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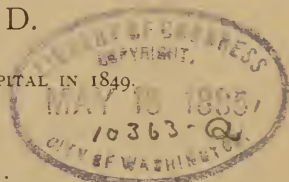
“HOME BOOK OF HEALTH.”

WAS COMPLETELY COPYRIGHTED ORIGINALLY ON THE SAME DAY WITH THE

“Anatomy, Physiology and Laws of Health;”

By J. H. JORDAN, M. D.

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1345
PHYSICIAN TO THE CINCINNATI CHOLERA HOSPITAL IN 1849.



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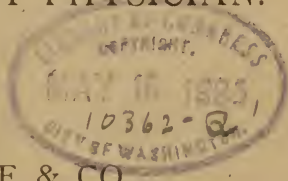
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CHICAGO:

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1885.

DR. GUNN'S work was first issued as "GUNN'S NEW DOMESTIC PHYSICIAN, OR HOME BOOK OF HEALTH," having the copyright duly completed July 30th, 1857, the title was originated and written by the person whose name is given at the head of this page, the same date was also copyrighted complete, and published at Cincinnati, in the same volume, in 1857, an appendix, under the title,

"ANATOMY, PHYSIOLOGY,
AND THE
LAWS OF HEALTH.

By J. H. JORDAN, M. D.

PHYSICIAN TO THE CINCINNATI CHOLERA HOSPITAL IN 1849."

From its publication, originally, until the present time, this has formed a part of the volume which has become so popular and widely known as *Gunn's Family Physician and Home Book of Health*, and complying with the copyright statute governing the case, it has been re-entered by its author for renewal of copyright.

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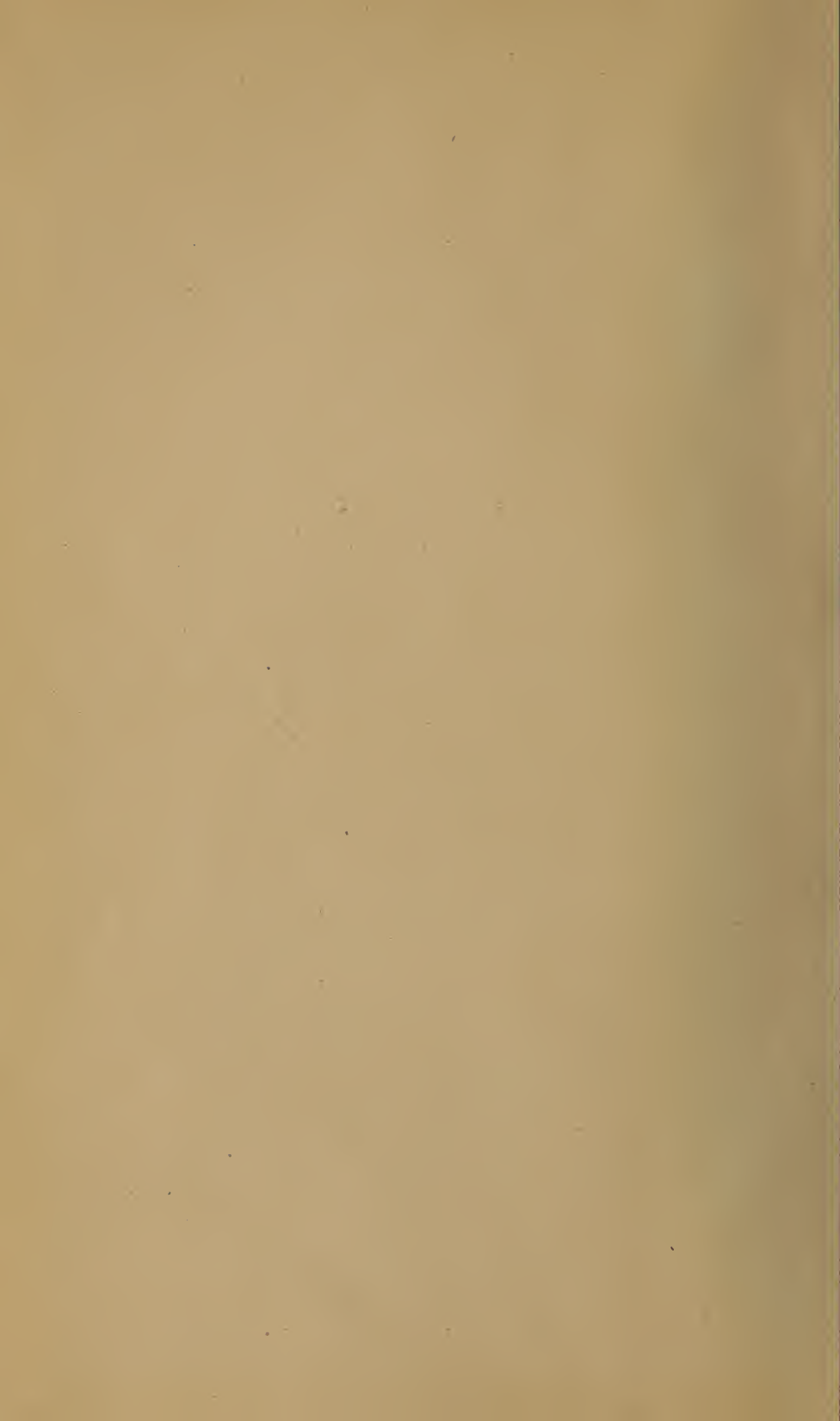
"ADDITIONAL DISEASES
DESCRIBED AND TREATED.

