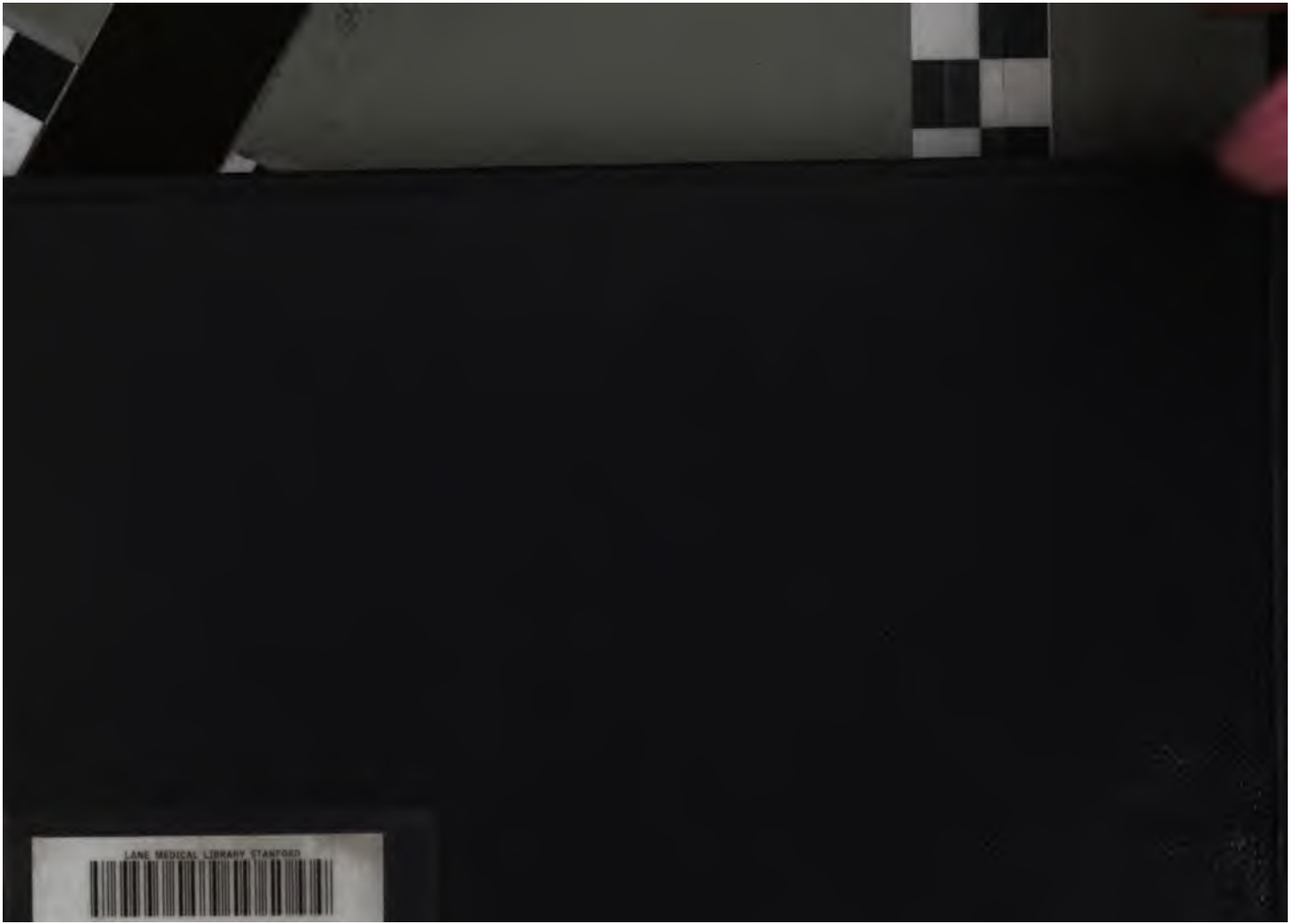

PRACTICAL HOME NURSING

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PRACTICAL NURSING

AN ELEMENTARY CONDENSED TEXT-BOOK FOR TRAINED ATTENDANTS

BY

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PREFACE

During a period of some years in teaching classes for Trained Attendants the need has been felt for a simple textbook. This little book, therefore, is based on the requisite knowledge for such courses and covers only just enough anatomy and physiology to make clear the reasons for the practical work involved.

Care has been taken to define clearly and accurately the different steps in the necessary technique of simple treatments and the care and comfort of the patient. The treatment in cases of common emergencies has been outlined; the subject of acute disease and the treatment peculiar to such conditions has purposely not been discussed.

L. H.

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PRACTICAL HOME NURSING

CHAPTER I

THE STRUCTURE OF THE BODY

The Nervous System

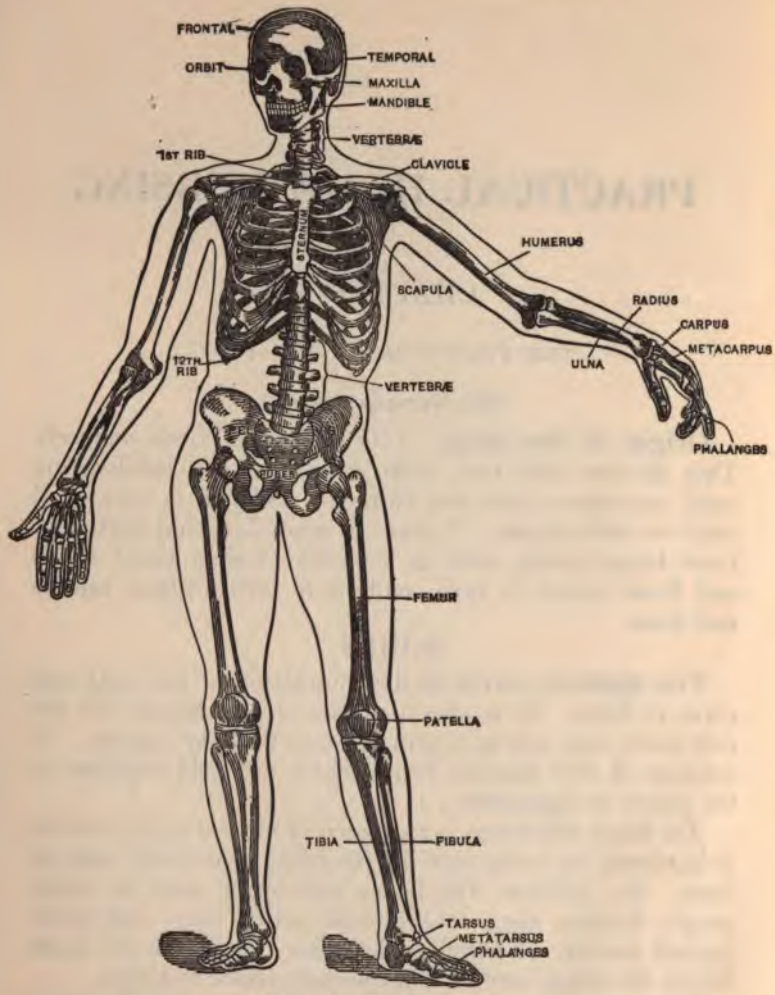
Origin of the body. Life originates from one cell. This divides into two, each successive cell subdividing until numerous ones are formed. Cells of a like kind unite to make tissue. Tissues of a similar kind unite and form larger units, such as muscular tissue, blood tissue and fluids which in turn combine to form organs, muscle and bone.

BONES

The skeleton serves as the foundation of the body and gives it form. It is also a means of attachment for the soft parts, and acts as a protection to the vital organs. It consists of 206 distinct bones which are held together at the joints by ligaments.

The **bone** substance is composed of animal matter which is hardened by being mixed with salts, principally salts of lime. In children, the bones are softer than in older people because they contain less earthy salts and more animal matter. Therefore the older the person the more brittle the bones become and the more liable to break.

Enveloping the bone is the membrane called the periosteum which protects and nourishes it and is very sensitive when injured.



THE HUMAN SKELETON

TABLE OF BONES

Cranium or Head	8
Face	14
Ears	6
Hyoid — supporting tongue	1
Trunk of Body	
Sternum or chest bone	1
Ribs	24
Vertebrae or backbone	26
Upper Extremity	
Clavicle or collar bone	1
Scapula or shoulder blade	1
Humerus or arm	1
Radius } Forearm	1
Ulna } Forearm	1
Carpus or wrist bones	8
Metacarpus or hand bones	5
Phalanges or finger bones	14
	32 x 2 = 64
Lower Extremity	
Hip bone	1
Femur or thigh-bone	1
Patella or knee-cap	1
Tibia } Leg	1
Fibula } Leg	1
Tarsus — ankle	7
Metatarsus — foot	5
Phalanges or toe bones	14
	32 x 2 = 62

Four varieties of bone comprise the human skeleton:
Long: — serve to support the weight and act as levers:
Example: — legs, arms.

Flat: — for protection and to provide a broad surface for muscular attachment.
Example: — Ribs and sternum.
Short: — for strength and compactness.
Example: — wrist and ankle.
Irregular: — lack definite shape and so are not to be classified with the others.
Example: — vertebrae.

CAVITIES AND ORGANS

Cranial .....Brain
Spinal canal .....Spinal cord
Thoracic or chest ...Lungs, Heart, Trachea, Esophagus.
The Diaphragm muscle separates the thoracic abdominal cavities.
* Abdominal .....Stomach, Liver, Pancreas, Small and Large Intestines, Spleen, Kidneys, Appendix
Pelvic .....Some of the Generative Organs, Bladder and Rectum.

There are also small cavities such as the mouth, nose, eye, ear.

Note: Position of organs in the abdominal cavity.

The stomach is situated in the upper part, to the center and left.
The liver is in the right hand upper part below the diaphragm.
The spleen is in the upper, left-hand part below the diaphragm.
The kidneys are at the small of the back on either side of the spine, about the waist line.
The pancreas is behind the stomach.
The small intestines are in the lower part of the cavity.

The large intestines nearly surround the small intestines. The appendix is at the point where the small and large intestines meet on lower right hand side.

GLANDS

A gland is an organ which has the power to abstract from the blood certain materials and convert them into a new substance.

JOINTS

A joint is the point of union of two bones. The ends of the bone at all such points are covered with a smooth substance called cartilage, which helps them to glide easily one against the other, and at all joints the synovial fluid is secreted which lubricates them and allows movement without friction. The ends of the bones are held together by ligaments.

LIGAMENTS

Ligaments are strong bands of fibrous tissue attached to the bones on either side of a joint. They are tough and inelastic though, at the same time, very flexible thereby allowing motion of the joints while holding them closely in position.

MUSCLES

Muscular tissue commonly called the flesh of the body is composed of small fibers united in a sheath-covering, and bundles of these bound together form the different muscles. They hold the bones together and serve to give shape and power of motion to the body. Muscle has the power of shortening in length and increasing in thickness, and upon this all motion depends.

When a muscle contracts, its two ends and whatever is fastened to these two ends, are brought together. In this way the bones of the body are made to move, and for every muscle that acts upon a limb from one direction, there is another muscle with a directly opposite action.

Examples of the uses of muscles are:

Locomotion	Work
Breathing	Speech
Facial expression	Peristaltic action.

There are two varieties of muscles:

Voluntary, or those that can be made to act by the power of the will, and

Involuntary, or those acting independently of the will and without one being conscious of them.

The action of the voluntary muscles is made possible through the nerves as each muscle is in communication with the brain or spinal cord through a separate nerve fiber.

TENDONS

Tendons are small, glistening cords of fibrous tissue which attach muscle to bone. A cut tendon is always serious because it deprives the attached muscle of its power to move the bone.

CONNECTIVE TISSUE

Connective tissue is a network of fibrous tissue with fat cells imbedded in it, and this surrounds the muscles and organs.

THE SKIN

The skin forms the outer covering and protection of the body. Its chief uses are:

First — as a covering for the body.

Second — as a heat regulator, by evaporation of perspiration on the surface.

Third — as a waste remover, through the sweat glands.

Fourth — as a special organ for the sense of touch.

It consists of an external layer called the **epidermis** or scarf skin and an internal layer called the **derma** or true skin.

The derma consists of a fibrous substance in which are imbedded nerves, blood vessels, sweat glands and sebaceous or oil glands, while upon its surface are a number of small, highly sensitive projections. Each one of these has a tiny nerve which ends in it, and the sense of touch lies here.

The sweat glands have the function of separating waste material from the blood in the form of perspiration, which passes from the glands to the surface by means of ducts and pores.

The hair and nails are appendages of the skin.

MUCOUS MEMBRANE

At the edge of the openings leading into the body, the skin ends and is replaced with soft, reddish tissue, the mucous membrane, which forms a smooth lining for the interior of all bodily tracts. Its surface is lubricated by a secretion called mucus. This membrane is very absorbent and sensitive to infection.

SEROUS MEMBRANE

This is a thin tissue lining some of the cavities of the body and covering its organs, as for example:

Around the lungs, where it is called the pleura,
Around the intestines, where it is called the peritoneum,
Around the heart, where it is called the pericardium.

This membrane secretes a fluid to moisten its surfaces.

THE NERVOUS SYSTEM

The nervous system is a chain of nerve cells in close relation to each other and extending by branching nerve fibers to all parts of the body.

The brain, which is enclosed in the skull, is the central power, and the spinal cord (protected by the strong bones of the vertebrae or backbone) acts in alliance with the brain, and from these centers all nerves branch.

The nerves control the muscles and in case there is pres-

sure from any cause on a nerve, the muscle controlled by it is weakened or paralyzed until the pressure is removed, after which it may regain its power by gradually increased exercise.

The nervous and physical systems affect one another closely, so that in nursing the sick, special care should be taken not to overtire or over-excite the nervous system because of its effect on the physical condition, nor to overtax the physical strength because of its effect upon the nerves.

Reaction from nerve strain usually means physical exhaustion and the best remedies are rest, quiet, sleep, and, if possible, diversion from the cause of the nerve strain.

QUESTIONS

What elements in food supply bone with nourishment?
Name bones of the upper extremity.
Name bones of the lower extremity.
Describe the clavicle.
What bones form the pelvic cavity?
Where is the diaphragm and what is its function?
Describe the formation of a joint.
What are the functions of muscles?
Name the organs of chest and abdominal cavities.
Describe the skin.
What is the central force of the nervous system?
What organs do the nerves most directly control?
How may nerve strain be prevented?

CHAPTER II

CIRCULATION OF THE BLOOD

Respiration — Pulse — Temperature

Blood. Blood, the vital fluid of the body, is composed of red and white corpuscles or little solid bodies floating in a serum. It is the medium for conveying both oxygen from the air and the product of food to the tissues of the body to give nourishment and to create heat and energy. This oxygen is derived from contact of the blood with air in the lungs and the product of food (after the completion of the process of digestion and absorption), is conveyed directly into the blood circulation. Blood also has the power of collecting waste from the tissues and bringing it to the lungs to be breathed out from the body.

Blood tests. Blood tests are made by a physician to determine the condition of the blood by analysis. One method is to prick either the ear or the tip of the finger and obtain blood in that way; another is to have the blood drawn directly from a vein. In either case, the surface of the skin should be disinfected with alcohol, or painted over with iodine before the physician draws the blood from the part.

Blood pressure. By blood pressure is meant the pressure exerted by the blood on the walls of the vessels in which it is flowing.

CIRCULATION OF THE BLOOD

Circulation is the conveying of the blood through the body by means of the heart and three kinds of blood vessels.

The **heart** is a hollow muscular organ about five inches long, placed in the center and left of the chest cavity. The

left side of the heart which always contains arterial or pure blood, is completely separated from the right side which contains venous or impure blood. Each side is divided into two parts; an auricle and a ventricle, with a valve between. The heart is provided with a covering called the pericardium.

Arteries are the vessels which carry pure bright blood from the left side of the heart through the body.

Veins are the vessels which bring the dark, impure blood back to the right side of the heart. They are provided with valves which prevent mixing of the impure with the pure blood.

Capillaries connect the arteries and veins. They are very minute and almost porous vessels and during the time the blood passes through them it gives off vitality and nourishment to the tissues and absorbs impurities from the tissues.

Circulation is carried on as follows: the contraction of the heart forces the blood from the left side into the **aorta,** the largest artery in the body, and then to smaller and smaller arteries until it reaches the capillaries. After circulating there, it goes first into the small and then into the larger veins, until finally the two largest veins of the body, the **superior** and **inferior vena cava,** bring the blood to the right side of the heart. It is then carried to the lungs through the pulmonary artery, (this is the only artery that carries impure blood), to be purified by coming in contact with oxygen from the air, and by giving off impurities to be breathed out. The pulmonary veins (the only veins that carry pure blood) take it back to the left side of the heart.

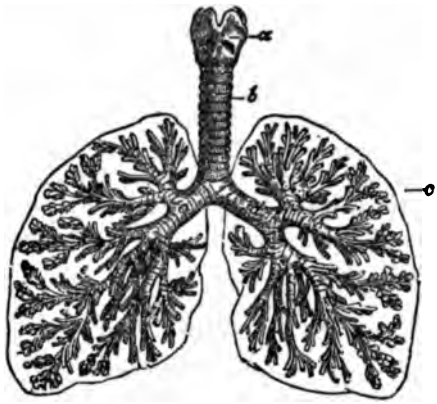
THE LYMPHATIC SYSTEM

The **lymphatics** are an extensive network of small vessels distributed generally through the body, and contain a fluid called **lymph.** They are often spoken of as absorb-

ents as they absorb certain elements from the blood and distribute them to the tissues; they also absorb waste from the tissues and convey it to the blood to be sent out of the system.

RESPIRATION

Respiration is the act of breathing. The organs connected with this process are: nose, mouth, trachea, lungs. There are two **lungs,** one on either side of the chest cav-



LUNGS AND AIR-PASSAGES.
a, larynx; *b*, trachea;
c, bronchial tubes.

ity, each with its own covering called the **pleura.** The lungs are composed of a sponge-like substance made of air cells and blood vessels. They communicate with the outer air by means of the **trachea** which subdivides on reaching the lungs and forms the **bronchial tubes** in each lung.

The **larynx** is the opening from the mouth to the trachea and is provided with a small lid-like covering which closes during the act of swallowing and prevents food being carried into the trachea.

Respiration consists of two parts, inspiration — or

drawing the air in, and expiration — or driving the air out — but the lungs are never entirely emptied. A large percentage of **oxygen** is breathed in from fresh air which, mixing with the blood, purifies it; and in the circulation of the blood, this oxygen is conveyed to the tissues. A large percentage of **carbon dioxide** is breathed out, thus removing waste from the body which has been gathered from the tissues in the circulation of the blood. The exhaled air is always the temperature of the body and in this way a certain amount of heat and moisture is constantly being lost and the body cooled off.

Counting respiration. Observe the **rise** and **fall** of the chest (which constitutes one breath) and count for a full minute, or for half a minute and double the number. It is better to count this immediately after taking the pulse and while the hand is still on the wrist as the breathing is more natural when the patient is not conscious of its being counted. There is usually about one respiration to four heart beats.

Table of Respiration

Normal	18 per minute
Limits of normal	16–22 per minute
Fast	30 per minute
Very fast	40 per minute and up

Points to notice about respiration:

Its frequency;
Its regularity — or irregularity;
Is it quiet, labored, or noisy?

Note: See emergencies for artificial respiration.

PULSE

Pulse indicates the heart beat. When the heart contracts, it forces the blood into the arteries, and whenever an artery approaches the surface, the pulse can be felt.

This is usually counted at the **radial** artery on the thumb side of the wrist; also at the **temporal** artery on the lower side of the forehead, or at the **femoral** artery in the groin.

Method of counting. If taking the pulse at the **radial** artery, have the arm extended and resting on some support; make slight pressure on the artery with the index and middle finger, and count by tens for a full minute, dividing the count at the half minute to compare the frequency of the beat with the next half minute.

Another method is to count for a half minute and double the number.

Easy method of counting pulse:

1, 2, 3, 4, 5, 6, 7, 8, 9,— 10
1, 2, 3, 4, 5, 6, 7, 8, 9,— 20
1, 2, 3, 4, 5, 6, 7, 8, 9,— 30 — and so on.

Table of Pulse

In adults:	
Normal	72 per minute
Limits of normal	60–80 per minute
Rapid	100–120 per minute
Very rapid	130–140 per minute and up
In children:	
Infancy — at birth ..	130–140
First two years, about	120–110 (at end of second year)
2d to 5th years	100–90
5th to 12th years	90–80

It is generally found that a man's pulse beats more slowly than a woman's.

During sleep the pulse rate is slower.

Some points to observe regarding pulse are whether it is:

fast or slow,

regular or irregular or intermittent,
strong or feeble.

Some causes that hasten pulse are:

fever	excitement
exertion	position
nervousness	sex

Pulse beats faster when a person is in a standing position, and slower when lying down, so whenever it is necessary to save a strain on the heart, keep the patient lying down, or, if necessary to raise a patient who has a weak pulse — do it with a steady, slow movement. There never is an increase of temperature without an increase of pulse, usually at the rate of ten beats for the rise of each degree of temperature, but there can be an increase of pulse-rate without a rise of temperature.

TEMPERATURE

Temperature is the heat of the body. The blood keeps the body warm and the action of the skin, by the evaporation of the watery part of perspiration, keeps the heat from accumulating. This is aided by the accumulation and loss of heat in the act of breathing, and also by the loss of heat in the fluids eliminated from the body. Thus a normal temperature is maintained in health.

Rise of temperature is caused either by overproduction or by imperfect loss of heat. Change of temperature may be the first symptom of disorder and should be carefully watched.

Table of Temperature
(In Adults)

Normal	98.4°
Limits of normal	98–99°
Fever	100 — up°

High fever	103°
Very high fever	105°
Subnormal	Below 98°
Very low	96°
(In Children)	
Normal	98.5°–99°

Temperature of the body is lowest between midnight and 5 A. M. It is highest between 5 A. M. and 10 P. M.

In convalescence, a patient is likely to have a subnormal temperature in the morning for some time, owing to lack of vitality.

Taking temperature of the body. The heat of the body is gauged by taking the temperature with a clinical thermometer which differs from the ordinary thermometer by remaining at the point reached until shaken down and it has a range only from 94–110 degrees. To shake the mercury down, place the stem of the thermometer between the first and second fingers with the bulb downward and hold it with the thumb, and give the hand a sharp jerk. In all cases before taking the temperature, the thermometer should be cleansed with water or alcohol and the mercury shaken down to 96°.

The temperature may be taken by mouth, rectum or axilla (under the arm).

Methods of taking temperature. By mouth. Place the bulb of the thermometer under the patient's tongue, touching the mucous membrane of the mouth, and keep it there from 2–3 minutes, having the lips closed during this time. Remove from the mouth, read and record the temperature. Nothing hot or cold should have been taken into the mouth for at least ten minutes beforehand.

By rectum. This method is the most accurate and usually records a temperature one degree higher than by mouth. It is used for children, very sick people or in cases where the mouth cannot be kept closed. Oil the

bulb of the thermometer and insert about 2 inches into the rectum and hold in place for 2 or 3 minutes.

By axilla. Place the bulb of the thermometer in the hollow under the arm, touching the skin, and hold the arm over the body. Keep the thermometer there for 5 minutes. This will register about a degree lower than by mouth.

To **disinfect** a thermometer wash it in soap and water, not hotter than 105°, then in alcohol.

To test a thermometer, place it with another in warm water at a temperature of 105° and see if both reach the same point at the end of two minutes.

If a thermometer should be broken while in the mouth, have the patient immediately rinse out the mouth thoroughly to remove broken glass and mercury, and give olive oil at once.

To reduce fever without medicine. Make the skin act by bathing with tepid or cold baths, keeping cold to the head. Have the patient in a cool room, under light covering, with fresh air and plenty of fluid to drink. Also give a very light diet and provide for a free action from the intestines.

To raise the temperature. Apply heat, either hot water bottles or bags (covered), taking care not to burn the patient, or hot blankets wrapped closely around patient; hot drinks — such as ginger tea, coffee, tea or alcohol (of the latter a tablespoonful of whiskey in a little hot water). Keep the patient lying down to save the heart action.

QUESTIONS

By what means is circulation carried on?
Describe the heart.
Trace the circulation of the blood from the left side of the heart back to the same point.
What are the functions of the capillaries?
What is the difference between arteries and veins?
Name the largest artery — largest veins.
Describe the lymphatics.
In what direction does the blood in veins flow?
What are the respiratory organs?
Describe the lungs.
How is waste of body removed by the lungs?
How many heart beats to one respiration?
How does air reach the lungs?
What is normal respiration for adult?
Give rate of normal pulse in adult — in child.
How is the pulse affected by rise of temperature?
Mention causes that decrease the pulse rate.
Where can the pulse be counted?
Mention causes that increase the pulse rate.
What keeps the temperature of the body normal?
From what is the heat of the blood derived?
Give normal temperature for adult.
How reduce fever without medicine?
How raise a subnormal temperature?
Describe methods of taking temperature.

CHAPTER III

THE URINARY TRACT

Urine

Urine is the principal waste matter of the body and is separated from the blood by the kidneys and carried out of the system through the urinary tract. Its chief solid constituent is called urea and it also contains a large proportion of water — about 95 per cent.— and uric acid, coloring matter and salts.

The **kidneys** are two small, bean-shaped organs, about four inches long by 2½ inches wide, situated in the small of the back on either side of the spine at the waist line. The urine passes from them to the **bladder** through two narrow tubes, 12 to 18 inches long, called **ureters.**

The **bladder** is in the lowest part of the abdomen, at the front of the pelvic cavity and acts as a reservoir for the urine. It has a capacity of about one pint. The urine passes from this through a small, muscular tube called the **urethra** to the **meatus,** or mouth. In the female, the urethra is 1½ inches long.

It is very necessary that the kidneys be unimpeded in their chief work — that of carrying off the **urea,**— lest this waste matter be carried back by the blood and poison the entire system.

The **normal amount of urine** passed by an average healthy adult in 24 hours is about 3 pints, and the color should be light amber. But the amount passed may be temporarily increased or decreased by various causes, in health as well as in sickness. The amount may be increased by drinking a quantity of fluid, by lessened perspiration or by emotion; and usually when more is passed,

its color is lighter. The amount may be decreased when less fluid is taken into the system, when the skin perspires freely and, usually, when a person is suffering from fever or from some form of kidney disease.

Always observe any change in the color, quantity and frequency in passing of the urine as this often points to conditions in the system which might otherwise pass unnoticed. Also note if there is any distress in passing it.

Suppression of urine is caused by the kidneys failing to act.

Retention of urine is caused by the failure of the bladder to expel its contents.

Incontinence is the failure of the bladder to retain its contents.

Plenty of water should be given to sick people, particularly in cases of fever and when changing from a fluid to a solid diet.

Difficulty in passing urine. There is frequently some difficulty in passing urine from the bladder. This may be either from weakness of the urethra, or contraction of the muscles, and in such a case the patient may be helped to expel the urine by some of the following aids: (1) if allowable, raise the patient to a sitting position; (2) apply heat over the bladder or between the thighs, or put hot water in the bed pan; (3) give a hot drink; (4) give a hot, simple enema; or (5) if the patient is nervous, go out of the room and leave her alone. If necessary to use any further treatment, a doctor should be consulted. Report if the patient cannot pass urine at the end of 12 hours. At any time, if doubtful of a sufficient amount of urine being passed, measure it in a graduated measuring glass or some substitute.

Specimen of urine. To secure a specimen of urine

for analysis. First, wash off the part and then have the patient pass urine into an absolutely clean vessel. From that amount, take 8 ounces and place in a sterile (boiled) bottle, cork, and label with patient's name and send immediately for analysis.

If a 24-hour specimen is wanted, keep in a clean bottle or vessel, and collect all the urine passed in 24 hours. To secure this accurately, have the patient empty the bladder at 9 a. m., for instance. Do not count that at all, but start the record from that hour and keep it until 9 a. m. the next day.

QUESTIONS

Define urine and state from what it is derived.
Describe the kidneys and state their function.
What is the position of the bladder?
What is the function and what the capacity of the bladder?
State the normal amount of urine passed in 24 hours.
How relieve retention of urine?
How relieve suppression of urine?
Describe method of securing a 24-hour specimen.
Name the constituents of normal urine.

CHAPTER IV

THE DIGESTIVE TRACT

The Process of Digestion — The Food Principles — Diet

The digestive tract is known as the alimentary canal which is about 28 feet long and divided into different portions:

Mouth	Small intestines
Esophagus	Large intestine (which
Stomach	ends in the rectum)

The digestive process all takes place in the alimentary canal.

The liver and pancreas are accessory organs which send their juices into the small intestines. (See digestive process.)

Digestion is a mechanical and chemical process by which foods are changed to prepare them for absorption by the tissues. The mechanical part is largely mastication by the teeth and the action of the muscles throughout the different parts of the tract; the chemical part is the effect produced on the food by the different digestive juices.

Absorption is the taking up of food into the tissues when digested, and making it into a suitable solution for absorption by the blood.

Peristaltic action is the movement made by the contraction and relaxation of the muscles of the stomach and intestines.

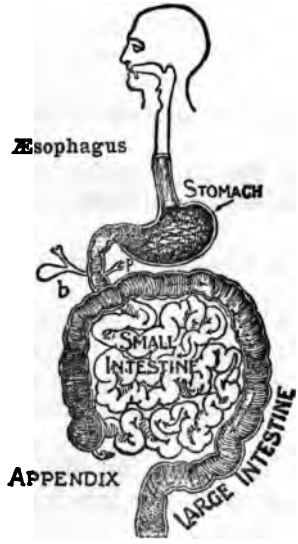
DIGESTIVE JUICES

Mouth	Saliva
Stomach	Gastric juice
Intestine	Intestinal juice
Liver	Bile
Pancreas	Pancreatic juice

FUNCTION OF THE DIGESTIVE ORGANS

Mouth. The functions of the mouth are to secrete the saliva in the salivary glands (this chemically affects certain food elements), and to masticate and make food more soluble.

Stomach. The stomach secretes the gastric juice in



ALIMENTARY CANAL.
b. Bile duct.
p. Pancreatic duct.

its glands, (this chemically affects certain food elements). It makes food soluble, assists in digestion and has some power of absorption.

The liver. The liver secretes the bile, stores it in the gall bladder, and from there it is sent through a duct as needed to the small intestines to assist in digestion. The bile also serves as an antiseptic to the intestines.

The pancreas. The pancreas secretes the pancreatic juice and from there it is sent through a duct to the small intestines to act as a digestive juice in chemically affecting food.

Small intestines. The functions of the small intestines are to secrete intestinal juice (which chemically affects food), to receive the bile and pancreatic juice, to finish the digestive process of all food not previously digested, and to absorb most of the product of food.

Large intestine. The function of the large intestine is to absorb some of the product of food, particularly fluids, and to pass the residue on and out of the body through the rectum.

FOOD AND THE DIGESTIVE PROCESS

Food is a substance essential to the body and combined with oxygen in the air makes the motive power that sustains life. Food contains the chemical elements similar to those found in the composition of the body and after the process of digestion has taken place, the product of food is in a condition to replenish or build up these tissues and become part of them. The combination of food with the oxygen of the air causes combustion which creates the heat and energy in the body necessary for work or activity of any kind. A proper proportion of all classes of food is required to maintain health.

Food adjuncts, such as flavoring, spices, etc., have no nutritive value but they stimulate the appetite and help make variety in the taste of food.

THE FIVE FOOD PRINCIPLES

Principles	*Examples*	*Functions*
Proteins	Lean of meat, Albumen of fish, Curd of milk, Gluten of bread, Egg.	To build up and repair muscular tissue.
Fats	Cream, fat of meat, Butter, oil.	To yield heat, Create energy, Build up fat tissue.
Carbohydrates	Starch, sugar, Fruit, cereals, Starchy vegetables.	To yield heat, Create energy, Store up fat tissue.
Mineral salts	Iron, phosphates, lime (in many foods).	To build up bone and other tissues and keep blood normal.
Water	In all foods.	As a solvent and to form part of all tissues and fluids.

Food may be classified chemically as:
Organic — Proteins, fats, carbohydrates.
Inorganic — Mineral salts and water.

It may also be classified as:
Nitrogenous (meaning proteins).
Non-nitrogenous (meaning all other classes of food).

In regard to their source, foods are divided into
Animal (and this includes their products),
Vegetable, and
Mineral.

