand so for half a minute. Then slowly lower the heels. Repeat for five minutes.

FIGURE NINE

Stand with feet parallel and six inches apart. Raise the inner side of the foot throwing the weight on the outer border. Repeat fifty times.

Special Shoes. The tendency that a weak foot shows to roll inward, allowing the arch to fall, may be combated

to some extent by altering the shoe. In such a shoe the sole and heel are raised somewhat along the inner border, wedging up the inner border of the foot and throwing the body weight over toward the outer border of the foot.

All the measures mentioned, with the possible exception of the shoe alteration, will be needed to correct practically every case of foot strain; mild cases may respond so quickly to intelligent care, however, that the whole treatment might consist simply in the use of properly shaped shoes, with foot exercises daily for a month or two.

It is important to remember that the feet, in the normal act of walking, are kept approximately parallel, the toes pointing directly forward.

FIGURE TEN

A chronic anterior arch displacement complicated with hammer toes.

Flat-foot (Splayfoot). The conditions that cause chronic foot strain if uncorrected may result eventually in a break-down of the arch, and flat-foot.

A flat-foot is absolutely incapable of meeting the demands of a policeman's occupation; the afflicted man is a cripple and rarely ever obtains adequate relief from any amount of treatment. Flat-foot should be treated in the weak-foot stage, when the symptoms of chronic foot strain give warning of the impending break.

The alteration in the shape of the foot, the change in the character of the footprint, the tenderness in the region

of the instep and mid-sole, and pains in the feet and leg under forced use are all familiar symptoms.

The preventive measures are those enumerated above for the treatment of foot-strain.

The correction of flat-foot, when once established, is tedious and requires special skill. Arch supports are advisable in very few cases.

Metatarsalgia is a painful affection of the foot caused by alteration of the relations of the bony parts entering into the formation of the transverse arch of the foot. (Fig. 10.)

FIGURE ELEVEN

Deformed feet caused by ill-fitting shoes. Note the large bunions.

The pain, located about the base of the second toe, may be intermittent, and in severe cases will not permit the bearing of the body weight upon the forepart of the foot.

This condition is caused by persistent use of improper shoes; occasionally by accidental sprain of the small joints in the forefoot. Treatment by specially devised supports is required.

Bunions. Shoes that are modeled with a taper in such a way that the great toe is bent outward are the cause of bunions. (Fig. 11.) The great toe joint is subjected

to abnormal pressure, the soft parts about the joint become inflamed, the irritated bone near the joint tends to painful enlargement, and the great toe is unable to play a normal part in the mechanism of the foot.

This deformity of the foot frequently has its inception in childhood and young manhood due to ignorance in the selection of the shoe.

In the earlier stages, a good deal may be accomplished by correct shoeing and by the judicious use of splinting apparatus to check the out-bending of the great toe and encourage its return to a normal location and function.

Hammer Toe is an angular deformity of the toes, usually the second, third, or fourth, which causes the tip to press sharply against the sole of the shoe; the outer joint of the toe is fixed in a bent position. This deformity is caused by ill-fitting shoes.

The affection is painful at times due to the formation of a callus on the tip of the toe and corns on the upper surface of the bent joint.

Hammer toe will never occur in properly shod feet.

Ingrowing Toe-Nail practically always affects the great toe. It is really an infection of the groove of the nail. Improper trimming of the toe-nail and carelessness in the matter of cleanliness about the toe-nail are the usual causes.

The toe-nails should be kept reasonably short, a little shorter than the fleshy tip of the toe, and should be trimmed straight across. The groove on either side of the nail should be carefully freed of dirt and flaking skin every day, using a small cotton swab wrapped on a tooth-pick and taking care not to cause any cuts.

If the infection gets under way it must be treated with applications of hydrogen peroxide solution and the flesh lifted away from the nail by packing with absorbent cotton.

In long standing or recurring cases it may be necessary to remove the infected tissue by surgical means.

Corns and Calluses. A corn is a small, hard lump on the skin resulting from pressure. A callus is a diffuse

patch of thickened skin resulting from undue pressure. Both conditions may be very painful and prevent proper action of the feet in walking.

Treatment consists of measures to relieve the faulty pressure and the removal of the corn or callus by appropriate means.

Chafing and Blistering of the Feet usually result from wearing new shoes, the stiff uppers of which press upon unaccustomed skin points and damage the skin.

The chafed areas must be protected by cotton pads or by strips of rubber adhesive plaster.

If blisters form they should be opened with a sterile implement and carefully dressed and protected from any further pressure.

Sweating of the Feet. Excessive sweating of the feet is frequently an indication of a serious and weakening disease. Any one so afflicted should report to a physician for a general examination.

The excessive sweating may be accompanied by an offensive odor which is the result of germ action in the soggy thickened skin.

Treatment should be directed by a physician.

Fissures of the Feet occur as a part of an eczema of the skin of the feet. The under surface of the toes and the web between the toes are the usual locations.

Prevention and treatment is the same as for eczema of the feet. (Refer to the section on Diseases of the Skin.)

DISEASES OF THE NERVOUS SYSTEM

Headache. Headache is, of course, a symptom and not a disease. However, as it happens frequently that a serious disease escapes detection because this symptom is ignored until the disease has reached an advanced stage, it seems advisable to call attention to the significance of various types of headache.

Acute headaches due to constipation, digestive disturbances, exhaustion, and infectious diseases (influenza,

septic sore throat, etc.) are familiar to every one, and as their causes are fairly obvious they will receive no further comment.

There is one variety of acute headache, however, that deserves special consideration, the headache of Migraine.

Migraine (sick headache, megrim, bilious headache). The headache, the outstanding symptom of this affection, begins usually as a boring pain confined to a small area, extends gradually and finally involves a considerable part of one side of the cranium; the headache is accompanied by dizziness, flickering spots in the field of vision, nausea, vomiting, somnolence—the attack being usually terminated by sleep. The pain may persist from twelve to forty-eight hours.

Migraine regularly recurs and may attack the sufferer as often as three or four times a month.

This disease appears to be related to epilepsy, for they have many features in common, and the most effective preventive measures and treatment are practically the same for both diseases.

Diagnosis is important and the sufferer should report to a physician for examination and advice.

Chronic Headaches may be due to a number of causes, some are rare and others of comparatively slight import; but it will be helpful to know that persistent headache is often the chief complaint of persons suffering from chronic Bright's disease, high blood-pressure, syphilis of the brain, chronic infection of the sinuses about the nasal passages, and chronic eye-strain.

All the diseases mentioned, with the exception, of chronic eye-strain, are classed as serious. They regularly produce the most hopeless states of invalidism, and can rarely be treated successfully except in the earliest stages.

Neuritis is a painful affection of the large nerves, and is commonly caused by a form of infection allied to rheumatism.

The nerves most frequently affected are those of the lower back (causing lumbago), the thigh and leg (causing sciatica), and the shoulder and arm.

Neuritis is regularly preceded by an infection of the nose or throat, and the attack is usually precipitated by wetting or chilling.

The prevention of neuritis involves persistent and thorough treatment of acute infections of the nose and throat, and the avoidance of fatigue and exposure during convalescence from such inflammations. Repeated attacks of neuritis demand a careful search for chronic sources of infection.

Paralysis, in the generally accepted meaning, indicates a more or less complete loss of muscular power in one or several limbs.

The familiar "stroke" of paralysis is due to a sudden alteration of the blood supply in, or sudden pressure applied to, the part of the brain that controls the movements of the limb paralyzed—the blocking of a small blood-vessel in some cases, in other cases a rupture of a blood-vessel and hemorrhage.

Paralysis is an accident in the course of a chronic disease of the blood-vessels or heart—arteriosclerosis (hardening of the arteries), chronic Bright's disease, and valvular disease of the heart.

Prevention is the same as for the diseases mentioned and is discussed in the sections devoted to them.

Locomotor Ataxia (Tabes Dorsalis; Tabes) is a disease of the spinal cord caused by syphilis. This disease frequently reaches an advanced stage before the diagnosis is made and treatment commenced.

The cause is syphilis, and abundant evidences may be found, even in the earliest stage, by blood and spinal-fluid examinations, to indicate the nature of the infection.

Numbness of the feet, awkwardness and stumbling when walking in the dark, and severe neuralgic pains in the legs and abdomen are fairly early symptoms, and when occurring in a person who has a history of syphilitic infection they should cause him to report to a physician for examination without delay.

It is important to note that locomotor ataxia may not develop for ten to twenty years after infection with syphilis.

When treatment is commenced in the early stages there is a good chance of arresting the disease before severe disability occurs.

Prevention is the prevention of infection with syphilis. Among men who have a history of syphilitic infection repeated examinations of the blood and spinal-fluid are the only safe insurance, and this rule applies even in cases where the syphilis has been "cured."

Insanity. In a great many forms of insanity a predisposition is found in the form of an inherited nervous defect, as shown by the unusual number of cases of neurasthenia, eccentricity, and epilepsy that adorn the family history. It is this inherited tendency to mental disease that has given substance to the popular belief that insanity itself is hereditary.

Other causes of insanity acting with, possibly without, the special tendency mentioned, are syphilis, alcohol, toxins of infectious diseases, worry, anxiety, narcotic drugs, diseases of the heart, blood-vessels and kidneys, and, to a slight degree, sex problems.

Syphilis is mentioned first because it results in a persistent and serious form of insanity known as General Paresis.

Paresis (G. P., Paralysis of the Insane) is a fairly common type of insanity, it is caused by infection with syphilis, and leads to rapid mental and physical deterioration and death in a few years.

Heredity plays practically no part in the development of this type of insanity.

Prevention requires the complete eradication of the syphilitic infection. Fortunately the examination of the blood by the Wasserman test has been found to be a thoroughly reliable check upon the activities of the poison of syphilis ; and, if made at reasonable intervals, in cases known to have been infected, it is a reliable safeguard against the unsuspected development of paresis.

It is important to know, however, that numerous cases of paresis are found in which there is no knowledge of an infection with syphilis. The original injury was not suspected because it was not venereal in origin or type, or because a frank infection was improperly diagnosed,

or a syphilis with indications so mild that it was overlooked. An important fact also is that paresis may not develop for fifteen or twenty years after syphilitic infection.