By J. H. JORDAN, M. D.

PHYSICIAN TO THE CINCINNATI CHOLERA HOSPITAL IN 1849."

This filled very nearly one hundred of the octavo pages, not counting the index matter, and covered some seventy to eighty important items, continuously published in the volume until now, when it has become necessary for the author to renew the copyright—May, 1885.

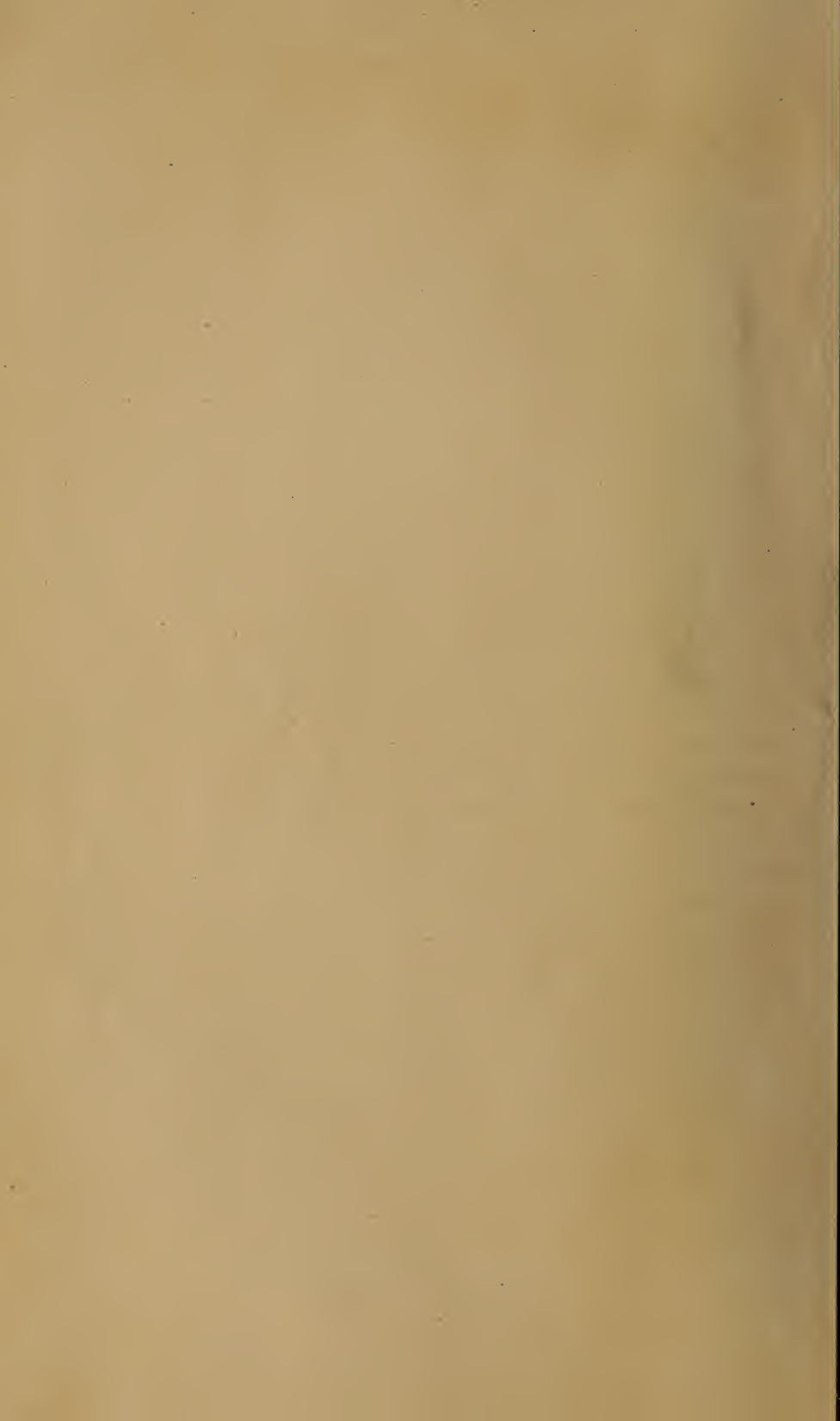
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"ANATOMY, PHYSIOLOGY,
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ANATOMY AND PHYSIOLOGY.