PROCESS OF DIGESTION OF FOOD ELEMENTS

The mouth. In a mixed diet, all food is first made partly soluble in the mouth by being chewed with the teeth and mixed with the saliva (the digestive juice of the mouth), and the starches are changed into sugar by the chemical action of the saliva upon them.

The esophagus. The food, after being swallowed, progresses through a tube called the æsophagus to the stomach.

The stomach. In the stomach all food is made soluble and changed by being mixed with the Gastric juice combined with the muscular action of the stomach, and the digestion of the proteins is largely affected by the chemical action of the gastric juice. The semi-solid substance which represents food after the changes in the stomach have occurred is known as **Chyme.**

Small intestines. The food then passes to the small intestines and comes in contact with three juices:

Bile, from the liver;
Pancreatic juice, from the pancreas;
Intestinal juices, secreted in the small intestines.

The fats, which have not previously been affected to any extent, are here digested; the digestion of all food is here completed, and absorption of the food products follow. The milk,like fluid which represents food after undergoing the process of digestion in the intestines is known as **Chyle.**

Large intestine. The absorption of some of this food and also of most of the fluids taken into the body continues all the way down the large intestine, and what is not absorbed, passes off out of the rectum as waste or fecal matter. In all food there is meant to be a certain amount of waste or bulk which is not absorbed and when this reaches

the large intestine, it stimulates the muscular action there and prevents an accumulation of residue which, if too long in the intestines, may cause a reabsorption of it into the system with bad results to the general health.

DIET

A diet comprising all five elements of food is best in health and as far as possible in time of sickness, but in the latter case sometimes a restriction or an elimination of one class of food is ordered because it cannot be digested and assimilated properly in the system under the existing conditions of the illness. To diet a person in any case is to prevent elements of food being put into the body which cannot be taken care of there.

Diet in disease. The principles governing diet in disease are:

(1) To give as much nourishment of the right kind as can be assimilated and at the same time try to provide sufficient bulk to stimulate the intestines to act normally:

(2) To give a sufficient amount of water;

(3) To restrict or eliminate any one class of food, the waste of which cannot be thrown off through the channels by which waste is usually removed from the body;

(4) To restrict foods which are causes of irritation to the system in general or, to any one organ in particular, such as the stomach, kidneys, intestines, etc.

(5) To restrict elements which cause undue acidity.

In acute diseases the diet is usually ordered by the physician, while in convalescence and simple cases of illness it is left more to the judgment of those taking care of the patient. A highly condensed protein food and cereals reduced to flour are rather constipating, while fats, coarse-grained cereals, bread, green vegetables and fruit, tend to prevent constipation.

In time of illness, food is generally given at shorter intervals, in smaller quantities, and in more condensed form

than in health, and the heaviest meal is served in the middle of the day.

Amount. The amount is sometimes regulated by order, but as a general rule it is better to offer too little rather than too much, especially in trying to tempt the appetite.

If the amount is estimated in **calories** (a calory being a heat unit or measure of heat) it means that a sufficient allowance of certain elements in food is made to supply the necessary heat and energy used up by the body.

Care of food. Food for an invalid particularly must always be pure, fresh and clean, and, as **bacteria** easily develops in it, should be kept covered and cold. Meat, fish and milk are particularly susceptible to decomposition.

Choice and preparation of food. The value of food that can be easily digested and assimilated is a very important factor in reëstablishing health. It should be prepared and served in such a way as will tempt the appetite by appealing to the sense of **taste** and **sight**, and meeting the personal desires of the patient as far as practical.

Varying the diet. Make food interesting to the patient by varying the diet as much as is allowable under the circumstances of the illness. Also vary the way of cooking the same articles of food and serve in dainty, unexpected ways. Even bread can be of different kinds and varied in the way it is cut and arranged. If the patient has a persistent craving for something which can do him no actual harm this craving should be satisfied if possible, as the **monotony** of diet is trying to a patient.

Serving food. Meal times are important events to a patient, affording as they do an opportunity to make a break in the monotony of the sick room, and should be made cheerful and agreeable. Before serving a meal have the patient rinse out the mouth and arrange her in a comfortable position with the head and neck supported by pillows, and the tray placed conveniently either on an

improvised stand or upon a bed table stretched across the bed and adjusted to the proper height, or on a bed tray. A substitute for the latter can be made with a board resting on supports on either side of the patient to keep the weight off the knees.

Arranging tray. Arrange the tray in an attractive manner and to look like a well set place at a table, not too crowded, the linen clean, the silver bright, and as dainty china as can be obtained, if possible with a colour scheme in the dishes. Well selected flowers add an interest. Serve cold foods **cold** and hot foods **hot.** Heat cups meant to contain hot fluids beforehand, and serve hot food on a hot water plate, which is a china plate set over an aluminum deep dish fitted with a spout and screw top in which boiling water can be placed to keep the food hot on the plate. This can be substituted by a heated plate placed over a bowl of very hot water.

Feeding a helpless patient. In feeding a helpless patient, allow plenty of time so that there may seem no necessity for hurrying. Support the head at a convenient angle on the pillow, not bending it too far forward. Place the food on the tongue and not just inside the lips. If a patient is able to drink fluid, have the glass only about two-thirds full (so as not to spill it) or use an invalid's cup with a partial cover. Another method is to use a bent glass tube with one end in the fluid. The glass containing the fluid can most conveniently be placed in the hollow of the patient's arm so that the tube may reach the mouth easily. As a substitute for the glass tube, a straw or a piece of clean rubber tubing with a glass tip may be used.

CLASSES OF FOOD

In regard to its source, food is divided into animal, vegetable and mineral, while water exists in all foods.

Patient drinking through glass feeding tube.

Water

About two-thirds of the body consists of water. A certain amount of water independent of the fluid contained in food is essential in illness as well as in health, (1) to flush out the system, (2) to remove worn-out tissue and (3) to assist in assimilating food. At least two quarts of liquid in some form should be taken as the minimum amount in twenty-four hours, some of which is included in beverages with food.

Under ordinary circumstances the available drinking water is considered pure though it should be filtered. Where possible its source should be carefully investigated and if there is the slightest doubt as to its purity, particularly in times of epidemics, it should be boiled to destroy any harmful bacteria in it. In order to avoid the flat taste, consequent to boiling, it may be boiled for only two minutes, then shaken from one vessel to another to re-aërate it. Water can also be purified by being sterilized in the upper part of a double boiler, the water in the lower part of which should be kept boiling for an hour.

A great deal of water is given in the form of beverages such as orangeade, lemonade, tea, etc., which may appeal more to the patient than plain water. It is sometimes ordered in the form of alkaline mineral, or charged water, such as vichy.

What is known as "hard" water generally contains a great deal of mineral deposit and this is constipating. This hardness can be corrected by boiling which tends to cause the mineral salts to settle in a deposit, or bicarbonate of soda can be added to soften hard water.

Ice. As freezing does not destroy all germs and only renders some of them temporarily inactive it is important to have ice come from pure water. If the water for artificial ice is pure that will be quite safe to use. All ice should be washed before being placed in the ice box. This box requires to be kept thoroughly clean as particles of

food, combined with the melting ice, accumulate in the piping where bacteria may develop. This piping can be cleaned with boiling hot soda and water to dissolve any grease that may have been deposited there.

Animal food

Animal food is used in the forms of flesh of animals, fowls and fish, and in the juices extracted from them and also their products such as eggs, milk, etc.

Milk. Milk is largely used in the food of invalids as it can usually be changed, if necessary, to suit the digestion of the individual patient, can be easily taken, is a good medium for other food and in itself contains all of the food elements in the following proportions:

Water . . 87 per cent.	Fat . . . . . .4 per cent.
Protein . 3.3 per cent.	Carbohydrate. .5 per cent.
Mineral . .07 per cent.	

The fats and sugars are in a particularly digestible form and the mineral salts in good proportion. The curd of milk, or the protein, is less digestible in proportion to the other constituents and the milk has often to be changed on this account to suit a patient's needs.

Milk should always be taken slowly so that the curds formed in the process of digestion (which solidifies the curd first) will not become too large and cause distress, by preventing the gastric juice acting on them.

The amount of water in milk is sometimes considered a disadvantage on account of its bulk.

It is essential that milk should be pure and kept covered and cold as it absorbs bacteria very easily particularly between the temperature of 70° and 100°.

Methods of purifying milk.

Pasteurizing — which means mantaining a heat of 140° for half an hour to destroy most harmful germs.

Sterilizing — means a heat of 212° from ½ to 1 hour and destroys all germs.
Scalding — at a temperature of 160° destroys germs that cause fermentation or souring.
(See method for above on page 36.)

Suggestions for **altering the conditions** in milk to suit the individual needs of a patient:

Diluted milk
Milk with lime water
Milk with soda
Milk with vichy
} to counteract too much acidity

Peptonized — predigested milk.
Milk with salt.
Kumyss — a fermented milk (which alters the condition of the curd).
Matzoon or Zoolak — fermented milk.
Buttermilk — containing less curd and sugar and more fat than skimmed milk.
Whey — containing little nourishment but easily digested and slightly acid in taste.
Milk added to bread or cereal aids its digestion by preventing too large curds being formed.
Junket and some custards serve as milk substitutes.

Milk diet. A diet entirely of milk is sometimes ordered in an amount varying from 6 to 8 ounces at intervals of two or three hours. The following are suggestions for **varying** a milk diet:

Hot milk (not boiled)	Ovaltine { Dried milk, Cocoa, Cereal
Cool milk	
Buttermilk	Malted milk
Matzoon or Zoolak	Condensed milk
Fermilac	Milk flavored with coffee, nutmeg, chocolate, etc.
Ice cream	
Egg-nog	Albumenized milk
Milk 2 parts, club soda 1 part	Milk toast
	Milk and gruel (barley and oatmeal)

Eggs. Eggs contain all the food elements except carbohydrates and are usually taken in combination with them. They are considered especially valuable as containing nourishing elements in a condensed form and are easily digested under most conditions. The albumen or white of egg raw, is combined with many beverages and the entire raw egg is largely used in the diet of invalids. In order to make cooked eggs easily digestible they must be cooked at a low temperature to prevent the albumen of the egg becoming tough. (See page 41.)

Vegetable food

The vegetable class of foods consists of the product of vegetation or plant life, such as grains which supply the material for bread and cereals, also starch, green vegetables, fruits, and the various forms of sugar derived from them, as well as nuts and their derivatives.

Mineral food

Minerals are found in practically all foods in varying quantities in such forms as iron, lime, phosphorus, etc., and a mixed diet provides this in necessary proportions.

EXAMPLES OF DIETS

Liquid diet. This would usually consist of milk, of broth, beef tea, beef juice, cereal or arrowroot gruel, albumen water, orangeade, egg-nog, or other nourishing beverages.

Liquid Diet for Twenty-four Hours

7	Hot milk flavored with coffee	6–8 ozs.
9.30	Oatmeal gruel with 1 oz cream	6–8 ozs.
12	Egg-nog	6–8 ozs.
2.30	Beef broth	6–8 ozs.
5	Kumyss	6–8 ozs.
7.30	Chicken broth	6–8 ozs.
10	Hot milk	6–8 ozs.
2 A. M.	Hot milk	6–8 ozs.

Soft diet. This includes puree of vegetables, cereals, rice, jellies, soft cooked eggs, raw scraped beef sandwich, milk toast, custards, soft puddings, etc.

Breakfast	Soft boiled egg, toast, milk with coffee.
10 A. M.	Chicken broth.
Luncheon	Scraped beef sandwich, baked custard.
4 P. M.	Orange juice.
Supper	Cream toast, snow pudding.
10 P. M.	Hot milk.

Convalescent diet. This includes the foods mentioned above and scraped beef, slightly cooked, baked potato, cooked and raw fruit, green vegetables, oysters, fresh fish, bacon, squab, sweetbread, chicken, chops, steak, etc.

Breakfast	Grape fruit, cream of wheat cereal with cream, bacon broiled, toast, coffee.
10 A. M.	Orange juice in ice water for drink.
Dinner	Squab, spinach and egg, potato in shell, ice cream, sponge cake, black coffee.
Supper	Raw oysters, brown bread and butter, tea, blanc mange and cream.
10 P. M.	Hot milk.

The change from one form of diet to another should be

gradual both in considering the amount and the variety, and plenty of water should be given when changing from a liquid to a solid diet.

QUESTIONS

Mention the organs connected with the process of digestion.
What are the divisions of the alimentary canal?
Name the digestive juices.
Define digestion — absorption.
What is meant by peristaltic action?
What is the danger to patient of an unclean mouth?
How would you feed a helpless patient?
How may food become infected?
Name the food elements.
Mention the functions of each.
What foods stimulate the muscles of the large intestines?
How could you vary a milk diet?
Mention methods of changing conditions in milk.
What is the general principle for restricting diet?
What are uses of water in the body?
Apart from food, mention conditions that affect digestion.

CHAPTER V

RECIPES

Beverages

Symbols: — tbsp. for tablespoon
tsp. for teaspoon
A level spoonful or cupful is meant in all cases.

Lemonade

Juice of 1 lemon or 3 tsp. of sugar
3 tbsp. of lemon juice 1 cup of water or vichy

Dissolve sugar in a little boiling water, add this to the juice and water and cracked ice.

Albumen can be added.

Orangeade

Juice of 1 orange ½ tbsp. of sugar
1 cup of vichy

Dissolve sugar in a little boiling water, add to juice, and strain over cracked ice.

Lemon or pineapple juice may be added.

Albumen water

White of 1 egg ½ cup of water

Place in a covered jar or shaker. Shake thoroughly, strain and serve. This may be flavored with any fruit juice.

To place cracked ice in the shaker breaks up the albumen.

Rice water

3 tbsp. rice 1 pt. water
Pinch of salt

Soak rice in water 30 mins.

Heat gradually to boiling point and cook 1 hour.

Strain, dilute with boiling water or hot milk and season with salt. Sugar or flavoring may be added.

Barley water

2 tbsp. of barley flour to 1 pt. of boiling water

Make flour into a thin smooth paste with cold water. Add boiling water to it very gradually, stirring rapidly.

Boil over direct heat 5 mins., then cook ½ hour in a double boiler, stirring frequently.

Strain through fine gauze strainer while hot.

Peptonized milk

¼ cup of cold water 1 pt. cold milk

1 tube Fairchild's peptonized powder

Cold process: Dissolve the powder in the cold water, add the milk, and place in a bottle and keep on ice.

Warm process: Mix in same manner and keep the bottle surrounded with water at 115 degrees for 10 to 20 minutes, depending on the degree of peptonizing required, cool quickly and keep on ice or lacking ice after above process bring quickly to boiling point to stop the action of the ferment.

Pasteurized milk

To pasteurize a bottle of milk, place it in a vessel of cold water, with a wire protector under the bottle, and bring the temperature of the water up to 140 degrees and keep it at that temperature, or between 140 and 145 for one-half hour. Cool immediately and keep on ice.

For pasteurizing babies' bottles, a convenient form of apparatus is the Freeman pasteurizer, in which spaces are arranged for each bottle and directions for its use are given with it.

Milk can be pasteurized in the upper part of a double boiler by using a thermometer and keeping the milk at

the required temperature for ½ hour. Pasteurized milk should be used within 24 hours.

Sterilized milk

Milk can be sterilized in the same manner as above, except that the temperature must be at boiling point — 212 degrees for ½ hour. Sterilized milk is supposed to be safe for 48 hours, but sterilization is destructive to the value of the milk.

Wine whey

1 pint milk
2 tbsp. sherry wine
1 tsp. sugar

Pour the wine into the warm milk and cook over boiling water about five minutes, or until the curd separates from the whey. Strain through fine cheese cloth and sweeten. Serve hot or cold.

Lemon whey

1 pint milk
2 tbsp. lemon juice
2 tsp. sugar

Prepare in the same manner as wine whey.

Rennet whey

1 pint milk
2 tsp. rennet
1 tsp. sugar

Heat the milk until lukewarm, add the sugar and stir until dissolved, add rennet; leave until firm, about 20 minutes. Break the curd and strain through fine cheese-cloth. Flavor if desired.

Milk punch

1 cup milk
½ tbsp. sugar
1 tbsp. rum or brandy

Place all the ingredients in a covered glass jar, shake until thoroughly blended.

Tea

1 pint boiling water
2 tsp. tea

Heat a small teapot. Place the tea in it and pour freshly boiling water over it; steep a few minutes and strain. It may be served hot or cooled and iced, with lemon or cream.

Boiled coffee

2 tbsp. coffee
1 tbsp. cold water
Small pieces of egg shell
1 pint boiling water

Mix the coffee with the cold water, and shells. Add boiling water. Boil 1 minute, remove to back of stove. Add a little cold water to settle it.

Cocoa

2 level tsps. cocoa
Sugar to taste
¼ cup water
1 cup milk

Mix cocoa and sugar, add the cold water and boil directly over fire 3 minutes. Then stir into the milk and cook 5 minutes over hot water.

TOAST

Toast is bread in which the starch has been changed to dextrin, which is the most easily digested form of starch.

Cut a slice of stale bread ½ inch thick, put it on a toaster and let it gradually dry, then allow it to become a light brown by placing it nearer the heat. It may be toasted in the oven.

Milk toast

1 cup hot milk
1 slice toast buttered
Pinch of salt

Dissolve the salt in the hot milk and pour over toast cut in squares.

Cream toast

1 tbsp. butter
1 tbsp. flour
1 cup of milk or cream
Pinch of salt
2 slices of toast

Heat butter, add flour and salt, stirring until thoroughly blended. Add the milk gradually, bring it to a boil, and boil for two minutes. Pour over the toast and serve.

Corn meal gruel

1 tbsp. corn meal — 1 pt. water
Pinch of salt

Sprinkle meal into the boiling salted water, cook over direct fire 10 minutes, stirring constantly, then over boiling water 1 hour. Add cream and serve.

Oatmeal flour gruel

2 tbsp. oatmeal flour — 1 pt. water
Pinch of salt

Mix flour in cold water and stir into boiling water, cook 5 minutes over direct fire, then continue over boiling water in a double boiler ½ hour. Strain and flavor to taste.

Cracker gruel

1 tbsp. sifted cracker crumbs — 1 cup hot milk
Pinch of salt
Sweetening to taste

Pour hot milk gradually on to cracker crumbs, stirring constantly. Cook in double boiler five minutes.

Rice brulé

1 tbsp. rice — 1 qt. milk
Salt to taste

Parch the uncooked rice deep golden color in a clean, dry frying pan, shaking and stirring all the time. Add 1 qt. of milk with a pinch of salt and put in a double boiler and cook till reduced to about half the quantity or until the mixture is creamy. Cool and put on ice. Can be served hot or cold.

Rice boiled and steamed (Southern)

Take 1 cup of rice and sprinkle into a large saucepan half full of boiling salted water, boil 15 to 20 minutes until slightly soft, then strain into a colander and rinse off with cold water. Leave rice in the colander and place

over boiling water, cover and steam ½ hour. Each grain will be whole, dry and tender.

Beef tea

1 lb. beef makes 1 pt. beef tea

Chop 1 lb. beef very fine, place in upper part of double boiler and cover with cold water. Soak for 2 hours, then place upper part of double boiler over cold water on the fire, which gradually heats. Stir frequently and when the beef tea is a reddish-brown, pour off and season, removing fat. This may be served hot or cold.

Beef juice

1 lb. beef makes 4–6 ozs. of beef juice

Take 1 lb. of beef and sear over the fire or in a hot oven. Cut into small pieces and press out the juice, using a meat press which has been heated. Season with salt and serve either hot or cold.

Starch free soup

1 cup chicken broth
¼ cup milk
2 tbsp. cream or piece of butter
A little finely chopped parsley

Salt to taste

Pour all these into a saucepan — bring to a boil, cool to medium heat then add 1 egg well beaten. Cook slightly over hot water, and serve.

Chicken broth

3 lbs. chicken
3 pts. water

Allow 1 lb.— 1 pt. of broth

Thoroughly clean a chicken, remove skin and fat, wipe with a damp cloth, separate joints and put in a kettle and add cold water. Let stand 1 hour. Heat slowly and simmer 3 hrs. or until meat is tender. Strain and season and when cold remove fat.

Oyster stew

1 cup milk
6 oysters
1 tsp. butter
Salt
Pepper

Heat milk. Cook and strain the oyster juice. Add oysters and cook until the edges curl. Add seasoning, butter and hot milk. Serve at once.

This soup may be thickened with one teaspoonful flour cooked in the butter as for white sauce.

Scraped beef balls

2 tbsp. scraped beef
Chopped parsley
Salt and pepper
Onion juice

Scrape the meat from the connective tissue with a dull knife or spoon. Season and make into little balls and broil or pan broil. Garnish and serve hot.

Scraped beef may also be used raw in sandwiches.

Cold egg-nog

1 egg
1 cup milk
Sugar to taste
Flavor to taste

Beat the egg, add sugar, then the milk and flavoring and strain.

Egg lemonade

1 egg
1 tbsp. sugar
2 tbsp. lemon juice
1 cup cold water or vichy

Beat the egg, add sugar and lemon juice — then the water gradually stirring until blended.

Soft cooked egg

Place the egg in 1 pt. boiling water, remove from fire, cover and allow it to stand from 3 to eight minutes in saucepan where the water will keep hot but not boiling.

3 minutes — very soft
6 minutes — medium
10 minutes —firm

Poached eggs

Break the egg into a saucer. Slip the egg into boiling salted water at simmering point and cook until firm.

Serve on a slice of toast. Season.

Omelet

1 egg — 1 tsp. butter
1 tbsp. milk — Salt and pepper

Beat yolk and white separately. Add seasoning and milk. Heat an omelet pan, rub with butter. Turn in omelet. When it is set and browned, fold over and serve at once.

Baked custard

1 egg — 4 tsp. sugar
1 cup milk — Pinch of salt
Flavoring to taste

Beat eggs, add sugar and salt.

Add scalded milk slowly. Flavor and bake in custard cup in a pan of hot water until set, about 20 minutes.

To test when done, dip a pointed knife into water, then plunge in middle of custard. If knife comes out clean the custard is done; if milky it is not cooked enough. If cooked too long, custard will curdle.

Egg cream

Juice ½ lemon — 2 eggs
2 tbsp. sugar

Separate yolks and whites. Beat yolks with sugar until well mixed, add lemon juice and place bowl in dish of hot water over the fire. Stir slowly until it begins to thicken, then add beaten whites and stir until the whole forms a thick cream. Remove from fire, pour into dishes and set aside to cool.

Rennet or junket

1 pint milk
½ tbsp. liquid rennet or half a junket tablet
Vanilla to taste
1 tbsp. of sugar

Heat the milk until lukewarm, add sugar and vanilla and rennet. Pour into a dish, leave until firm, then put in ice box. Sprinkle with nutmeg. Serve with cream.

Lemon jelly

3 tsp. gran. gelatine
2 tbsp. cold water
1 pint boiling water
3 tbsp. sugar
4 tbsp. lemon juice

Soak the gelatine in cold water, add the boiling water, sugar and juice, stir until sugar is dissolved, strain and cool.

Orange jelly

3 tsp. gran. gelatine
2 tbsp. cold water
1 cup boiling water
3 tbsp. sugar
1 cup orange juice
1 tsp. lemon juice

Same method as for lemon jelly.

Coffee cream

2 tsp. gelatine
4 tbsp. cold water
¼ strong coffee
4 tbsp. sugar
1 cup cream

Soak the gelatine in cold water until soft, then add the hot coffee and the sugar. When gelatine is dissolved and begins to thicken, add the cream which has been previously whipped, then pour into a glass dish.

CHAPTER VI

VENTILATION

Ventilation means the substitution of pure for impure air in any enclosed space. The chief constituents of air are **nitrogen, oxygen** and **carbon dioxide.** Of these, oxygen is the element that supports life, but can only be breathed in combination with the other natural elements of the air. The amount of nitrogen is the same in the air breathed in and in that breathed out, the chief difference being in the excess of oxygen taken in with fresh air, and in the excess of carbon dioxide exhaled from the lungs.

Inspired air:
- Nitrogen .....79 per cent.
- Oxygen .....20.96 per cent.
- Carbon Dioxide ..... .04 per cent.

Expired air:
- Nitrogen .....79 per cent.
- Oxygen .....16.03 per cent.
- Carbon Dioxide ..... 4.38 per cent.

Carbon Dioxide is the element produced by the combination of oxygen with a substance or any element in a substance with the consequent result of creating heat or combustion.

This heat is generated in animal life and gives the supply necessary to create energy. It also results from the processes of fermentation and from decomposition of animal and vegetable matter. The greater part of this gas breathed out from animal life is utilized by plant life which in turn gives off oxygen to animal life.

Impurities of inside air. The impurities of inside air are largely the result of perspiration, respiration and of combustion, which is constantly generating carbon dioxide; it also results from dust, dirt (including the lack of cleanliness of utensils) and from delay in removing waste or garbage of any kind, or from defective plumbing.

Excessive moisture in air. The exhaustion and headache that so frequently result from being in badly ventilated and overcrowded places are considered to be largely due to the combination of heat (the air exhaled being warmer), and excessive moisture (as moisture passes from the body with every breath). This prevents the normal evaporation from the body and therefore the heat and waste (that usually pass off from the body) are retained.

The constant inhaling of impure air from badly ventilated rooms undermines the constitution and leaves one liable to develop disease very readily when exposed to germs. This is the most generally recognized cause of disease. Fresh air is of the greatest importance as an aid in the development of physical health, energy and mental activity and in the restoration of health. The general health is frequently greatly improved by securing the admittance of fresh air by day and night, or by living in the outside air as much as possible.

Ventilation of room. Natural ventilation implies movement of the air and therefore no indoor air can be just the same as that of outdoors, and in ventilating a room this movement of air is a most important factor to consider. Have currents of air at different heights, as far as can be arranged. It is the constant circulation of air and the means of its supply and escape that form the essentials of good ventilation.

In any space, the air breathed out by human beings or animals is at the normal temperature of the body — about 98°— and this being warmer rises; while the colder air

entering the room replaces it. Therefore in order to ventilate a room, at least one place must be provided to admit fresh air and another (in the upper part of the room) to allow for the escape of impure air. This is usually accomplished by means of windows, doors, transoms, fire places or an adjoining room. A fire place aids ventilation by heating the air around it which consequently becomes lighter and rises up the chimney, leaving a vacuum to be filled by cold, fresh air. A lamp burning in the grate, makes a substitute for a fire. A steady dilution of impure air by a constant supply of pure air is the most consistent way of ventilating a patient's room, and this must be arranged without draught in the sick room.

Temperature of room. The average temperature of a patient's room should be from about 65° to 68° and a thermometer should be placed in the room where it will register the average heat, and not near the window, fire or light.

Methods of ventilation. (1) One method is to open the window from the top only, to allow for the escape of air in the upper part of the room, while another current enters the room from between the sashes.

(2) Open the window from the top and bottom. This provides three different currents of air and if necessary a screen * can be placed in front of the window higher than the lower open space to prevent draughts and to direct the lower current slightly upward.

(3) If there are two windows in the room, the upper sash of one can be opened and the lower sash of the other.

(4) Window board ventilation: This is a contrivance to assist in ventilation and consists of various methods.

Method (1) In this case, have the window opened from the top and a piece of board about 10 inches deep placed under the lower sash. This allows air to come in between the sashes constantly without a direct current.

Method (2) This consists of a frame-work of wood covered with wire netting and placed permanently against

the inside of the sash at the top so as not to interfere with the opening or shutting of the window and at the foot a small box arrangement about 6 to 9 inches high, fitted with a wire covering, placed in the same manner at the lower part of the window, extending across the window sill and not interfering with the opening and shutting of the window. This is an excellent way to admit air without draught.

(5) When access to direct outside air is not feasible, fresh air can be admitted from an adjoining room if this is well aired first.

(6) In cold weather, it is a good plan to open all the windows in a patient's room at the time of day when the air is warmed by the sun, and have the patient covered with extra blankets and protected by a screen.

In hot weather, this plan is reversed and the cooler part of the day chosen for such purpose. An electric fan is a valuable aid to keep the air circulating.

When gas or kerosene is used for lighting, or heating a room, more fresh air is needed, because this combustion uses up oxygen. For this reason, electric light is considered best for use in a sick-room.

Undue dryness in air. The air frequently becomes too dry in artificially heated rooms and causes irritation to the mucous membrane of mouth, throat, nose or eyes. Moisture should then be provided by such means as: — (1) Steam from a boiling kettle in the room (or in an adjoining room).

(2) An open vessel of water kept on the radiator, or wet cloths hung in the room.

Note. * A practical screen can be made by fastening a piece of muslin or blanket to the casement of the window high enough to prevent a direct current when the sash is open. Inside shutters can also be utilized for the same purpose.

QUESTIONS

What is the principle of ventilation?
State difference between inspired and expired air.
What effect has excessive moisture in air on health?
In what part of room would warmest air be found? Why?
Describe different methods of ventilating a room.
Mention practical methods of preventing draughts.
What advantage has electricity over other forms of lighting a room?
How may disease be caused by impure air?

CHAPTER VII

BACTERIA

Bacteria, germs, microbes, are all names used to describe the many different forms of minute living bodies of plant life that are all around us in air, water, earth and almost everywhere. They are the smallest known form of vegetation and start in one cell which divides into two, and in this way they multiply very quickly if conditions are suitable for their development. Some germs later develop spores or seeds which have great resistant power and are more difficult to destroy than the germs themselves.

Beneficial bacteria. Bacteria is so freely talked of in connection with disease that it is easy to forget that it also has a beneficial function, and is essential to Nature's plan for the constant interchange that is taking place between the animal and vegetable kingdoms, keeping a balance and preventing a waste from either, promoting the growth of plants and destroying dead, organic substances. And in fact, life itself is dependent upon these little living bodies.

BACTERIA IN DISEASE

These are called **pathogenic** or **disease producing** germs and they develop in animal or plant life, causing disease if conditions are favorable for their growth. They are liable to enter wherever the natural defense is weakened as in any susceptible part or when the general health is below its normal condition. Frequently the lowering of vitality may be attributed to overwork, lack of sufficiently nourishing food or fresh air.

Preventive measures. It is most important to pre-

vent in a practical way the conditions existing that are favorable to germ development by such preventive measures as (1) plenty of sunlight and fresh air, (2) cleanliness of surroundings, (3) a safe disposition of refuse of all kinds (by burning if possible, or by the use of chemical agents), (4) maintaining a healthy body by personal cleanliness, exercise, elimination of waste from the body, suitable food and sufficient fluid taken into the system, and all the various things that tend to keep up a normal health standard.

Disease germs develop rapidly where (1) bad sanitary conditions exist, (2) where there is dirt, as this is a surface for bacteria to settle on, (3) where there is the combination of heat and moisture, (4) where there is bad ventilation, (5) where there is lack of good health, or lowered vitality, poor circulation of the blood, unhealthy teeth, lack of sufficient food or water, besides such germ carriers as dirty hands and nails, house flies, insects, vermin, etc.

Infection. An infection is an invasion and growth in the body of germs that cause disease, different kinds producing different effects, on the substance upon which they feed. Each disease has its own particular germ that reproduces its own kind.

Indirect infection is transmitted by air, food and drink.

Direct infection is transmitted by such mediums as the mucous membrane of the body, the mouth (breath), clothing, skin, etc., and is spread particularly by the discharges that come from that part of the body where the disease is located, as for example:

The discharge from the **lungs** in tuberculosis,
From the **intestines** when the disease is there,
And from the **mouth** and **nose** and **throat**, or
Direct discharges from the infected area as in a **wound** or a **skin disease.**

Infection may be spread also by being carried into other tissues of the body by reabsorption.

BACTERIA IN WOUNDS

The unbroken skin of the body is a strong guard against the entrance of bacteria into the system, but if the skin is broken the danger of infection arises at once. For that reason, the greatest care should be taken in the treatment of even a small cut or wound. The injury itself may not amount to much but the danger of infection does.

Various germs enter wounds and in various ways. In case of accident, the germs are liable to be introduced by any dirt getting in at that time, or by the instrument of whatever kind that caused the wound, (2) if a wound is not kept clean, infection may develop in the wound itself, (3) if the cleansing fluid applied to wash out wounds, or the dressing used, is not in itself perfectly free from germs, infection can be absorbed in that manner.