A second important cause of mental disease is the habitual use of **alcohol.**

Alcohol not only directly causes a typical form of insanity, alcoholic insanity, but also acts indirectly as a factor in the development of a number of forms of mental impairment.

Alcoholics are often morphine and cocaine addicts as well, and in these cases the mental deterioration is likely to be very rapid.

Overwork is often spoken of as a cause of insanity, but a case resulting from this cause alone is rarely seen; there is usually an accompaniment of exhaustion from lack of proper rest, irregular and improper meals, excessive use of tobacco and alcohol, and general physical neglect before the nervous breakdown occurs.

Good mental habits are very important factors in the preservation of a sound mind. Discontent, jealousy, unsociability, over-sensitiveness, tendencies to brooding, constant suspicion of being imposed on and similar mental states are conducive to mental distortion and insanity.

There is a mental hygiene as important as the physical—to have a serious aim in life, to work incessantly but sensibly for its attainment, to give to trifles the attention they warrant, and to remember that the mind works best in a sound body, are rules that will suffice amply for the average individual.

Sex problems are sometimes the cause of nervous breakdowns, but not as often as sometimes claimed. Ignorance of sex physiology, and the worry it inflicts, is the cause of some mental disturbance, especially in young adults. Parents should instruct their children tactfully at the proper age as to the nature of sexual indications and should not allow them to get misinformation from street companions.

Epilepsy

Epilepsy is a disease of the nervous system characterized by attacks of unconsciousness and convulsions. The

attacks may occur in sleep, the afflicted individual on awakening finds himself possessed of a lacerated tongue or lip and an unaccountable feeling of exhaustion.

Heredity plays a prominent part in this disease, probably in much the same way that it acts as a factor in insanity, by the passing on of a defective nervous system.

Epilepsy as a rule develops in childhood, but late-developing cases are encountered occasionally and constitute a serious disability.

The excessive use of alcohol and excessive meat eating are prominent exciting causes for the convulsive attacks, and must be rigorously avoided by those who have experienced an attack at any time.

The prevention and cure of this condition are so dependent upon the life habits that no general rules, other than those mentioned above, can be laid down; advice by a competent physician is necessary.

Nervous Exhaustion (Neurasthenia)

Neurasthenia is the name of a disease of the nervous system that reduces all forms of nervous energy—psychic, motor and organic.

The commonest causes are over-work, worry, anxiety, alcohol, tobacco, narcotics, and injuries (especially to the head or spine).

The symptoms of this condition are very numerous, and many of them fleeting and trivial, but in all cases there is a tendency to rapid mental and physical fatigue and mental irritability; headache, spineache, insomnia, and dyspepsia are regular complaints.

Mild cases yield to proper rest and food, and abstaining from alcohol, tobacco, and coffee; severe cases may require, in addition to dietary and rest treatment, a complete change in occupation.

The mental disorders of neurasthenia, if uncontrolled, may lead to the development of delusions and outright insanity.

Sound habits of life, training in self-discipline, sensible adjustment to the hardships of average existence, moderation in the use of alcohol and tobacco, and attention to healthy bodily needs will prevent the development of many cases of neurasthenia.

Sunstroke and Heat Prostration

These invite consideration in company with the various nervous disorders because they are occasionally cited as the initial upset in various chronic nervous affections, especially neurasthenia and epilepsy.

Sunstroke occurs during the summer months and is due to over-exposure to the sun's rays. The symptoms are high fever and coma. Over-eating and alcohol are contributing causes.

Prevention consists in the proper protection of the head and spine from the sun, moderation in eating during the hot weather, abstaining from alcohol, and the use of a sufficient amount of drinking water to promote perspiration.

Heat Prostration is a state of physical exhaustion, the product of a number of factors brought into play during a prolonged spell of tropical weather. Prominent contributing causes are lack of proper rest through inability to sleep during the hot summer nights, the nagging effect of heavy clothing, indigestion and impaired nutrition due to ill-advised efforts to obtain relief from the heat by resorting to ice-cream, iced water, and other cold foods and drinks.

It is possible to carry on the regular daily routine with a reasonable amount of comfort in even the hottest weather of the summer months if one takes a few precautions.

The most important item is suitable clothing. On very hot days one should discard about every thing that the regulations permit; exercise regularly in the cool of the morning or evening hours; drink sufficient cool, not iced, water to promote a moderate amount of perspiration; cool the body by resorting to tepid or cool showers once or twice a day, a cool or tepid bath before retiring may give a restful night's sleep on the hottest night; change underclothing once or twice a day if perspiring freely; eat moderately, very sparingly of meat (the food requirements of the body are very much less in summer than in winter); ice-cream and other cold dishes must be used cautiously.

Mild cases of heat prostration improve rapidly when rest is assured, severe cases may require careful medical supervision, especially if complicated by digestive disturbances.

DISEASES OF THE JOINTS

Inflammation of the joints may be acute or chronic.

Acute Inflammation (Acute Arthritis) may result from injury to the joint by a bruise or sprain, and is known as traumatic arthritis; or it may be due to an infection of the joint, familiar in the form of acute rheumatism, less frequently seen as a complication of gonorrhea, tuberculosis, pneumonia, erysipelas, etc.; and it may also be caused by gout. Other varieties of acute joint inflammation occur so infrequently that they need not be discussed here.

Prevention of acute arthritis, other than the traumatic form, is covered by the preventive measures advised in the articles on gout, rheumatic fever, and other infectious diseases which it may complicate,

Chronic Inflammation of the Joints (Chronic Arthritis.) Excluding the cases directly traceable to an injury of the joint (chronic traumatic arthritis) the cases in this class are commonly known as "chronic rheumatism."

There are a number of varieties of chronic arthritis, and also, at present, there is considerable uncertainty as to the exact cause in many of them, though a large number of cases have been found to be due to chronic infection in other parts of the body, the tonsils, canals about the nose, the teeth, the appendix, etc.

When there is a tendency to chronic inflammation of the joints, an effort should be made to rid the body of all chronically infected tissues; the diet should be adjusted by restricting the amount of meat soups, meat, and sugars; clothing should be planned to give sufficient protection against dampness and cold; and the bowels should be properly regulated.

The special form of joint inflammation constituting the "bunion" is discussed in the section on Disorders of the Legs and Feet.

INFECTIOUS DISEASES

Diseases of this class are caused by living microscopic organisms that invade the body tissues.

It is known that the body has a varying ability to resist the attacks of bacteria and is only infected, as a

rule, when the local or general resistance is greatly lowered.

The section on personal hygiene deals in a general way with the means necessary to maintain at greatest efficiency the natural resistance to infection, and should be read in conjunction with the following information regarding the special infectious diseases prevalent in the region of New York City.

Colds

Acute inflammations of the lining membrane of the nose, throat, bronchial tubes, occasionally of the intestines, are called "acute catarrhs" and are usually caused by an invasion of the bacteria regularly found upon the surface of these membrane, in the healthy adult.

Some of the acute catarrhs of the nose and throat are acquired by contact with persons suffering from similar inflammations, that is, they are contagious in type and are classed as "influenza."

To prevent colds it is necessary that the general resistance to infection be kept at the highest possible point (see personal hygiene); the nasal passages should be cleansed regularly with a non-irritating wash; cold baths daily are advisable to keep the skin circulation well toned; suitable clothing should provide the necessary adjustment to the rapid changes peculiar to our climate; there should be careful regulation of the temperatures and humidity in living and work rooms; if the body has been subjected to chilling through unavoidable exposure and wetting, prompt corrective measures should be taken—hot drinks, application of heat externally, and dry clothing.

Repeated colds may indicate an unusual susceptibility to catarrhal infections that can be relieved by the skilful use of suitable vaccines.

Persistent infection in the tissues about the nasal passages may cause frequent attacks of acute catarrh and would require special treatment.

Long or repeated attacks of bronchitis should lead to a suspicion of pulmonary tuberculosis and demand very careful physical examination.

Septic Sore Throat

Such is the general name of an acute inflammation of the throat affecting the tonsils and adjacent tissues (tonsilitis, faucitis, quinsy sore throat).

The organisms responsible are regularly found in the mouths and throats of fairly healthy people, especially when decayed teeth or chronic mouth infection are present.

Ordinarily these cases occur during the cold wet weather of winter and are brought on by a chilling of the body.

Epidemics of this infection have been traced to contaminated milk.

It is possible for the poison of septic sore throat to invade the general system and attack the joints, kidneys, and heart, particularly when repeated attacks have brought about a condition of chronic infection of the tonsils.

Prevention calls for measures to eliminate infection of the teeth, gums, and tonsils, and general measures to insure maximum resistance by the system.

Influenza

A severe general infection, usually with well marked catarrhal symptoms, fever, and prostration, is termed influenza.

The disease was epidemic in New York and elsewhere in 1918 and cases have been occurring since with more or less frequency.

Influenza is contagious, and prevention requires that contact with known cases be avoided if possible.

Pneumonia

Pneumonia is characterized by an inflammation of the lungs. The bacteria that cause this disease are regularly found in the mouths and throats of healthy persons.

Pneumonia is induced by chilling the body, by exhaustion from lack of rest or from disease, by the inhaling of irritating gases, and by chest injuries.

The chief symptoms of the beginning attack are chill, followed by fever, pain in the chest usually limited to

the affected side, and cough. These symptoms may occur with great suddenness, and in severe cases the patient may also complain of nausea and vomiting, general muscular pains and headache.

If the foregoing symptoms should occur one should get into bed at once and send for the doctor. Influenza may have a similar violent onset and should be dealt with in the same manner.

Vaccines designed to provide protection against pneumonia are at present on trial and it is possible that the near future will reveal something of value along this line.

Pleurisy is characterized by a severe stabbing pain on one side of the chest, especially when the patient takes a deep breath.

Tuberculosis

Tuberculosis commonly occurs in the form of a chronic inflammation of the lung (consumption), a prolonged fever with progressive loss of weight and strength. The bacteria causing this disease are found in large numbers in the spittle of persons suffering from this affection, and the inhaling of the dried spittle in the form of dust and contamination with fresh spittle are probably the only means by which an individual is infected.