PRELIMINARY REMARKS.

ANATOMY comprehends a knowledge simply of the structure of the human body and of its various organs. It takes up and examines the different parts of the body separately, as you would examine the various parts of a complicated machine, and acquaints us with the situation, form, and character of each, in the general economy.

PHYSIOLOGY shows us the functions and uses of the different parts and organs of the system; it examines the machine *while in motion*, and explains the various processes by which it is sustained, replenished, and made to grow, live, and act—as Digestion, Nutrition, Circulation of the Blood, and all those phenomena which go to constitute Life and Health. In short, Physiology is the Science of Life.

There are few studies more interesting than Physiology, and none more necessary for all classes. A knowledge of the Laws of Life and Health is of vastly more importance to a young man or young woman than all the French, Music, and Drawing accomplishments taught at the most popular Boarding Schools, or all the Latin, Greek, and Hebrew to be learned at Yale College or Oxford University. Of what value are all the more fashionable accomplishments without health? I say nothing against these things: The attainment of knowledge is commendable in any one, and the embellishments of polite literature and a refined education are always desirable, when they can be had without too great a sacrifice. But they should not

be allowed to engross the whole mind to the exclusion of knowledge which has so much more important a bearing on the happiness of our race; for I need hardly say that without health there can be no real happiness.

It is well to be able to read French, and to paint, and draw, and play on the piano; but it is better to know how to preserve one's health, and when lost, how to regain it, and then how to keep it. It is well to be versed in ancient lore, and to be able to read Homer's Iliad and Cæsar's Commentaries in their original languages; but it is far better to know ourselves, to understand the laws of our physical being, and the relation we bear to things around us. In the present state of civilized society, with its Fashions, Luxuries, Vices, and its various styles of Cookery—all more or less filled with the seeds of Disease and Death; and surrounded as we are on every hand with Temptation in its thousand luring forms—it is next to impossible to pass through life and enjoy any thing like a reasonable share of health, without a thorough knowledge of the Laws of Life, and of the penalties which God has annexed to their violation. Until recently no department of knowledge has been more neglected than this. But at length a new era has begun to dawn upon our country. Books on Anatomy, Physiology and Hygiene have been prepared for families and schools, and commendable efforts are being made to supply the masses with this most necessary information. The public mind is becoming awakened to the importance of the subject, and well it may; for it is a fact so palpable that all can begin to see it, that mortality and disease are rapidly on the increase, each generation becoming more effeminate, sickly, and short-lived than the one which preceded it. It is an alarming fact that the average duration of human life at the present day in this and other highly civilized countries is nearly or quite one-fourth less than it was one or two centuries ago. Why is this? There must be some cause for this degeneracy. Is it not high time that we begin to seek out this cause, and the means for its removal? It is sometimes said that the people of each generation grow wiser and shorter-lived than their predecessors, as though the latter was the necessary result of the other. We grow wiser in some things, I admit—wiser and more ready in devising means and ways and facilities for producing disease

and death. In these things we are apt and progressive. But we do not make adequate progress in that knowledge which is the only true remedy against these evils. While the causes of disease, to be found in our habits, luxuries, and manner of living, are rapidly on the increase, the means of preserving life and health have been almost entirely overlooked. Hence the alarming degeneracy of the species, and the increase of mortality and disease. The only hope of redemption for our race is in a widespread, practical knowledge of ourselves as organized beings—a thorough acquaintance with the philosophy of existence, the laws of health, and the causes which tend to disease and premature death. Let Physiology and Hygiene be taught in all our schools; let every family be provided with practical works on these subjects, and both young and old study them well, and endeavor to live in accordance with the truths they teach—and then there will be some prospect of arresting the downward tendency of the race, and hope of a return to that state of health enjoyed when our grand-mothers were little girls, which we can read about, but of which their grand-children know but little.