Process of wound healing. Wounds heal by forming new tissue which fills up the space solidly from the lowest part of the wound up to the surface. A **clean wound** is one in which **no injurious bacteria** exist. All preparations to have things sterile are meant to prevent the entrance of such germs and no detail in preparation can be carelessly attended to without danger of bad results.

Treatment of wounds. To treat a cut or wound without disinfectants, let the part bleed a little first to remove any poison taken in at the time of the accident. Then cleanse with water that has been boiled and cooled and apply a sterile dressing as described on page 54. Apply this dressing wet; or a dry dressing taken from a previously unopened sterile gauze package may be used, being always careful not to handle the dressing at the part which will come in direct contact with the wound. Bandage this on and place the injured part in the most comfortable position for resting, as quiet to the part is essential. If anti-

septics are obtainable, they may be used in place of the sterile water mentioned above.

DEFINITIONS

Sepsis means poison produced by putrefactive bacteria.

A **septic** wound is an infected wound.

Asepsis means freedom from infection.

Sterile means free from germs.

An **aseptic wound** or dressing is one free from germs, or sterile.

An **antiseptic** is an agent by whose means **the growth of germs** is prevented (but it does not kill them). **In a wound** antiseptics prevent putrefaction by virtue of their action in arresting the growth of organisms or the chemical activity of certain substances which give rise to fermentation and decomposition. They include carbolic acid, boracic acid, iodine, alcohol, balsam of Peru, and many others.

A **disinfectant** is an agent which kills **germs. In a wound** disinfectants destroy germs or active chemical substances on the surface already infected or foul. They are for the most part the same material as the antiseptics but are used in a much stronger form, as strong solution of carbolic acid, iodine, etc.

Deodorant is an agent used to destroy odor. The best deodorant is fresh air. Chemical deodorants absorb gases and neutralize foul odors. Those chiefly used are charcoal, permanganate of potash, etc.

STERILIZATION

The important point in modern methods of treating a wound is to have preparations made beforehand in order

that all things used in such treatment may be perfectly free from germs, or as it is called, sterile.

Sterilization is a method of destroying germs with heat by such methods as:

Boiling temperature	212°
Steam pressure temperature	230°
Dry heat	300°

In hospitals and large sterilizing plants the heat is arranged in large sterilizers and the dressings, instruments, or any articles to be rendered sterile, are left in the sterilizer at a definite heat for the required length of time.

General disinfecting of utensils, instruments, dressings for wounds (cotton, gauze), fluids or lubricants, and clothes, is usually done by the process of sterilization, but chemicals are also used for this purpose. The latter, however, are used chiefly in **strong solution** for disinfecting the direct discharges that contain germs, or at a **weaker strength** as antiseptics. But their use and strength should be governed by the physician in charge.

Any sterile solutions of the strength required, dressings, gauze, cotton, instruments or utensils, are obtainable in sterile, sealed packages at a local drug store.

Practical suggestions for sterilization. In households where there are not likely to be any definite arrangements for such a purpose, sterilization may be most practically accomplished by first cleansing the article and then **boiling** it for the required time and using it undried when taken out of the water, unless there is a sterile substance to dry it on.

To make sterilization consistent and of any use, do not touch the sterilized article with the fingers, if possible to use a sterile instrument, such as forceps, or sterile scissors; and in any case, the part to come in direct contact with the body must not be made unsterile by careless handling.

To sterilize a dressing. To sterilize a dressing, place the gauze, cotton, linen or old muslin, folded in a convenient size, in an outside cloth and pin or tie together, and then boil for twenty minutes. Wring partially dry (while still in the outside cloth), then apply the inside dressing moist, taking care not to touch your own fingers to that part of the dressing which is to be applied to the wound.

To sterilize towels. To sterilize towels, wrap several together in an outside cloth and boil twenty minutes; wring out as described above and use the inside towels while they are wet.

To sterilize rubber. Gloves, bags, tubings, or any rubber utensil, may be boiled from two to five minutes. These may be wrapped in a cloth and removed from the water without touching, or they may be boiled directly in the water and removed with sterile forceps, without touching that part which will come in contact with the patient. Never use soda when boiling rubber as it softens it too much.

To sterilize instruments. Needles, scissors, forceps, nail files, etc., are sterilized by placing them in boiling water in which 1 per cent. of soda has been dissolved (this is to prevent rusting), and boil for five minutes.

For glass utensils, tips, nozzles, etc., place them in cold water, bring to a boil, and boil five minutes.

For larger utensils, place them in a large sauce pan or washing boiler and boil for ten minutes (active boiling).

To sterilize gauze or cotton. To sterilize gauze or cotton or the stoppers of babies' bottles, place them in a bottle with an airtight cover, surrounding this with cold water, (do not let the bottle come in direct contact with the bottom of the pan), and bring the water to a boil. Keep it boiling for an hour.

Fluids, oils, or tubes of vaseline can be treated in the same way and thus made sterile. Water can be sterilized by straining or filtering it and then boiling it, taking care that it is kept in a sterile receptacle.

METHODS OF DISINFECTING

Disinfecting. Generally speaking, sterilization means the process of destroying germs by heat, while disinfecting usually implies the use of chemical agents. This latter method is especially used to destroy germs in direct discharges from the body. These chemicals are strong poisons and should only be used by the direct orders of the physician.

Stools, or movements from the intestines. Use the particular disinfectant in the strength ordered by the physician. Place as much of this as there is fecal matter in the vessel, stirring it thoroughly with an implement that can be boiled or destroyed (for instance a glass stick which can be easily boiled). Over this vessel place a cloth wrung out of the disinfectant and leave it from one to two hours. Then the stools can be safely disposed of in the usual way and the vessel rinsed and thoroughly washed with soap and water.

Urine. Place equal parts of urine and disinfectant together, leave for half an hour, and then dispose of in the usual way.

Vomited matter may be treated in this same manner.

Sputum should be disinfected when it contains germs from a diseased condition local to lungs, nose or throat. If it is possible have the patient use paper sputum cups and burn these intact. But if this is not practical, have the patient expectorate into a cup in which there is a little water (to prevent sputum drying and allowing the germs to escape into the air). At intervals of at least every six

hours, mix the sputum that has collected in the cup with the ordered disinfectant. Leave it for an hour, covered, and then dispose of it in the usual way. If cloths are necessary to catch the sputum, substitute if possible paper napkins, or use old cloths which can be burned; otherwise these must be disinfected like any other receptacle, or boiled at once, as they contain the direct discharge.

Clothes should be **boiled** as this destroys the germs. They are usually kept in a weak solution of chemicals until a convenient time to boil them. The weak solution of chemicals only prevents the growth of the germs temporarily, while boiling directly kills them. If there is any discharges on the clothes they should be boiled at once.

Dishes. The simplest and surest way is to boil them for ten minutes. If this is not feasible, they may be left in the ordered solution of chemical disinfectant for half an hour and then washed with soap and water as usual. Those dishes coming in direct contact with the mouth, such as cup, glass, spoon, fork, etc., should be boiled.

Hands. Scrub the nails, hand and forearm thoroughly with a brush, soap and water for five minutes, then hold the hands in a chemical disinfectant as ordered for another five minutes. If no disinfectant is to be used after the washing, alcohol (from 50 per cent. to 70 per cent.) may be thoroughly rubbed into the hands. Dry the hands on a sterile towel, or shake them dry.

Chemical solutions. The chemical solutions most commonly used for direct application to the body are:

Salt, or **saline solution,** made by adding 1½ teaspoonfuls or 90 grains of salt in 1 quart of water and boiling. This is chiefly used for washing out wounds, cavities, for all sorts of irrigations and douches, and is not irritating to the surface when applied in this strength; and

Boracic acid solution, made by adding 1 part of boric acid powder to 24 parts of boiled water, which equals a solution of 4 per cent. This is used in strength varying from 2 per cent. to 5 per cent. It is particularly non-irritating and is used for eyes, nasal sprays, irrigation for wounds, cavities, etc.

These two solutions while largely used on the body surface or in cavities are not strong enough to be effective as external disinfectants.

Alcohol, 95 per cent., or weaker (50 per cent.–70 per cent.) may be used for external disinfecting of the skin or for disinfecting instruments or thermometers.

Milk of lime solution (1 part of slaked lime to 4 parts of water) is used for disinfecting discharges. Other chemicals sometimes ordered by a physician are:

Carbolic acid solution (2 per cent.–5 per cent. strength) — 6 drams or teaspoonfuls to 1 pint of water makes a 5 per cent. solution.

Bichloride of mercury — $\frac{1}{1000}$ to $\frac{1}{5000}$ strength — 7½ grains of bichloride of mercury to 1 pint of water makes the strength of $\frac{1}{1000}$.

Formalin solution — 4 per cent.–10 per cent. strength. This comes in a 40 per cent. solution, 1 part of formalin to 9 parts of water makes the strength of 4 per cent.

DISINFECTING A ROOM

In case it is necessary to disinfect a room after an illness of an infectious nature, it is fumigated and the infection destroyed by the gases of the chemicals used. This process is also used for cleansing rooms from insects, vermin, etc.

Preparation of room. Gather such things as books, toys, etc., that have been used by the patient, and if there is a stove or grate in the room burn them. Otherwise, have them taken to a furnace and destroyed after they have been fumigated with the rest of the room.

Open bureau drawers and closets and hang up pillows and blankets on a line and spread the mattress so that the air gets underneath it. Close windows and ventilators and cover fireplace. Close up all crevices around doors, etc., by strips of paper pasted over the openings (use simple flour paste which can be easily wiped off).

Method. Have water in a large dish pan or tray near the floor with a protector under it. **Formalin candles** are generally used for this purpose, placing three or four (for an average sized room) in this dish of water, supported on the tin stands that come with them. As there is no wick in them, hold a taper or candle to the edge until the ash begins to get white and fall away. This liberates the gas into the room and disinfects it. Moisture in room makes it more effective.

If **sulphur** is used, make the same arrangements, and place 4 or 5 lbs. of rock sulphur (for an average sized room) in a sauce pan, saturate with alcohol, and when this pan is placed in a larger one light the alcohol to start the sulphur burning. The door should be closed and securely sealed from the outside. Leave the room for twelve to twenty-four hours, then open the windows and thoroughly air and clean the room. Sulphur fumigating is frequently used for destroying vermin. Sulphur will destroy roaches but not ants.

When entering a room after it has been fumigated, to open the windows, hold a damp cloth to the mouth and nose to prevent the irritating effect of the gas on these parts.

QUESTIONS

Define infection.
What is meant by sterilization?
How does a wound become infected?
How prevent such infection?
Describe methods of disinfecting sputum.
Mention some of the mediums through which infection is spread.
How would you sterilize rubber gloves?
How make a saturated solution of boracic acid?
How make normal saline solution?
In an emergency how would you cleanse and dress a cut hand?

CHAPTER VIII

THE MODEL SICK ROOM

Beds — Changing Bedding

Under normal circumstances, the average person takes little notice of minor details in the location and furnishing of a room. However, in time of illness the mind is more sensitive to uncomfortable or inharmonious surroundings and therefore the immediate environment deserves the closest attention.

The conditions described here are practically ideal and will be difficult, perhaps, to duplicate completely outside of a private hospital or sanitarium. They should, however, be approximated, especially when the illness itself promises to be long or to be followed by a tedious convalescence. Some of the favorable points will be found in almost any room. Look for these and make the most of them, trying as far as you can to minimize or correct the unfavorable ones.

Room. The room itself should be situated near the top of the house for isolation, quiet and better air, and should open into an adjoining room and be near a bath room. It is desirable to have a southern or western exposure and to have the room large and airy, with two windows (protected by light and dark shades) and an open fire place.

Floors. Hard or plain wooden floors are preferred covered with small, washable rugs.

Walls. Neutral tinted or plain paper should be used, avoiding stripes or figures which become most irritating to the average invalid who finds opportunity for tracing monotonous designs in every line.

Furniture. A white enameled or brass bed (for size, etc., see page 63) should be placed with an open space around it, also a duplicate bed should be provided if possible; a bedside table, two small tables, a screen, a sofa, large comfortable chairs and two or three straight chairs, a hassock or foot stool, an electric reading lamp with shade. Growing plants and cut flowers add materially to the "atmosphere" of a room and dainty curtains of washable material also help to make the room look attractive. A thermometer should be hung near the center of the room and some means of attachment for a syringe bag should be provided, such as a hook in the wall near the bed, or an improvised stand like a coat rack, or high backed chair.

Adjoining room. The neighboring room should be supplied with an ice box (and ice pick), some apparatus for heating water, food, etc., such as a gas or electric stove or an alcohol lamp, in which denatured alcohol should be used. Guard against fire by placing whatever stove is used on a tray over an asbestos mat.

Utensils. There should be at hand a large, enameled or granite bed pan, a small bed pan (to use as urinal), a douche pan, a fountain syringe bag with attachments, hot water bags, an ice cap, bath thermometer, clinical thermometer, two hand basins, small basins, pitchers, drinking glasses, small trays, glass drinking tube, spoons, 2 medicine glasses, a measuring glass, a bed tray or table and footstool. A supply of paper bags, two rubber sheets or oilcloth or newspaper as substitute, soap dish with castile soap, two blankets for bathing purposes, an extra blanket or rug, pillows, back rest or substitute, a foot tub, a hamper, cotton, gauze, alcohol — both denatured and 95 per cent.; a good supply of linen should include bath towels, face towels, face cloths, sheets (large and smaller for draw sheets), pillow cases, tray cloths, napkins and

some pieces of old linen which may be torn up as needed, also personal linen.

Where there is not constant attendance, some method of signaling attention should be arranged for the patient, such as a bell or an electric buzzer.

When there is a grate in use, avoid making dust while removing the ashes. When necessary, coal can be wrapped outside in paper and gently laid in the grate to avoid noise and dust.

The bath room should be clean, tidy, and well ventilated.

Care of cut flowers. Once in twenty-four hours, water should be changed on all flowers and the stems cut off about an inch. Flush water over the stems and replace in freshly filled vases. It is wiser to remove cut flowers from the patient's room at night and return them, freshened, in the morning.

CARE OF THE SICK ROOM

Whoever is in attendance will be held responsible for the condition of the sick room and for its being clean, tidy, well ventilated and attractive.

Sweeping. In cleaning a room, care should be taken not to raise unnecessary dust for the patient to breathe. Any small rugs should be removed from the room and brushed outside. Wood floors should be wiped over with a dustless mop or with a broom covered with a slightly damp soft cloth. Where there are carpets, a vacuum cleaner can be used to great advantage, as it minimizes the discomfort of flying dust. Also if, there are carpets or rugs which cannot be moved out of the room, a carpet sweeper — with its brush slightly dampened, may be used.

Dusting. Use soft, clean cloths for dusting, gathering the dust within the cloth and not allowing it to be scattered about. Never use damp cloths on polished furniture. Protect the furniture from scratches and spots.

Especially when using alcohol, care should be taken not to splash or spill it as this leaves a mark on furniture.

Glasses containing fluids should be kept on a plate or small tray, and when using basins, place a protector under them, such as paper or rubber cloth.

Place any dressings used, or cloths on which there is a discharge from any part of the body in a paper bag, and remove and burn as soon as possible.

All bottles should be clean and carefully labeled and any medicines kept in a safe place.

The dishes and table silver used should be kept clean and well polished.

All necessary appliances such as syringes, bed pans, etc., should be kept out of sight until needed.

BEDS

Of chief importance to the patient's comfort is the bed to be used and the way it is made.

Kind. A white enameled iron or brass bed, strong enough to stand firmly on the floor, is the simplest kind to keep clean and the easiest to move about when necessary. This should be fitted with a double woven wire spring or the newer type of spiral spring.

Size. The usual dimensions are 6 feet, 6 inches long by 36 inches wide and 26 inches high. A three-quarter or 45-inch bed is as wide as can be conveniently managed. In many circumstances a double bed is the only available one and when a double bed is used, the patient may be moved from one side to the other night and morning, thus providing a change and a certain amount of rest.

Height. Twenty-six inches is a good average height and practically any bed can be adjusted to this height by raising the legs of the bed on wooden blocks. If these blocks are grooved or made concave, the castors will drop

into them and there stay securely. A good sized, firm stool or hassock is most convenient to have at hand, particularly when the bed to be used is high.

In cases of long illness it is imperative to have a bed which is, first, comfortable for the patient, and second, convenient for the attendant.

Mattresses. A light-weight, hair mattress is preferable to any other kind, being firm, elastic and comparatively easy to turn; cheaper grades of felt or cotton may be used but are much heavier. An air mattress is used only under special conditions to help equalize the pressure on the body and to prevent bed sores. It must be partly filled with air and placed on top of the other mattress and should be at least 45 inches wide to be comfortable. It is expensive and made of rubber which punctures easily, and so requires careful use. A blanket should be spread between the air mattress and the lower sheet.

When a hair or cotton mattress has been used for some time, there is a tendency for it to sag in the middle. This fault can be remedied by pinning, with large safety pins, or by sewing, a folded blanket or pad to the under side of the mattress under the depression. This will raise it to the proper level and prevent the strain that would otherwise be felt on the patient's back.

Pillows. The usual, medium sized pillows are made of feathers covered with striped ticking. A hair pillow is sometimes used as a foundation pillow, while small hair pillows (not too full, and covered with fine ticking) are cool and comfortable to place around the body. These will be found preferable to the usual small, down pillows. Air pillows are of value for many purposes, particularly when a patient is riding or being moved in a chair, or when there is occasion to sit still for any length of time.

Pillow cases. Pillow cases should preferably be of linen or fine cotton material.

BEDDING

Sheets. Sheets are usually made of cotton as linen has a tendency to chill the surface of the body. Flannel sheets are used in special cases. The size of sheets is important. They should be one yard wider and longer than the mattress on which they are spread to allow for sufficient surplus to tuck in firmly.

Draw sheets. Draw sheets should be provided to fit over the center of the bed and tuck in well on each side. They should be from a yard to a yard and a half wider than the mattress. Any narrow sheet, used lengthwise across the center of the bed, provides a good draw sheet.

Blankets. Blankets should be light in weight and color. It is better to use two or three light weight blankets than one heavy one; as not only are they more easily handled and more comfortable to the patient but warmth may be much more readily adjusted where there are various layers to apply and remove. All-wool blankets are lighter and warmer than cotton, although in summer a cotton and wool mixture may be more comfortable.

Spreads. Spreads should be of light weight material — a sheet makes a good substitute.

Rubber sheets. These are made of double faced rubber sheeting, white, black or colored, and are placed to protect the mattress, usually between the lower and the draw sheet. Oilcloth or newspapers can be used as substitutes.

MAKING BEDS

A closed bed. In making a bed see that it has been freshly aired and that the mattress is turned. A light pad or blanket should be provided to protect the mattress. Over this should be spread the **under sheet,** the wide hem to the top and a greater surplus left to tuck in at the head than at the foot of the bed. Tuck the sheet in first at the head of the bed, then at the foot of the bed and then down one side; going to the other side of the bed, pull the sheet

snugly across, tucking it in firmly and seeing that the corners are neatly squared.

All sheets and blankets must be placed with the center fold to the center of the bed so that they will not wrinkle when stretched to be made tight.

If it is necessary to protect the mattress, a rubber sheet may be placed over the under sheet and tucked in at both sides before the draw-sheet is spread.

The draw-sheet is tucked in firmly on one side, then stretched and tucked in on the other. If a double sheet is used for this purpose, the fold must be towards the top of the bed.

The upper sheet should be placed with the wide hem at the top, right side down so that when the sheet is turned back over the bedding, the smooth side of the hem will be uppermost. The edge should just reach the top of the mattress, leaving the remainder to be tucked in at the foot. The lower corners should then be squared and tucked in.

Each **blanket** is put on like the top sheet, but not nearer than 12 to 14 inches to the head of the bed. When the blankets are adjusted, the top sheet is turned back over them and tucked in down the sides loosely. Over all is laid a light **spread** stretched evenly to the top of the mattress and tucked in firmly at the foot, with the corners mitered or squared and the sides left hanging.

Pillows should be shaken well down into their corners, then flattened out and placed in position; one across the bed and the other standing up on it, folding any surplus pillow slip well out of the way.

An opened bed — ready for use. To prepare a bed for a patient: (1) slip one hand under the mattress and raise it slightly while pulling the upper bedclothes out with the other. Loosen the bedding in this manner from both sides of the bed. (2) Fold the spread under the top of the blanket and then fold the upper sheet down over

A comfortable arrangement of pillows. Upper bed clothes folded back.

this. (3) Then, facing the foot of the bed, fold the clothes back in parallel plaits across the bed to its foot where they remain until needed to be drawn up over the patient. The pillows are arranged one on top of another.

TO CHANGE BEDDING WITH PATIENT IN BED

To replace the upper sheet only. Spread the clean sheet across the bed after removing all but one blanket and the soiled top sheet. These may be drawn away under the new covering and the outer bedding replaced and tucked snugly in at the foot and sides with the corners carefully squared.

Sheets are more often changed than blankets in making a bed fresh so that ordinarily the spread and top blanket may be completely removed while the change is being made.

To remove top bedding. When necessary for any purpose to do this, place a folded light blanket over patient's chest, loosen the bedding at the foot and fold it back as far as the patient's knees; the bedding at the top is then turned down over this in one deep fold, drawing the blanket with it, then the sides one after another are folded over making a square. This can be readily removed and replaced, unfolding the square in the same manner.

To change the under sheet. Remove the upper bedclothes as described. Then, steadying the mattress with one hand so that the patient is not disturbed, loosen the under sheet and the draw-sheet. Draw or turn the patient to one side of the bed and fold back the soiled lower sheet close to the body. Then spread the clean sheet smoothly over the side of the mattress which is clear, leaving the greater length at the top and taking care that the center fold of the sheet is in the center of the bed. Tuck in

tightly at the head and the foot, then along the side. Put the draw-sheet in place and tuck in on the side bringing the rest of it with the surplus of the lower sheet close to the patient's body; then go to the other side of bed and turn the patient away from you on to the clean sheet. Remove the soiled ones and spread the remainder of the clean sheets over the mattress, tucking them in securely under the remaining sides and ends.

If a patient cannot well be turned, the knees may be flexed and the lower bedding drawn under the body at the hips, after which the shoulders and legs may be alternately raised while the bedding is made smooth underneath.

To change a draw sheet. Fold the upper bedding back a little, loosen the soiled draw-sheet, folding it closely to the patient's side. Replace this with a fresh draw-sheet, tucking it in on the side nearest you and spreading the rest smoothly. Turn the patient back on this fresh sheet and remove the soiled one, drawing the remaining half of the clean sheet across the bed and tucking it in securely.

The chief advantage of a draw sheet, aside from the protection it affords the bed, is the ease with which it can be changed.

To change a draw sheet when a rubber sheet is used, fold, spread over the bed and tuck in both together.

To change bedding when only one rubber sheet is available. Loosen bedding on one side, fold draw sheet close to patient's side, lay rubber sheet back up over the patient's body, then fold lower sheet close to patient's side and spread the clean under sheet. Bring down the rubber, lay in clean draw sheet and tuck it in, turn patient over, remove soiled draw sheet, lay rubber back over patient's body, remove soiled under sheet. Draw over and tuck in the clean one. Bring down rubber and spread the clean draw sheet and tuck them in together.

In folding sheets in lengthwise plaits, as frequently directed, divide it into an uneven number of folds with the free edge topmost and nearest the side to which it is to be drawn. This makes quicker and smoother arranging possible.

To change the mattress with a patient in bed. The mattress may be changed with a patient in bed by removing the upper bed clothes, leaving just a light weight cover over the patient. Have two or three chairs on the far side of the bed on to which the mattress can be slipped. Draw the patient to the side farthest from the chairs and slip the mattress half off on to them with the patient still lying on it. Place three pillows on the springs for a temporary mattress and draw the patient back on them. Go to the far side of the bed, remove the sheet and turn the mattress over (from the head to the foot), then replace it half over the wire springs. Spread a fresh under-sheet and draw-sheet over the mattress and tuck in on one side. Lift the patient back on to it, remove the pillows, and draw the mattress into position. Tuck in the remainder of the lower sheets and replace the upper bedding and pillows.

To change the patient to another bed. Have a freshly made bed of corresponding height conveniently placed with the upper bedding folded back to the foot. Draw the patient to one side of the bed, loosen the draw-sheet and fold this over the patient while removing the upper bedding. Bring the two beds together and, going to the free side of the fresh bed, take the upper ends of the draw-sheet and the pillow (on which the head and shoulders rest) in one hand, and the lower end of the draw-sheet in the other, and draw the patient carefully over to the other bed. Draw up the upper bedding, remove the draw-sheet and change the pillow.

NOTE: This is more easily accomplished with an assistant.

To relieve the weight of bed clothes. If there is a foot rail or board to the bed, the weight of the bed clothes may be taken from the body by being drawn over the foot of the bed and fastened securely either under the mattress or around the foot rail. The corners and sides should be folded diagonally and pinned to exclude any draught. If the bed lacks a foot board a high back chair may be used as a substitute, or a cradle which comes for the purpose and extends across the patient's legs beneath the bedding. Various substitutes may be improvised to keep the weight of the clothing off the body, such as a box with two sides knocked out.

To prevent slipping down in bed. 1. One method of preventing slipping down consists in a board like a swing seat which may be placed upright against the feet. The tapes or cords at its sides are drawn tight and fastened to the head of the bed low down. The board should be deep enough to support the bedding and wide enough not to interfere with the moving of the patient's feet, and should have a small, hair pillow placed against it as a foot rest.

2. A sheet folded diagonally into 12-inch plaits may be used similarly, bringing it below the body so that the feet rest in its center on a small pillow, and fastening the ends securely to the sides of the bed.

3. Another method is simply to put a large pillow beneath the patient's knees, or for this purpose a pillow can be fastened in a roll with tapes running through the center of the roll and these tied to the sides of the bed, thus keeping the pillow in position under the knee.

Changing a nightdress. Gown opening in front. Flex the knees and draw the nightgown up and over the knees, and from beneath the hips, well toward the shoul-

der. Draw the gown out and up to the point of the shoulders. Slip the arm out of one sleeve, supporting the arm comfortably, then lay the gown over the head, put on the sleeve of the clean gown over the same arm, laying this gown also over the head. Lift the head slightly, supporting the neck, and draw both gowns from under the shoulders. Take hold of the soiled one by the cuff and remove it. Put on the sleeve of the fresh one and draw the gown well down from under the shoulders; flex the knees and bring it down beneath the hips and legs smoothly.

Slip over head gown. When the gown to be removed is a closed one, proceed in the same manner as above.

A gown **opened in the back** is very convenient and can be changed with little effort to the patient and this is the hospital model. Remove one sleeve and replace with sleeve of fresh gown and draw this gown across the body over the soiled one (this keeps the patient covered). Then slip off the soiled one and put on the sleeve of the fresh one and pull down the gown.

Arrangement of pillows. Pillows, if well arranged, mean comfort to the patient, and the particular parts needing support in general are: — (1) **head** and **neck**, (2) **shoulders**, (3) **arms** and **elbows**, (4) **small of the back.**

It is easier to arrange pillows both for sitting up and when the patient can only be partly raised with the support of a bed-rest or substitute — a tray or board or a stiff hair pillow.

In **changing a pillow** (one under the head) have the fresh one ready on the far side of the bed. Lift the patient's head and shoulders with one arm by reaching over the body and remove with the other hand the used pillow, substituting the fresh one at the same time. Have the pillow come well under the shoulders.

When **two pillows** are used, if the patient is lying on

the back, have the first and lower one well beneath the shoulder blades, with the second and upper one higher on the bed to support the neck and head, but still under the shoulder blades.

When **several pillows** can be used, place the largest one nearest the patient's back and arrange the others in overlapping layers closer to the head of the bed. Slip small pillows under the elbows and neck and in the hollow of the back.

Cage pillow. A cage pillow may be built to resemble an arm-chair. Some firm support such as a stiff pillow or a backrest should be laid against the head of the bed (place a towel to protect from marking bed). Shake the pillows well and place the two largest into an inverted **V** behind the patient's body, with the lower ends where they may support the elbows. Build two other pillows up on these in same way, bringing them closer to the body so that when the cage is complete the patient's back and arms will be completely supported. A small pillow may be added for the support of the neck and the head.

Patient sitting up in bed to read. Put on a wrap and make a comfortable arrangement of pillows (cage or overlapping pillows) with a small one to support the neck. Place a bed-table or some substitute across the knees (not on them) at the most convenient height to hold the book, and have the light come from the back and be thrown on the book.

Arrangement for sleeping when sitting up. In cases when a patient cannot comfortably lie down, a bed-table or a bed-tray covered with pillows may be laid across the knees and the patient bends forward and lays the head on it. The back should then be carefully covered and the arms supported with small pillows.

For a patient who is lying on the back and can only be partially raised, a **crow's nest** is arranged with one large

Patient sitting up, reading in bed.

pillow and three small ones, as follows: — Two small ones are crossed like an inverted V, with ends under the shoulders on top of large pillow with third pillow where they intersect, for the head.

When only one pillow is available, blankets or towels rolled, may be substituted more or less comfortably.

QUESTIONS

Describe a model sick room and furnishings.
What sort of a bed would you select?
Describe suitable bedding.
Describe the process of making a complete bed for patient.
How would you change the under bedding — patient in bed?
How could a patient be moved from one bed to another comfortably?
How relieve the weight of the bed clothes over the feet?
What methods can be used to prevent slipping down in bed?
Mention the parts of the body that need particular support from pillow.
How arrange a patient comfortably to sit up in bed and read?

CHAPTER IX

MOVING AND LIFTING A PATIENT

Purposes. To relieve pressure and thus keep circulation active.

To rest the muscles by changing the position.

To place the patient in a convenient position.

Suggestions for simplifying moving. Move the patient with a firm steady motion, using the level of the entire hand and not merely the fingers.

Have the weight evenly distributed and move the hands simultaneously.

In order to make an easier move, draw the patient towards you, rather than push her from you.

In moving, supporting or turning a patient, place the hands under the bony parts of the frame, i.e., the shoulders and the hips; otherwise the patient is made uncomfortable and a less firm purchase is to be had on the body.

When raising the center of the body for any reason, have the patient flex the knees (or do this for her). In this position the patient has much more power to raise her body to assist you, or if too weak to do this, the hips are still raised to some extent (by this position of the legs).

Always support the patient's neck in the hollow of your arm, when moving the shoulders and head.

When a second person assists, the weight should be evenly distributed between the two, and the movements of both should be simultaneous.

Attendants in position to move patient up in bed.

To move a patient up in bed. Patients are very apt to slip down in bed too far, and need assistance in being drawn back on the pillows.

Method. Flex the patient's knees. Slip one arm under the neck, and support the far shoulder blade with the hand, the fingers reaching the hollow under the arm, and the neck resting on the curve of your arm. Place your other hand well under the hips, and draw the patient up in bed by moving both arms together. If possible while doing this, have the patient press on her heels to assist.

To move a patient down in bed place the hands in the same position, flex the knees and simply move the body toward the foot of the bed.

To draw patient from one side of the bed to the other. Place one arm under the shoulders as previously described, with the other arm well across, and under the hips. Draw the patient steadily toward you, moving both arms at the same time. If the patient is too heavy to move all at once in this way, use both hands in moving each part, first the shoulders, then the hips, then the legs.

If assistance can be obtained, distribute the patient's weight (after her knees have been flexed, as usual) upon the four hands, placed well under the trunk, and move them together.

To turn a patient on side. Slip your hands under the patient's shoulders and hips and turn her on the side, at the same time drawing the hips and shoulder back slightly. Thus the weight falls directly on the side, relieving all strain on the back. It is sometimes comfortable to flex the upper knee and place a pillow beneath it for support.

To help a patient to a sitting position in bed. Place

your arm under the neck and shoulder. Your other arm is inserted under the patient's back from the other side, reaching over the body to do so. Draw up the patient to a sitting position.

To draw a patient who is sitting up in bed further back towards the pillows. First flex the patient's knees. Then, standing behind her, place both your hands beneath the buttocks and draw the hands back together.

To lift a patient from bed. If two persons are to lift a patient out of bed, they should both stand on the same side. One of them places her hands under the neck and shoulders (supporting the head) and the other hand in the middle of the back while the other helper's hands are placed under the hips and just below the knees. Draw the patient to the edge of the bed, then lift, taking care to make all movements at the same time.

With a heavy person a third helper is necessary. The weight should be distributed by four hands under the trunk, and two under the legs.