Tuberculosis may not be evident for some years after actual infection, the disease remaining latent until the infected person suffers a weakened resistance through an exhaustion from illness, under-nourishment, or overwork, from chronic poisoning as in alcoholism and diabetes, or from exposure.

Owing to the prevalence of tuberculosis it is practically impossible to escape contact with infected individuals, and prevention must depend chiefly upon the development of a high grade of resistance by the system through sane habits of living.

Great care must be exercised to avoid close association with known cases of tuberculosis, especially when they are coughing and expectorating.

Early diagnosis is of the utmost importance for successful treatment of pulmonary tuberculosis. Continued loss of weight, persistent cough with or without expectoration, blood in expectorated matter even in slight quantities, loss of appetite, and chronic exhaustion are

common complaints in the first stage of pulmonary tuberculosis. The existence of any one or several of these symptoms demands a careful physical examination by a competent physician.

The disease is curable; when detected in the early stages it can be arrested very promptly and with moderately good care a cure will result in a reasonably short time. Moderately advanced cases require longer treatment, but they also are frequently cured.

There are men doing full duty at present in the Police Department who without question are fully cured cases of pulmonary tuberculosis.

Rheumatism; Rheumatic Fever

The infecting bacteria that cause rheumatism apparently gain entrance to the system chiefly through infected teeth sockets, tonsils, and appendix, or through diseased tissues of the canals about the nasal passages.

The germs of rheumatism usually attack the joints, but it is important to remember that they may also attack the heart and nerve trunks.

Preventive measures consist in treatment directed to the removal of the infected areas mentioned above (teeth sockets, tonsils etc.) and to the cultivation of good habits of personal hygiene.

Malaria

The germ that causes malaria is conveyed by the bite of an infected mosquito. The parasite invades the blood through the bite puncture, attacks and destroys the red blood cells, and incidentally causes the characteristic attacks of chills and fever.

Prevention consists in avoiding attacks of the mosquitos by screening rooms and beds during the season when these pests abound, and by destroying mosquito breeding places.

Syphilis

Syphilis is a chronic infectious disease usually classed as venereal in origin. The germ is found in the secretions of the mouth, nose, throat, genitals, blood, and skin sores of persons suffering from the disease.

Infection usually occurs through intimate contact with infected individuals.

In connection with this disease it is important to know that uncured or unrecognized cases may progress unknown for years to result finally in the hopeless invalidism of various forms of insanity, paralysis, blindness, or diseases of the heart and blood-vessels.

Children of syphilitic parents may be diseased from birth and develop all the infirmities that afflict the adult who has acquired the disease.

Prevention requires avoidance of contact with known or suspected cases, and the use of appropriate means of disinfection if unavoidable contact has occurred.

The possibility of passing this disease on through contaminated drinking vessels and table utensils is the reason for the rigid enforcement of the Health Department rules for the abolishment of the drinking cup for common use, and for the sterilization of table utensils in restaurant service.

The unfortunate late results of syphilis, locomotor ataxia, paresis, blindness, epilepsy, valvular heart disease, aneurism, and break-down of the arteries, nearly always give one of the following histories:

1. An ulcer on the genitals and subsequent skin eruption on the body correctly diagnosed as syphilitic; treatment started and continued more or less faithfully for several months; patient seemingly cured, drops all treatment on own responsibility or may be told by doctor that he is cured; no blood examinations in the several years immediately following the supposed cure; no suspicion for years that there is any persisting syphilitic infection until symptoms of one or other of the above disastrous affections have appeared.

2. A venereal ulcer or urethritis diagnosed as non-syphilitic; no anti-syphilitic treatment administered; no blood examinations at any time; symptoms of locomotor ataxia or other grave conditions appear and indicate for the first time that the individual has suffered a syphilitic infection.

3. No history of ulcer or skin eruption of suspicious type at any time; no suspicion of syphilitic

infection until serious symptoms indicate the condition. Cases with this history are comparatively rare and are instances where the symptoms of infection in the primary stage were so slight that they escaped observation.

A person infected with syphilis must submit to careful observation and treatment for years. During the first year he is a serious menace to the community because of the ease with which he may transmit the disease to others; supervision in after years is required for the purpose of detecting relapses and, by appropriate treatment, preventing the development of paresis, locomotor ataxia, heart-disease, etc.

Blood examinations are regularly required as controls for successful treatment, and in certain cases it is necessary to tap the spine and obtain fluid for examination. Cases discharged without repeated blood examinations are improperly treated.

Typhoid

Typhoid is a general infection characterized, as a rule, by symptoms of intestinal inflammation.

The bacteria gain entrance to the body by means of contaminated food and water.

Health Department supervision of food and water supplies has successfully controlled typhoid in most cities, but scattered cases and small epidemics still occur in the rural districts, and it is usually while visiting such districts that the individual becomes infected.

Typhoid convalescents harbor the bacteria for long periods and throw them off in their excretions in great numbers. Some of these individuals are listed as typhoid carriers and frequently originate epidemics if they are employed as food handlers.

Prevention consists in avoiding untreated water and raw foods while traveling in suspected places; avoiding contact with the person and secretions of known cases of typhoid; carefully disinfecting the hands if a case of typhoid is unavoidably handled; and the use of typhoid vaccine.

Typhoid Vaccine. The use of this vaccine is strongly advised for persons about to visit infected localities or

whenever typhoid is epidemic. The administration of typhoid vaccine is usually devoid of unpleasant features and the freedom conferred by its use is practically complete for two years, and more or less complete for several years longer.

Diphtheria

This is a contagious form of inflammation usually of the tonsillar region, and is membranous in type.

The germ is found in the mouths and throats of persons suffering from the disease or who have recently recovered from an attack, and infects healthy individuals through the contamination of linen, table utensils, drinking vessels, and by personal contact.

Prevention consists in avoiding of contact with known cases and with articles used by them, and in prompt disinfection of the hands and injection of diphtheria antitoxin when unavoidable exposure has occurred.

It should also be generally known that it is now possible to immunize against diphtheria by injection of a special serum and that this form of prevention has proved of great value for school children and others frequently exposed.

Lockjaw (Tetanus)

The infecting germ of this disease is found in garden soil, particularly where animal droppings are used as manure. Infection occurs chiefly through the contamination of punctured, lacerated, and gunshot wounds.

Prevention consists in the prompt use of tetanus antitoxin in all cases of gunshot wound, and in all wounds of the legs and feet.

Hydrophobia (Rabies)

The virus of this disease is found in the mouth secretions of rabid animals; man is usually infected through bites inflicted by rabid ("mad") dogs. Horses, cats, and rats may also be infected with rabies and transmit the disease to man.

Prevention of rabies consists in precautions to avoid infection through the bites or slobbering of suspected animals.

If bitten by a dog the animal should be captured and delivered to the Health Department for examination, alive or dead, but preferably alive.

If the Health Deparment reports the animal to have been rabid, Pasteur treatment must be commenced at once.

If the attacking animal has escaped, it must be presumed to have been rabid, and in this case also the Pasteur treatment is imperative.

Smallpox; Scarlet Fever; Measles; Chickenpox

These are infectious diseases with characteristic eruptions, and are contagious in type. The germs apparently reside in the secretions of the nose and throat and in the skin sores of affected individuals.

Prevention of smallpox depends upon vaccination, and revaccination at intervals of seven years.

Prevention for the other diseases of this class depends generally upon avoiding of contact with known cases and disinfecting the hands, etc., if contact has unavoidably occurred.

A serum for the prevention of measles may now be obtained from the New York City Health Department for use in children under three years of age who are known to have been exposed to contagion with measles.

Erysipelas

Repeated attacks of erysipelas of the face indicates a persistence of the germs in the tissues about the nose. Special treatment is indicated for its eradication.

Typhus Fever

The disease is not common in New York City, but may be encountered while assisting on ambulance cases. Infection is conveyed by lice that infest the individual suffering from the disease.

Prevention, when exposed to infection, consists in bathing the person and in disinfecting the clothing to destroy lice that may have been transferred from the infected person.

SUFFOCATION

Suffocation or asphyxiation is a form of unconsciousness caused by an insufficient supply of oxygen to the lungs.

It may be the result of many things : it may be caused by constriction of the neck—by hanging or choking; the presence of a foreign body in the air passages may be the cause, or, the oxygen of the air may be replaced by poisonous gases, as illuminating gas, smoke, etc., or by water.

Suffocation by Smoke. In attempting to rescue a person from a room filled with smoke, a moist cloth covering the mouth and nose will make the smoke less irritating.

Near the floor the smoke is less dense, hence crawling will be safer than walking erect.

Before entering the room, the lungs should be filled with fresh air—and the work of rescue be quickly performed.

If the person has been suffocated but a short time, the moment he is brought into the fresh air he will revive. If he is unconscious and breathing efforts are poor, it will be necessary to begin artificial respiration at once. All constricting clothing should be loosened and his body massaged firmly to stimulate blood circulation.

Bronchitis and pneumonia are likely to follow exposure to the irritation of smoke fumes, and protection of the body against chilling is essential.

METHOD OF ARTIFICIAL RESPIRATION

Suffocation or asphyxiation due to carbon monoxid gas poisoning has increased fatalities in recent years. The illuminating gas jet, the gas stove, the coal stove and furnace, the coke stove, the charcoal stove, and lately the automobile exhaust in badly ventilated garages have all caused fatal asphyxiation, both accidental and suicidal.

In New York City the Chief Medical Examiner in his statistics shows that five hundred (500) deaths occurred in one year from this cause, exclusive of those

in factories, etc. This poison causes faintness, stupor, dizziness, and coma.

To relieve a case of gas poison: 1st. Shut off the gas at the jet and meter. 2d. Remove the patient from the poisonous atmosphere to another room. 3d. Open windows and doors. 4th. Send for an ambulance. While awaiting the arrival of the doctor loosen the clothing about the neck and waist. 5th. Listen to the patient's heart beat; if any sound is heard start to use the Schaeffer Method of Artificial Respiration, as taught by the Instructors in the Police Training School for Recruits. The Schaeffer Method has received the endorsement of the scientific schools as the best system.