To carry a patient in a sitting position. Draw the patient to a sitting position in bed, and turn her around with her back close to the edge of the bed. Have the attendants form a chair with their hands and slip them under the body, having the patient sit on the seat thus provided, and support herself by placing her arms across their backs with her hands touching the far shoulders. An assistant is necessary and the "chair" is made by having each person grasp her own left wrist with her right hand, then each takes the other's right wrist.

To get a patient up in a chair. Articles required:

Chair	Blanket or rug	Wrapper	Stockings
Pillows	Foot stool	Personal clothing	Slippers

Drawing patient up from pillow.

Method. Place the chair close to the bed and arrange one end of the blanket on it so that it can be used to cover the legs and feet. Turn the bedding slightly back from the side of the bed and draw on the stockings. Put on the far arm of the dressing gown first, and draw it down over the body, while removing the bed clothes beneath it. Then with one arm beneath the patient's shoulders and the other under the knees, **draw your arms together, and turn her** to the edge of the bed, thus swinging the patient to a sitting position. This is known as "pivoting" and is usually quite easily done. With the patient sitting on the edge of the bed, put on the other sleeve of the gown and the slippers. Then, standing in front of the patient, pull the gown down, put your hands under her arms and with the patient's hands on your shoulders assist her to the chair; then wrap the blanket well around her legs and arrange the pillows comfortably and if the chair can be moved (on casters) take it to another part of the room or to an adjoining room, thus providing a change of scene, which rests the mind. Place a footstool under the feet or provide some sort of support as a substitute. It is advisable to take the pulse at intervals after the exertion of getting up. If there are symptoms of faintness at first, a drink of cold water and fanning will usually give relief. If actually faint, the head may be brought forward and down. Care should be taken not to overtire a patient especially when first sitting up.

While the patient is out of bed turn the mattress and remake the bed, leaving it with the upper bedding folded back to the foot.

To help a patient back to bed. Draw the chair close to the bed, then, standing directly before the patient, place your hands under her arms and with her hands on your shoulder assist her to a sitting position on the edge of the bed, first lifting the skirt of the gown. Remove the sleeve from the far arm and draw the gown away from the

back. Place your arms under the shoulders and knees, as described before, and bring them together, and pivot the patient back into bed. Remember to have her placed, when on the edge of the bed, near enough to the pillows so that when pivoted around the head and shoulders will rest on them without extra moving. Remove the dressing gown, slippers and stockings, replace bedding and let the patient rest.

To move an extremity. It is frequently necessary to move a painful or sore leg or arm for various reasons, or to elevate it (elevating a part eases the pain where there is inflammation).

For an arm. Support the elbow with one hand under it and place the other under the wrist and move both hands together.

For a leg. Place one hand under the knee and with the other support the ankle and move the leg steadily and gently.

QUESTIONS

State points to consider for patient's comfort when moving patient.

State points to consider for your own ease when moving patient.

How would you assist a patient to get out of bed?

How arrange comfortably on chair sitting up?

Describe method of moving an injured arm — leg.

How would you move a heavy patient from one side of bed to the other?

Describe method of turning a patient to lie on her side.

CHAPTER X

BATHS

The matter of personal cleanliness is at all times important in order to maintain general good health and comfort and in time of illness this needs especial attention, not alone to keep the skin in good condition but also to alleviate various internal irregularities.

The skin. The skin is furnished with many small glands, ducts and pores, and in some places these are more numerous, as under the arms, at the soles of the feet, etc. The sebaceous glands supply an oily substance which keeps the skin soft.

Perspiration. The sweat glands separate the **perspiration from the blood** and this is passed out through the pores or ducts. The average amount is about two pints daily but this varies, influenced by such conditions as outside temperature, exercise, etc. This perspiration represents a form of **waste** that is being constantly eliminated from the system and as all waste matter decomposes rapidly, once outside the body, unless this is removed, the odor becomes offensive and in time of illness this is even more apparent. Perspiration also helps to regulate the **temperature** of the body. The constant evaporation of this fluid prevents the heat from accumulating, as for instance — a person while exercising accumulates heat, the skin at the same time throws off more perspiration — and the temperature of the body is kept even.

Bathing. Baths are given for various effects and at different temperatures, but the fundamental reason is to stimulate the action of the skin, so that it can perform its

various functions. By bathing — the blood circulation of the skin is stimulated — the temperature of the body is kept even — and the residue of the oily substance, with the waste matter which is brought to the surface by perspiration is removed. In most conditions a bath is refreshing to the patient and soothing to the nerves.

Temperatures of baths.

Hot bath	105–110°
Warm bath	90–100°
Tepid bath	80– 90°
Cool bath	70– 80°
Cold bath	60– 70°

Cool or cold baths are given for their tonic effect and also to reduce temperature. A patient should be rubbed constantly during such a bath to bring more blood to the surface to have it cooled.

Hot baths are sometimes ordered for special reasons to cause excessive action of the skin, to relax muscles or to stimulate the heat of the body. Hot baths taken continually are enervating.

A **warm bath** with a non-irritating soap is the usual bath for **cleansing purposes.** This sometimes may be followed by a cold sponge to act as a tonic for the skin.

Soda, bran and **starch** baths are used to allay irritation of the skin and are given warm or tepid.

A **soda bath** is prepared in the proportion of 8 ounces of bicarbonate of soda (ordinary baking soda) to every gallon of water. In this case the patient should be carefully dried without rubbing to avoid irritating the skin.

A **bran bath** is prepared an hour beforehand by placing two pounds of bran in a bag (cheesecloth or some other thin material) and allowing it to soak in a tub half full of water, and squeezing the bag often. Hot water may be added immediately before the bath.

A starch bath is prepared thus: — mix about 8 ounces of starch in a little cold water. Add sufficient boiling water to make a very thin paste and mix this with the bath water.

Salt baths are given for their tonic effect on the skin. Allow 2 or 3 pounds of salt to a tub half full of water, dissolved in hot water and then cooled to the desired temperature, which is usually cool or cold, although sometimes ordered quite warm.

Odor to perspiration. If the odor of perspiration is very strong, even if care to bathe has been taken, this can be lessened by using bicarbonate of soda or ammonia, 1 teaspoonful to a quart of water, and washing the parts where the glands are thickest in order to counteract the acidity in the perspiration which, in such cases, largely causes the odor.

Dry skin. If the skin is unduly dry, rub in some lubricant such as cocoa butter, oil, or cold cream after the usual bathing.

Moist skin. If the skin is unusually moist, alcohol (95 per cent.) should be rubbed on after the bathing, and the skin powdered with talcum.

Excessive moisture or "night sweat." Sometimes due to sudden fall of temperature or extreme weakness the skin perspires too freely, and excessive perspiration or "night sweat" is the result. Care must be taken to prevent a patient taking cold as the vitality is lowered under these circumstances.

Method of treatment. Pin a blanket around patient's neck and keep this over the body while removing the wet clothes. Then rub the skin dry with hot towels and apply warm alcohol (warmed by placing the bottle of alcohol in hot water). Put on warm, dry clothing and bedding.

GENERAL RULES FOR BATHING

The ideal times for bathing are in the morning or at night.

Baths should not be given sooner than 1½ to 2 hours after eating as, by thus increasing the circulation of the skin, blood is brought from the stomach where it is needed during the process of digesting the food.

The room in which a bath is taken should be warmer than usual and without draughts.

Everything needed should be ready before beginning the bath.

TUB BATH

Uses.

For cleanliness
To increase temperature
To decrease temperature
To relax the muscles
To soothe the nerves

Articles needed.

Chair	Soap	Wash cloths
Bath mat	1 face towel	Personal linen
	2 towels, warmed	

Method. The room should be warm and without draughts. Place a chair conveniently near with a towel spread on it and a mat on the floor beside the tub. Fill the tub half full of water at a temperature of 90° or, if desired, the bath can be made warmer. Help the patient both in getting in and out of the tub. Use plenty of castile soap and a rough wash cloth. Rinse the skin well and when drying, rub briskly with a warmed towel to increase the circulation. Have the patient rest for at least an hour afterwards.

Note. When a patient is taking her own bath, always stay within call in case your assistance is needed.

SPONGE BATH IN BED

Uses.

For cleanliness.
To keep the pores of the skin open.
To give comfort to patient.
To remove waste material given off through the skin.

Articles needed.

2 basins	Small blankets
1 face towel	Soap
2 bath towels	Alcohol
2 wash cloths	Powder

Personal and bed linen

Method. Half fill one basin with water at a temperature of 110° and the other with cooler water for rinsing.

Draw patient toward the edge of the bed. Remove the pillow entirely (to rest the muscles of the neck) or replace it with a smaller pillow if the patient prefers.

Lay a small blanket, arranged in three folds, across the chest and have the upper end of it held by the patient or tucked in around the shoulders so that while folding down the bedclothes to the foot of the bed, the other end of the blanket may be drawn with it, thus covering the patient. Then place another small blanket lengthwise on the bed, rolled close to the patient's side. Draw this beneath the body and remove the nightdress under cover.

Each part is washed, rinsed and dried separately and the body is at all times protected by a cover blanket.

In using a wash cloth, take all four corners within the hand to prevent them dripping on the patient, and wash with firm, gentle stroke. First bathe the face, wiping the eyes toward the nose. Then the neck and ears. Then bathe the arms and immerse the hands in the water and carefully clean them, using a brush and an orange stick for the nails, and when bathed wrap the arms in folds of

the under blanket. Then proceed to bathe the chest, axillae and abdomen. After drying them, turn the patient on the side and wash to the waist line, then to the middle of the thigh, and dry. Turn the patient again on the back and wash the legs, which can more easily be done by flexing the knees. Place the feet in the basin of water when bathing them and use a brush for the nails. Wash the soles of the feet with firm, steady strokes to prevent tickling and carefully bathe the pubic region unless this has been done prior to the whole bath.

If alcohol is used, rub it on each part after it is dried. Powder if desired.

When the bath is finished, remove the under blanket, replace the nightdress, draw up the bed clothes, and remove the cover blankets. Replace the pillows which have been shaken up and if the bedding requires to be changed, this should be done at the same time that the under blanket is removed.

In case only one bath blanket can be procured, use it doubled or substitute turkish towels.

COLD ALCOHOL SPONGE BATH

Uses. To reduce temperature.

Articles needed.

1 basin of cold water	1 hot water bag
2 large wash cloths of rough material	3 safety pins
	1 bottle alcohol, 95 per cent.
3 towels	Ice bag or cloth for head

Ice (if ordered)

Mix alcohol and water in equal parts.

Method. Prepare the bedding and the patient as for a sponge bath, except for these details: a rubber sheet should be put beneath the under blanket so that more water may be safely used, and a loin cloth is pinned about the hips. Allow the head to remain slightly raised.

Apply an ice bag to the head, or a cloth wrung out of cold water and frequently changed. Then remove the upper blanket. Proceed to bathe the large surfaces of the body, keeping up friction which, by constant rubbing, brings the blood to the surface of the body to be cooled. Let the water evaporate; do not dry it off. The only part which cannot be vigorously rubbed is the abdomen or any tender spot.

Half the time ordered for the bath (usually 15 or 20 minutes) is given to sponging the front of the body; the remainder is spent on the back with the patient turned on her side.

To remove the patient from the bath. Remove the cold application from the head. Place a blanket over the body and remove loin cloth and under blanket by rolling them close to the patient's side and slip another blanket in their place at the same time. Turn the patient on to it. Draw up the upper bedding and place a hot water bag near the feet. Give hot broth to drink and at the end of half an hour remove the blankets and hot water bag, replace the nightgown and take the temperature, pulse and respiration.

FOOT BATH

Uses — in general.

To relieve congestion, by increasing general circulation.

To draw blood away from the head.

Articles needed.

Foot tub and water	Pitcher with additional hot water
1 rubber sheet	
3 towels	Hot water bag with cover
1 blanket	Bath thermometer
	Mustard

Foot bath for patient in sitting position. Patient should recline in a comfortable chair. The bath is pre-

pared in a foot tub at a temperature of 105°. Place the rubber sheet on the floor to protect the rug; fold the blanket in half, placing one end under the knees so that the patient is sitting on it. Then move the tub in position, having a thermometer in the water or testing heat with your elbow. Lower the feet gently into the water and cover with the other end of the blanket, lifting one corner occasionally to add hot water. This should be done gradually until the temperature reaches 110°. When mustard is added (one tablespoonful to a gallon of water) a lubricant should be applied to the soles of the feet to prevent irritation.

When finished, withdraw the tub, dry the feet and leave them wrapped in a blanket or apply a hot water bag for a few minutes.

Note. Mustard should be mixed to a thin paste in cold water and thoroughly stirred into the bath.

Foot bath in bed. Flex the patient's knees and turn the bed clothes back from the foot of the bed over them; lay the extra blanket into a simple envelope or fold, one side of which rests on the bed under the tub while the other is drawn up over the legs and tub. Continue the bath as described above. It will be found more convenient to let the tub lie lengthwise on the bed, with the edges covered by a folded towel to protect the legs from touching the edge.

WASHING THE HAIR IN BED

Articles needed.

1 rubber sheet	1 pail
2 bath towels	1 pitcher hot water
3 towels	1 pitcher cold water
Comb and brush	Castile soap

Method. Make an improvised Kelly pad by rolling a large bath towel firmly and placing it in a half circle at

Foot bath in bed. Blanket turned back to show tub.

the right hand corner at the head of the bed, leaving the open part of the circle toward the outside of the bed. Over this place one end of the rubber sheet and tuck in the corners under the rolled towel. This forms a depression into which the patient's head may be placed. Put the other end of the rubber sheet in a pail on the floor and fold in the sides to form a trough or tube so that the water used in washing the hair will be directed downward into the pail.

Make a good lather of soap and wash the hair, rinsing it in warm water thoroughly two or three times. Lift the head out of the Kelly pad on to a bath towel and dry with extra towels. Apply 95 per cent. alcohol to the hair to assist in drying and rub until thoroughly dry. Separate the hair into several strands with the fingers and brush each one free of tangles.

Pediculi or lice cause an eruption on the scalp accompanied by constant itching.

Treatment. Saturate the hair with kerosene oil and bind the head in a cloth for two hours. Then wash the hair in warm vinegar to soften the eggs or nits, and comb with a fine comb. After this wash the hair with warm water and soap.

Larkspur may be used instead of kerosene and followed by the warm vinegar as described above.

If any nits or eggs are left on the hair, apply warm vinegar and comb with a fine tooth comb.

Note. If kerosene oil has been used, precaution must be taken to keep the head away from lighted gas or any open flame until it has been washed off.

Arranging a patient's hair. Method. To comb a patient's hair in bed, draw her as near the edge of the bed as possible. Provide some covering for the pillow. Comb very gently, beginning at the end and always holding the hand between the comb and scalp to prevent pulling. If the hair is badly tangled it may be made some-

what easier to comb by rubbing in a little vaseline or alcohol at the tangled part. Part the hair and arrange in two braids. If the patient can sit up even for a short time, the hair should be left until then to arrange.

The scalp needs to be rubbed frequently and a little lubricant applied.

CARE OF THE MOUTH

The **mouth** requires close attention and care during illness as any infection from an unclean mouth can easily affect the mucous membrane all down the **alimentary canal.**

Infection can also be carried from the mouth to the ear through the **eustachian** tube.

A patient suffers great discomfort from an unclean or sore mouth or tongue, also from an unhealthy condition of the teeth. The latter frequently causes a sore mouth and many unfavorable conditions in the body.

Methods of caring for the mouth. Brush the teeth night and morning and after every meal with a fairly stiff toothbrush, being sure that the back of the teeth also are brushed, using toothpaste or an antiseptic solution, such as listerine or borine, as preferable to powder.

In case of extreme sensitiveness of the mouth or where difficult to open wide, procure a **soft, small** toothbrush for this purpose, or wrap cotton on a stick or on a piece of whalebone and dip this in an antiseptic solution and then rub the cotton very gently over the gums and teeth.

When a patient cannot sit up turn the head a little to one side and have them use a flat basin or an ordinary soapdish to expectorate in. The mouth should be rinsed out after food.

To clean the tongue. Take a small wooden stick or whalebone with the end wrapped in cotton and dipped in the solution and wash off the tongue with it. If the tongue is dry and hard apply a lubricant such as:

1. { 2 parts glycerine
   { 1 part lemon juice
2. Glycophosphates
3. { 1 part alboline
   { 1 part lemon juice

Any of these can be applied with a dropper or a wooden toothpick with cotton on the end is convenient.

When the patient is on a milk diet, the mouth should be rinsed out after each feeding with a weak solution of bicarbonate of soda, 1 teaspoonful to a glass of water (few drops of tincture of myrrh may be added).

If the patient wears false teeth, these must be carefully cleaned and kept in water when not in the mouth.

A little lubricant or oil sprayed or rubbed inside the nostrils is a simple way of giving relief when they are dry, or breathing through the nose is difficult.

CARE OF THE HANDS

The hands become uncomfortable unless well cared for in the time of sickness. They need frequent washing, especially before and after eating, and if the skin is dry rub on cold cream or almond cream lotion. Keep the nails filed short and soft with a lubricant, and use an orange stick for cleaning them. The cuticle can be rubbed back with a towel when drying the hands each time.

CARE OF THE FEET

To keep **the feet** in good condition have them soaked in warm water at least three times a week, and washed daily. Some oil, vaseline, or other lubricant can be rubbed in if the skin and nails are dry and hard. The nails should be cut straight across, not curved, and where there is a tendency toward ingrowing nails clip an inverted disc in the center and scrape the center surface as thin as possible to draw the nail away from the sides. If the feet

perspire too freely, they become tender, sore and chafed, and there is likelihood of a strong odor. To overcome this tendency bathe daily with soap and water and then with salt and water and rub with alcohol and powder. Change stockings frequently and let air get to the inside of the shoes.

RUBBING A PATIENT

There are innumerable times in sickness when rubbing is needed and if well done gives a great deal of comfort to the average patient. Regular massage is the science of exercising the muscles and requires very exact knowledge and should not be confused with ordinary rubbing: — this rubbing increases the circulation under the skin and soothes the nerves by relieving the tension and tends to keep the whole skin healthy, particularly when normal exercise is restricted as with the sick.

In order to make a smooth motion, use even pressure of the whole hand and don't press in with the fingers and have a little lubricant or powder on hand.

In the **extremities,** follow the course of the veins, rubbing toward the heart and from the **head** down. For the **forehead** rub over the eyes, using the tips of the fingers lightly and press outward.

For the **arm,** hold the wrist in one hand and rub up with the other.

When rubbing the **lower extremity** stand facing the foot of the bed and draw the strokes toward you (this gives your arm freer action). The abdomen is sometimes rubbed when patient is constipated and the direction should be up the right side, across the top and down the left side.

To rub **the back,** have the patient turned toward you and rub out from either side of the spine and for the shoulders and lower part of the back rub with circular motions, making the skin move under your hand. The back requires frequent rubbing.

PREPARING A PATIENT FOR BREAKFAST

A sick person is usually in no condition in the early morning to endure exertion, so that the few preparations necessary before breakfast should be made with as little effort to the patient as possible.

Take the temperature, if necessary; the face and hands should be washed and the hair smoothed, not arranged, the teeth cleaned and the mouth rinsed out. Straighten the bed clothing and have the room tidy. If able to sit up in bed, place a wrap around the patient's shoulders and a large pillow or bed rest directly against the head of the bed for her to lean against, and small pillows arranged where needed and a stand or table for the tray.

Breakfast itself should be a light meal and attractively served, to tempt the appetite.

TO GET A PATIENT READY FOR THE NIGHT

If possible let a patient sit up in a chair for a few minutes before retiring. Tighten and smooth the under bedclothes and brush out any crumbs. See that the upper bedding is sufficiently loose to be comfortable over the feet and is drawn up high enough to cover the shoulders when the patient is lying down, and have fresh, cool pillows.

Give any necessary nourishment, wash the face, hands and teeth, and brush the hair. Rub the back with alcohol and powder it. Change the nightdress, and if necessary for comfort, a small pillow may be placed under the back, or, if the patient lies on the side, under the abdomen, to give support. Sometimes a warm bath is given or an alcohol rub. Darken the room and see to it that there can be no noise from rattling windows or banging doors. (Wedges put in windows and doors, or a cloth tied from the door handle inside to another outside helps to prevent these sounds.) Leave an extra cover at hand for the patient to draw over her toward morning if she should feel cold. Open the windows and use a screen if neces-

sary to prevent draughts or streaks of light from outside.

Giving a bedpan. Warm the bedpan first, then turn the bedclothes slightly back. Have the patient flex the knees. Raise the hips, draw up the gown and insert the pan at right angles to the bed, turning it so that it lies in proper position under the patient. If the patient cannot raise the hips, have pan in position, flex the knees and with both your hands raise the hips; hold with one hand and insert the pan with the other.

Removing bedpan. Flex the patient's knees, raise the hips, and withdraw the pan in same manner as it was inserted. Cover and remove. Turn patient on the side and wash off the part.

To prevent bedsores and for the comfort of the patient it is very necessary to raise the hips perfectly clear of the pan while inserting or removing. If a patient is emaciated, it will be more comfortable to place a rubber ring partly inflated with air over the bedpan before inserting. A small pillow or a folded towel should be placed under the small of the back with the end over the edge of the pan.

QUESTIONS

What different purposes are tub baths given for?
Mention points to be considered in giving them.
Describe method of giving sponge bath for cleanliness.
Mention points of difference when giving sponge bath to reduce fever.
Under what circumstances would soda or bran baths be advised?
Describe the method of giving a mustard foot bath.
What results are expected from it?
What are the dangers of an unclean mouth?
How can they be avoided?
What effect has rubbing on the skin?
In what direction are the extremities rubbed?

CHAPTER XI

BED SORES

Pressure sores are usually spoken of as bed sores, although they can develop under any condition where there is a constant pressure on a part, as this prevents healthy circulation.

This pressure may come: (1) from the body being constantly in one position; (2) from one part pressing against another; (3) from moisture and uncleanliness of the skin; (4) from friction from the bed clothes or (5) from splints and bandages improperly adjusted. Paralytics and very thin or emaciated patients or those with otherwise lowered vitality are especially susceptible to this danger.

The most susceptible parts are the lower end of the spine, the buttocks, hips, heels, knees, ankles, toes, elbows and ears. When placing or removing a bed pan special care should be taken to raise the hips sufficiently to avoid rubbing the surface against the pan.

Prevention of pressure sores. Bathing and **rubbing.** Bathe the parts frequently. Keep the skin dry and stimulate it by rubbing, using a little lubricant on the hand and rubbing with a smooth firm touch in circular motions. This is always to be followed by rubbing with alcohol which leaves the skin dry, hardened, and less liable to break down. Then apply talcum or stereate of zinc powder.

Remove pressure. If a patient can be turned, **change the position** frequently as the simplest way to remove pressure. If this cannot be done, the pressure must be kept

away from the susceptible parts by the use of rubber or cotton **rings, air pillows,** or an air mattress.

For the lower part of the back, a rubber ring is necessary. This should be covered with a bandage or should be slipped into a pillow case. This ring should be only partly inflated, otherwise it will be hard, uncomfortable, and may itself cause irritating pressure. In case of a very heavy patient, two such rings can be used, one on top of the other, both only partly inflated and tied together by a bandage or adhesive plaster. Be sure that the part to be protected does not touch the **surface under the ring.** To ease the consequent strain on the muscles, place a pillow in the hollow of the back. Rings made of cotton and covered with bandage, or air pillows, can be utilized to keep pressure off various parts of the body. A hot water bag partly filled with air makes a good substitute for such a pillow.

Signs of development of bed sores. If a patient complains of stinging when rubbed with alcohol, stop the use of alcohol at once as this sensation indicates that the skin is nearly broken. Apply stereate of zinc powder or oxide of zinc ointment over the part. Remove all pressure and rub around the part towards the wound and not away from it. This will improve the general circulation at that part.

Always notice the least sign of redness of the skin.

Bed sore wound. Report the first sign of a bedsore to the physician. When a sore has formed follow orders as to dressing, etc. It would be treated as any wound, but particular care must be given to those developing around the hips and buttocks in order to prevent fecal matter or urine from infecting them. Remove all pressure.

If the skin is reddened or sore from pressure from splints or bandages these must be readjusted and the skin rubbed with alcohol and alum (to harden it) and well powdered.

A patient who is constantly sitting in a chair requires care to prevent pressure sores. Rubber rings and air or soft hair pillows can be adjusted to relieve such pressure, and the arms of the patient must also be protected in many cases by the same method. Patients suffering from any form of paralysis are very susceptible to this danger.

When an invalid is driving or motoring. It is a comfort to an invalid when driving or motoring to have an air cushion under the body to ease the strain.

QUESTIONS

What may cause bed sores?
What practical means can be taken to prevent them?
Mention the parts of the body most susceptible to bed sores.
Describe the practical methods for removing pressure.
How may a threatened sore be prevented from developing?
Why are bed sores difficult wounds to heal?

CHAPTER XII

ENEMATA

An enema is an injection of some fluid into the intestines through the rectum.

Kinds.

- Simple laxative . To stimulate the muscular action of
- Laxative ..... the intestine
- Nutritive ..... To give nourishment
- Stimulating .... To give stimulation
- Saline irrigation . To supply fluid to the system and to cleanse the intestines

Under normal conditions an individual should have at least one movement a day from the intestines, otherwise there is a reabsorption of this waste into the system which acts as a slow poison causing various disturbances. This is usually regulated by exercise and the proper diet. In time of illness the lack of exercise and the more condensed food taken are apt to make the use of an enema necessary.

GENERAL RULES FOR GIVING AN ENEMA

All appliances must be absolutely clean before using, and thoroughly cleansed afterwards by washing with soap and water, rinsing and drying.

All tubes, tips or nozzles must be sterilized by boiling, rubber tubes being left not longer than two minutes in the water.

Always let the fluid run to the end of the tube to expel the air, then clamp until inserted. Leave fluid in the tube and clamp it before withdrawing for the same reason.

A screw may be fastened in the wall near the bed at the

desired height to support a fountain syringe bag. This will be filled with whatever solution is required for the treatment. The force of the flow is regulated by the height of the bag.

Appliances used.

Rubber sheet	Fountain syringe or irrigating can, with tubing, clamp, and nozzle
Cotton sheet	
Towel	
Bed pan or commode	Soft rubber rectal tube
Lubricant	Proper quantity of solution to be used
Glass funnel	

The tubing attached to the syringe or irrigator is usually about five feet long, fitted with a clamp to control the flow, and is connected with a soft rubber rectal tube by a glass connecting tube.

Position. The patient should be placed on the left side. This allows the fluid to go higher into the intestines, because it can follow the natural course of the canal. The next best position is to have the patient on the back. The knees should be drawn up to relax the muscles of the abdomen.

SIMPLE ENEMA

Preparations. Place a rubber covered by a sheet under the patient, at the same time drawing up the nightdress to the waist line. Turn the patient on the left side, bending the knees. Arrange the bed clothes conveniently and place a towel over the rectum.

Solution used. A solution of warm water and castile soap (which is non-irritating), 1–3 pints for an adult or ½ to 1 pint for a child, is most commonly used. The suds should be removed.

Process. Have the solution in the bag at a temperature

of 105° and hang it two feet above the patient. Lubricate the rectal tube, expel the air from the tube, clamp it and insert gently into the rectum. For a high enema, the tube is inserted about 8 inches; for a low one, 3–6 inches. It is easier to retain a high enema than one just inside the rectum. If there is any difficulty in inserting the tube, do not force it, but withdraw it slightly and try it again. If the patient complains of pain while the fluid is running, stop the flow for a few minutes to allow the gas (which is causing the pain) to disappear, so that the patient can retain the additional fluid more comfortably. When the required amount has been given, withdraw the tube slowly and press a towel against the anus, or opening of the rectum. This enema should, if possible, be retained ten minutes.

If a **bed pan** is to be used, turn the patient on the back, bend the knees, raise the hips and place the pan in position. Fold the end of the sheet (which is already under the patient) over the legs to protect the bedding. After removing the bed pan, turn the patient on her side, wash off the part carefully with soap and water and dry. Remove the rubber and extra sheet and arrange the nightgown and bedding.

If a **commode** is to be used, have it convenient to the bed. Put on patient's stockings, slippers and wrapper, and assist to the commode. Place a blanket over the legs, a hassock under the feet, and a low chair in front which can be used to lean on in case the patient feels faint or wants to relax the abdominal muscles.

Funnel and rectal tube method. Another apparatus frequently used for a simple enema is a funnel with a rectal tube attached. In this case, the fluid is poured in the funnel from a pitcher. This method should always be used for an enema requiring only a small

amount. Have the fluid ready,— hold the funnel in the left hand and pinch the end of the tube between the thumb and the index finger. Fill the funnel, allowing the fluid to run to the end of the tube. Then pinch the tube at the funnel end while it is being inserted with the right hand and control the speed of the flow by pressing the tube with the finger. If necessary, refill the funnel, being careful to do so before it becomes entirely empty and pinch the tube before finally withdrawing it to prevent air being carried in.

LAXATIVE OR OIL ENEMA

This is frequently used when the patient is very constipated to soften the fecal matter and it consists of 6 to 8 ounces of olive oil at a temperature of 105°. This should be given as a high enema, very slowly, by means of a rectal tube and funnel, and may be retained an hour. This is sometimes followed by a simple enema if not effectual.

NUTRITIVE ENEMA

This is prescribed when food cannot be taken in the usual way and, as the large intestine has not the power to digest but only to absorb it, the food for this purpose must be predigested. This may be peptonized milk or beef extracts combined with other ingredients as ordered. The usual amount is 4–6 ounces at intervals of 4–6 hours and at a temperature of 100°.

This is given by means of a rectal tube and funnel as described, but very slowly, almost drop by drop, so that the intestines will tolerate and retain it.

A simple enema is given once in 24 hours while a patient is being fed by rectum.

STIMULATING ENEMA

This can be used in emergencies. It is given at a temperature of 110°–112° and its ingredients are generally saline solution or strong coffee in a quantity 8–12

ounces, or if whiskey is used, from ½ to 1 ounce included in the total amount of fluid.

RECTAL SALINE IRRIGATION

Normal salt or saline solution is made by adding 1½ teaspoonfuls of common salt to one quart of water and boiling it. In this proportion, the solution is not irritating to the surface and is very generally used for all sorts of irrigations.

Articles needed. Beside the usual articles necessary for giving an enema have ready 6–12 quarts of the above solution at a temperature of 100°; also an irrigating bag with the usual tubing and clamp and, connected to this, a glass T tube. To one of the arms of this glass a rectal tube is connected and to the third opening a piece of tubing 3 feet in length, fitted with a clamp, is attached.

Method of giving. Prepare the patient as for a simple enema and place a foot tub on the floor beside the bed. Fill the bag with the solution and hang it two feet above the patient. Place the tubing to carry off the return flow in the foot tub, fasten the glass T tube to the sheet with a safety pin, then introduce the oiled rectal tube and allow a pint of the solution to pass in, clamp off that flow, and open the other clamp to let the outflow escape. This is kept up until the required amount has been given, opening and shutting the alternate clamps to allow the solution to run in and out.

Another method of using tubes. Make the same preparations as above except that in this case two rectal tubes are used. Connect with the bag in the usual way and join the second to a piece of rubber tubing to make it long enough to reach the foot tub. Both tubes exactly the same length are oiled and inserted together 8 inches into

the rectum, then one is withdrawn 2 inches and kept in that position while the flow runs steadily in and out at the same time.

In all cases of rectal irrigation, unless there has been a normal movement from the intestines, a simple enema is given before the irrigation, to clear away the fecal matter.

VAGINAL DOUCHE

A vaginal douche is given to wash off the surface of the vagina.

For the purpose of cleanliness or as a treatment for continuous heat.

For a simple douche a saline solution may be used or a boracic acid solution of 1 per cent.; other kinds, including strong disinfectants, would be ordered by the physician.

Four to eight quarts should be prepared at a temperature of 108–112°.

Articles needed.

Douche pan	Solution
Rubber bag and tubing	Sheet
Sterile douche nozzle	Towel

Douche nozzles are made of hard rubber or glass with the holes in the side.