Schaeffer Method

The patient is laid stomach down, in a prone position, arms folded under the head, face to one side, the mouth opened and locked with the tongue pulled to one side of the cheek. Kneel astride the patient at about the hips facing down toward the head; place the hands on the ribs so that the little fingers press the last ribs. The fingers are joined, the thumb alongside the fore-finger. Commence respiration by pressure downward on the ribs, thus forcing all air out of the lungs. Release the hands quickly relieving the pressure on the ribs. This will cause the air to rush in and fully inflate the lungs, which will take up the work of a bellows. Repeat the manouver at the rate of your own breathing, sixteen to eighteen times a minute.

Do not attempt to use a pulmotor or lungmotor; this should be left to a skilled physician—even then it may be dangerous, owing to defects in the mechanism.

MEDICAL AND SURGICAL EMERGENCIES

1. In the presence of an accident, or an emergency of any kind, the first thing to do is "*To Keep Cool.*"

2. Always remember that the person injured is extremely anxious, and suffers to some extent from shock. A noisy and officious bystander attempting to give First Aid, will often by his excitement and lack of knowledge do more harm than good. Nothing is more soothing or quieting to the injured than a cool manner upon the part of those attempting to assist him.

3. A knowledge of the proper course to follow in the various emergencies, will enable one to approach a case with an assured manner that will serve to quiet the anxiety of the victim.

4. Excitement and haste must be controlled, but action which is prompt and well thought out will frequently save a life or a limb.

5. On being summoned in an emergency, whether medical or surgical, *send for a doctor immediately;* never take full responsibility. Remember whatever you do is purely to be applied as an "Aid" between the time of your arrival and the coming of trained medical attention. Never feel that you have mastered the art of healing or can always read the "Handwriting on the Wall" simply because you have had training in First Aid.

6. The first thing that usually happens in any emergency in a large city, is the collection of a crowd of people, curiosity seekers only, and not interested in helping. See that the crowd is dispersed in an orderly and quiet manner, and give the patient plenty of air. Never move a patient until some inspection of the injury has been made and you feel sure that none of the large bones has been broken, or a severe injury to the chest wall or abdomen has not been sustained.

7. The plan of action can be decided upon best after a survey of the surroundings and the type of accident. When it seems apparent that no immediate treatment is to be commenced, the patient should simply be placed in as comfortable a position as possible until medical aid arrives.

8. A sick or injured person should always be made to lie down, with his lower limbs extended, and his arms by his side. If the patient seems faint, his head should be low, without any pillow or rest; if faintness is not present, the head may rest on a low improvised pillow, such as a folded coat or some such device. If he seems to be sick and inclined to vomit, always turn his head on the right side, so that the material which comes from his stomach will run out, otherwise it may collect in his throat and block his wind-pipe. This procedure is very important, and when an injured person, whether conscious or unconscious, is vomiting, great care should be taken

to roll him very slightly to one side, in order to prevent the material from entering the air passages.

9. All clothing should be loosened—belts, collars, etc. —which seem to interfere with breathing or circulation.

The popular idea that the first thing to do for the injured is to give them stimulation or stimulants, is wrong. There are many cases in which stimulation will really do harm—such as an injury accompanied by bleeding. If the bleeding has stopped, stimulation will increase the rate and force of the heart beat, and dislodge the clot, resulting in more bleeding.

10. If thirst is present, water is the best thing to use —always to be given slowly and in very small amounts. In the winter it should be given warm in the form of tea or coffee, for warm water is sometimes disagreeable. These are vastly superior to alcoholic drinks.

11. When coming upon a person who has been injured, and particularly if he is unconscious, the individual and the surroundings should be observed with great care for legal reasons, for the case may come into the courts and the information obtained may be very important.

12. The time of discovering an injured or unconscious person should be noted, also whether one's attention was attracted to the spot by others or if the person was observed purely during routine patrol.

13. The relation of the injured to the surrounding buildings must be noted, and the position in which he was when discovered, (sitting position, unsupported or supported, and by what, as building, fire escape, barrel, etc.) The condition of his clothing, as to the presence of tears or ripping or soiling as might happen as a result of a scuffle, the condition of his collar and shirt, both of which are usually disarranged. Evidence of blood on the exposed parts, such as the hands or face should be noted.

The presence of ladders or fire escapes should be particularly noted, and the relation of the injured one to these structures noted, for a fall from any one of these might explain the accident.

14. Any articles lying near should be carefully noted, with a view to the possibility that they had been used

as missiles—an empty whisky flask might point to intoxication; a bottle labeled bichlorid of mercury, morphine or laudanum would create a suspicion of poison; a pistol lying nearby would make one suspicious of a gun-shot wound, or a knife would indicate the possibility of a stabbing.

15. Medical Emergencies: Frequently an emergency arises, not as the result of an accident, but the first indication of disease, and often the unfortunate individual is afflicted quite suddenly.

Certain signs or appearances point toward the existence of certain diseases.

A person struggling—seized with a convulsion—with a flushed or bluish red color of face, frothing at the mouth, with tongue protruding, signifies an epileptic seizure. A flushed face may be the symptom or sign of fever, apoplexy, or intoxication. On the other hand a pale face indicates failing circulation, fainting, or bleeding.

Bleeding from mouth, nose and ears may be taken as a sign of fractured skull; frothy blood coughed up in considerable quantities—bleeding from the lungs.

HEMORRHAGE OR BLEEDING

Bleeding means the escape of blood from the blood-vessels.

Types of Bleeding

1. Arterial Bleeding. The blood is pumped by the heart to the several parts of the body, through a system of blood vessels, called *Arteries*. When an artery is cut, the blood which escapes is *bright red in color and comes in spurts;* each spurt following a heart beat.

2. Venous Bleeding. The blood is returned to the heart through a system of blood-vessels, called *Veins*. When a vein is cut the blood which escapes is dark red in color, and seems to flow slowly and steadily.

3. Capillary Bleeding. The arteries and veins are connected by a system of minute blood-vessels, called *Capillaries*. The capillary system is very extensive, and these blood-vessels are very small. Blood escaping from

the capillaries is red, bright, or dark, oozing slowly from the exposed surface of a wound.

Symptoms of Bleeding. Where there is a wound there is the appearance of blood. The amount of blood will depend upon the type of wound :

a. Lacerating wounds cause profuse bleeding.

b. Scratch wounds—slight bleeding.

Nearly all bleeding is accompanied by more or less shock—this depends on the nature of the accident and the temperment of the patient.

Sometimes the patient becomes weak and faint, the face becomes pale and covered by a cold perspiration. The body becomes cold and the patient may complain of dizziness, roaring in the ears, and difficulty in breathing, and in some cases the patient faints.

These symptoms may all occur, when the bleeding is very slight, as the sight of blood, following an accident, may be enough to bring about shock in some patients.

Treatment of Bleeding

1. Summon a surgeon immediately.

2. Make the patient lie down.

3. Expose the wound, and determine how severe the bleeding is.

4. Lift up the wounded part if possible.

5. Press firmly with a compress of sterile gauze, or freshly laundered handkerchief or towel, on the wound to control the bleeding temporarily.

6. Dress the wound with a clean compress (gauze or linen) and firmly bandage.

7. If the wound continues to bleed, and the dressings become saturated—reinforce the original dressings with more compresses and bandage firmly. Elevate the wounded part if possible.

8. If the wound is in the arms or legs, and the hemorrhage continues, apply a bandage torn from clothing, a belt, or suspender strap, or piece of rope tightly about the limb above the wound.

Appliances for arresting the circulation in a limb by tightly compressing it in this way are called *Tourniquets*.

The Tourniquet can be made more effective by the use of a stick or baton, or the hand or revolver, thrusting it beneath the tourniquet. By using such a lever and twisting it about it is possible to cause pressure enough to stop the circulation completely. In this way the blood supply to the part injured can be controlled. After this is done the wound can again be inspected, and a firm compress of gauze or linen can be packed into the wound—reinforced by more dressing, and again firmly bandaged.

After the wound has been redressed and the tourniquet has been in place fifteen minutes, the tourniquet should be slowly released and the effect of the returning blood supply to the wounded part noted on the bandage. If the wound continues to bleed, the tourniquet should be tightened again for from twenty to thirty minutes, and again released, and so on until surgical aid is obtained.

Treatment of Bleeding from Special Regions

1. Bleeding from a Wound of the Scalp. The scalp is abundantly supplied with blood-vessels, and wounds of the scalp bleed freely.

Always remember that a little blood will make a big show. Locate the wound, by carefully inspecting the scalp. Part the hair and make firm pressure directly on the edges of the wound with the fingers, or better still, make firm pressure directly upon the wound with a compress of gauze or any available soft material. The pressure must be continuous, until material is available for a firm bandage or surgical aid arrives.

2. Bleeding from Wounds of the Temple. Occasionally wounds in the region of the temple bleed greatly even in spite of firm pressure and a well applied bandage. In such a case, pressure by the finger directly in front of the ear, which is the location of the artery which supplies the temple, will control the bleeding until surgical aid arrives.

3. Bleeding from Wounds of the Face. Direct pressure upon a wound of the face by a compress will usually control the bleeding. Temporary control of bleeding of the lips or cheeks may be obtained by placing the thumb in the mouth and grasping the cheek between the thumb and first finger below the wound.

4. Bleeding from Wounds of the Neck. When vessels of the neck are injured, as in "cut throat" or other wounds, the emergency is urgent.

When blood is gushing from the large vessels of the neck, without an instant delay the thumb should be applied directly over the vessel and pressure made against the spinal column, and continued until surgical aid arrives. **Never apply a tourniquet about the neck.**

5. Bleeding from Wounds of the Arms. If a severe accident should result in a large laceration of the shoulder joint and soft tissue, the bleeding is profuse, and must be controlled by pressure upon the artery.

This artery can be located by deep and firm pressure, just behind the collar bone, about its center. This pressure must be continuous until surgical aid arrives.

6. Bleeding from Wounds of the Arm and Hands. Wounds of the arm and hand usually can be controlled by direct pressure with a compress of soft material and a firm bandage. Occasionally, however, one of the main arteries is injured, and it is impossible to control the hemorrhage by pressure applied to the wound, it is then necessary to apply a tourniquet to control the bleeding until surgical aid arrives.

7. Bleeding from Wounds of the Legs and Feet. In a wound high up on the thigh, and of a punctured variety, often the main vessel or one of its largest branches is injured, and the bleeding is uncontrollable by direct pressure. It is necessary to control such bleeding by thumb pressure in the groin, about the midline of the thigh. Pressure necessary to control such bleeding must be very great, and one is bound to become fatigued unless relief is provided.

In wounds of the lower thigh, direct pressure with a compress and bandage usually is sufficient to control the bleeding. The large vessels are deeply placed, and only in severe lacerating and tearing wounds is it necessary to apply a tourniquet to control the bleeding.

Wounds of the lower leg and foot are controlled usually by the simple process of direct pressure with compress and firm bandage, but occasionally it is necessary to control the blood supply to the injured part by a tourniquet for a short time until the wound can be inspected.

8. Bleeding from Wounds of the Chest and Abdomen. In wounds of the chest and abdomen the bleeding can usually be controlled by direct pressure with a compress.

It is frequently difficult to apply a bandage to such parts, but with a little patience it can be done, or the compress can be kept in place by adhesive plaster firmly applied.

9. Bleeding from Wounds of the Genital Organs. Pressure directly by means of a compress will in all cases control such bleeding. This pressure must be continued until surgical aid arrives.

10. Bleeding from Wounds of Veins. In all wounds some of the bleeding comes from injury to the veins; this is usually controlled by the direct pressure. Frequently, a varicose vein of the leg will rupture without having been injured; this may be quite dangerous, for often the bleeding is profuse.

11. Bleeding from Wounds of Capillaries. This is the type of bleeding usually seen in simple abrasions of skin, as in pin scratches or scraping of the skin in falling. The bleeding usually stops without radical treatment, and the only thing necessary is simple dressing with a compress and light pressure with a bandage or adhesive plaster.

12. Nosebleed. The emergency treatment required in this condition depends of course on the cause. If the bleeding is the result of an injury, in many cases it will stop without any direct treatment, except keeping the patient quiet and applying cold cloths. However, a nosebleed may be quite severe, and occur without any history of injury. If it is abundant, place the patient at rest in a reclining position, apply cold compresses to the face, and plug the nose with any available material, such as strips of a linen handkerchief, or pieces of cotton. The nose can be packed by using a pencil or pen holder, and the packing should be as firm as possible during the emergency. Do not be afraid of losing the material, as it always can be located when aid arrives.

13. Internal Bleeding. This is hard to determine, unless the victim expectorates or vomits blood, or passes considerable blood from the bowel.

The patient usually feels very weak, is pale, complains of blurring of vision, feels cold, and beads of perspiration will frequently come out on his face and forehead.

It is always a good policy, whenever such a situation presents itself, to advise complete rest, have the patient lie down, protect him from the cold, and send for an ambulance.

Do not give any whisky or stimulating drinks to any person suffering from bleeding. Water is the only thing permitted, and if a patient is vomiting, nothing should be given by mouth.

WOUNDS

Definition. A wound is a break of the skin and soft tissues of the body, caused by an injury. The kind of wound resulting will depend on the way the injury was inflicted.

Variety of Wounds

1. **Incised Wounds.** Made by a knife or razor blade.

2. **Lacerated Wounds.** One that might be inflicted in a bad railroad wreck or automobile accident, or in a machine shop, the result of which is to tear the skin, soft tissues, and muscles.

3. **Contused Wounds.** A wound caused by a blow of a blunt instrument—the result is a crushing injury to the soft tissues, accompanying a break of the skin or other surface membrane.

4. **Punctured Wounds.** A wound of the skin and soft tissues caused by a nail or spike is known as a punctured wound.

5. **Stab Wounds.** A wound of the skin and soft tissues produced by the thrust of a sharp pointed instrument is called "a stab wound."

6. **Gun-Shot Wounds.** A wound inflicted by a bullet or piece of high explosive steel, is termed a "gun-shot wound," such wounds may vary greatly in severity and in the extent of tissue involved.

7. **Poisoned Wounds.** A wound caused by the bite of poisoned animals or insects.

Treatment of Wounds

When confronted with an emergency which necessitates the treatment of a wound, a few essential principles are to be observed :

1. Always expose the wound if possible, to determine :
   a. The extent of injury.
   b. The type of wound.

If the wound is large and disabling, always place the patient in as comfortable a position as possible.

2. Stop the bleeding as far as practicable by pressure with a compress of clean linen, but do not destroy a clot by wiping.

3. If the wound contains large pieces of glass or dirt, splinters of wood, or clothing, they can usually be removed by gently lifting from the surface of the wound with the fingers.

4. Do **not** pour iodin into a large open wound.

5. Dress the wound with a compress of clean linen, or better still, sterile gauze, if available, and bandage firmly.

Treatment of Wounds of Special Parts

(See also "Treatment of Bleeding" in the preceding section.)

Wounds of the Head and Face, with or without a break in the skin, are frequent, and often present themselves for emergency treatment.

Wounds of the scalp bleed freely, and this usually can be controlled by pressure. Iodin may be applied to the scalp surrounding the wound, but not poured into the cut surface. Apply a clean compress and bandage while waiting for medical aid.

Wounds of the Lips or Cheeks, as a result of a blow, usually bleed rather freely at first, but usually in a short time the bleeding stops. If not, gentle pressure with the finger covered with a piece of linen or gauze will cause a clot to form. The wound may then be touched with iodin and let alone. Healing usually occurs without any infection.

Wounds of the Neck. A gun-shot wound or stab wound of the neck is usually a very small affair on the surface, but much damage can be inflicted in this region, especially if the wound is located beneath the jaw bone. It is hard to tell the extent of the damage done, and the best policy is to summon surgical aid immediately. While waiting, insist that the patient lie down. Do not give any stimulants of any kind by mouth. Always protect the exposed wound with clean linen or gauze, firmly held in position by hand.

BURNS AND SCALDS

Burns and scalds may be considered as a special variety of wounds, caused by the effect of heat.

Burns result from the direct contact or close proximity to flames or heated solid bodies.

Scalds result from the action of boiling water, superheated steam, or other hot fluids or gases.

Substances such as oils which boil only at a high temperature produce more severe results.

Burns are usually classified according to the severity of the injury:

1. A slight burn is usually seen as a diffuse redness of the skin.

2. More severe burns produce blisters or blebs.

3. Severe pain follows such burns where the skin has been injured to such an extent that the deeper layers and the nerve ending are exposed.

4. A deep burn is one where the whole thickness of the skin has been destroyed and also some of the tissue beneath.

5. When the heat has been intense, and tissue has been exposed to the heat for a long time, the skin and underlying tissue and muscles are charred and disorganized.

Symptoms. Pain, of course, is the outstanding complaint. The pain is severe and continuous in even burns of the first degree, and increases directly as the extent of the burn.

Frequently symptoms of shock are present, such as faintness, and considerable weakness, sweating, cold perspiration.

Treatment of Burns and Scalds

1. Remove the clothing as gently as possible from the burnt region—when clothing seems to stick, cut around it and flood it with oil—olive-oil or carron-oil.

(Carron-oil is a mixture of equal parts of linseed-oil and lime water.)

2. In burns of the scalp, cut away the hair as freely as possible, and apply a compress, wet with olive-oil or carron-oil.

3. When treating small burns that do not show blisters, all that is necessary is to protect the area by dusting with boric-acid powder, starch powder, or stearate of zinc powder and gently applying a dressing.

4. A compress wet with a solution of baking soda will frequently sooth the pain. Also a compress soaked in olive-oil or carron-oil.

Blisters, when present, should be punctured with a sterile instrument so as to allow the contained serum to escape—the wrinkled skin should be cut away if possible, and a dressing applied.

If the patient is in a state of shock, he should be put to bed—and covered with warm blankets and a little warm stimulating fluid administered.

In children or adults, when the burn is severe and extensive, it may be necessary to place them in a warm bath and the clothes removed gently. The patient should be allowed to remain warm some time—until the shock subsides—the water to be replenished, if necessary.

Burning Clothing. If from any cause the clothing of a person has been ignited—an accident that fairly frequently happens to women—the dangers to be avoided are chiefly inhalation of the flames and severe burns of the head due to the tendency of the flames to rise. The victim should be made to lie down, thrown down if necessary. The patient should be wrapped in a rug, coat, or similar object, preferably woolen (never cotton) and the fire smothered by pressing or patting on the outside of the rug.

BRUISES OR CONTUSIONS

A Bruise or Contusion is an injury to the skin and the tissue beneath the skin, without causing a wound.

The Symptoms are pain, which becomes quite sharp, swelling, stiffness, and tenderness upon pressure. The swelling increases for about the first twenty-four hours. If the contusion is severe, discoloration beneath the skin occurs in a short time. At first it is bluish, and spreads widely from the point of injury. Later the color changes to a yellowish blue. When the contusion is severe, the patient suffers also from shock.

Treatment at first is by the application of cold compresses to the part injured. This helps to control the bleeding, which is due to rupture of the minute capillaries in the soft tissue. After a period of twenty-four hours, the stiffness and soreness may be relieved by hot applications.

In dealing with contusion about the joints it is well to have an X-ray to make sure that no bones are broken.

When it has been definitely decided that there has not been an injury to the bony structures in the vicinity of the wound, gentle massage for ten or fifteen minutes, twice a day will aid nature in removing the coagulated blood.

Great relief may be obtained by supporting the part injured by a firm bandage or by the application of adhesive plaster.

A severe bruise or contusion may result in a large collection of blood beneath the skin which is known as a "hematoma"; this must be treated by a surgeon.

TO SUMMON MEDICAL AID

No time should be lost in summoning an ambulance at the time of an accident or medical emergency.

This can be done by simply calling Headquarters, as the control of the ambulance has been placed in the hands of the Police Department.

In calling Headquarters for an ambulance the patrolman gives his name, rank, and shield number, also the

precinct he is working in, and the number of the telephone he is speaking from. The calls should be described as:

Accident case;

Sick call;

Insane case;

Contagious disease.

In contagious cases, it is necessary to get in touch with the Board of Health, as they usually send a doctor before sending the ambulance.