Method of giving. Arrange the patient in position on the back with the knees flexed and head low; raise the hips and draw the gown and place the douche pan beneath, putting a folded towel as a cushion on the seat part of the pan. Fold the bed clothes partly back over one leg and place a folded sheet around the other to prevent exposure; wash off any discharge from the vagina. Have the bag containing the solution arranged two feet above the patient; expel the air and introduce the nozzle downward and backward about 4 inches, allowing the solution to run in with a slow but steady flow. In removing the pan after the

water is expelled be careful not to spill the contents. Dry off the part, pull down the gown and let the patient rest.

EAR IRRIGATION

This is given to wash out the canal of the ear, or for the application of heat to relieve pain. The solutions most commonly used are normal saline solution or boracic acid, 2 per cent., at a temperature of 105° or hotter.

Articles needed.

Basin	Bag and tubing	Cotton
Towel	Sterile glass tip	Solution

Method of giving. Wash off any discharge on the ear. Have the patient sitting up or at least with the head raised, and place a basin under the ear. Hang the bag containing the solution a foot above the head. Hold the ear backward and upward to straighten the passage and, after expelling the air from the tube, direct the fluid into the ear but do not close the opening with the tip as there must be a space to allow for the return flow. When the required amount has been given, wipe out any remaining moisture with a piece of cotton, rolled firmly, and lay the patient on the affected side to drain out any fluid.

Another method of irrigating the ear is to use a **return flow nozzle** which is attached to the bag in the usual way but with an additional piece of tubing attached to the other branch of the main tube. This allows for a continual flow in and out of the ear. The nozzle in this case is placed in the opening.

Note. An ear should not be syringed without orders from a physician.

NASAL IRRIGATION

A nasal irrigation or douche is given to cleanse the nasal cavity and usually consists of normal saline solution or boracic solution, 2 per cent., at a temperature of 105°.

Articles Needed.

1–2 quarts of solution	Basin
Irrigator bag and nasal tip	Towel and handkerchief

Method of giving. Arrange the patient sitting up, with the head bent down over the basin and the mouth open, as the breathing is to be through the mouth the entire time of the treatment. Warn the patient not to turn the head on the side. Hang the bag so that the lower part is on a level with the patient's head (to prevent too much force). Insert the nasal tip in both nostrils alternately and the fluid running through will wash the cavity.

The position of the patient in this case is important in order to prevent discharge being carried into the **Eustachian tubes** which extend from the **throat to the ear** and through which infection is easily carried.

THROAT IRRIGATIONS

These are ordered for cleansing the throat or reducing inflammation by a continuous flow of hot salt solution. About 4 quarts can be used at a temperature of 108° or hotter if the patient can stand it.

Articles needed.

Solution to be used	Basin
Bag and tube	Towel

Any tube with an opening in the end can be used. The best is a glass tube 8 inches long with a curve of two inches more at one end.

Method of giving. Have the patient sitting with head bent down over the basin and place a towel around the neck. Hang the bag 2 feet above the head, insert the tube well back on the top of the tongue and let the water flow in and out, keeping the mouth open and not breathing through the nose.

CHAPTER XIII

EXTERNAL APPLICATIONS

External applications are used frequently in the care of the sick, in various forms and for different reasons, and must always be applied with the greatest care. They consist of dry heat, moist heat, poultices, counter-irritants, and cold applications — moist and dry.

EXTERNAL HEAT

This is used

(1) to give warmth to the body and in that way stimulate it,
(2) to promote free perspiration,
(3) to relieve pain.

Heat relieves pain by increasing the circulation of the affected part, thus removing the congestion which, by pressure on the nerves, causes pain in many cases.

Dry heat. For this purpose may be used **electric pads** or **hot water bags.** With the former, while they are most convenient, there is some danger attached to their use and they must be constantly watched as the heat increases gradually and is liable to become too hot and burn the part. Also be sure that the pad is in a thoroughly good condition and that the insulating material is intact to prevent accidents by fire.

Method of filling a hot water bag. A hot water bag is the most generally used method of applying dry heat. Have the water below boiling point — and not above 180°— and half fill the bag with it. If the water is

poured in by means of a funnel it goes directly into the bag without injuring the rubber cement at the neck of the bag; it is also the most convenient way of filling it. Screw on the stopper securely and invert the bag to test for leakage, then place it in a washable cover.

The air in the bag can be left if it is used for such a purpose as against the feet, but in order to make it pliable and adjustable, the air should be expelled by pressing it out before the stopper is inserted.

If this method of dry heat is to be used over a very sensitive part, lessen the weight by putting very little water in the bag.

When not in use, a rubber bag should be filled with air which distends the sides and prevents them from sticking together. Have the rubber washer on the stopper replaced by a new one if worn thin.

Metal or crockery bottles are durable but not as convenient, and can be used only at the feet or to warm a certain area.

Dry heat can also be applied by means of hot salt bags, the salt being heated before placing it in the bag, or by hot blankets.

Moist heat. **Moist heat** is more penetrating than dry heat and by relaxing the muscles and tissues, quickens the circulation and thus eases pain. For this purpose are used: (1) hot or warm baths, (2) fomentations, (3) poultices, or (4) hot compresses.

HOT FOMENTATIONS OR STUPES

By this means, moist heat is applied continuously for a certain period of time, to various parts of the body. They are most commonly used on the **abdomen** to relieve pain arising chiefly from an accumulation of gas which distends the abdomen and causes a great deal of distress. In such

a case a rectal tube is sometimes inserted into the rectum and left there during the treatment to make a channel through which the gas passes off more readily. The free end of the tube should be in some receptacle to receive any fecal matter discharged with the gas.

Articles needed.

2 basins	Lubricant
A blanket	Stupe cover
Large towel	Stupe wringer
½ yd. gauze	Turpentine if required
3 pieces flannel	Boiling water

Some apparatus for heating water near at hand

For the cover, a layer of flannel and oil silk fastened together will be found most serviceable but flannel and brown paper used in the same way make an excellent substitute. Such a cover should be light in weight and as air-tight as possible and much larger than the area to be covered.

A stupe wringer is made with a piece of coarse toweling about ½ yard long with a two-inch hem turned in at either end. Two thin, round sticks longer than the width of the towel are run through the hems. The stupe can then be laid on the toweling and wrung nearly dry with the help of the sticks, turning them in opposite directions. In place of the wringer, a crash towel can be used in much the same way.

Method of applying. Turn back the bedclothes to below the abdomen, replacing them with a blanket. Draw the gown up out of the way and arrange a tightly rolled large towel around the abdomen in a circle to prevent the bedding getting damp. Oil the surface of the abdomen and protect with a piece of gauze. On top of that place the stupe cover and fold the blanket back from that part.

Place the flannel inside the wringer or towel and dip this into a basin of boiling water (which should be at hand) leaving the ends of the wringer outside the basin where they can be handled. Wring the flannel very dry by twisting the two ends in opposite directions. Place the wringer in an empty basin, remove the flannel, shake slightly, draw the gauze protector away and apply the flannel stupe directly to the skin, passing it under the stupe cover. These flannels are changed every five minutes and always under cover. This treatment is usually kept up from half an hour to an hour. After removing the heat, dry or oil the skin and cover with flannel or a warm protector.

If turpentine is ordered, this can be put into the water in the basin — about 1 teaspoonful to a quart of water — or a safer way to prevent blistering of the skin is to mix one part of turpentine with three parts of oil and wipe this over the surface before applying the stupe. However, this should not be applied more than three times during the entire treatment.

Fomentations are also applied over the chest, throat or other parts of the body by the same method.

A hot compress. These can be made of gauze or thin flannel wrung out of hot water, the temperature of this varying from 116° to 120°, and applied to the part, and changed every two minutes. No cover will be needed. This treatment is kept up usually from half an hour to an hour. If there is any discharge from the part, such as from an eye, a fresh compress should be used each time.

A convenient arrangement is to have a chafing dish near the bed and the compress kept in hot water there, ready for use.

POULTICES

Poultices can be made of any non-irritating substance that will retain heat, the size and shape depending upon

the surface to be covered. The poultice is put in gauze or thin muslin and will require a cover (as described in stupes) to retain the heat.

Articles needed.

Flaxseed	Sauce pan	Cover
Water	Gauze	Lubricant

Method of applying flaxseed poultice. Flaxseed or linseed meal is generally used for poultices as this contains oil which makes it penetrating and more effective. For a poultice about six inches square, allow 1 pint of water, ¼ lb. of flaxseed and ¼ yd. of gauze. When the water is boiling, add enough of the meal to make a paste which will drop semi-solid from the spoon. Then continue the boiling from 3 to 5 minutes, beating constantly. This incorporates it with the air which makes it light in weight, while at the same time it thickens with boiling. A half teaspoonful of bicarbonate of soda added during the beating will help to make it still lighter.

Spread this poultice about an inch thick on the center of the gauze, folding the extra gauze over from side to side, then from the ends, placing one inside the other to make it secure. Carry this with its cover on a warm plate or tray, to the patient's side.

Adjust a binder to hold it in place under the part to be poulticed, leaving the ends outspread. Oil the skin, test the poultice for heat with the back of the hand, and apply it directly to the part, slightly raising the corners of the poultice from the skin until the patient becomes accustomed to the heat. Place the cover over this and adjust the ends of the binder to hold it in place. This will usually keep warm about an hour, and if necessary to continue the treatment, a fresh poultice must be ready before the other is removed. Afterwards dry and oil the skin and keep the part well covered with a warm protector.

Mustard is sometimes added to such a poultice in the proportion of 1 part of mustard to 8 or 10 of flaxseed. It should be dissolved in a little cold water and added after the poultice is cooked, and well beaten into it.

Starch poultice. This is made by dissolving laundry starch or corn starch in cold water and then adding it to boiling water which thickens it. It is spread on a muslin surface and when cool enough, applied directly to the part. This is often used for its soothing effect on an irritated surface.

Bran poultice. Bran is placed inside a bag, dipped in boiling water, wrung out in a cloth and applied to the part, and kept covered.

COUNTER-IRRITANTS

These are agents which, by their irritant action, increase the flow of blood to one part thus attracting it from another, thereby relieving pain by reducing congestion in any one place.

The simplest counter-irritants are hot water bag, mustard paste, tincture of iodine, turpentine and camphorated oil.

Mustard plaster or paste. These are made with mustard, flour and water or, if the skin is very sensitive to blistering, the white of egg can be used instead of water. For a paste six inches square about 6 level tablespoonfuls of the material will be needed and a half a yard square of gauze.

Table for mustard paste.

Medium	1 part mustard to 5 parts flour
Stronger	1 part mustard to 4 parts flour
Weaker (for children)	1 part mustard to 8 or 10 parts flour

Method. Mix mustard and flour together dry, add tepid water to make a paste; spread this on the center of the gauze leaving a margin all around the paste. Then fold over the extra gauze from side to side, and from end to end, fastening one inside the other securely. Place this on a warm plate to remove the chill from the surface, before bringing it to the patient.

Method of applying. Oil the surface of the skin and apply the paste, and hold in place with a light binder. This is usually left on from 10 to 20 minutes. Guard against burning by raising the edges of the plaster and looking at the skin which should be red, but not a dark red. After removing the paste, wipe the skin with a soft cloth or wash over the surface to prevent the mustard oil from further action on the skin. Then apply cold cream or vaseline, or simply powder, and place a smooth, soft cloth over the part.

Mustard leaves. Mustard leaves can be obtained ready for use. They are made of mustard in combination with a substance that adheres to a muslin foundation. To apply, dip the plaster in tepid water for a minute and after oiling the skin, place this on it, leaving it there for about 10 or 20 minutes or until sufficiently red. After removing, wipe off the skin and oil the surface as described above.

Tincture of iodine. This is applied to the skin by brushing it over the surface with a camel's hair brush, or a piece of cotton attached to a small stick. If too much or too strong iodine is put on the surface and burns severely, wash it off with alcohol.

Note: Tincture of iodine must always be fresh or the alcohol in which it is dissolved may have evaporated and left too large a proportion of iodine.

Liniments. Liniments and various oils are applied

to the skin with a piece of cotton, and then rubbed in by friction with the hands.

Ointments can be applied in the same way or they may be spread on muslin and placed on the skin, and kept there by a bandage or strips of adhesive plaster.

COLD APPLICATIONS

Cold is employed to allay inflammation, to relieve pain, to keep the blood from congesting in any one part, and is used in the form of ice bags or cold compresses, and these kept continually cold.

Ice bag. Ice bags are usually made of rubber, fitted with a metal screw top. They should be about half filled with chopped ice and the air pressed out, then wrapped in a muslin or gauze cover to prevent over-chilling or freezing the part to which applied. The ice should be constantly replenished to prevent their getting warm.

To relieve the weight of the ice bag. If the weight of the bag is uncomfortable, it can be arranged so that the cold surface rests on the part without the pressure. If to be placed on the head, a piece of tape can be tied around the metal top and adjusted to allow the bag to hang from the top of the bedstead and just touch the head; or if applied on the knee, for instance, a support of some firm kind can be placed on either side to support the sides of the bag, letting it barely come in contact with the skin.

Care of bag. After using, dry the inside of the bag thoroughly and screw on the metal top with its rubber washer, leaving sufficient air to keep the sides from sticking together.

Cold compress. Fold two pieces of gauze or thin, soft muslin in the required size, with the edges folded inside. Have a basin nearby in which there is a large piece of ice and some water. Soak the compresses in the water and cool them on the ice, applying them alternately to the part — one being constantly on the ice.

Compresses for the eyes. In this case, if there is any discharge from the eyes, use a fresh compress each time. For this purpose the gauze is usually cut in oval shape, larger than the eyes and ¼ inch thick, and can be chilled and changed as described above. Sometimes the treatment calls for cold and hot compresses to be applied alternately.

QUESTIONS

For what reason is heat applied?
How does it relieve pain?
How does cold relieve pain?
Describe common methods of applying heat.
How may cold be applied to a part?
How apply hot fomentations to abdomen?
What danger to patient from hot applications?
How avoid this danger?

Applying hot or cold compresses to the eye.

FOR THE COMFORT OF THE PATIENT

Amongst the little details that go to make up the sum comfort of the patient a few of the most essential may be considered in the following suggestions:

Change the patient's position frequently and use a foot rest to prevent strain on the muscles.

Have the patient's person and surroundings clean. Give an extra alcohol rub in hot weather.

Keep the room quiet and cool and have the bed comfortably made and bed clothes loose enough over the feet.

Give treatments with quiet confidence. Do it quickly and quietly and concentrate your mind on doing it.

Serve food and drink attractively, prepare and season it in as many different ways as possible.

Be cheerful and resourceful yourself and keep the sea smooth. Answer the patient's questions in a satisfactory way and not evasively. Anticipate harmless desires of the patient and study her or his likes or dislikes. Know when you have done enough and don't fuss over it and never try to entertain too much.

Leave the patient sometimes alone.

Be interested in the patient's personal responsibilities.

Try to prevent small household worries from reaching the patient.

Do not become careless in detail during convalescence.

Have the room darkened for the patient to rest for an hour a day.

CHAPTER XIV

MEDICINES

Medicine may be given by mouth, through the skin or by rectum. It is usually in the form of fluids, pills, powders, tablets, or capsules; also medicated ointments are applied externally or suppositories are inserted in the rectum.

MEASURES

Dry Measure	*Fluid Measure*
60 grains ....1 dram	60 minims .....1 dram
8 drams ....1 ounce	8 drams .....1 ounce
(480 grains ....1 ounce)	16 ounces .....1 pint
	2 pints .....1 pint
	4 quarts .....1 gallon

Approximate equivalent

1 teaspoonful	1 dram
1 tablespoonful	½ ounce
1 glass (if full)	8 oz.
2 glassfuls	1 pint

General rules for giving medicine.

1. **Always read the label twice,** once before preparing the dose and again before giving it to the patient.

2. Have the medicines fresh and **clearly labeled,** and keep them in a **safe** place.

3. Medicines should be given in the **exact quantity** and at the intervals ordered, but if for any reason (such as a patient's being asleep) the dose is delayed, allow the usual interval between that and the next dose. For example, medicine due at 12 o'clock, 3, 6, etc. may be given at 1 o'clock if the patient awakes then, and after that at 4,

7, 11, etc. Those ordered before meals are usually given 15 minutes beforehand and those ordered after meals about 15 minutes afterwards.

In giving **fluid medicine,** shake the bottle thoroughly, wipe off the mouth of the bottle and pour the liquid from the side opposite the label so that it is kept clean and there is no danger of obliterating the directions. Measure fluids accurately by a minim dropper or a graduated glass, and dilute 2 to 3 times unless otherwise directed.

Ice held in the mouth before giving oil or any disagreeable medicine dulls the sense of taste.

Tablets, powders and capsules should be placed on the center of the tongue and followed at once by a drink of water to wash them down. In some cases, tablets are dissolved in water, or before being given are placed in a piece of bread or in a spoonful of jelly in order that they may be swallowed more easily.

Among the most used common classes of medicines are: **tonics** (to tone up the parts, such as blood, nerves, stomach, etc.); **stimulants** (to improve heart action); **sedatives** (to quiet the nerves or ease pain); **emetics** (to cause vomiting); and **cathartics** (to stimulate the muscular action of the bowels and produce a movement).

COMMON HOUSEHOLD STIMULANTS

(To be used in emergencies)

Stimulants may be given internally by mouth or rectum or by inhalation. **For inhaling,** ammonia salts may be held to the nose, taking care not to spill any of its fluid which would burn the patient, nor to hold the bottle too near the face. A handkerchief saturated with aromatic spirits of ammonia may also be held to the nose with good effect, or plain ammonia used in the same way.

Stimulants which can be given **internally** are:

Whiskey or brandy — 1 tablespoonful diluted in at least ⅔ as much hot water.

Aromatic spirits of ammonia — ½ to 1 teaspoonful in 2 tablespoonfuls of cold water.

Coffee, strong and clear, from ½ to 1 cupful (the stimulant is caffeine).

Extract of coffee, 1 tablespoonful to a cup of boiling water.

Tea, strong and clear (the stimulant is theine).

Ginger tea, made with 2 tablespoonfuls of powdered ginger to 1 cup of boiling water, steeped and strained; or syrup of ginger, 2 drams in ¼ cup of water.

No attempt should be made to administer stimulants or other medicines by mouth unless a patient is fully conscious, except aromatic spirits of ammonia in very small doses, which can be absorbed by tongue.

Coffee and alcoholic stimulants may be administered by rectum.

(See Enemata, page 99.)

EMETICS

These are given to cause vomiting. The common emetics are:

Strong salt and water (3 teaspoonfuls of salt to 1 glass of water which makes it sufficiently irritating to produce the desired effect).

Mustard and water (1–2 teaspoonfuls of powdered mustard to a glass of water).

Syrup of ipecac (½ to 1 teaspoonful, taken undiluted).

Running the finger down the throat will frequently produce vomiting without emetics, or warm water given continually until vomiting is produced.

CATHARTICS

This class of medicines is given to stimulate the muscles of the intestines and cause a free action from them. Some cathartics produce the effect slowly and these should be given at night. Others, producing a quick effect, are given in the morning. Of this latter class, **castor oil** is most frequently ordered in doses of from 1 teaspoonful for an infant to 3 tablespoonfuls for an adult. As this has a very nauseating taste, it must be carefully prepared to enable a patient to take and retain it. It can be more easily taken in any ice-cold fluid, even ice water, or ice water and lemon juice, or whiskey. Pour this in a small glass, rinsing it around the edge first; then pour the oil, also cold, in the center and the oil will thus be kept intact. Swallow quickly and the oil goes down on the water easily; then take some strong flavor in the mouth, such as peppermint and lie down to prevent nausea. For a child, the oil can be placed in the same way on top of a little cold fluid in a spoon; then place the spoon well back on the tongue and hold it there until its contents are swallowed. This prevents closing the teeth and giving an opportunity of spitting the oil out. Olive oil in the same quantity may be substituted for castor oil.

Calomel is another cathartic frequently prescribed, and usually in doses of from 1 to 2 grains. This may be given in one dose or in ¼ grain doses every 20 minutes with water each time until the required amount has been taken. Five grains of bicarbonate of soda with each dose helps prevent irritation in the stomach and consequent nausea. Calomel is given at night and is invariably followed the next morning by a cathartic such as magnesia, or any of the laxative mineral waters. Food should not

be taken for 1 to 2 hours after this second laxative and then only a hot drink, as otherwise the patient will become nauseated.

Other kinds of cathartics are in the form of pills, capsules, tablets or fluids and these would be given at night as their action is slow.

Suppositories are also used to cause a movement from the intestines; they are cone shaped substances made of cocoa butter, gluten or glycerine and are placed in the rectum.

To insert a **suppository,** oil both it and the little finger and push it far into the rectum.

Medicated suppositories are used as a medium for introducing drugs into the system.

ACIDS AND ALKALIES

These are substances that counteract the effect of each other and neutralize.

Acids	Alkalies
Lemon juice	Bicarbonate of Soda
Vinegar	Lime water
	Magnesia

Mouth washes.

Soda and water (1 teaspoonful to 1 glass).

Listerine or borine diluted ⅔ with water.

Water with 10 drops of alcohol to a glass.

Saline solution.

Boracic acid, saturated solution or diluted, as desired.

{ Lemon juice 2 tbsps.
Glycerine 2 tsps.
Water ½ glass.

Gargles.

Lemon 4 tbsps.
Glycerine 1 tbsp.
Water ½ glass.
Soda ½ tsp.

Very hot saline solution.

Vinegar 1 part.
Water 4 parts.

QUESTIONS

Mention important points in the giving of any medicine.
How guard against making a mistake in giving a medicine?
Name stimulants that could be used for inhaling.
Mention common emetics.
Mention common stimulants.
How prepare a dose of castor oil for adult — child?
What could be used for a mouth wash?
What could be used for a gargle?

SUGGESTIONS FOR CONTENTS OF A CONVENIENT HOUSEHOLD MEDICINE CLOSET

Alcohol
Whiskey or brandy
Aromatic spirits of ammonia
Smelling salts
Headache cologne
Baume Analgesique (to rub on for pain)
Olive oil
Castor oil
Magnesia granules (effervescing)
Seidlitz powders
Syrup of ginger
Syrup of ipecac
Essence of peppermint
Soda mints
Mustard
Bicarbonate of soda (baking soda)
Lime water
Boracic powder
Solution of boracic acid
Glass jar of sterile water
Small basins
Pond's extract
Vaseline
Albolin
Cold cream and Pond's extract (equal parts)
Oxide of zinc ointment
Small package of sterile cotton and gauze
Sterile gauze bandages, 1 and 2 inch widths
Roll of adhesive plaster
Hot water bag
Ice bag
Fountain syringe bag or an enamel irrigating can
Tubing and tips for syringing
A measuring glass
A dropper and eye cup
Glass drinking tube
Small glass
Measure spoon
Rubber tissue
Assorted bandages
Roll of old flannel and linen

CHAPTER XV

SYMPTOMS

Observation of symptoms. One of the chief responsibilities in connection with nursing the sick is that of training the mind to acquire the habit of **observing changes** that occur in the patient's condition. Nothing is too trivial to notice. Slight changes may give warning of a serious condition approaching which if discovered early, might prevent acute developments later. State the facts in regard to observations as clearly and accurately as possible to the physician.

The mind must be alert and keen to do this well and to have an understanding of the patient, and the conditions that normally surround her. These changes are usually spoken of as **symptoms** which are classified as follows:

Subjective are those realized by the patient alone, such as pain, headache, nausea, chilliness, defects in hearing or seeing.

Objective are those visible to the onlooker, such as the position taken, the color and general appearance.

Constitutional are those which affect the whole body, for example, fever.

Local are those restricted to any special part, as a swollen knee, a sore throat, etc.

Symptoms may indicate either a state of the **body, mind or nerves** and their severity usually increases towards night. The increase or decrease of strength from day to day is indicated by small things that need close observation: was the patient less tired after sitting up to-day than yesterday? Could she walk a longer distance to-

day? Did she seem less nervously tired? Was the voice stronger or weaker? Was the attitude of mind more depressed or cheerful? Her nervousness less apparent? Was the attitude of the body alert, tense or relaxed? Had the appetite improved and was there loss or increase of weight?

Pain. It is difficult to define suffering or pain, or to report on it, because the patient only can tell the severity or character of it. Some bear pain almost stoically, while others, having less power of endurance, grow restless and nervous and sometimes magnify to themselves the degree of their suffering.

Notice the **expression of the face,** also the **position taken,** for a patient almost instinctively takes that which gives the most comfort: — when the pain is in the abdomen, the patient will draw up the legs toward the body to relax the muscles and relieve tension; if the pain is in the head, this is instinctively raised up to prevent too much blood going there and causing pressure. Notice if supporting an injured or aching part or elevating it, give relief and if the pain is darting or piercing, if there are intervals of relief, or if it is a steady ache. A pain the patients complain of as "boring" is usually the result of pressure and needs the removal of that pressure to ease it. It is important to observe how pain is affected by heat or cold, rest or motion, such as rubbing, or by the lessening of light and sound. Surface pain is increased by light pressure; deep-seated pain by deep pressure.

Sleep. During illness, sleep is more or less unnatural, and the result of loss of sleep is felt on the heart action as normally it beats slower during sleep, and this reacts on the system generally. Some of the particular points to notice about a patient's sleep are: the actual time if possible — as a patient is not a good judge of this; also if it is sound, continuous and quiet or if the patient is restless,

waking up often, and talking or muttering. Another point to be noticed is whether the breathing is through the nose or mouth, and if the latter, it should be reported; also if the eyes are closed or partially opened. Patients are usually not waked for food or medicine, but this depends upon the physician's orders. The return to natural sleep is often a turning point in an illness, and is always a favorable symptom, and everything should be done to induce sleep. Quietness and darkness generally encourage it and for further suggestions, refer to treatment on insomnia (page 137).

Position. Even when not considered in connection with pain, the position taken by a patient is important to notice. When there is distress from various causes in the **abdomen,** patients will draw up the knee and lie either on the back or on the side as this relaxes the muscles and relieves the tension. When pressures give relief, as in colic, they will lie over on the abdomen. If a patient lies on **the back** with no desire to change the position, it is often a sign of extreme weakness and in that case, the patient must be moved on the side at intervals to keep the circulation active in all parts. Lying continuously on **one side** may indicate local disease. Frequently in disease of the lungs the patient lies on the affected side to leave the other free and it is a sign of improvement when a turn can be made over to the other side. The position on the right side is often taken in order to leave the action of the heart free. When there is difficulty in breathing a patient is not always able to lie down and should be supported comfortably. Notice the position that eases and in which the patient can sleep best. For methods of supporting with rests and pillows see page 71.

Appetite. The appetite can only be considered in connection with other symptoms and is more or less allied with the condition of digestion or indigestion. Sometimes

patients are considered to have no appetite when all that they need is food that they like. **Observe closely what leads to loss of appetite,** it may be only over fatigue, either physical or nervous or, as the result of depression, and the patient doesn't want food, or only picks at it. In acute illness from fever and various causes, the appetite fails just as other parts of the body are affected. This is often from the exhaustion of illness and the effort required to take food. Notice if the appetite improves as the strength does, and whether the desire for all food is lost or if certain kinds appeal to them.

The secretion of digestive juices is stimulated through the nerves by taste, smell, sight; and the manner in which food is offered to a patient has a great deal to do with the appetite. A loss of appetite is also due to lack of digestive juices, or to the lack of certain constituents in them. In this case, tonics are given to overcome this condition and to restore the appetite.

Thirst should be noted as it defines a lack of fluid in the blood or tissues.

Skin. The color of the skin varies in disease: pale as in fainting; red or flushed with fever; yellow as in jaundice; or bluish when the blood is very much congested. Notice any rash or eruption and how it spreads and if the skin is dry or moist and if the nails are soft or hard; whether there is any sign of puffiness of the skin (this often shows under the eyes or in the feet and legs and comes from an excess of fluid in the tissues). Also notice any swelling of the abdomen or any other parts such as the glands, and any indication of redness, chafing or tenderness. A patient may complain of an itchiness on the surface of the skin when there is no rash to be seen. Any of these conditions should be reported carefully to the physician.

Tongue, mouth and breath. The condition of the tongue gives information as to the state of the digestive organs particularly. It is important to notice if it is dry or moist, furred and coated, if the edges and tip are red or sore (making it painful), and if swollen. If it is becoming better or worse and if there are any signs of irritation on the surface of the mouth, or in the throat, and if there is an unpleasant odor from the breath. This usually arises from the condition of the stomach, unhealthy teeth, or from a catarrhal condition of the nose or throat.

Feces. It is important to observe in regard to the feces, whether they are dry, hard, constipated, or if they show a tendency to soft, watery stools; and if there is any evidence of undigested food or unnatural color. Also note the frequency of movement and if accompanied by pain or gas.

Urine. Notice the frequency of passing urine and if there is any distress in connection with this, the color, the amount in twenty-four hours, and if it is clear or shows evidence of any sediment.

Circulation. Observe if there is a tendency toward chilliness or if the hands and feet are apt to be cold.

Temperature, respiration and pulse. Notice if the temperature varies from normal, either above or below and if the variation is continuous; the rate of the pulse and its character — whether strong and regular, or weak, also if the breathing is difficult or noisy and if it is eased by the head being raised; if there is any cough, and whether this increases at night and is attended with expectoration (and the character of the sputum); if the cough is loose, dry, hacking, hoarse or comes in paroxysms, and if it causes any pain.

Muscular weakness. Sometimes after an illness there is more or less weakness and in some cases paralysis of the muscles. Watch carefully for any sign of lameness or dragging of the feet, or lack of strength in the muscles of the arms; also any signs of twitching or unnatural movements of the muscles.

Bedside notes. It is much safer to record in writing the necessary points in regard to a patient's condition. It is an easier method, more reliable, more accurate, than trying to remember them, and the physician needs the necessary facts about the condition in a condensed way. In keeping bedside notes, state the facts clearly, give definite amounts as far as you can. Among the usual points are temperature, pulse, respiration, diet, sleep, medicine given, number of stools and amount of urine. Forms for bedside notes can be easily obtained at any drugstore and charts can also be obtained for recording the temperature in case of a persistent fever.

PATIENT'S RECORD

Name..... *Date*.....

Date	Time	Temp.	Pulse	Resp.	Medicine	Diet	Fluids	Stools	Urine	Remarks

CHAPTER XVI

SPECIAL CARE IN CONDITIONS RELATING TO THE FEMALE GENERATIVE ORGANS

The **female generative organs** lying in the pelvic cavity consist of **two ovaries** each about an inch and a half in diameter in which the ovum or germ of life is secreted, and from these extend **two Fallopian tubes** about four or five inches long to the **uterus** which lies in the center of the cavity. This is also a small organ, 3–4 inches long, 2 inches wide and 1 inch thick, composed of strong muscular tissue which enables it to expand during pregnancy and contract again afterward. Its function is to receive the ovum and, if the ovum becomes fecundated, to retain it during its development. The uterus is suspended by ligaments, is not attached to any bone and lies between the bladder and rectum. The **vagina** is the passage leading from the outside to the uterus. This is lined with mucous membrane and like all such membranes is susceptible to infection and to irritation from uncleanliness.

The general health of a woman depends largely on the healthy condition of these organs as they are so closely allied to her nervous system. Constipation is apt to cause pressure on the uterus owing to its position which is directly over the rectum, and is particularly harmful to a woman.

Development of the generative organs. The development of these organs, spoken of as the time of puberty, commences at about fourteen years of age and they function until about fifty years of age. During that period at intervals of about one month, the ovaries develop and discharge an ovum which is passed by the tubes to the uterus

and simultaneously a temporary congestion of the uterus occurs, the result of which is known as menstrual discharge, lasting for a few days. For the first day during that period there is consciousness of additional weight for which reason no very active exercise should be taken nor should too much physical or nervous strain be borne by a woman at such times.

SPECIAL CARE OF THE SICK DURING NORMAL MENSTRUATION

This care is largely precautionary. Any symptoms of disease are likely to be aggravated and the patient may feel a little depressed. There is also sometimes loss of appetite. Omit general baths for a couple of days so as not to draw too much blood to the surface when it is needed for active circulation internally. Keep the patient quiet and free from worry. Restrict the diet somewhat and unless there is a free action of the bowels give an enema. As headache is a frequent complication, prevent glare or direct light or too much strain on the eyes from reading.

PAINFUL MENSTRUATION

There may be various indirect reasons for this pain relative to unnatural uterine conditions, also nervousness, etc., but actual pain is usually due to congestion inside of the uterus which prevents free circulation, thus causing pressure on the nerves with consequent pain. Constipation is a common cause for such congestion on account of the position of the rectum under the uterus which brings pressure on that part. Another reason lies in the chilled blood returning to the body when the feet have been cold or wet for any length of time.

Treatment. Heat applied is the chief treatment. This may be applied most directly to the uterus by giving a simple hot enema and after a movement has been induced, continue with a very hot low irrigation to increase the

circulation in the rectum which will affect that of the uterus. Keep the patient in bed if possible with knees flexed to relax the muscles and place a hot bag at her back and feet and another over the abdomen, or hot fomentations may be applied. (See page 107.) A mustard foot bath is an effective means to increase general circulation. Give hot drinks; ginger tea is excellent in this case as is also hot tea or coffee. If the patient is nauseated apply a mustard paste to the pit of the stomach.

Suggestions for preventing pain. If there is a tendency to having pain at this time, try and prevent constipation (see page 133) before the period is due and relax the muscles by a warm bath. Keep the feet warm and restrict the usual diet a little.

CESSATION OF MENSTRUATION

Menstruation ceases when the ovaries become inactive and the extra amount of blood which had been sent to and utilized by the generative organs during the period of active function is then distributed to the general circulation and during the period (for some years) of this readjustment, many uncomfortable sensations are experienced such as sudden flushes, etc. Also the effect on the nerves is very noticeable and care should be taken to avoid physical or nervous strain, or to become even overtired, to keep in the fresh air a good deal and occupy the mind with some new interest.

VAGINA

Any unusual discharge from the vagina should be reported and the usual treatment for such a condition would include a vaginal douche, directions for which are given on page 101. For treatment of hemorrhage from the Uterus (See "Emergencies," page 148).

Positions for examination or treatment. For examinations or treatments of various kinds patients are placed in definite positions, and among the most commonly used are: —

Dorsal position. Patient is placed on the back, head low, and knees flexed, and the legs are draped with a sheet.

Sims position. Patient lies on the left side, with the left arm extended out at the back, head low. The left leg flexed, the right leg flexed with the heel almost touching the knee of the left leg, and legs are draped with a sheet.

Knee and chest position. The patient kneels with the chest resting on the bed and the knees flexed at right angles to the body.

QUESTIONS

Name the female generative organs.
What is the function of the ovaries?
What care would a patient require during menstruation?
Mention causes for painful menstruation.
How relieve this condition?
How arrange a patient in the Sims position?
How arrange a patient in the Dorsal position?

CHAPTER XVII

MINOR ILLNESSES AND DISORDERS

HEADACHE

Headache is a symptom of importance in disease and it may also be caused by slight digestive disorders, constipation, over fatigue, nerve strain (particularly of the eyes). The tendency to headache may, in many cases, be overcome by correcting these irregularities.

The direct effect of headache pain is usually from congestion of blood in the head, which causes pressure on the nerves. Or it may be that tension, over-fatigue, etc., affects the nerves directly.

Treatment. Try to remove the congestion by **drawing the blood away from the head** by such effective methods as: hot mustard foot bath, mustard paste between the shoulders just below the neck, heat or cold over the seat of the trouble, hot water bottle to the feet or to the back of the neck. Have patient lying down to rest the nerves, with the head high and the eyes protected from the light.

CONSTIPATION

Constipation is at all times a serious menace to a healthy condition of the body. When this exists the residue or waste of one part of the body is not expelled in the normal way by the muscular action of the colon but is retained in the system longer than usual and from this there is an absorption back into the tissues with the result that the patient has the symptoms resembling those of an enervating, slow poison, with consequent lack of energy, heaviness and irritability, besides the distress of an accumulation of gas in the abdomen.

In time of illness there is a **natural tendency** to constipation due to the lack of general exercise and the consequent inactivity of the muscles of the intestines; and also because the diet at such times consists of more condensed food, most of which is absorbed without leaving sufficient waste to stimulate the muscles of the colon and keep them active.

Treatment. The influence of **the habit** of evacuating the bowels at a **regular** hour each day has the most permanent effect in overcoming constipation, and even in time of illness this has proved an efficient help towards counteracting this tendency.

Exercise the muscles of the legs which directly affect the intestinal muscles. The simplest way of doing this is to walk (even walking up and down stairs). If exercise can be combined with pleasure, so much the better.

Rub the muscles of the colon in the natural direction up the right side, across the top and down the left side.

Allow the patient to drink freely of water because fluids, being absorbed in the large intestines, stimulate the muscles there. Also give fruit and green vegetables for the sake of the mineral salts contained in them, which have the same effect. The fiber of the vegetables, well cooked and unstrained, as well as coarse grained cereals and breads are valuable in the diet as all of these leave more bulk or waste which is not absorbed, and their presence in the colon stimulates the muscles to act and expel the feces from the rectum.

An enema or laxative is frequently given to overcome this condition when other efforts fail.

DIARRHŒA

Diarrhœa is caused by increased intestinal peristalsis or increased intestinal secretion. The muscles of the intestines are over-stimulated, irritated or too much relaxed. This may be caused by undigested food, any irritating substance or from nervous conditions.

Treatment. Observe the movements: whether they contain undigested food, mucus, etc., also whether there are any traces of blood. The safest and quickest treatment is to give a large dose of castor oil to clear away the irritating cause. Keep the patient quiet, warm, if possible in bed, with hot water bottles at the abdomen and at the feet. For diet, give food that will be more easily digested in the stomach such as white of egg, scraped beef, flour gruels, barley or rice water, toast. This diet gives very little effort to the intestines and enables them to rest. Give no fats and restrict fluids and provide a very simple diet afterwards. When there is a tendency to this condition, special care should be taken in regard to the regular diet in order not to overstimulate or exercise the muscles of the intestines. A change of air and building up of the general system is usually advised to help overcome this tendency.

FEVER

Fever may be caused by a variety of conditions or may be the first symptom of a serious disorder.

Treatment. In any case of fever, it is perfectly safe to bathe the patient with water, tepid or cold, using a great deal of water and allowing it to evaporate. Rub the body at the same time in order to bring the blood from the heated parts to the surface to cool it in turn. Keep a cold cloth or an ice bag on the head; have light covering over the patient and see that the room is cool. Give either an enema or a laxative to produce an effective action of the bowels, plenty of fluid to drink is required and a very light diet, usually fluid or semi-solid. Watch the temperature closely and when it falls remove cold from the head.

CRAMPS OR COLIC

Cramps or colic from gas in the abdomen are usually relieved by **heat** applied to the abdomen — either by hot water bags or by hot fomentations (page 107) or by im-

mersing the body in hot water up to the waist line. Give an enema which, in this case could be made effective by a combination of 1 part of turpentine and 2 parts of sweet oil. A rectal tube inserted in the rectum and left there makes a passage through which gas may escape more easily. Ginger tea, essence of peppermint in hot water, or soda and hot water taken by mouth, sometimes give relief.

EARACHE

Earache may be caused by some indirect trouble with the teeth, or from cold, or by a purely local disease of the ear.

Treatment. Have the patient keep the head raised on a pillow and lay the affected ear on a hot water bag (not too full). Lacking that, apply hot cloths or even a poultice over the outside ear. If persistent an earache may be relieved by careful syringing with hot water (108°), for method see page 102. An earache should always be reported to a physician even if it has been relieved. Carefully note any sign of discharge.

TOOTHACHE

Treatment. Keep the head high on a pillow, and some temporary relief may be obtained by applying a swab of cotton, soaked in spirits of camphor or some form of alcohol, directly on the gum around the tooth. This will probably relieve the pain. A dental poultice can be used in the same way after soaking it a minute in warm water. Another remedy is to paint the gum with iodine. Oil of cloves may be dropped in the cavity of the tooth, or a small piece of cotton soaked in it inserted in the cavity. This at best can only afford temporary relief and as soon as possible the affected tooth should be examined by a dentist.

NEURALGIA

Neuralgia. (Nerve pain) usually indicates a rather **lowered general vitality** of the patient and is best overcome permanently by improving the general conditions, securing good nourishing food, plenty of fresh air and sleep, and if possible a change of air. Look also for any local cause of the trouble, such as toothache or pressure on a nerve.

Treatment. For immediate relief, **heat** should be applied to the part where the pain is felt, also keep it as quiet as possible. Menthol pencils or menthol fluids applied directly over the affected parts usually give relief.

VOMITING — NAUSEA

Vomiting may be caused by irritated nerves of the stomach, too great acidity or by bile or unsuitable food.

Observe the vomited substance and if necessary preserve for the examination of the physician.

Treatment. Lay patient down to relieve pressure on the nerves that lie back of the stomach, provide fresh air, apply a mustard paste over the pit of the stomach and give hot water in sips with a little soda in it (1 teaspoonful to a half glass) or pieces of ice to be swallowed whole, darken the room and try to induce sleep. If persistent give a glass full of water as hot as can be swallowed.

INSOMNIA OR SLEEPLESSNESS

Insomnia has many causes — too great activity of the brain, reflex action from over fatigue, nervousness, worry or from habit.

Treatment. It is important to **draw the blood away from the head** by means of a warm bath, heat applied to the extremities either by mustard foot bath or a hot water bottle; for the same reason some easily digested food, or a hot drink may be taken before going to bed; this tends to draw the blood to the stomach during its digestion and thus relieves the amount in the head; mustard plaster at

the back of the neck or over the stomach causes a sensation of sleepiness, gentle rubbing is also soothing, avoid stimulants, such as tea or coffee late in the day, divert the mind from the subject which is keeping it active by trying to induce the patient to think of something else, or to do some active work, or take a walk before going to bed. If this condition becomes habitual a total change of air and scene will be the most effective means to help overcome the habit.

A CHILL

A chill may be the initial symptom of disease or the result of nervous reaction from severe pain or nervousness. **The blood vessels of the skin contract** and thus a greater amount of blood is sent to the interior of the body which causes sensation of cold on the surface with shivering of the body and chattering of the teeth more or less violent according to the intensity of the chill.

Treatment. Lay the patient down, apply hot water bags, wrap up in blankets and give hot drinks. Take the temperature after the chill, and again in an hour: a high fever rarely follows in a case of chill arising from nervousness but with those from other causes the temperature will be very high and this should be watched carefully.

HIVES

Hives is an eruption that comes on the body in the form of pale red circles from ½ to 1 inch in diameter, which are very itchy. The cause may be from indigestion, constipation or from eating certain foods.

Treatment. Give a laxative, preferably magnesia in this case, and for the relief of the itchiness apply carbolized vaseline or camphor ice or menthol. Give water freely and a very light diet for a few days.

CATARRHAL COLD IN THE HEAD

This is an inflammation of the mucous membrance of the nose and the throat and often of the eyes as well with

a very free discharge of mucous which may extend to the trachea or even bronchial tubes.

Treatment. Give the patient a warm bath and a laxative and keep in bed for a few days. Some relief is obtained by inhaling steam from a solution of benzoin (1 tsp. to a pt. of water — or the same amount of pulverized camphor) and for this treatment a paper cone can be made of newspaper or brown paper to extend from the kettle to the patient. Gargling the throat with an astringent; such as lemon juice, glycerine, water and soda or very hot saline solution may provide relief.

Give fluid drinks such as hot lemonade and plenty of water. To allay irritation of the surface of the throat, which frequently causes coughing, give the white of egg with a little lemon juice in it. Apply a mustard paste, or a flaxseed poultice over the chest and throat or rub on camphorated oil, or turpentine and oil in equal parts. (This treatment must be stopped before the skin is too much irritated.) Give a light but nourishing diet. Care is needed to build up the system afterwards to prevent a repetition of the same condition.

SORE THROAT

It is always important to take precautions in regard to a sore throat as it may indicate so many serious conditions; **look into the throat** and see if there are evidences of spots or membrane on it or if it is very red. It is safer to isolate any one with a sore throat until sure that it is not of an infectious nature.

Treatment. For immediate relief use a very hot saline solution gargle, or an irrigation of the same (for method see page 103) or an astringent gargle or spray might be substituted. Either hot applications (poultices or fomentations) or ice cold applications may be used on the outside of the throat and in many cases afford speedy relief. Give a laxative and watch the temperature closely and allow very light diet.

QUESTIONS

What is the cause of fainting?
What would you do for the patient?
How does position affect this condition?
Mention stimulants that could be used for inhaling.
What is the cause of apoplexy?
Give symptoms.
How treat the patient — why elevate the head?
What condition follows an attack of apoplexy?

FRACTURES

A fracture is the breaking of a bone. The chief kinds are Simple and Compound.

A simple fracture is where the bone is broken and no wound leads to the surface.

A compound fracture is where the bone is broken and the air penetrates to the broken bone. The latter is always serious from the danger of infection being carried into the bone and tissues.

The emergency treatment of fractures is largely to prevent a **simple** one from becoming **compound**, by careful handling of the part.

Symptoms. Loss of power of the part, **pain** (from injury to the nerve), **swelling** (from fluid in the tissues), and **discoloration** (from the escape of blood from the small blood vessels).

Appliances for the treatment of fractures are **splints** and **bandages.** For the former can be utilized a flat piece of wood, a walking stick or umbrella, a folded newspaper or cardboard, in fact anything that is firm and **long enough to reach beyond the joints above and below the break.** These should be padded with whatever is available. For **bandages** — handkerchiefs, ties, torn up clothing or regular bandages (if available) can be used.

Treatment. For a **simple fracture. Keep the injured part quiet** and slightly elevated with a support un-

derneath. Apply cold over the part and lay the patient down on account of shock.

For a **compound fracture,** the same treatment applies except that in addition it is necessary to cleanse the wound and to place a sterile dressing over it. (See page 51.)

For **simple fracture of the lower extremity.** Place the patient on the back and put a splint or support underneath the injured leg, **extending beyond the adjacent joints** and tie this on with a bandage. Support may also be provided on either side of the fracture. Lacking splints, tie the legs together at points beyond the joints adjacent to the break if it is necessary to move the patient. Always apply cold over the part if practical in order to reduce the tendency to inflammation.

For **fracture of the arm:** Place the injured part on a pillow and apply cold over the surface. If it is necessary to move the patient, bandage on a splint **underneath** the fractured part, extending **above** and **below** the adjacent joints. Adjust a sling to give additional support and keep the arm quiet. If the injury is in the **forearm,** the elbow is encased in the sling, while if in the **upper arm,** the sling extends only to the elbow and does not encase it.

For a **fractured collar bone:** Place a pad under the arm on the injured side — flex the arm and have the fingers nearly touching the opposite collar bone, and bandage **the elbow close to the body** to keep the **shoulder joint immovable.**

For **broken ribs:** Place a bandage, such as a folded towel, closely around the chest, and pin firmly to keep the muscles between the ribs quiet.

SPRAINS

A sprain is the tearing or injuring of the **ligaments around a joint** and this becomes swollen and discolored

due to the hemorrhage of the smaller blood vessels into the deeper tissues, and any movement of the muscles pains the joint.

Treatment of a sprained ankle. Slightly elevate the ankle and support it comfortably; apply either heat or cold continuously over the joint for 1 or 2 hours, then bandage firmly to support it and to keep the muscles quiet around the joint.

If the ankle is sprained while out of doors and the patient is obliged to walk home, it would be best to keep the shoe on and bandage tightly outside of that with whatever is available (a handkerchief or tie), giving the above treatment as soon as possible. A sprained wrist or knee would be treated in same way.

STRAINS

A strain is an injury to or a twisting of a muscle.

Symptoms: Sharp pain in the muscles when moving them, probably swelling of the part.

Treatment: Place the patient in the most comfortable position, with a support, such as a pillow, under the injured part, and apply heat (hot water bottles or hot fomentations — see page 106) over the strained muscle.

DISLOCATIONS

A dislocation is where the ball at the end of a bone is out of its socket, causing deformity and swelling.

Treatment for dislocated finger. Apply cold over the joint and if a physician is not available an attempt can be made to replace the dislocation by pulling the finger hard and straight out beyond the ridge of the socket, letting it snap back into place. If this is accomplished, bandage it securely and keep cold over the joint for some time.

For a dislocation of the jaw, under like circumstances, wrap both thumbs in cloth — then place them in the patient's mouth, resting on the lower teeth while the fingers

grasp the jaw outside. Make pressure downward and backward, quickly letting go as it slides into the socket. Bandage the jaw to keep it in place.

For dislocations of other joints, support the part and keep cold applied until a surgeon arrives. Do not attempt treatment.

QUESTIONS

What is a fracture?
State difference between a simple and compound fracture.
How treat simple fracture until the surgeon's arrival.
What can be done to prevent a simple fracture from becoming compound?
Mention important points in adjusting a sling.
How is new bone formed?
What is a sprain?
How could you relieve the pain in a sprained ankle?
What is a strain — how relieve?

HEMORRHAGES

EXTERNAL HEMORRHAGE

Cause: The escape of blood from a blood vessel.

Symptoms: Blood from the wound, pallor, feeble pulse, and, if severe, general prostration.

Treatment: **Elevate the part,** lay patient down, and **apply pressure on the main artery** between the wound and the heart. This can be done either with the fingers — a ligature — or a tight bandage which can hold a pad or some other **pressure over the artery.** A tourniquet may be used if necessary (see page 179), but this should not be left on longer than half an hour and loosened very gradually. In hemorrhage from **veins** — pressure is made **below** the wound. In hemorrhage from **capillaries** — pressure is made **over** the wound. Give no alcoholic stimulants in cases of hemorrhage.

MAIN ARTERIES THAT MAY BE PRESSED TO CONTROL HEMORRHAGE

HEAD

For **internal** hemorrhage — **Carotid artery,** in the neck, on either side, at a point on a level with the chin.

For **external** hemorrhage — **Carotid artery,** in front of the ear. **Temporal artery,** over the temporal bone.

UPPER EXTREMITY

Upper Arm — Subclavian artery, under the clavicle bone, pressing from above down. **Brachial artery,** on the inner side of the upper arm.

Lower Arm — Brachial artery or applying pressure by placing a pad in the bend of the elbow and bandaging the lower and upper arm together.

LOWER EXTREMITY

Thigh — Femoral artery, in the groin midway between the hip and the center of the body, or along **the inner side** of the upper leg.

Lower leg — Popliteal artery, under the knee, applying pressure with a pad held in place by bending the leg back and bandaging to the thigh.

INTERNAL HEMORRHAGE

Cause: Escape of blood from a blood vessel.

Symptoms: Low temperature, weak, rapid pulse, pallor, thirst and prostration.

Treatment: Lay patient down, **raise the affected part** if practical. Keep absolutely quiet, with ice on the part. Give no alcoholic stimulant and treat prostration by external heat.

NOSE BLEED

Treatment: Raise the head and, if easier to keep

patient quiet, lay her down with the head raised on a pillow and turned to one side so that the blood may trickle easily into a basin. Apply ice over the nose. Pressure can be made on the **artery leading to the nose** by placing a pad under the upper lip, close to the outer angle of the nostril. If necessary, use an astringent; for this, vinegar, diluted with equal parts of water, may be sprayed on or brushed over the surface inside of the nostril or a piece of cotton saturated with alum placed inside the nostril.

HEMORRHAGE OF THE THROAT

Symptoms: Bright red blood from the mouth.

Treatment: **Keep the head raised** and supported to keep it quiet, with cold on the outside of the throat. An astringent spray may be used.

HEMORRHAGE OF THE LUNGS

Symptoms: Blood filled with air bubbles, from the mouth (this shows the interchange of air and blood in the lungs). This hemorrhage usually follows the effort of coughing.

Treatment: Keep patient lying down and quiet, with **head and chest slightly raised.** Ice can be applied to the throat and chest and heat to the body. Small pieces of cracked ice given by mouth relieve thirst.

HEMORRHAGE OF THE STOMACH

Symptoms: Blood vomited, dark in color, mixed with food and juices (often resembles coffee grounds).

Treatment: **Have patient lying down** quiet, with ice on the pit of the stomach.

HEMORRHAGE OF INTESTINES

Symptoms: Blood from the rectum resembling that of a hemorrhage of the stomach.

Treatment: Keep patient **quiet and lying down** with the foot of the bed raised, and ice on the abdomen.

HEMORRHAGE OF THE UTERUS

Symptoms: Blood from the vagina.

Treatment **Keep patient lying down,** move for no reason whatever, raise the foot of the bed. Tie the knees together to prevent the patient from moving the legs.

QUESTIONS

What is hemorrhage?
What are the means used to control hemorrhage?
How may pressure be applied?
What quality in blood assists in stopping hemorrhage?
How would you control a hemorrhage from the upper arm?
How distinguish between bleeding from the lungs and the stomach?
What is the difference in the treatment?
How arrest hemorrhage from the nose?
What could be done to check a hemorrhage from the uterus?

BURNS AND SCALDS

A burn is an injury to tissue caused by dry heat, while a scald is a similar injury caused by moist heat.

1. The effect of a burn may be a mere reddening of the skin, or
2. The formation of blisters on it.
3. The deeper tissues may be involved.

If clothing adheres to a burned surface, it must be most carefully removed to prevent further injury. Cut it away from around the part and saturate with oil or water any clothing that is directly over the burn, as this makes its removal easier.

Methods of Treatment: Cover the burn to exclude the air, and thus ease the pain.

1. Place the burned part in a solution of water and bi-

carbonate of soda (baking soda), 1 oz. to a pint of water; or, if there is no soda available, use water alone at the temperature of the body (98°). This excludes the air and gives temporary relief.

2. Place a wet dressing of above bicarbonate solution over the injured part and keep it wet.

3. A lotion of sweet oil and lime water (equal parts shaken together) may be used as a dressing — or carron oil, which is linseed oil and lime water in equal parts. Vaseline and soda combined or boracic ointment are likewise valuable. Picric acid gauze can be obtained and placed directly over the burn. Another treatment, largely used at the present time, is the application of a form of parafin which is placed over the burn, where it hardens and forms a protective covering. **Always bandage the dressing on a burn without any pressure,** very lightly and keep the part supported comfortably.

Patients suffer from shock very much in case of burns for which treatment may be given as described (see page 140)

Sunburn is really a mild burn.

Treatment: Use for relief a weak solution of baking soda and water, or apply oil and soda, or white of egg spread over the burn, or talcum powder, and keep it covered.

FIRE

If **clothes** catch on fire (self), try to keep your presence of mind. **Lie down and press the burning parts to the floor** to prevent a draught and thus put out the fire; or if there is a woolen article or wet cloth handy, pull this closely around yourself, but **do not run** for a wrap as this increases the danger of flame.

If the clothes of another person catch fire, do the same thing to them, and if possible to secure a rug or blanket or a wet sheet, wrap it around them **from the head down**

to prevent the fire from reaching the hair and face and the inhaling of the flame.

OVERCOME BY SMOKE

If a patient is overcome by smoke inhaled, get them at once into **the fresh air,** make a crowd (if any) stand back, give artificial respiration and stimulants.

FROST BITE

When exposed to severe cold, such parts of the body as the ears, nose, feet and fingers are apt to freeze. The frozen part loses sensation, becomes waxy white and later is congested and a dark blue color.

Treatment: Do not take patient into a warm room but keep in cool place. Rub the frostbitten part gently with a **cold** cloth or with **snow,** and later with the hand or a towel. Or when possible, as in the case of a frozen foot or hand, place it in cold water and rub while there to restore the circulation safely. When circulation is fully restored, have the patient still kept in a **cool** room for some time as the return to heat must be very gradual. After this, a soothing ointment as for a burn may be used on the surface.

QUESTIONS

What aid could you give to a person whose clothes were on fire?
What could you do if your own clothes were on fire?
How remove clothing from a burned surface?
What is a burn?
What is the first thing to do to relieve the pain of a burn?
What simple dressings may be applied?
What is the great danger attending a severe burn?

ARTIFICIAL RESPIRATION

Schafer method: Lay the patient on chest, with head turned to one side in order to keep the nose and mouth

off the ground. Have arms extended over the head. Then kneel alongside or astride of patient facing the head and, placing both your hands with palms down on the lower ribs, one on either side of the spine, press steadily downward and forward, bringing the weight of your body to bear on your hands while you swing your body forward, thus pressing the air out of the patient's lungs. **This produces expiration.** Draw back your body somewhat more rapidly and relax the pressure without removing your hands. **This produces inspiration.** Continue these movements alternately until respiration is restored or a doctor pronounces life to be extinct.

DROWNING

As quickly as possible loosen the patient's clothing and clear the mouth and throat by wiping it out with a handkerchief wound around your finger. Place patient face downward with a pad below the chest, or, in place of a pad, press from underneath with your hands on the pit of the stomach; this movement is made to help free the passage from water. Then give artificial respiration as described above until breathing is restored.

Surround the patient with heat as soon as it can be obtained and also give stimulation.

GAS POISONING

Give fresh air in abundance. Keep the patient lying down. Apply external heat and stimulation and, if necessary, artificial respiration. For some days afterwards, the patient should take a quantity of fluid to help eliminate the poison.

ELECTRIC SHOCK

If necessary to remove patient from contact with a live wire **protect your hands** with something which will resist the current, such as rubber, dry silk, dry cloth, dry wood or

straw, or newspaper, or else drag the patient away with a rope or push with a stick.

Treatment for insensibility: Lay patient down, loosen clothing, give fresh air, keep slapping the face and chest with wet cloths and give artificial respiration. After consciousness is restored, treat the burns, if there are any. The same treatment applies in shock from lightning.

SUN STROKE OR HEAT STROKE

Cause: Exposure to excessive heat or to the sun's rays.

Symptoms: High temperature, flushed face, faintness, difficulty in breathing.

Treatment: **Move patient to a cool place,** loosen or remove most of clothing, fan vigorously, apply cold to the head and body. Give no alcoholic stimulants, but when the patient is able to swallow give cold water.

HEAT EXHAUSTION OR COLLAPSE FROM HEAT

Symptoms: Weakness (without unconsciousness), pulse weak and rapid, breathing shallow.

Treatment: Put patient **in a cool place,** give stimulants such as tea, coffee, aromatic spirits of ammonia, and apply heat to the extremities.

ACUTE INDIGESTION

Cause: Undigested food, cold, or from eating heartily when overtired.

Symptoms: Acute pain in stomach or abdomen, or both.

Treatment: Give a strong emetic of mustard, or salt and water, and when the stomach is quieted, give a dose of castor oil. Secure a free action from the bowels by an enema at once. Give hot water with a little soda in it to counteract the acidity of the stomach. Rest, warmth are helpful and the diet, following this, should consist of the simplest sort of food, such as beef tea, gruels, etc.

QUESTIONS

What is the first thing to do in case of drowning?
Describe Schafer method of artificial respiration.
State treatment for patient overcome by gas or smoke.
Give symptoms of sunstroke.
What should be done immediately?
Give treatment for patient suffering from heat exhaustion.
What symptoms would there be in evidence with acute indigestion?
How relieve this condition?

FOREIGN BODY IN THE NOSE

Make pressure on the opposite nostril and have patient take a deep breath **through the mouth** and then close it. Thus the air may force the obstacle out. Or, while pressing on the opposite nostril, blow the nose hard or induce sneezing by tickling the inside of the nostril, or having a little pepper in the air.

FOREIGN BODY IN THE EAR

If it is a hard substance, hold the **head down** on the affected side to prevent its going farther in, and unless it falls out easily, seek medical aid, as it is never safe to put an instrument in the ear.

If there is an insect in the ear, pull the ear upward and backward and drop in warm oil, or syringe it with warm water, being careful not to close the opening into the ear with the end of the syringe.

FOREIGN BODY IN THE EYE

Pull down **lower lid** and if the substance can be seen remove it with the pointed corner of a handkerchief. When it is beneath the **upper** lid, draw the upper lid out and push the lower lid up under it. The substance may then attach itself to the eyelashes on the lower lid. When

any foreign body is firmly attached in the eyeball, place wet gauze or a wet handkerchief loosely over the eye and hold it on with a very light bandage until patient can be taken to a physician.

It is always safe and generally successful to try to remove a foreign body by washing the eye out carefully (using weak salt and water, boracic acid solution or plain water) and as the fluid goes over the surface, hold the lid out from the eye and direct the patient to move the eyeball up and down.

FOREIGN BODY IN THE THROAT

Insert your finger along the inside of the cheek as far back as possible, then make an outward motion with the finger to dislodge the obstacle. Bend patient's head forward and slap between the shoulders hard to force a cough. In the case of a very small child hold up by feet with head down and slap between the shoulders.

FOREIGN BODY SWALLOWED

Do not cause vomiting by an emetic or give a laxative, but give starchy food (such as potatoes, bread, oatmeal, cornmeal mush) in which the substance will more likely pass safely through and out of the body. Observe the stools until the object is passed.

WASP STINGS AND INSECT BITES

Apply a strong alkali to counteract the strong acid of the sting, such as ammonia, soda, lime water, or menthol, if indoors. If out of doors, apply mud as this contains a strong alkali.

RELIEF FROM FLIES AND MOSQUITOES

Pour into an atomizer half a teaspoonful of lavender oil. Add to this as much alcohol as will make a saturated solution. Use as a spray. Sweet clover hung about the

room will banish flies and mosquitoes. The drier the clover becomes, the more effectual it is.

QUESTIONS

If a foreign body is swallowed what should be done about it?
What would you do if lime was in the eye?
Name fluids that could be used to wash out the eyes.
How would you treat if a foreign body was under the upper lid?
If firm in the eyeball what could be done?
How try to remove an insect from the ear?
Would you make any effort to remove any hard substance?
How relieve earache?

HYSTERIA

Cause: Uncontrolled nerves often due to overfatigue, or nerve strain, or habitual lack of self-control.

Symptoms: In appearance, the symptoms are rather negative. The body is warm, the color and pulse normal. The patient acts in an uncontrolled way, sometimes grinding the teeth, or thrashing around, and alternately weeping and laughing.

Treatment: Leave unnoticed as much as possible in order that the patient may get control of herself. Speak sharply to attract attention and divert the mind. Sprinkle cold water or apply a cold sponge to the face. A warm bath often gives immediate relief in such cases, and complete rest is required afterwards as the patient has had a certain amount of strain, both physical and nervous.

EPILEPTIC FIT

Cause: A disease of the nervous system.

Symptoms: Usually a shrill cry accompanied by convulsions and unconsciousness, throwing the limbs about,

while the whole body twitches violently. In a few moments the patient recovers consciousness but is drowsy and usually sleeps.

Treatment: Prevent patient from injuring himself when twitching. Place a hard substance, such as a pencil or even a rolled up handkerchief, between the back teeth to prevent biting the tongue, loosen the clothing around the neck, place a pad or pillow beneath the head and remove any obstacles which the patient might knock against.

QUESTIONS

What is the usual cause of hysteria?
How could you help a patient to regain control?
What after treatment is necessary?
Describe an attack of epilepsy.
What special care must be taken in treating such a condition?

POISONING

In case of poisoning send for a physician at once, stating the case, and if possible, the name of the poison. Poisons either irritate or deaden sensibilities.

Irritant poisons: Irritant poisoning is caused by strong acids, alkalies, or chemicals.

Symptoms: Severe pain in the stomach and abdomen, vomiting, diarrhœa and extreme prostration — the severity of the prostration depending upon the poison.

Treatment. To neutralize the poison give **the antidote** if known. If the definite antidote is not known, it is well to remember that if an **acid** has been taken to give an **alkali** and if a strong alkali to give an acid. See page 120.

If the poison has been taken by **mouth,** give an emetic (except where the poison has burned the lining of the mouth) of salt and water, 1 tbsp. to a glass; and persist in causing free vomiting. Give something to soothe the

surface, such as white of egg or milk or cereal gruel.

When the mouth has been burned give the soothing drink instead of the emetic. Treat the shock by inhaling ammonia or giving coffee, tea, or alcohol (by enema, if necessary), and by external heat.

Narcotic poisoning. These dull the sensibilities and are usually caused by some form of opium.

Opium poisoning. Symptoms: Drowsiness to unconsciousness; contracted or very small pupils of the eyes (pin points); very slow breathing.

Treatment: Is taken by mouth, wash out the stomach freely with emetic. It is more difficult in this case because the patient only wants to be let alone. Use irritant emetics, such as mustard and water — 2 tsps. to a glass, or salt in the same proportion. Keep patient awake by walking about or by any practical means — such as flicking with wet towel particularly on the chest and face. Give stimulation by large quantities of black coffee or tea. Never give alcoholic stimulation in these cases as this tends to produce stupor. Apply artificial respiration, if necessary.

Ptomaine poisoning. The cause is poisoning by food.