The patrolman should give the name, address, and floor of the house—state precisely which apartment, as front, rear, east or west of the house. He should station some one at the door of the house so that when the ambulance surgeon arrives he may be directed to the exact location of the sick or injured person. After waiting a reasonable length of time for the arrival of the ambulance, he should repeat the call.

Equipment and Supplies. It is always well to have in mind certain supplies which might be of practical use in an emergency, as treated in a well equipped First Aid Station. For when an emergency presents itself and you take command of a situation, you are expected to know just what is needed, and to direct others to obtain it, or the most convenient substitute.

Frequently the worker is required to do many things with improvised material—for many of the emergencies occur some distance from the base of supplies.

Ordinarily the First Aid packet will contain the following:

Bandages—assorted	3
Sterile gauze	5 yards.
Cotton	½ pound.
Tincture of Iodin	1 ounce
Adhesive plaster (5 yards 2-in. and	5 yards 3-in.)
	2 rolls of each
Carron-oil (for burns)	8 ounces
Sodium Bicarbonate (baking soda)	2 ounces
Vaseline	1 ounce
Boric acid powder	2 ounces

SHOCK

Used in its surgical sense, shock is a term which indicates a condition of depression of the nervous system, more or less profound.

Shock follows injury, and, as a rule, the more severe the injury the greater the shock. However, this is not necessarily true. One person may suffer extensive injuries in a railroad or machinery accident and show no evidence of shock, while another person may develop marked shock after comparatively insignificant injuries.

Symptoms. The symptoms develop slowly, usually beginning shortly after the accident, although in some cases they may be delayed for several hours or longer (secondary shock). When shock is fully developed the observer notices that the patient is either unconscious or in a stupid condition, taking no interest in his surroundings. The face is pale and drawn, with the eyelids drooping, and the eyes dull with large pupils. The breathing is feeble and shallow, the pulse weak and rapid, the skin cold and clammy, and there is a general feeling of bodily and mental fatigue.

Shock is apt to occur under the following conditions:

1. After severe injuries.
2. After hemorrhage.
3. After severe mental strain.
4. After exhaustion from bodily exertion, exposure, or disease.

Severe, or long continued pain increases the shock. Thus, there is less danger of shock when the pain of a broken arm is prevented by the use of suitable splints, than when the patient is obliged to walk with the arm dangling, every step causing great pain.

Treatment. Bearing in mind what has just been said, it is evident that treatment should begin with the removal of the causes which may aggravate shock. Hemorrhage should be stopped, the patient should be removed, if possible, from the immediate vicinity of the accident, and measures should be taken to relieve the pain.

However, only temporary dressings or splints should be applied. We are unjustified in taking a long time to apply a splint when the patient is in a marked state of

collapse. In severe injuries it is often wiser to carry out the treatment on the spot than to attempt removal before there are signs of reaction.

In case of shock the patient should be placed in a horizontal position, with head slightly lowered, covered well with blankets to preserve the body heat, and hot-water bottles applied to the feet, abdomen, and to the sides of the chest. Glass bottles filled with hot water, hot bricks, or any other form of heat will serve. Heat may be applied internally by the use of hot drinks, especially coffee or beef tea.

Stimulation may be given in addition to other treatment. Aromatic spirits of ammonia, in thirty-drop doses every fifteen minutes for four doses, and whisky or brandy, in teaspoonful doses every five or ten minutes for five or six doses, are suitable stimulants. Large doses of alcoholic drinks should not be given. Coffee, because of the caffein which it contains, is one of the best stimulants.

If this treatment is successful, the symptoms gradually become less marked, the pulse is stronger, the breathing is easier, and the general appearance is improved. The period of shock may last only a few minutes or it may last for days. Even when early reaction occurs, it is better to keep the patient warm and quiet for a while to prevent the recurrence of shock.

FAINTING

Fainting is caused by lack of blood in the brain. It resembles shock except that, as a rule, there is only a trivial injury or none at all, for in many cases it is a reaction to emotion.

A person may faint after a very slight injury, such as a pin-prick or a comparatively slight blow; after an unpleasant mental impression, such as fright, or the receipt of unpleasant news; after seeing something unpleasant, as the sight of blood or a wound; and when weak and exhausted, as after illness or severe muscular exertion. Fainting is more apt to occur in hot, crowded places, as in theaters or churches, than in the open air.

The condition is ushered in by a sensation of weakness and exhaustion. The face is seen to grow pale, and it

is apparent that the sufferer is taking little interest in his surroundings. When questioned he is apt to answer at random or not at all. The breathing is shallow and the pulse is either very slow or very weak. Often it is impossible to detect the beating of the pulse at the wrist. As the condition develops, unconsciousness occurs, and the patient falls limp to the floor.

Treatment. When the first sensation of faintness occurs, loss of consciousness can often be avoided if the patient is given a glass of water and allowed to stand by an open window. When more active measures are necessary, it is a good plan to place the patient in a chair, with the body bent forward, the head being held between the knees.

This accomplishes two things: it places the head lower than the heart, and allows the blood to run into the brain, and it squeezes together the contents of the abdomen, forcing the blood from the large abdominal veins into the general circulation. Try this yourself and notice how this position held for a minute or two will cause flushing of the neck and face.

If unconsciousness has already occurred the patient should at once be placed flat on his back with the head low, preferably lower than the rest of the body. A fainting person should not be held upright under any circumstances. In ordinary cases the horizontal position is all that is required, recovery soon taking place. The position should be continued for a few minutes, however, so that recovery may be complete. If paleness recurs upon standing, there is danger that the patient may again faint and further treatment be required.

In addition to the above, for mild cases and to prevent recurrence, stimulants may be given by mouth. Aromatic spirits of ammonia, whisky or brandy, ice-water, or hot coffee may be given. Cold sponging of the face and chest and smelling salts are additional aids.

Persons subject to fainting spells, when there is no disease of the heart, may obtain relief and diminish the attacks by daily cold sponging of the chest and face, and by exercises to strengthen the heart and blood-vessels. When nervous influences, such as the sight of an operation, cause faintness, it is possible to school one's self by

repeatedly being present at operations, and thus overcoming the tendency to faint, and by taking the sitting position outlined above when the first faintness occurs. Once conquered the condition is not apt to return.

Fainting or Loss of Consciousness is always the cause of considerable excitement and alarm among people in all classes—for frequently it is the initial sign of a serious illness. However, a great majority of such cases are not dangerous.

In an accident, where there is evidence of severe injury to the head, loss of consciousness may mean fracture of the skull; as result of a fall without evidence of injury, it might mean concussion of the brain. Fainting is one of the manifestations of shock, which can be very slight, as the sight of blood. Loss of consciousness may be the result of drunkenness or of indulgence in narcotic medicines as, opium and chloral. Convulsions associated with loss of consciousness would lead one to suspect epilepsy, or kidney disease.

A sudden loss of consciousness in a person of advanced years, might make one think it was due to apoplexy or stroke.

Frequently one comes across an individual in an unconscious state, and at the moment it is difficult to state the exact cause. Under such conditions a complete survey of the surroundings should be made with all possible acuteness, and any bottles or vials in the vicinity of the victim should be noted and removed as evidence.

A complete examination of the head and face might reveal evidence of an injury that would produce a fractured skull. If the face is drawn to one side, paralysis may be indicated. A bloated flushed face, with an odor of alcohol about would indicate drunkenness.

FITS OR CONVULSIONS

Definition. A fit or convulsion is characterized by a jerky twitching of the muscular structure of the body—sometimes only a portion of the body—as the face, or the arm or leg; sometimes one half of the body, or the twitching may include the entire body.

The condition is beyond the control of the individual after it has started, and may spread to all parts of the muscular structure. When the entire muscular system is involved, the distortion of the face is remarkable, and the force of the convulsion is only apparent when one tries to restrain such a victim.

Causes and Symptoms. In adults, the most common cause of fits is **epilepsy.** This may attack only a portion of the body or the entire body. The victim may become perfectly rigid, or utter a peculiar cry just before falling. He becomes immediately unconscious, is thrown into violent convulsions of arms, legs, face, or entire body. His face becomes distorted and bluish red in color; he froths at the mouth and grinds his teeth. Frequently the victim bites his tongue or lips. The convulsion usually lasts about five minutes and then the patient passes into a deep sleep.

Treatment. Nothing can be done to stop an attack when once it has started. The victim should be so placed that he can not do himself harm. Gently lay him down and loosen the collar, tie, and top of shirt. Try to restrain him, but not roughly. If possible, try to protect the patient from biting his tongue by inserting a handkerchief wrapped about a lead pencil between his teeth. Give him plenty of air. Do not give him anything to drink. As the spasm relaxes he will begin to breath regularly, and his color will improve. Allow him to rest as quietly as possible and protect him from the cold by blankets or an overcoat.

If he vomits turn his head to one side, so that all the food will run out. Do not in any way try to arouse him by rubbing or slapping, for often such methods may cause repeated attacks.

Send for an ambulance, for the patient should rest for twenty-four hours after such an attack.

Convulsions or fits may be brought about by a stroke of apoplexy; in the emergency it is hard to tell the real cause. The care of the victim does not differ, however, for all who are unconsious or unable to make themselves understood should be treated with great consideration.

Do not attempt to give anything by mouth, unless you feel sure the patient is able to swallow.

Fits and convulsions occur quite suddenly, like a cloudburst from a clear sky, as the first notice of a serious and damaging **disease of the kidneys.** Here, again, in the emergency the cause is beyond First Aid, but the care of the victim is exactly the same, until the arrival of trained medical aid.

Once again—the treatment is rest and quiet together with protection of the victim from doing himself harm and also from chilling the body.

HYSTERICAL UNCONSCIOUSNESS

Hysterical unconsciousness is the result of a functional disorder of the nervous system. The patient, usually a woman, falls to the ground, apparently unconscious, but the fall is not so heedless or sudden as to result in injury. Often there is no known cause for the attack. Sometimes, though, it is brought on by a fright or by an emotional shock.

The face appears normal, the eyes are closed; but the lids are tremulous and any attempt to open the eyes is resisted. The eyeballs are rolled upward and the pupils are normal. The pulse is normal, but the respiration is greatly disturbed, possibly slow and deep, or very shallow and rapid. The body may be limp or held tight. If the hand is pinched or pain caused in any other manner, the part is withdrawn, but the patient can seldom be made to speak or cry out. In short, the entire appearance is that of a person who is "faking" for some unknown cause.