Symptoms: Great prostration, severe pain in the abdomen, vomiting, diarrhœa, very weak pulse, cold, clammy skin.

Treatment. Wash out the stomach by salt and water emetic, followed by a dose of castor oil. Later, saline irrigations by rectum are given. Stimulate by external heat, hot water bottles and blankets.

QUESTIONS

State the most important thing to do in case of poison being taken by mouth.

What is an antidote?

What emetics could be used?

Give symptoms of irritant poisoning.
Give treatment for such a case.
Give symptoms of opium poisoning.
Give treatment. Why has the patient to be kept awake?
What is the most effective stimulant in this case?
What is meant by ptomaine poisoning?
Give symptoms. How treated?
How treat the shock caused by poisoning?

CONVULSIONS (OF CHILDREN)

A convulsion is a spasm or an involuntary contraction of the muscles of the body caused often by indigestion, high fever, or it may be the initiation of some disease.

Symptoms: Muscles contracted, face almost blue, insensibility, frothing at the mouth.

Treatment: Place cold on the head.* Put the child in a hot bath registering 105° by a thermometer, but lacking the latter, test the heat by placing your elbow in the water (in the excitement of such a time, children have been burned by too hot water). Mustard may be added to the bath — 1 tablespoonful to a gallon of water. Keep in the bath 5 or 10 minutes or until muscles relax, then wrap in a warm blanket and keep cold at the head, and let the child sleep. Later give an enema and a dose of castor oil.

Lacking the opportunity to give a bath, place cloths wrung out of hot water and mustard around the body, or put the feet in a basin of mustard and water. The mustard used should first be dissolved in cold water or put in a cheesecloth bag and squeezed into the water. Keep close track of the temperature after a convulsion and give nothing but water temporarily, followed by a very light diet for the next 24 hours.

* **Note:** If the child is old enough to have teeth place something between them to prevent biting the tongue. (The rolled up corner of a handkerchief answers this purpose.)

CROUP

Croup is a contraction of the muscles at the entrance to the trachea from the throat.

Symptoms: The chief symptoms are a noisy, "croupy" cough, difficulty of drawing air into the windpipe and straining for breath.

There are two distinct sorts of croup; one is the ordinary catarrhal croup and the other a membranous croup and very serious. The initial symptom — difficulty in breathing — is the same in both. Fortunately the latter is comparatively rare but if a child shows symptoms of croup **look in the throat immediately** and see if there is any sign of membrane forming there. If so, report it to the physician **at once.**

Treatment: Give an emetic of a teaspoonful of syrup of ipecac, a little alum on sugar, or one teaspoonful of melted vaseline. The finger can be put down the throat to induce vomiting. Place hot, moist cloths around the neck and down the middle of the chest, keeping a warm hot water bottle over them, or a flaxseed poultice can be applied there.

Hot, moist air to breathe relaxes the muscles and may be provided by the following methods:

1. Place a screen around the crib and cover the crib and screen with a sheet. If there is a croup kettle (this is a kettle with a long funnel spout) use this over some heating apparatus (alcohol or gas lamp) near the bed, being careful to avoid the danger of fire. Let the steam escape through the funnel under the sheet into the enclosed space. Lacking a croup kettle, use an ordinary kettle with a paper funnel or a child's bugle attached to the spout.

2. Take the child to the bathroom and turn on the hot water so that the resulting steam may be breathed.

3. Or take the child to the kitchen where a temporary bed may be made on a table or chairs near the stove, with an umbrella and sheet over it to provide an enclosed space.

Have the steam from the kettle directed into this space by means of an improvised paper funnel.

A mustard foot bath is sometimes very effective.

Be careful in giving the treatments outlined above that the child does not take cold as the effort of difficult breathing causes excessive perspiration. Afterwards give a laxative. The diet for the next few days should be very light.

QUESTIONS

What are the causes of convulsions in children?
What are the signs?
Describe the treatment in detail.
How prevent biting the tongue when in a convulsion if child is old enough to have teeth?
Why should a close watch be kept on the temperature afterwards?
What is the first thing to do if a child develops croup?
Is simple croup dangerous?
What can be done to relieve the condition?
What after care is necessary?

CHAPTER XIX

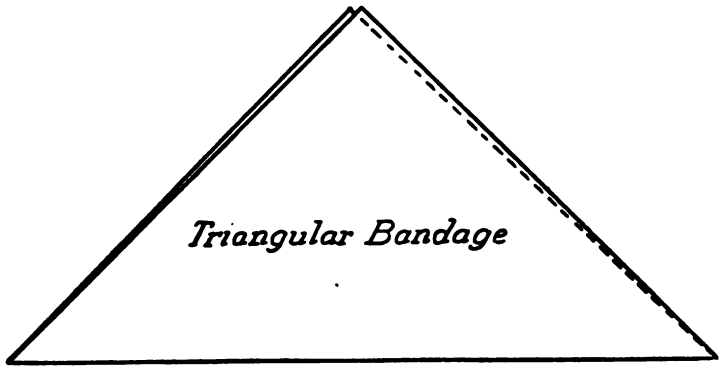
BANDAGES

Bandages are used for various purposes:

To give support to an injured part.
To limit or restrict motion.
To apply pressure.
To hold dressings or splints in place.
To control swelling of a part.

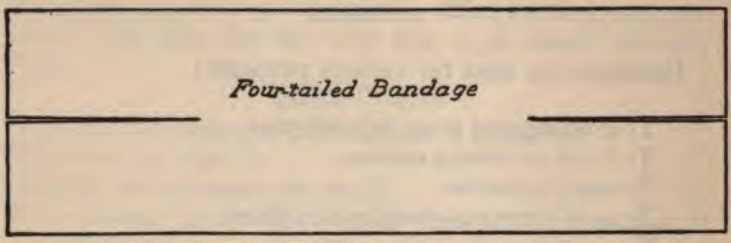
They can be made of almost any material that is pliable enough to shape to the part: muslin, gauze, stockinet, flannel, rubber and also crepe paper. Those in most common use are the

Roller — usual lengths 5 to 7 yards, and 1 to 5 inches wide. These should be tightly rolled up before applying.



Triangular Bandage

Triangular — made by folding or cutting a 40-inch square of material diagonally and can be used either spread out or folded into a wide or narrow band. These are used mainly in emergency work to retain dressings and splints.



Four-tailed Bandage

Four-tailed — represents a roller bandage about 6 or 8 inches wide and 1 yard long, slit down from each end to about 6 inches from the center.

FOUR-TAILED BANDAGE APPLIED

Four-tailed bandages are principally used for the head and face, as well as for the knee and elbow. In general, to apply a bandage of this sort, place the center over the injured part and tie the ends securely together where they will most firmly hold the bandage in place.

To apply a four-tailed bandage to the chin. Place the center of the bandage over the chin itself, bringing the two opposite lower ends to the **top** of the head where they are tied, and the two opposite upper ends to the **back** of the head and tied.

For the forehead, or top of the head. Place the center of the bandage over the injury, with the two opposite, forward ends brought to the back of the neck and tied, and the two remaining ends brought beneath the chin and tied.

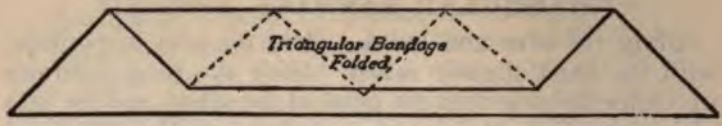
TRIANGULAR BANDAGE APPLIED

Sling for arm and hand. Hold the arm in position, with the hand slightly raised. Slide the sling carefully up under the arm with the point at the elbow and the bias edge extending straight up and down on the uninjured side and over the shoulder. Carry up the lowest point of the bias edge over the shoulder of the injured side. Pin both ends together to the coat at the back or else tie in a knot at the side of the neck — a pad should be placed under the knot. (These methods of fastening prevent strain on the neck.) Adjust the point of the sling at the elbow and secure with a pin. If the sling is not large enough to reach around the back of the neck, each point can be pinned to the coat at the shoulders. If not necessary to encase the elbow, adjust the sling in the same way, except the point which should be turned back on itself and pinned to the under side of the sling just above the flexed arm.

Head bandage. To protect a dressing on the head, fold a hem two inches deep along the bias edge of the triangle and place this around the forehead with the point hanging down the back. Draw the rest of the triangle into folds close to the sides of the head, cross the ends at the back, bringing them around to the forehead where they are tied. Bring the pointed end up and over the crossed bandage at the back and pin securely.

Hand bandage. To retain a dressing on the hand, place a triangular bandage spread out under the hand with the fingers directed toward the point. Carry this point over the back of the hand to the wrist. Draw the rest of the bandage into folds at either side and cross it so that the ends can be tied around the wrist. Pin the point down over this.

Foot bandage. For dressings on the foot, use the same method as for hands, fastening at the ankle instead of at the wrist.



A triangle folded into bands can also be used for the eye, ear and jaw, and over any joint.

ROLLER BANDAGES

These are the most important and are used to fix and retain dressings and splints, to prevent and control swelling, and to prevent undue pressure on any part.

Suggestions for efficiency in roller bandaging.

Keep the bandage well rolled up with the roll upwards.

Leave an even space between each turn of the bandage — usually from ½ to ⅓ the width of the bandage. The evenness of these spaces allows for the same amount of bandage on each part and helps to equalize the pressure.

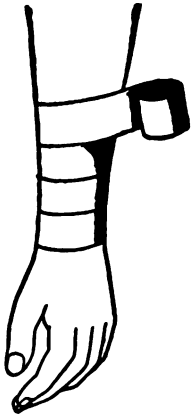
Bandage from below upwards, that is, away from the extremity.

Make the firmness suitable to the need of that particular bandage.

Prevent pressure sores by placing padding of cotton or some soft material at points where the pressure might be felt, that is, at the ending point of bandages or at such places as the edge of the armpit, or, in the case of triangular bandages, under the knots.

Sling for arm.

Roller bandage for broken collar-bone.



Spiral bandage.

Spiral reverse bandage.

Figure of eight bandage.

Spiral bandage is a circular turn around any part, either straight around or slanted upward usually with an even space between each turn.

Figure of eight is a turn of bandage slanting up and

another turn slanting down, forming a V with spaces between each turn.

Spiral reverse is made by turning the bandage over on itself or reversing the downward stroke to make it fit the part.

Spica bandage means a figure of eight bandage that connects an extremity with the trunk.

ROLLER BANDAGES APPLIED

In the following diagrams each consecutive movement is indicated by the numbered sentence.

Finger bandage — (Tip of finger is to be uncovered.)
Roller 1 inch wide.

1. Make a turn around the finger about half way up.
2. Carry bandage down and make a turn around the finger ½ inch from the tip.
3. Make figure of eight or spiral turns until the finger is covered.
4. Then carry the bandage up over the hand and around the wrist.
5. Down over the hand and around the base of finger.
6. Repeat up over hand and fasten around the wrist.

Finger bandage — (Tip of finger to be covered.)
Roller 1 inch wide.

1. From the base of the finger take one fold down and over the tip.
2. Return to same point underneath finger.
3. Repeat twice, making the fold extend wider each time at the tip.
4. Then make one fold around, half an inch from the tip.
5. Continue to bandage the finger as described above.

Spica for the thumb —

Roller 1 inch wide.

1. Make a turn around the wrist.
2. Carry bandage down to the tip of the thumb and around it.
3. Bring it up the thumb with spiral or figure of eight turns to half way above the first joint.
4. Then carry the upward turn over the hand and around the wrist.
5. Down the hand and around the thumb, making a figure of eight.
6. Continue these turns until the joint is covered and fasten around the wrist.

Figure of eight bandage for knee or elbow — (To allow for easy movement of the joint.)

Roller 2 to 2½ inches wide.

1. Take bandage around the center of the elbow joint.
2. Then carry the bandage around from above with the lower edge of the bandage to the center of the elbow.
3. Then from below take it in the same way with the upper edge of the bandage to the center of elbow.
4. Repeat this until joint is covered, leaving a little space between each layer. (Usually there are 5 turns in all for the elbow and 7 or 9 for the knee.)

Bandage for hand and arm —

Roller 2 to 2½ inches wide.

1. Make a turn around the wrist to secure it.
2. Carry the bandage down back of hand to joint of little finger.
3. Then around the hand.
4. Carry bandage up back of hand to wrist, making a figure of eight turn.
5. Repeat these turns until the hand is covered.
6. Make two spiral turns around wrist, leaving space between each.
7. Then make spiral turns to the elbow.
8. Reversing this on the downward strokes.
9. Make elbow joint bandage as described above.
10. Fasten with a turn above the elbow.

Bandage for upper arm and spica for shoulder — Roller 2½ to 3 inches wide.

1. Make a turn above the elbow to secure it.
2. Make spiral turns up arm until nearing shoulder joint.
3. Reversing the downward stroke.
4. To connect it with the body carry upward stroke of bandage across the back (for a right arm injury).
5. And under the far arm.
6. Returning it across the chest and around the arm.
7. Continue processes 4, 5, 6 until the necessary covering is provided.

Note: For a left arm injury, the first upward stroke on the body would be across the chest, under the far arm and over the back before completing figure of eight turn around the arm.

Bandage for foot and leg —

Roller 2 to 2½ inches wide.

1. Make a turn around the ankle to secure bandage.
2. Bring the bandage down front of foot to include the big toe joint.
3. Carry it around the foot.
4. Then bring it up over the front of foot and around back of the heel (leaving heel uncovered).
5. Repeat these turns until foot is covered.
6. Then make two or three circular turns around the ankle with a space between each.
7. Make a spiral bandage up the leg to the knee.
8. Reversing or turning the downward stroke of the bandage every time.
9. Arrange knee bandage as described before in bandage for elbow or knee.
10. Make two turns around the leg above the knee to faster the end of the bandage.

Bandage for thigh and spica for hip —
Roller 2½ to 3 inches wide.

1. Make two turns below the knee to secure the bandage.
2. Arrange knee bandage as described before.
3. Make two turns above the knee around the thigh.
4. Make spiral turns up the thigh, reversing each downward stroke until near the hip joint.
5. To connect it with the body, carry upward stroke of bandage around the waist.
6. Then bring the downward strokes around and under the leg, forming the same figure of eight.
7. Repeat these turns until desired space is covered.

Bandage to cover the heel or foot as for sprained ankle —

Roller 2 to 2½ inches wide.

1. Make two turns of bandage around the ankle to secure it.
2. Bring it from the front around and over center of heel.
3. Then bring bandage under heel from **below** with upper edge of bandage to center of heel.
4. Then, under the heel, from **above** to center in the same way, overlapping each other a little at each turn.
5. Repeat third and fourth processes, making five layers around the heel.
6. Bring bandage down front of foot to toe joint, including it.
7. Then pass it under and once around the foot.
8. Make figure of eight bandage up the foot and around back of heel (keeping it low) and down to same point on foot.
9. Repeat until foot is covered.
10. End bandage around ankle and fasten securely.

Bellevue walking bandage — (This holds secure when a patient is obliged to walk with a bandage on.)

Roller 2½ to 3 inches wi

1. Make two turns around the ankle to secure t bandage.
2. Bring it around and under the instep (this prevei it slipping up).
3. Then around ankle twice, leaving a space between.
4. Make rapid ascending turn to below the knee (1 o turns).
5. Carry bandage around the leg below the knee.
6. Make rapid descending turn to ankle and around
7. Then figure of eight turns until leg is covered.
8. Take bandage around below the knee only eve second or third time that it is brought up.
9. End the bandage around the leg below the knee a fasten securely.

Roller bandage to cover one eye.

Roller bandage for the ear.

Clavicle or collar-bone bandage —
Roller 2 to 2½ inches wide.

1. Place pad in armpit (on injured side).
2. Bend the elbow, having the fingers nearly touching the opposite collar-bone.
3. Start the bandage from middle of back and pin securely to coat.
4. Bring it over the opposite shoulder (uninjured side).
5. Then down to the outside of elbow and around it.
6. Then up the injured side to outside edge of shoulder.
7. Take it across the back.
8. And under the arm (uninjured side).
9. Then bring bandage across and over front of elbow joint and
10. Continue it around to the back of the body and up to the opposite shoulder.
11. Repeat from process 5, making 2 turns across and 3 around the elbow.
12. End bandage in the back and fasten.

Valpeau hammock bandage —(Particularly adapted for use with children.)

Flannel bandage 5 inches wide, 3 yards long.
Muslin roller 2½ inches wide.

1. Place a pad in the arm pit (injured side). Bend the elbow and have fingers nearly touching opposite collar bone.
2. Start at waist line in the back with the flannel bandage and bring it up over the shoulder (uninjured side).
3. Carry it down in front to point of elbow (injured side), make a loop around the elbow.
4. Bring it back up over shoulder (uninjured side) and down to waist line.
5. Fasten there with pin and attach muslin bandage.
6. With this muslin bandage make one turn around the waist.
7. Make a second turn around the waist but this time take it over point of elbow.
8. Bring it around the back to the front and diagonally up over the shoulder (injured side).
9. Bring it down behind the arm, around elbow and up in front of arm to same shoulder.
10. Then across back diagonally and around to the front and over point of elbow.
11. Repeat processes 8, 9 and 10, until bandage reaches arm pit.

Recurrent bandage for the scalp.

Roller bandage for sprained ankle.

Bandage for the eye —

Roller 1½ to 2 inches wide.

1. Make two turns of bandage around forehead to secure it.
2. On second turn carry bandage behind the head, low, almost to the neck.
3. Then pass it forward under the ear on the injured side.
4. Bring it up over the lower part of the eye to the forehead.
5. And across the opposite side of the head and down to the neck.
6. Then bring it forward again under the ear and up over the eye a little higher, leaving a narrow space each time.
7. Repeat this until the eye is covered and end the bandage around the forehead.

Bandage for ear —

Roller 1¼ to 2 inches wide.

1. Make a turn around the forehead.
2. Bring bandage down from front of forehead to lowest point over the injured ear.
3. Continue it around the head, keeping low at back.
4. Bring it around the forehead to the center.
5. Then pass it over the ear again, a little higher, leaving a narrow space each time.
6. Repeat until ear is entirely covered, and end the bandage around the forehead.

Recurrent bandage for the scalp —
Roller 1½ to 2 inches wide.

1. Fasten two roller bandages together.
2. Place the center of the bandage on the forehead.
3. Carry both bandages around to the back of head.
4. Passing one underneath the other.
5. Carry the underneath one back across the middle of the scalp, to lower edge of the forehead.
6. Carry the other bandage around the head, crossing over the former bandage at the forehead (thus holding it firmly).
7. Continue the circle to the back of the head.
8. Carry the first bandage back over the scalp, alternating on either side of the center, at each turn.
9. Take the circular bandage across this each time to secure it.
10. Repeat this process until the entire scalp is covered.
11. Finish the bandage with a circular turn around the forehead.

Tourniquet.

(This enables very tight pressure to be made with a bandage in case of hemorrhage.)

1. Tie a knot in a handkerchief (or some material).
2. Place this knot on the artery between the wound and the heart (or use a pad or other hard substance in place of the knot).
3. Tie the bandage over this pad and around the part with a square knot.
4. Place pencil or stick through the knot.
5. Twist until hemorrhage ceases.
6. To hold the pencil firm, cross both ends of bandage.
7. Take them up and underneath the pencil.
8. Cross again on top and bring down beneath its pencil.
9. Tie a secure knot.
   In removing, slip the pencil out steadily.
   Untwist the bandage very slowly, holding it firmly all time.

A tourniquet should never be used unless absolutely necessary and should not be left on longer than half or three-quarters of an hour, as it is dangerous to cut off the blood supply to any part for too long a time.

CHAPTER XX

ENTERTAINMENT OF PATIENTS

Perhaps no one responsibility in the care of the sick calls for more judgment or understanding of human nature than the entertaining of patients. All through average illness, the mental and nervous attitude is, to a certain extent, dependent upon the happiness of surroundings. There can be no rules laid down; each person must be considered individually with personal likes and dislikes, but as the need arises, patients are usually willing to become interested in something outside of themselves that will make the time pass happily and give them employment and courage. When very sick, physical weakness prevents effort of either mind or body and such patients should be protected from any well-meant efforts at diversion. But as strength increases and, particularly with **chronic invalids**, it is often wise to encourage them to do small things that they want to do for themselves, thus making them feel that they are not absolutely helpless. In fact, in caring for the really handicapped, crippled and helpless invalids, our greatest opportunity to alleviate this sense of helplessness lies in the suggestion of interesting occupation, suitable to their powers.

There is frequently a mental depression following sickness and a tendency for the convalescent to hug lovingly his or her own ailments, and keeping the hands busy is a marvelous aid in overcoming this weakness. The needs of convalescents differ from those of other patients to some extent: more attention having to be paid to the condition of mind and encouragement given to them to take up natural responsibilities gradually. On that word "gradually"

hangs a great deal of the speed with which the usual strength will be regained.

Convalescence really means getting back, step by step, to normal responsibilities and the further away a patient's mind can be directed from the idea of illness, so much quicker will the progress be. If overtired, patients become discouraged, irritable and depressed, all because they have done more than physical strength allows. Two steps forward and one step back is discouraging — rather one and a half steps forward and no overtiredness.

Visitors are a great benefit when they bring in an outside influence that is bright and encouraging, but they also handicap convalescents if they overtire, irritate or are too exacting. Some visitors are comforting and reposeful and quietly assume the responsibility of the entertaining, but it is quite the reverse when a patient has to strive to talk to and interest a difficult person, and invalids should be protected from those who leave them exhausted and nervous. One visitor at a time is less tax on the nerves than two or three. The visitor should be placed in a convenient position so that the patient may not be obliged to turn the head to catch the sound of the voice.

Because you are in charge, you must not feel it necessary to keep the patient amused and diverted every second. Let her own inclinations have some weight in the matter. It is one of the greatest mistakes to schedule every minute of time.

Don't over-entertain. If a patient wants to rest or do nothing, it is very trying to have some one suggest that the best thing to do is to get up and walk, or if wanting to read, to have gardening suggested instead. In other words the patient's inclinations, unless unwise, should be followed as closely as possible but when requiring guidance, your resources should be sufficient to meet the need with understanding.

Reading aloud to patients. One of the first things in entertaining patients is to read to them. It is some strain on their part to listen; this can be lessened by remembering to modulate the voice, and to throw it directly towards them; to read clearly and not too long at one time. In reading the daily papers or magazines, make a good choice of subjects that will interest the individual and the same applies in discussing current events. Be interested in the things a patient likes to talk about, and cultivate his or her particular hobby.

Be a good listener. Nothing takes the place of this. As illness usually prevents much contact with the world, it is helpful if you can bring new ideas and fresh interests to the patient's mind. In fact it is a distinct duty to go away from your patient daily for a change of thought and scene, so that when you return the influence of this new interest, whatever it may be, will unconsciously help to encourage and to brighten the mind.

The convalescence of old people is always a slower process than that of youth. They are likely to get depressed and discouraged and need to be urged to new interests more than younger people. They are so apt to feel that it doesn't matter whether they get well or not; that they wouldn't be missed; that no one needs them. **They are very lonely.** Nurses of experience have often noticed this and how much happier such patients are if some occupation can be found for them. With the young, even if crippled, there is the **hope** of increased strength and that muscles will grow stronger bit by bit with patience and exercise. **Convalescents** have not the endurance to work continually at one thing and the need of change in occupation and frequent rest from work is not sufficiently realized.

Suggestions for entertaining. Perhaps change of

scene will provide more entertainment than anything else and provision should be made for as much open-air work as possible.

The work of gardening implies a fairly strong person but the lighter part of this is quite possible, such as planting seeds and watching them grow, watering and light weeding. This proves quite interesting to both adult and child, but the latter will have to be persuaded not to dig up the seeds each day to watch their progress. Notice the effect of work on a convalescent and see if the interest increases or if they just keep at it with tense nerves as a duty. If the latter is the case, try something else or lessen the time devoted to one particular thing, and have some other resource in mind to which you can direct their attention.

It is often quite simple things and those which are at hand that amuse and interest. Many an invalid enjoys clearing out her desk drawer and looking over all sorts of things that have accumulated, and also arranging the flowers which gives a special interest in them, and even quite sick patients like to do this.

To be able to play games of all sorts, including cards, is a talent that can be used to advantage if the patient is fond of that sort of thing, but play keenly and make them interested. There are a number of amusing games for two, such as Chinese whist, Rummy, and always the standby of solitaire (for either one or two people); also cribbage, checkers, dominoes and puzzles of all sorts.

Among other suggestions might be mentioned: making a scrap book with the patient, on any subject that interests; all sorts of clay modeling; stenciling, coloring pictures; making knots; carving leather for bags or book covers; knitting, crocheting and making baskets either of reed or raffia or various things of crepe paper (flowers, baskets, etc.). In arranging occupations, it is important to gauge the strength of the patient and where the eyes

are not very strong to choose the coarser patterns in any work, and in making articles, such as a basket or knitting a sock, encourage the worker to have a definite plan for its use. If some personal interest can be connected with it, so much the better.

Entertaining convalescent children. To meet the need during a child's convalescence, it is equally necessary to prevent their being overtired and overentertained as in the case of adults. Do not give too many toys at one time. Let the child get all the diversion he can from one and when tired of that, take it away and give another. A child will play with much less nerve strain when he is evolving things himself than when closely observing what another does. A little boy when he was sick received numbers of beautiful toys and one was a mechanical toy in a yellow cardboard box. The toy interested him a few minutes; the box for two weeks, for out of the latter he made all sorts of things with the help of some string, empty spools, imagination and suggestions from the nurse. One day it was a cart, another time a stable and just because he had designed and planned it himself, it became very precious to him.

Children become overtired if read to for a long time. They will ask to have the reading continued but they don't realize the strain of listening and are none the less overtired in consequence.

In convalescence a child's eyes should be carefully guarded and no close reading or fine work of any sort allowed no matter what the illness has been.

Children like to feel that a grown person understands and sympathizes with their desires, but they play more naturally when left to themselves and their own devices.

Some simple suggestions are: sailing boats in a basin or bathtub; making soap bubbles from a simple clay pipe; cutting paper dolls and dolls' furniture; making toys of

cardboard boxes or flowers out of tissue paper; rabbits out of handkerchiefs; studying birds and trees and flowers; planning little gardens; sewing dolls' clothes and knitting for them; modeling in clay; putting picture puzzles together; playing with mechanical toys; making scrap books of jokes or poetry clipped from magazines, or of advertisements and picture postals; coarse weaving (such as horse reins), games of all kinds; collecting stamps; coloring pictures by using water color paints or crayons; collecting stones, shells and all manner of things.

CHAPTER XXI

THE CARE OF CHILDREN

From the time of birth, an infant requires intelligent care in its helplessness, much as an invalid might. For although this is a natural process it is often accompanied by disorders, many of which are preventable by care and good judgment.

Even if normal and healthy, children are frail and functional disorders spread from one organ to another easily. Whoever is in charge of little children must carefully observe their condition and any symptoms that are unusual, such as the position a child takes, the sort of cry, the hand going to the eye, ear, or any part of the body, all of which may give a clew to what is causing the distress.

SPECIAL CARE OF NEWLY BORN INFANTS

The infant's **eyes** and **mouth** are washed with boracic solution or boiled water, and this repeated as often as necessary to keep them clean. Two to four drops of 20 per cent. sol. argyrol are dropped into the eyes with a medicine dropper immediately after birth by the doctor, to prevent ophthalmia, and cold compresses are afterwards frequently applied. A dressing of dry sterile gauze and powder is placed around and over the ending of the umbilical cord and held in place by a binder around the abdomen, and it must be kept dry until the cord falls off, in about five days; after which pressure, by means of a pad over the part, is maintained in the same way for some weeks.

Sweet oil or vaseline is rubbed over the **skin** including the head, and the infant is wrapped in a warm blanket

and laid on the **right side** for some hours to free the heart from any pressure. Later, the position should be changed from side to side to promote active circulation in all parts. A sponge bath is given with warm water (100°) and castile soap at any convenient time during the first twenty-four hours. (Child should not be put into the water until the cord falls away.) The skin should be carefully dried and powdered and the infant dressed in simple clothing. For this will be needed a flannel band, 5 inches wide and 1 yard long, to place around the abdomen (later on this is changed to a band with straps over the shoulders); a long-sleeved shirt of wool and silk mixture; diapers of cotton birdseye; a flannel and a muslin slip.

The **urine** and **feces** at this time are very dark in color and will be until the contents of the intestines at the time of birth have passed off.

Feeding. If a child is to be nursed by its mother, it is put to the breast 6 to 12 hours after birth and for the first few days about every four hours. The supply of milk is scant at first and acts more as an aid to clear the intestines than as a food until the third day, when the breasts become normally full. If there is any discharge from the eyes it is important to cover them before allowing the infant to nurse, to prevent infection being carried to the breast, and to wash the mouth before each feeding, and the nipples of the breasts before and after each feeding, with boracic solution. Have the nipples carefully dried.

If the infant is to be fed otherwise for the first day give only sugar of milk and water, ½ oz. at a time, every three or four hours. Then gradually begin modified milk in the formula prescribed, starting with 1 oz. and slowly increasing the amount as the capacity of the stomach increases. This is given at regular intervals of three hours during the day and once or twice during the night. Boiled water given between feedings relieves thirst and aids normal

functions and is very necessary, especially in warm weather.

After the cord falls away a warm tub bath (100°) is given daily. (See page 190.) The skin around the groin and buttocks must always be kept clean, dry and well powdered with rice powder or stearate of zinc, and diapers changed frequently. There are two or three movements from the bowels daily and the child sleeps most of the time and needs good fresh air (not too cold) when sleeping; and the eyes must at all times be shielded from direct light falling on them and the infant kept quiet and the body temperature taken (usually recording from 99° to 100°).

In raising the baby support its **back and neck.** Change position of infants frequently enough while the cranial bones are soft to allow proper molding of the skull.

Keep the nostrils free from discharge by swabbing out with albolin on a little pledget of cotton. If stopped up, the child is restless and breathes with difficulty.

GENERAL CARE OF SMALL CHILDREN

Normal development in the child depends largely upon the freshness of the air it breathes, the nourishing quality of the food and its suitability to the individual needs and the climate; also upon cleanliness, the elimination of waste, sufficient sleep and not too much excitement (this reacts on the nervous system at that age).

The average **weight** of an infant is about 7 pounds at birth and the usual gain is from 4 to 6 ozs. a week. Occasionally there are intervals with no gain and this should not be a cause of worry as the deficit may be made up within the next few weeks, but usually week by week and month by month there is a steady increase in weight. **Muscular development** is gradual and natural and increases as in adults from normal use of muscles. Clothing should not restrict the natural movements of the body and the armholes should be made large. It is also to be

remembered that strain on the muscles of little children by too long walks, too much exercise, too long intervals without sleep are harmful and react on the nervous system with the result of fretfulness, irritation, and unnatural conditions for a healthy child. **Teething** occurs at various ages, usually there are

6 teeth during the first year.
12 at 1½ years.
16 at 2 years.
20 at 2½ years.

This completes the first set. While teething is a normal function, the child is often upset and fretful for a few days, particularly in the case of delicate children. The second and last set of teeth commences when the child is about seven years of age and, completed, numbers 32. It is most important that the **first teeth** be kept healthy by having them clean, attended to and filled if necessary to enable the permanent set to develop under healthy conditions.

Nursery. Have a bright room for a nursery with dark and light shades. Keep it well ventilated and evenly heated at a temperature of from 65° to 70° during the daytime and from 50° to 60° at night.

It is advisable to have everything in the room, such as walls, floors, furniture, rugs, etc., of such a nature that they can easily be kept clean. An enamel or brass crib is desirable, fitted with a woven wire spring and a hair mattress, or a folded blanket as a substitute, with a rubber or quilted protector. Soft, hair pillows (not full) are cooler than feather ones. Pillow cases and sheets should be of smooth texture; the blankets and spread very light weight. In addition, all the necessary furniture, including a screen, should be provided. It is a great convenience to have a table 30 inches high, 36 inches long, and 27

inches wide with a board about 4 inches high forming a rail around the top. This rail prevents the child from slipping from the table when placed there to be bathed or dressed or to have its diapers changed.

In an adjoining room there should be an ice-box and some apparatus for heating water.