When the physician arrives, patients of this type are surrounded by a crowd of sympathizers who are rubbing the wrists and dashing cold water in the face and otherwise causing a great commotion. In some cases there are convulsive movements of the arms and legs (hysterical convulsions.)

Treatment. While the unconsciousness is not a true coma, yet it is due to a loss of nerve control, and should not be treated as ordinary malingering. The patient should be left with one unexcitable attendant, who should not give any treatment, but should speak quietly and firmly, and attempt to help the patient to gain control of herself. The usual result is that after a few

minutes recovery is complete. In cases which persist for some time, the opinion of a physician should be secured. Even among physicians, however, cases may be wrongly diagnosed as hysteria, and later a more or less serious complaint is found which was entirely overlooked.

SUNSTROKE

When one is exposed to the rays of the sun or to extreme heat the tendency is toward an increase of the internal temperature of the body. Thus a temperature of 100° F. in very hot weather is not uncommon, and has no special significance. The normal loss of heat is increased through increased perspiration, and the rise of temperature in the body does not become excessive. The mechanism which causes increased perspiration is under the control of the nervous system.

After prolonged exposure to the sun the nerves which control this regulation become exhausted, with the result that the temperature of the body gradually rises, in severe cases rising as high as 105 to 107° F. This condition is known as heatstroke or sunstroke. The higher temperatures, unless promptly counteracted, result, in a short time, in unconsciousness and death.

Symptoms. The attacks may be preceded for several hours, or even two or three days, by certain warning signs, such as muscular weakness and fatigue, nausea, a sensation of weakness in the pit of the stomach, headache, and dimness of vision.

As these symptoms become more marked they may result, slowly or rapidly, in a state of unconsciousness. The face is flushed, the pupils are dilated, the skin is hot and dry, the breathing is labored, and the pulse over active. The temperature (taken in the rectum or under the armpit, if the patient is unconscious), is always considerably above normal.

Prevention. During very hot weather one's activities should be decreased as much as possible. The clothing should be cool and loose. When in the direct rays of the sun, the head should be shaded by a light, well ventilated hat.

The diet should contain little meat and few sweets. It should be light and unstimulating. Cool water should

be drunk freely and frequently. Cold sponging and cool baths may be frequently taken. Warm and hot baths, contrary to the common belief, do not make one cooler, and should be avoided in hot weather.

It is hardly necessary to add that persons already weakened by disease or exhaustion, must take special precautions to avoid sunstroke.

Treatment. If sunstroke is recognized before the temperature is high or unconsciousness occurs, it may be sufficient to allow the patient to rest in the shade, bathing the head, chest, and wrists in cold water, and giving a light stimulant, such as aromatic ammonia or cold coffee.

In more severe cases, where unconsciousness has occurred, the patient should be removed to a hospital, stripped, and put to bed wrapped in a sheet wet with cold water, and kept wet by frequent sprinkling with ice water. The cold pack (or cold bath) should be continued until the temperature is below 103° F.

An ice-cap to the head, cool drinks, and massage of the body during the cooling process, are all valuable additional treatment.

The cold pack must not be too long continued, or the temperature may be reduced considerably below normal. After it is stopped, watch the patient carefully. If the flushing of the face returns, and the temperature rises, the cold pack should again be started, but if the patient remains pale, with a normal or subnormal temperature and a weak and rapid pulse, he is evidently suffering from the secondary effects of the injury to the nerves, and requires treatment to prevent secondary shock. During this stage it may be necessary to apply external heat.

After the immediate effects of the sunstroke have passed off, the patient should be kept at rest for several days until recovery is complete, and should avoid prolonged exposure in the sun for several months.

Heat Exhaustion

Heat exhaustion occurs as a result of working in a heated atmosphere, especially when the physical or mental powers are exhausted or depressed.

Symptoms. The symptoms differ from those of sunstroke, and are more those of exhaustion. The face, instead of being greatly flushed, is pale or only slightly flushed, and the skin is moist and may be cool. The temperature is not increased, and the pulse is rapid and weak. Temporary unconsciousness may occur.

Treatment. As this condition is more in the nature of syncope, or fainting, the application of cold is unnecessary. The patient should be laid horizontally in a cool place and given cool drinks and mild stimulation. Stokers who are brought to deck unconscious are usually able to return to work within a few hours.

SUFFOCATION BY DROWNING

Considering the fact that many lives are lost by drowning, and that the water frontage of New York City has considerable mileage, it is suggested that all members of the Police Force acquaint themselves with simple and effectual methods of rescue and restoration.

The removal of the drowning person from the water is the first step necessary. This requires some knowledge of swimming, and of the various methods of rescuing a drowning person in the water.

The following ideas may in some instances be practical when confronted with the emergency of a drowning person :

1. When a person is discovered to be drowning, call to him in a loud voice that he will be saved—this will help to prevent weakness from fright.

2. Throw to him a life preserver—a plank, a chair, a bench, or some such object that will float, and summon aid.

3. Do not jump into deep water unless you are a good swimmer.

4. Undress as completely and as quickly as possible.

5. Do not touch the drowning person while he is violently struggling in the water.

6. At the first opportunity, seize him by the hair if possible, and turn him quickly on his back.

7. Swim on your back, towing the victim after you, place his head on your chest—holding the head with one arm, so that your other arm is free.

Resuscitation of Drowned Person

The steps to be taken in the resuscitation of a drowned person are as follows:

1. Loosen the clothing about the neck and chest.

2. Remove coat and vest as quickly as possible—loosen belt—loosen all clothing about the stomach.

3. Pry open the mouth by the use of small bit of wood or pencil which may be held in the corner of the mouth.

4. Wrap a handkerchief about your index finger, and clear the throat of seaweed or rubbish.

5. Grasp the tongue and pull it forward, and then with a sweep of the covered finger the throat can be cleansed.

6. **Artificial Respiration.** Turn the patient on his abdomen—place a handkerchief on the ground where his face will lie, turn his head on the right side and carry out the following rules:

   a. Press firmly with both hands over the lower part of the chest, as the patient lies on his stomach. Continue this pressure for four or five seconds. This is to help press out the fluid and the frothy material which collects in the lungs. Then suddenly remove the hands to allow the entrance of air by the natural recoil of the ribs.

   b. Grasp the patient's left shoulder, and roll him on his right side. This takes but two seconds.

   c. Each time patient is rolled on his right side, grasp the left wrist and raise it above the head in line with the body. This will help to expand the chest, and allow more air to enter the lungs. Roll back on abdomen.

Repeat operations a, b, and c at the rate of 12 to 15 times a minute until natural breathing is established.

During this time all clothing should be removed in the ordinary way, or cut off.

The body should be rubbed dry, and friction of the limbs toward the heart should be applied. The patient should be wrapped in warm blankets and heat applied in the form of hot-water bottles or bricks.

Great care must be taken of all patients found unconscious, for pneumonia frequently develops as a result of foreign material trickling down the windpipe during unconsciousness.

FROSTBITE

Frostbite is an injury to the tissues resulting from exposure to cold. This may not necessarily be a prolonged exposure, for severe injury may result from a short exposure during intense cold.

Parts of Body Affected. Usually the exposed parts are most frequently injured, as the tip of the nose, the ears, or cheeks; sometimes the fingers and toes are nipped, for circulation in these parts may be poor as a result of the exposure.

Symptoms. *Pain*, which is usually present when an injury to the tissue occurs, is frequently absent. There may be a sensation of tingling in the part, but acute pain is not experienced in the freezing process. Onlookers are more likely to recognize the condition than the individual himself. The color at first may be reddish blue, but eventually the part affected becomes dull navy-blue or white in appearance and the skin becomes shriveled and hard. This appearance is very abnormal, and attracts the attention.

Treatment. The frozen parts must be thawed very gradually. They should be gently rubbed with snow or cold water, and warmed by being held in the hands of the manipulator. It is wise to place the patient in a cold room, and gradually adjust the frozen parts to a higher temperature. The pain is intense in the frozen parts if suddenly placed before intense heat.

Indians, lumbermen, etc., have found that oil of turpentine is the best application at all stages.

SUFFOCATION BY ILLUMINATING GAS

The ordinary form of gas poisoning is by carbon monoxide, and is ordinarily found in cases of poisoning by illuminating gas.

The onset is slow, and unconsciousness often occurs without warning.

Poisoning with gas from coal fires, sewer gas, mine gas, and from the exhaust of an automobile in a closed garage, all present similiar symptoms, and require essentially the same emergency treatment.

Symptoms. In cases which are only slightly affected, the symptoms are headache, dizziness, nausea or vomiting, rapid breathing and rapid heart action.

Treatment

1. Remove the patient to fresh air.
2. Loosen the clothing about his neck.
3. Have him walk around, if he is not too weak.
4. Small doses of baking soda (sodium bicarbonate) in a half-glass of water if he is able to swallow.
5. Teaspoonful of aromatic spirits of ammonia.

If an alarm has been given that a victim is in a gas-filled room and must be rescued, certain precautions must be taken by the rescuer :

1. Never take an open light into a gas-filled room.
2. Take two or three deep breaths of air, and then hold the breath until a window is reached.
3. Open the window, and take another deep breath at the window, and then search the room for the victim.
4. Carry the victim into the open air, and return yourself, or send some one to continue the search for others.
5. Send for a doctor.
6. If the breathing of the victim has ceased, or is very shallow, start artificial respiration. See page 107.

7. As the action of the gas on the circulating blood is to destroy its power to carry oxygen, administer oxygen.
8. Trained medical assistance is necessary, and patient should be sent to a hospital.
9. If such assistance is not available, the patient must be placed in bed, with plenty of warm blankets and plenty of fresh air, and small quantities of stimulating and warm fluids should be given, such as hot broth, tea, coffee, and water.

A dose of salts in small quantities repeated three or four times will help to empty the bowels.

SUFFOCATION BY CHOKING

Choking may result from a constriction about the neck, or from a foreign body, as a peach pit, a large piece of meat, or a piece of candy, lodging in the throat.