Bathing. A bath should not be given sooner than an hour and a half after eating, because by thus drawing the blood away from the stomach the digestion is interfered with. For little babies the temperature of the bath is 100°; this is gradually decreased to 90° as the age increases. The room should be warm during bathing time and without draughts. A baby's bath tub can be conveniently placed on a stool or a table, or the regular tub in the bathroom be used. A little baby may be dressed and undressed on your lap (in which case wear a flannel apron, useful to wrap around the child), or on the table above described, or even on the crib, but this is not as convenient a height. For larger children use either of the last two methods. Have everything ready: — blankets, towels, wash cloths, castile soap, cotton, powder, boracic solution and lubricant, and warm clothing arranged in order as needed.

Before putting the child in the bath, wash the eyes, mouth, ears, nostrils and face (head, if required). Also, with a girl-baby, wash carefully with boracic solution the genitals, and with a boy press back the foreskin and wash over the surface, then draw it in place again. (A deposit from the urine sometimes irritates these parts and causes distress, restless sleep and loss of appetite.) Then take the child on your left arm, and, holding the feet in the right hand, lower into the water and bathe. If a child has been frightened by the water at any time, overcome this feeling by wrapping a soft blanket or a turkish towel around the body before putting into the bath, so that it will feel the water gradually and get over its fright.

It is considered a preventative to taking cold and a tonic to the skin to accustom the child to a cold sponge after a warm bath. When taken out of the bath, wrap the child in a blanket or towel, dry carefully, especially between every fold of the skin and powder surface where the moisture might collect.

To dress, first put on the band, shirt, diaper (being careful not to draw in the knees with the diaper), stockings or booties. The skirt and slip may be put on together over the head, avoiding touching the face with them.

The skin. At bathing time **examine the skin** carefully and see if there is any undue redness, irritation or rash of any sort, particularly between the folds of the skin at the neck, back of the ear, in the groin and around the buttocks. A child's skin is very sensitive and moisture and heat combined may cause irritation and a breaking down of the surface. **Cleanliness** and **dryness** are the essential points to be remembered in order to keep the skin healthy. This, of course, is aided by good nourishment and sufficient exercise.

The mouth. Wash the mouth of the young child morning and evening with a swab of cotton twisted around the finger, and wet with sterile water or boracic solution (1 part to 3 parts of water). Wash the roof of the mouth without pressure from the finger and also swab around the sides of the gums. When teeth are developed, clean these carefully with cotton wound on a small wooden stick or toothpick, and have older children rinse the mouth after eating and use a soft toothbrush as soon as that is practical, particularly at **night** and in the **morning.**

Stools. While on a milk diet, an infant's stools will be yellow smooth, with no curds and average from one to two daily. A child can be trained to have at least one movement at a regular time each day even in infancy, by

being held over the receptacle with the legs drawn slightly toward the body; or suppositories of castile soap or gluten are useful in helping to form this habit which is a very important one for health's sake all through life.

Clothing. Clothing should be **light in weight** with the undergarments sufficiently porous to allow for the easy absorption of perspiration, and have the warmth evenly distributed to all parts of the body, the abdomen being especially well covered. Too much or too heavy clothing causes excessive perspiration which is weakening. To avoid taking cold, make **changes** in the **weight** of the clothing **gradually.**

Sleep. A little baby sleeps most of the time and as age increases is awake at longer intervals. At six months he should sleep through the night 12 hours and also about 4 hours during the day; at 1 year, about 3 hours during the day. This day period is shortened as the child grows older and until about six years of age at least, the habit of sleeping an hour or even a half hour a day is an aid toward the foundation of health by avoiding overtiredness.

Feeding. The normal food for an infant is human milk and no other form of nourishment can quite compare with it. The proportion of the different food elements in human milk suits the needs and as the child grows this proportion changes imperceptibly to meet its requirements. An infant nurses from ten to twenty minutes and the mouth should be washed out first and also the nipples of the breast (which are also washed off afterwards) with boracic acid solution. **Regularity** is important and there are usually seven feedings allowed in the twenty-four hours at intervals in daytime of three hours.

As a substitute for human milk some form of cow's milk is prepared and given at the same intervals.

Modified milk is cow's milk changed to resemble as far as possible the qualities of human milk.

Comparative table

Composition of cow's milk		of human milk	
Water	87 parts	Water	87 parts
Sugar	5 parts	Sugar	6 parts
Protein	3.03 parts	Protein	2.02 parts
Fat	4 parts	Fat	4.05 parts
Mineral Ash ..	.07 parts	Mineral Ash ..	.03 parts
(Acid reaction)		(Alkaline reaction)	

Process of modifying milk. The milk is first diluted to reduce the curd which is tough and not easily dissolved (while that of human milk is flaky and soft). Diluting also reduces the mineral salts.

Cream is added to increase the standard which was lowered by the dilution (see note on Top Milk).

Sugar of milk or some other form of sugar, such as maltose, is added to make up for the deficiency in cow's milk.

Lime water is frequently added to neutralize the acidity.

The water used in this feeding must always be boiled and cooled. Cereal, in such a form as barley water, is sometimes substituted for the boiled water, partly for its food value, but more especially, to aid in preventing large curds from forming.

If necessary to make this food sterile it is pasteurized.

The food is strengthened by increasing the amount of milk and decreasing the proportion of water. When the quantity is increased it is at the rate of about ½ to 1 oz. at each feeding.

Top milk. This represents a higher percentage of fat than in the ordinary bottle of milk. Instead of diluting the milk and then adding cream to raise the standard

again, top milk is used, in which the percentage of cream is larger to begin with.

Method. Have an average bottle of milk which represents 4 per cent. fat, stand four hours. Remove the upper 16 ozs. with a cream dipper or syphon without disturbing the rest of the contents of the bottle. This represents 7 per cent. cream, and from that take the amount required for the day's feedings.

Top milk table.

Upper 16 ozs. equal 7 per cent. of fat
Upper 20 ozs. equal 6 per cent. of fat
Upper 25 ozs. equal 5 per. cent. of fat
The whole bottle shaken together represents 4 per cent. fat

Examples of formulas.

Age: 2 weeks		Age: 4 weeks	
Top milk (from upper 16 ozs.)	6 ozs.	Top milk	8 ozs.
Lime water	1 oz.	Lime water	1 oz.
Milk sugar	(1 oz.)	Milk sugar	(1 oz.)
Boiled water	13 ozs.	Boiled water	11 ozs.
	20 ozs.		20 ozs.

Milk sugar is not counted in the **amount** of the feeding as it dissolves into small space.

Unless the doctor decides on the exact formula to use it is advisable to be governed by the directions in such books as Dr. Holt's "Care and Feeding of Infants," Dr. Kerley's "Talks with Young Mothers," or various books by other authorities on this subject. These give the average formulas suitable for the different ages and suggestions for the feeding of older children.

Method of preparing feedings for twenty-four hours.

Protect all feeding utensils, bottles, nipples, and food from flies.

Don't fail to wash the hands before preparing the food.

All the utensils should be boiled and cooled before using.

The articles needed are: —

A dish pan (to boil utensils in).
A pitcher.
A pint measuring glass.
The required number of bottles.
Funnel for filling the same.
Cream dipper (Chapin dipper).
1–2 bottles of milk. (The best and freshest milk you can afford to buy.)
Boiled water or cereal water, cooled.
Lime water (if necessary).
Milk sugar (lactose).
Sterile cotton stoppers (see page 54).

Method. Add the milk to the water in which the sugar has been previously dissolved, and also lime water if used. Mix these together and place in each bottle the amount required for one feeding and cover with the stopper. If necessary, this is then pasteurized (see page 36). If not, the bottles are placed directly on the ice and left there until needed. An ice-box is obtainable in which the center part contains the ice and the bottles placed in separate divisions can touch it directly. Otherwise the bottles must be placed in a wire holder and this in the general ice-box, touching the ice.

Heating the food. Shake the bottle to mix and place it in warm water deep enough to cover the milk in the

bottle. When warm, remove the stopper and with the inside part of it wipe off the edge at the top of the bottle. Then test for heat by pouring a drop on the wrist or on a spoon from which it can be tasted. Adjust the nipple and when giving it to the child, see that the milk is always in the nipple by holding the bottle at a good angle, and remove before it is empty, otherwise air is drawn in, causing distress. Also see that it is taken slowly, as drinking milk too quickly allows it to form too large curds in the stomach.

Care of bottles. After each feeding, these should be immediately washed out in cold water then in soap suds and boiled before using again.

Care of nipples. Boil these, when new, for two minutes. After use, they should be washed out carefully in cold water and once a day turned inside out and washed with a brush; then kept in a covered dish in sterile water or boracic solution till needed. Make two holes in each nipple with a red hot, fine cambric needle. At least three nipples should be ready for use.

Water is given independently of food, between feedings. It is frequently necessary to substitute other foods temporarily for milk such as whey, barley water, Imperial Granum, white of egg, rice water, malted milk, etc., and the regular diet must be resumed **gradually.**

Fruit juices are added to the child's diet at varying ages from the sixth month up, starting with two teaspoonsful and increasing the amount to 2 ounces and more; the same with beef juice particularly where the milk is pasteurized, as some of its value has thus been destroyed. Cereals in various forms are also added to food.

In sudden hot weather, dilute the food, whatever it is. At any sign of illness, **dilute the food** and make the return to normal food very gradual.

Method of restraining the arms.

QUESTIONS

Describe the special care a baby needs for the first few hours of its life.

If not nursed by the mother what food will child have for first 24 hours?

What special care does the mouth need?

What is the danger to the child from sore eyes? — to the mother?

Mention points in care of a child for its comfort.

How should a baby be lifted up?

What is the usual gain in weight?

Describe a suitable nursery and convenient furnishings.

Describe method of bathing a child.

How prevent chafing of skin?

What is modified milk?

Why should the position of child be changed frequently?

CHAPTER XXII

CARE OF SICK CHILDREN

Most of the qualities required in general nursing apply in the care of sick children and more — more patience and tenderness, more firmness, tact and good judgment and better control of the voice.

When taking charge, if you are a stranger to the sick child, make your presence known gradually and try and gain his confidence quietly. Closely observe symptoms such as sore throat, rash, stools — condition and color, position, character of sleep, and the cry, whether sharp, moaning or fretful.

RESTRAINING A CHILD

To restrain a child from touching a sore place, scratching pimples or during the dressing of a wound or when giving medicines or treatment:

Methods.

1. Place a sheet folded diagonally under the child extending from the shoulders down and lay the child's arms down straight on either side of its body and fold the sheet firmly around and pin it. (This can be made long enough to include legs if necessary.)

2. Place mittens on the hands and fasten to the undershirt sleeve with safety pins. Have tape attached to the finger end of these and tie the tape to the bed loosely which prevents the child from getting the hands to the face while perfectly able to move the arms comfortably. The same arrangement for the feet can be devised if needed.

3. A softly padded splint can be bandaged on the arm

Method of restraint.

from the hand to beyond the elbow point. This allows free movement of arm, yet the child is unable to reach the face.

4. **Restraint for an examination or treatment of the throat, nose, eyes, or ears.**

Method 1. Restrain the child's arms as described; then place the child on your lap, facing the examiner, and place one of your arms across the child's body and the other hand against forehead to steady the head. With a larger child use above method but instead of sitting on your lap the child must stand in front of you; then you can cross one of your knees over the other to hold the legs firmly.

Method 2. Place the child in your lap, have him face the examiner, then put your right and left arms under the right and left arms of the child — by bringing up both your arms, you raise the child's arms and thus keep them out of the way of the examiner or operator. With both your hands on the child's forehead, you can raise or tilt the head while your knees crossed are securely keeping the child from struggling, and in that way you give the examiner a clear field for examination or treatment.

General rules.

When a child of any age becomes ill it is always wise:

To take the **temperature** and examine the **throat** to find out if the trouble is there;

To give a **warm bath** which will relax the muscles, soothe the nerves and may bring out any latent rash under the skin;

To look for a rash on the **skin**;

To give a **laxative** or an enema; and

To dilute whatever **food** the child is taking by half. This food is easily increased and undigested food only complicates conditions. **Isolate** from other children until assured that there is no infection.

FEVER

Fever is not in itself a disease but is one of the symptoms of some disorder and in a child this may arise from slight causes such as constipation, cold, indigestion; or it may be the initial symptom of serious illness depending on the degree of rise in temperature.

Treatment. It is always safe to try and reduce the temperature by means of a sponge bath with alcohol and water, half and half, or by a tub bath at a temperature of 85°. This will cool the skin, quiet the nerves and induce sleep. Also keep cold to the head, give an enema or laxative, dilute the food and have the patient drink plenty of cool boiled water.

VOMITING

Vomiting may be a symptom of disease but usually is due to irritation of the stomach from various causes such as acidity in the stomach, food given at too short or irregular intervals, too much at a time or unsuitable in kind. Vomiting may also be caused by the effect of heat or of nerve strain.

Treatment. If severe, cut off all food and give only boiled water with a little soda or lime water in it. Try to induce sleep to quiet the nerves of the stomach and when feedings are resumed, start with very small quantities of white of egg or barley water or whey at regular intervals and keep the child quiet, lying down in a semi-darkened room. If a child shows a tendency to vomit after feedings, omit one feeding or give water in its place, make the intervals longer, give less in quantity, and keep the child quiet and in good fresh air. If this is not successful, the necessity of a change of food is indicated.

RESTLESS SLEEP

Prevent the child becoming overtired, provide fresh air, a cool and darkened room. See that the bowels are

acting normally, that there is no irritation on any mucous membrane nor irritation or chafing of the skin, that the nostrils are free and the breathing easy, also notice if the child **breathes through the mouth** and if so, raise the head a little for relief and call attention to this symptom, for this in itself makes restless sleep. Have the child comfortably warm but the bed clothes light in weight and not too plentiful. A warm foot bath just before bedtime is soothing and quieting.

INCONTINENCE OF URINE

If a child cannot control this function, an examination by a physician will be necessary, but if purely from a bad habit, it can usually be overcome by having the child avoid fluid at the evening meal and not drinking any after that and pass urine just before going to sleep. The bed-clothes should be fastened securely to prevent the child from feeling cold. A bath towel tied around the lower abdomen with a good knot over the lower part of the spine to keep child from sleeping on its back also helps overcome this habit

VAGINITIS

With **vaginitis** there is a catarrhal discharge from the vagina and in many cases this is of an infectious nature, especially to mucous membrane and other children must be guarded from danger of this infection.

Treatment. The vagina is washed out with boracic or saline solution frequently and all cloths or utensils must be disinfected, and the diapers boiled and not even then used for other children. The general health of the child must be improved. Your own hands should be thoroughly disinfected after touching that part to avoid carrying infection to the mucous membrane of the child's mouth or eyes and for your own protection.

PRICKLY HEAT

Prickly heat is an irritation on the skin which makes any child fretful and restless. It comes as the result of **heat, moisture** on the skin or from too heavy clothing.

Symptoms. The skin is covered with a rash of fine pimples that burn and itch.

Treatment. Relief is best obtained from bathing the body frequently, either tub or sponge baths, using soda or bran instead of soap and water. Use plenty of water if giving a sponge bath and no rubbing, just pat the skin dry with a soft linen cloth and powder freely and often. Powder seems to relieve more than lubricants in this case. Use linen or silk next to the skin to prevent irritation from the underclothing and dress with the lightest of clothing. Prickly heat often causes digestive disturbance and there should be free action from the bowels. To maintain this, milk of magnesia is often added to the milk and plenty of water given to drink.

OTHER IRRITATIONS OF THE SKIN

Boils. A boil comes from some infection taken in through the skin which causes an inflammatory condition of the part. Until a physician sees it, keep a cold wet dressing of boracic solution or water over the boil and support the part and keep it quiet.

Hives. See page 138.

Chafing of the skin. Use powder freely, which is usually enough treatment, but if the outer skin is broken or very much irritated, rub a little oxide of zinc ointment or cold cream and Pond's extract on the surface. For sore lips, camphor ice is soothing.

INDIGESTION

Indigestion may vary from a slight disorder to a serious condition and is caused by the lack of proper digestion of food. This is shown in the stools, usually by the presence of curds and often mucus.

Treatment. The diet should be changed or the same type of food diluted and given in smaller quantities. In many cases this condition is overcome by a change of air, by an improvement in general living conditions, and by normal exercise, but in some cases, if patient is very much exhausted, rest is called for.

COLIC

Colic is usually a result of gas or air in the stomach or intestines, or it may be indirectly due to constipation or unsuitable food, or to cold.

Symptoms. As the gas presses on sensitive parts and on nerves, the pain is very sharp and severe and the child instinctively draws up the legs towards the body as this position relaxes the muscles of the abdomen which are tense and hard. The child's cries are hard and strong and are repeated at intervals until relieved.

Treatment. If the gas is in the stomach, put the child over your shoulder and pat the back. Give warm water with a little bi-carbonate of soda in it or peppermint. Lay the child, face downward, with the abdomen over a hot water bag for heat and pressure, which relieves the pain, or put the feet in hot water and mustard, lubricating the feet first to prevent the skin being irritated. If the colic is severe, an entire hot bath can be given which relaxes the muscles, allowing the gas to pass off more easily. An enema of soap suds with ten drops of turpentine added to it will usually give the quickest relief, or even inserting the rectal tube and leaving it in the rectum aids in expelling the gas. Rubbing the abdomen also provides relief.

DIARRHŒA

Diarrhœa comes from an irritation to the muscles of the intestines and may be caused by various conditions; as cold, indigestion, disease, etc. The stools are thin or

watery, usually an unnatural color (green instead of yellow) and too frequent.

Treatment. Keep the child warm and in bed or at least quiet. Clear away the irritating cause by a dose of castor oil or some laxative. (Calomel is frequently ordered in such cases to stimulate the liver to secrete more bile which is the natural fluid that clears the intentines.) Keep the abdomen and feet warm and prevent chafing of the buttocks. After the oil has taken effect, saline irrigations quiet the intestines and relieve thirst. For diet, give the class of food that is digested mainly in the stomach, such as condensed broth and barley water, white of egg and arrowroot gruel. When the condition is improved, increase the diet gradually.

CONSTIPATION

When there is a tendency to **constipation,** rub the abdomen night and morning with warm olive oil — the direction for rubbing is up the right side, across the top and down the left side — to stimulate the intestinal muscles. Establish regular habits to have a movement at the same time each day. If necessary, use suppositories of castile soap, gluten or glycerine or even an oil enema or one of soap suds to help overcome this difficulty, but these aids should be discontinued as soon as possible. The main point is to regulate the diet by giving an increase of fats, sugar, fruit juices (independently of food), green vegetables — if the child is old enough to have them in the diet — the coarser grained cereals and breads. Milk of magnesia is often added to milk for its laxative effect. This gives no taste to the milk and is only for temporary use. Lime water, when included in milk formulas, has frequently to be temporarily discontinued as it tends to constipate.

SUMMER DIARRHŒA OR CHOLERA INFANTUM

This may quickly **become serious** and needs the advice of a physician. The immediate distress is in the digestive tract and both stomach and intestines are involved. The indirect causes are usually heat, overfeeding, impure air, and it may be aggravated by teething.

Symptoms. There is vomiting and diarrhœa, with stools green in color, watery and containing mucus, fever, loss in weight and appetite, thirst, restlessness, and extreme general weakness.

Treatment. Give a dose of castor oil to clear away any irritating substance in the intestines and after the oil has caused a free movement, give a saline irrigation (see page 100). This relieves thirst through the absorption of fluid into the tissues and quiets the intestines as well as serving to wash away any foreign substance. Keep the child cool, quiet and in the open air, and if possible secure an entire change of air from the city to seashore or mountains.

Use vaseline in the entrance to the rectum and over the buttocks as the acidity of the stools at this time irritates, and powder applied is not enough to prevent it. Also put a soft cloth to be worn inside the diaper.

Remove milk from the diet for the time being and give barley or rice water, white of egg, and, when resuming milk, grade the amount carefully.

THRUSH OR SPRUE

Thrush is caused in most cases by uncleanliness of the mouth, and appears in white, flakey spots in the mouth. Sometimes every part is covered and again it appears only on the inside of the cheeks and gums. This distresses the child, making it difficult and painful to take food. The spots sometimes extend through the digestive tract to the rectum.

Treatment. Wash out the mouth with boracic solution after each feeding and swab over the surface inside the mouth several times a day with bicarbonate of soda or borax — one teaspoonful to half a glass of water; avoid pressure as these spots must not be rubbed off.

SORE THROAT

If a child is hoarse or complains of a sore throat or has difficulty in swallowing, **look into the throat** and see if there is any sign of membrane there, if it is red and inflamed or if it has white spots on it. It is never safe to take anything for granted about a sore throat and it should at once be reported to a physician.

Treatment. For immediate relief, apply a hot, wet flannel to the outside of the throat or ice cold applications (ice bag or ice cold cloths), or a flannel soaked in camphorated oil.

The throat can be sprayed with an astringent solution or, if the child is old enough, use a gargle of the same (see page 120).

Give general treatment to reduce fever, a laxative or an enema, plenty of water to drink and a fluid diet.

COLD IN THE HEAD OR CHEST

For a slight **cold in the head or chest,** take the temperature, put the child to bed for a few days, or if around the house, guard from draughts, keep on a very light but nourishing diet with plenty of water. Give a warm bath and a laxative, and for local relief, wash out the eyes with boracic solution and swab the nostrils with albolin or vaseline to make breathing easier, rinse the mouth frequently and if the throat is inflamed use a simple gargle or spray and rub the outside of the throat and chest with camphorated oil or with this and turpentine mixed in equal parts.

After any illness the important point is to build up the system with nourishing food, good air, plenty of sleep and

general care so that the resistant power will be increased and there will be less likelihood of a return of that or any other sort of illness.

QUESTIONS

Describe methods of restraining a child.
What would you do for a child when it becomes ill?
State the usual causes of vomiting.
Give signs of indigestion.
How would you reduce fever?
Give treatment for diarrhœa.
What change in food can be made to overcome constipation?
Mention means that could be taken to quiet a restless child.
Mention points to observe about the condition of sick children.

CHAPTER XXIII

DON'TS

Don't fail to remember that tact, patience and self-sacrificing endurance are essential in the care of the sick.

Don't tell the patient what medicine is being given. Leave that for the doctor.

Don't discuss the patient's condition with the doctor in the presence of the patient if it is possible to avoid doing so.

Don't remain in the room every minute of the doctor's visit. He may have something to discuss with the patient without you. This rule should also apply to visitors.

Don't whisper in a sick room or just outside, in the hearing of the patient.

Don't employ spare time in gazing at the patient, and do not rock in a rocking chair.

Don't rattle a newspaper.

Don't judge the temperature of a sick room by your own feelings. Use a thermometer.

Don't make too many explanations to the family about things you need for treatment; don't frighten them unnecessarily.

Don't knock against the bed in passing.

Don't move or uncover a patient more than is necessary in giving a bath or any treatment.

Don't fail to have things ready before beginning a treatment.

Don't hurry your patient by seeming to be in a hurry yourself.

Don't make larger washings than are necessary by careless use of linen.

Don't rub your eyes, or touch your face when dressing a wound, or after caring for the sick.

Don't talk too much.

Don't forget that it is an accepted fact that the mind has a great effect upon the body.

Don't wake up the patient for food, medicine or treatment.

But don't neglect to wake the patient for food, medicine or treatment if it is the doctor's order.

Don't tell about former cases; if asked, be discreet.

Don't comment on the patient's appetite to the patient but observe this carefully.

Don't forget that care in serving food attractively will often tempt the appetite.

Don't fail to aid the doctor by obedience to his orders and by loyalty to him.

Don't fail to be dignified.

Don't take unnecessary steps or tread heavily in the sick room.

Don't fail in kindness of heart, and in sympathetic understanding of the needs of your patient.

Don't fail to act calmly and wisely in an emergency.

THE END

GLOSSARY

A

Abdomen. Cavity between the chest and groin. It lies below the diaphragm and is the largest cavity in the body.

Absorption. The sucking up of fluids or other substances by the tissues.

Esophagus. The canal extending from mouth to stomach.

Albumin. A protein substance found in animal and many vegetable foods. It dissolves in cold water — coagulates or thickens by heat.

Alimentary canal. The tube extending from the mouth to the anus — about 28 feet long.

Antiseptic. An agent which prevents the growth of bacteria.

Anus. The external opening of the rectum.

Appendix. A small tube connected with the large intestine at a point on lower right hand side of abdominal cavity.

Arteries. Vessels through which blood is distributed from the heart to all parts of the body.

Astringent. An agent producing contraction of the tissues and thereby checking the secretions.

Axilla. The cavity under the arm at its junction with the shoulder.

B

Bacteria. A form of plant life — germ — microbe.

Bile. The secretion of the liver.

Bladder. A sac that acts as a reservoir for urine with capacity of one pint. It forms front of pelvic cavity.

Blood. The vital fluid of the body — circulating through heart and blood vessels.

Bone. Tissue forming the skeleton of the body.

Brachial. Relating to the arm.

Bronchial tubes. Air passage extending from the trachea into the lungs.

C

Capillaries. Small blood vessels connecting arteries and veins.
Carbohydrates. Food substances which include sugars and starches.
Carbon dioxide. Carbonic acid gas, an important constituent of exhaled air.
Catarrh. Inflammation of mucous membrane accompanied by discharge.
Cathartic. Medicine to cause a movement of the bowels.
Cell. A minute part of a living substance.
Chest. The cavity extending from throat to abdomen.
Clavicle. Collar bone.
Chyle. The milky fluid which is the result of intestinal digestion of food.
Chyme. The fluid into which food is changed by stomach digestion.
Colon. The large intestine.
Congestion. An accumulation of blood in one part.
Constipation. The retention of feces that normally should be expelled by muscles of the intestines.
Convulsion (Spasm). Involuntary contraction of the muscles.
Corpuscle. A small body or cell.
Counter irritant. An agent used to irritate the surface and draw blood from the deeper parts.
Crisis. The turning point of disease. A sudden change.
Croup. Inflammation of the larynx and trachea causing difficult breathing.
Curds. Coagulated proteid of milk containing some fat.
Cuticle. The outer or scarf skin.

D

Decomposition. The decay of a substance caused by bacteria.
Deodorant. An agent that destroys odor — fresh air — chemicals.
Diaphragm. The muscular wall separating the chest and abdominal cavities.
Diarrhoea. Frequent and too fluid evacuations of the bowels.
Digestion. The process of changing foods to prepare them for absorption into the tissues.
Disinfectant. An agent that will kill germs.
Dorsal. Pertaining to the back.
Douche. A stream of fluid directed into a cavity or over a part.

Duct. A tube through which secretions from a gland are conveyed.

E

Emetic. An agent to produce vomiting.
Enema. Fluid injected into the rectum.
Eruption. A breaking out.
Eustachian tube. The canal leading from the middle ear to the throat.
Expectorate. To spit up mucus from the throat or lungs.

F

Faint. Loss of consciousness caused by too little blood in the brain.
Fecal matter. Discharge from bowels mainly the residue of food that has not been absorbed.
Femur. The thigh bone.
Ferment. Is an agent that can break up a complex substance into simpler substances.
Fibula. The smaller of the two bones of the leg.
Flaxseed meal. Meal ground from seed of flax — used for poultices.
Foreign body. Any substance that does not normally belong in the part where it is.
Fomentation. An application of moist heat — cloths wrung out of hot fluid and applied over a part.
Fracture. The breaking of a bone.
Fumigation. Disinfecting by gas, vapor or heat.
Function. Natural action or use of a part.

G

Gastric juice. The digestive fluid secreted by glands of the stomach.
Genitals. Pertaining to generative organs.
Glands. An organ whose function is to produce a secretion.
Groin. Depression between abdomen and thigh.

H

Health. Normal condition — free from disease.
Heart. A muscular organ situated in chest cavity which forces the blood into the arteries.
Hemorrhage. An escape of blood from a blood vessel — Arterial — Venous — Capillary.

Humerus. Bone of the upper arm.
Humidity. Excessive moisture of the atmosphere.

I

Intestines. The alimentary canal extending from stomach to anus.
Indigestion. Lack of normal digestive power.
Infection. The communication of disease germs.
Inhalation. Breathing in of vapor or fumes.
Intermittent. Occurring at intervals.
Incontinence. An involuntary evacuation of feces or urine.
Insomnia. Sleeplessness.
Isolate. To separate one from another — to keep apart in order to prevent spread of infection.
Irrigation. A flow of fluid over a surface or wound or into a cavity.

K

Kidneys. Two organs lying in the hollow of the back on either side of the spine. They secrete urine from the blood.
Kumyss. Fermented milk made with yeast.

L

Lactose. Sugar of milk — an easily digested form of sugar.
Ligaments. Strong bands of fibrous tissue which hold bones together at joints.
Liniment. A mixture of a drug and oil for external use.
Lubricant. An oily substance that makes smooth when applied.

M

Massage. Scientific rubbing and exercising of the body to stimulate tissues and muscles.
Muscles. Organs of motion composed of strong muscular tissue, capable of contracting or relaxing.
Membrane. Thin tissue lining the cavities of the body and surrounding some organs.

N

Narcotic. Producing stupor.
Nasal. Pertaining to the nose.
Nausea. The sensation that makes one desire to vomit.
Nerve. A fiber conveying impulses and sensations to and from the brain and spinal cord.

Nitrogen. A gas or element of the air.
Nozzle. A tip end — glass or rubber — with an opening.
Nutrition. That which nourishes — food.

O

Ointment. Soft, greasy substance for external use.
Ophthalmia. Inflammation of the eye.
Organ. A part of the body which exercises special function.
Ovum. An egg.
Oxygen. The gaseous element that supports life and an important constituent of inhaled fresh air.

P

Pancreas. A glandular organ secreting pancreatic juice; this is conveyed to the small intestines to assist in digestion of food.
Paralysis. Loss of motion or sensation to any part.
Patella. Kneecap; a round bone in front of the knee joint.
Peptonized. Food partially digested by artificial means.
Periosteum. The membrane surrounding bone.
Peristaltic action. The peculiar wave-like contraction of muscles by which the contents of the stomach and intestines are moved on.
Perspiration. Fluid secreted from the blood by the glands of the skin.
Phlegm. Thick expectoration coughed up.
Piles. Enlarged veins about the rectum.
Pleura. The membrane covering the lungs.
Poison. Anything taken into the system or developed in it that endangers life.
Pores. Small openings on the surface — as on the skin.
Poultice. Moist external application made of meal or any bland substance.
Ptomaine poison. Poison usually produced from decomposition of food by bacteria in the alimentary canal.
Pubes. The front part of the pelvis.
Pulse. The beat felt in the arteries from the contraction of the heart.

R

Radius. Bone of lower arm on the thumb side.
Rash. An eruption on the skin.
Rectum. The lower portion of large intestine with function to expel feces.

Residue. Waste from body tissues and what is left over of food after normal absorption.
Respiration. The act of breathing which has two parts — inhaling and exhaling.

S

Skeleton. The framework of the body.
Spinal. Relating to the spinal column.
Spores. The seeds of some types of germs.
Sprain. An injury to or stretching of a ligament.
Sterile. Free from germs.
Sterilize. To destroy bacteria on a surface or in a substance or fluid.
Sternum. The breast bone.
Stimulant. An agent that excites activity in the function of a part.
Stomach. An enlarged portion of the alimentary canal lying between aesophagus and small intestines. It retains food during part of the process of digestion.
Strain. An injury to or stretching of a muscle.
Subclavian. Under the clavicle bone.
Suppository. A cone shaped substance that will dissolve to be introduced into the rectum, etc. A drug is sometimes included in this substance.
Synovial fluid. The fluid that lubricates a joint.

T

Temperature. The degree of heat according to some definite scale.
Thermometer. An instrument to determine the heat according to a chosen scale.
Tibia. The larger of the two bones of the leg.
Tissue. A combination of cells with a special function.
Trachea. The air passage from the throat to the lungs.
Tuberculosis. A germ disease in which the affected tissue deteriorates — wastes away.

U

Ulna. The bone of the lower arm on the inner side (little finger side).
Umbilical. Relating to the navel.
Urea. The chief solid part of urine.

Urine. Fluid secreted by the kidneys from the blood. A form of waste from the body.

Uterus. Female generative organ situated in the pelvic cavity.

V

Vagina. The canal leading to uterus from the vulva (external female genitals).

Veins. Vessels conveying blood on its return to the heart from all parts of the body.

Ventilation. Changing the condition of air. Admitting pure and expelling impure air.

Vertebrae. Bones of the spinal column.

INDEX

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