Symptoms. The victim is suddenly conscious of a sensation of pressure in the throat and also of extreme difficulty in breathing. The pressure and shortness of breath becomes quite disturbing and as a result the patient runs from place to place seeking relief—the face becomes flushed and often blue.

Treatment. In adults a foreign body can often be removed from the windpipe by a sharp blow upon the back, which causes a sudden expulsive movement. Children can be picked up by the heels and held head downward to dislodge a small particle which has been drawn into the windpipe or throat.

Sometimes if the above methods are not satisfactory, a foreign body in the back of the throat may be dislodged by means of a finger introduced into the mouth.

Occasionally, in patients suffering from alcoholism or unconscious from poisoning or drowning, the tongue falls back and shuts off the windpipe; this condition is relieved by drawing tongue forward.

When the throat is clear and there is no constricting band about the neck, breathing should be resumed immediately. If the patient does not begin to breathe, **artificial respiration** should be started.

DRUGS

While the administration of drugs is not properly a part of First Aid it is desirable that one should be familiar with a few drugs that are most commonly used.

Stimulants

1. Coffee, black, given warm, is very stimulating.

2. Tea, given warm, is also mildly stimulating.

3. *Whisky*, diluted, is stimulating, but very temporarily so.

4. Aromatic spirits of ammonia, one-half teaspoonful doses in a little water.

Sedatives. *Aspirin* in doses of 5 or 10 grains every four hours helps to deaden pain and quiet nervousness.

Cathartics. Castor-oil, in doses of 2 tablespoonfuls is very efficient.

Epsom salts, ½ to 1 ounce.

Rochelle salts, ½ to 1 ounce.

Sodium phosphate, 1 to 2 teaspoonfuls.

Citrate of magnesia solution, 6 to 10 ounces.

Milk of magnesia, 2 to 8 teaspoonfuls.

All these saline cathartics work rapidly and well.

Ointments. Boric acid ointment is very soothing and can be used on all parts of the body. Zinc oxide ointment is also very good for eczema.

Disinfectants and Antiseptics. Solution of boric acid —one teaspoonful to a pint of water.

Solution of sodium bicarbonate (baking soda)—one teaspoonful to a pint of water.

Solution of epsom salts—one tablespoonful to a pint of water—as a wet dressing for a sprain or for open wounds.

Tincture of Iodin. Regular strength 7½% applied lightly and carefully on an open wound may prevent infection. Too much, however, damages the tissue.

POISONS

Poisons are defined as substances which, when taken into the system in amounts larger than the ordinary dose, may produce serious trouble and even death.

Poisons are taken accidentally, or purposely with suicidal intent.

The kinds of poisons taken with suicidal intent change from time to time. During one period, carbolic acid will be the poison used. Then for a period bichlorid of mercury will be mentioned in connection with poison cases. Frequently tincture of iodin has been taken in large amounts in the belief that its action will cause death.

Poisons are divided into three classes:

1. Those which cause local destruction on the mouth, throat, stomach, and intestines. They cause violent pain and irritation wherever they touch, when introduced or swallowed, such as acids, croton oil, and silver nitrate (caustic poisons.)

2. Those which do not cause any local irritation, but produce serious general symptoms, as opium, belledonna, chloral, strychnin, wood alcohol (narcotic poisons).

3. Those which produce both a local irritation and destruction, and also severe general symptons, as carbolic acid, bichlorid of mercury.

Recently the hospitals have been receiving many patients who have taken an overdose of sleep producing drugs—such as veronal, which apparently can be obtained without a doctor's prescription. This type of drug does not produce any local irritation, but its general effect is to produce a very deep sleep—almost coma. Frequently it has proven fatal.

Symptoms. The symptoms of poisoning will vary according to the type of substances taken.

Locally irritating poisons are:

Muriatic Acid	Carbolic Acid	Caustic Potash
Nitric Acid	Ammonia	Caustic Soda
Oxalic Acid	Lye	Caustic Luna
Sulphuric Acid	Pearlash	Silver Nitrate

All these substances cause severe irritation and destruction throughout the mouth, the throat, stomach, and intestines. They all produce severe burning pain in the mouth and the stomach, difficult swallowing, great depression, and the vomiting of material which may contain blood.

In carbolic poisoning, the lining membrane of the mouth becomes white, hardened, and numb. It is easy to detect the odor of carbolic acid.

Treatment. Call a doctor.

If it appears that a person has taken an overdose of some irritating and poisonous acid or alkali, do not administer anything that will cause vomiting. The poison itself has caused great destruction and harm in its passage from the mouth to the stomach, and any added irritation might be painful and do harm.

For acid poisoning give alkali (such as baking soda, soda bicarbonate, saleratus, chalk), three or four teaspoonfuls in a glass of water. For lye and other alkali poisoning give soothing solutions, that will trickle down and not require effort, such as raw eggs, cream, milk, sweet oil, or olive oil. Place the patient in bed, cover with plenty of blankets and protect the body as much as possible from chilling.

Symptoms. Poisoning by substances which produce both a locally irritating effect and general poisoning, such as mercury, arsenic, copper and iron, all cause violent pain in the throat, stomach, and bowels; vomiting and severe diarrhea; tenderness through the abdomen; bloody stools.

Treatment. Send for a doctor immediately or call an ambulance—while waiting do not give irritating substances that will cause the patient to retch. Give raw eggs, milk, milk of magnesia.

The stomach-tube is only to be used by trained medical attendants.

Symptoms of Sleep-producing or Narcotic Poisons.

1. Chloral produces profound sleep; breathing slow and shallow; dilated pupils; rapid, feeble pulse. The remains of poison will be found near by.

Treatment. Summon medical aid or call an ambulance. Arouse the patient, if possible—give stimulating drinks, such as coffee, or whisky, if patient can be made to swallow—keep patient well covered.

2. Opium produces giddiness; drowsiness or unconsciousness; respiration very slow; pupils contracted to the size of a pin point.

Treatment. Summon medical aid or send for an ambulance. Try to keep the patient awake if possible, and give warm stimulating drinks.

Several other poisons might be mentioned, such as aconite, belladonna, lead phosphorous, prussic acid, and strychnin—of these prussic acid is the most severe, and proves fatal most rapidly. Whenever the emergency presents where it is evident that any of the above poisons have been taken, whether accidentally or with suicidal intent, the first requisite is to place the patient into the hands of the doctor. This is best done by calling an ambulance. The patient must be kept quiet, well protected from cold, and if the patient is able to swallow, stimulating, warm drinks should be given.

Emetics. Sometimes it is necessary to administer some mild substance which will cause the patient to disgorge as much of the stomach contents as possible by vomiting. Such substances are called "Emetics."

1. Vomiting may be produced by placing the finger back in the mouth to the pharynx. Sometimes a feather or some other soft material to tickle the throat will cause vomiting.

2. Drinking large quantities of warm water will often cause vomiting. A little salt added will increase the effect.

3. Chewing and swallowing tobacco juice will cause the stomach to rebel.

4. Drinking mustard water, made by adding a teaspoonful of powdered mustard to a tumbler of luke-warm water, makes an excellent emetic.

CONTUSIONS, SPRAINS, AND FRACTURES

Contusions

A contusion is a bruising or injury of a portion of the body without the breaking of the skin. The discoloration and swelling, which are due to small hemorrhages beneath the skin, are best treated in the early stages by cold applications, such as, an ice cap or cold wet cloths. At the end of thirty-six hours hot applications, such as, a hot-water bag, hot towels and gentle massage, will hasten the absorption of the blood and the return to normal of the part injured.

Sprains

A sprain is a wrenching of the joint, causing a stretching or tearing of the ligaments and resulting in pain, swelling, and disability of the injured joint. Sprains can not be always distinguished from fractures; therefore before attempting to treat sprains, surgical opinion or help should be had. It is absolutely wrong and dangerous to pull or twist the sprained ankle, wrist, or fingers with the idea of replacing the bones. If seen early after the injury and we are assured by surgical opinion that there is no fracture, firm, snug bandaging or strapping with adhesive tape will keep down the swelling. If this procedure is not possible, cold soaks or cold wet applications will help. As the pain and swelling begin to disappear, the use of the injured part is advisable, always under the direction of a doctor.

Fractures

Fractures are divided into simple and compound. A *simple* fracture is a breaking of the bone without wounding or injury of the skin. A *compound* fracture is the breaking of a bone together with an opening in the skin leading to the fracture. Despite the common idea, that there is a difference between a *break* and a *fracture*, there is really no distinction; a fracture is a break and a break is a fracture.

It is much better for the first-aid worker to remember the following few principles or rules than to try to learn how to treat all the different fractures:

The injured person should be made as comfortable as possible with some support given to the fractured bone, as a pillow or folded coat under the arm or leg.

It is better if the clothing is to be removed, to cut it through the seams.

Do not attempt to reduce or "set" the fracture. A moderately gentle pull in the normal or usual direction of the leg or arm, is all that is necessary.

Do not attempt to handle or move a patient until the limb has been made immovable by applying splints.

Keep the injured person as warm and as comfortable as possible.

Do not attempt to distinguish between *sprains*, *dislocations*, and *fractures*. Treat all doubtful cases as fractures.

In compound fractures, the first thing to do is to apply a sterile dressing to the wound in the skin. Emergency splints may be made from barrel-staves, laths, canes, umbrellas, cigar boxes, etc. These should be padded with cotton; if cotton is not obtainable, ordinary paper can be used.

When splinting a broken limb, remember to make the joint below and above the fracture immovable. For example; in leg fractures the splint should include the ankle and knee joints, always leaving the toes and fingers outside the splint, so that they may be inspected as to blood circulation.

A splint may be held in place by a bandage or a piece of any material, including cord. The splints should be applied snugly but must not check circulation.

In fractures of the forearm or shoulder joint, the chest may be used as a splint by bandaging the arm to the chest, after placing the forearm in a sling.

When moving a person with a broken bone, the entire attention of one person should be given to the injured limb.

Where surgical attention is promptly available, as in large cities, by ambulance calls or by summoning a physician, it is better to do no more than to make the injured person comfortable as described above, until more skilful help arrives, then to watch the application of splint bandaging, transportation, etc. By observation and practise much more can be learned of the treatment of these injuries than by reading of them.

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