A knowledge of Anatomy, except to the operative Surgeon, is not so important; yet an acquaintance with its outlines at least, is necessarily connected with the study of Physiology, and can not be dispensed with. Hence I shall proceed first to give a brief but concise view of the Anatomy of the human system. After which the Physiology of the principal processes and functions of animal life will be given in detail, accompanied with practical observations on Hygiene, or the Laws of Health.

ANATOMY.

ORGANS AND DIVISIONS OF THE BODY.

THE human organism is divided into *Bones, Muscles, Arteries, Veins, Nerves,* and *Viscera,* or Internal Organs.

The body, in its description, is divided into the *head, trunk,* and *upper and lower extremities.* The trunk is also divided into *chest* and *abdomen.*

THE OSSEOUS OR BONY SYSTEM.

The bones are the hardest and most solid parts, and are designed as a frame-work or foundation for the attachment and support of the softer parts, to give form and symmetry to the body, and for the purposes of motion and locomotion. When connected together in their natural order, they form what is called the *skeleton.*

The round bones are generally tubular, and the hollow is filled with a medullary substance called marrow, except at the ends or joints, where, instead of being hollow, they are usually enlarged, forming a kind of *head,* which consists of a sort of *net-work* structure, somewhat resembling honey-comb. The flat bones, as those of the *skull* and the *scapulæ* or shoulder blades, consist of two thin tables, or plates, united by the same kind of net-work structure.

Like all other parts of the body (except the nails and hair), the bones are supplied with blood-vessels, and nerves; and in their healthy state contain but little or no sensibility. But when in a state of inflammation they are extremely sensitive and painful. The bones are covered with a very firm, thin and closely attached membrane called the *periosteum.* Where this membrane covers the skull or cranium it is called *pericranium.*

The number of bones in the human body, including the teeth, is two hundred and forty, proper; though sometimes there are found in the thumbs and great toes what are called the *sesamoid* bones, increasing the number to two hundred and forty-eight. The head (including the thirty-two teeth) contains sixty-three bones; the trunk fifty-three; the upper extremities, or arms, sixty-four; and the lower extremities sixty.

These bones are composed of both earthy and animal matter. The

earthy portion, which is mainly the *carbonate and phosphate of lime*, gives them their solidity and strength; while the animal portion, which is mostly *gelatin*, gives to them vitality, and prevents them from being too brittle. If you will calcine a bone—in other words, burn it in a clear fire for ten or fifteen minutes, it will become white and brittle, the gelatin or animal portion having been destroyed, leaving the lime and chalk, or earthy portion. Again, to show the animal without the earthy matter, place a small bone for a few days in dilute muriatic acid, say one part acid and five or six parts water, and the acid will have removed the earthy matter, by its affinity for the lime, leaving the bone unchanged in shape, yet so soft that it may be bent in any direction. In children, while the bones are soft, these two substances are nearly equal; but in adults there is a much larger proportion of the earthy than of the animal matter in the bones. In the disease called rickets, or curvature of the spine, the earthy part of the bones has been more or less absorbed, leaving them soft and flexible.

The bones, like all other parts of the body, are formed from the blood, being at first only *cartilage*, and, while in this state, supplied only with the *lymph* or white portion of the blood. By and by they are supplied with red blood, when the formation of true bone, or ossification commences, by the deposit of phosphate and carbonate of lime. This process begins at certain points, called the *points of ossification*—generally in the center or middle of the bones, and gradually extends to the surface and ends. When ossification is complete there is still a gradual and constant change going on in the bones. They increase in size, the proportion of the animal matter decreasing and the earthy increasing, as the person advances in years, till in extreme old age the earthy substance so preponderates that the bones are extremely brittle and easily broken.

Such bones as form joints, as those of the arms and legs, have a reciprocal correspondence in their shapes at the points of union, the one usually being convex or round, and the other concave or socket-shaped, so that they nicely fit together. They are also at these points spongy and porous, which renders them more elastic than if compact and hard, and are also covered with a cushion of cartilage, which acts like India-rubber springs, in preventing or diminishing severe jars and concussions. There is around and about every joint what is called the *synovial membrane*, which secretes a fluid called *synovia* or joint-water. This is for the purpose of oiling or lubricating the joints and surfaces of the bones and tendons, so that they may move smoothly upon each other, and avoid the friction consequent upon their action.

NAMES OF THE PRINCIPAL BONES.

The bones of the head are divided into those of the *Skull*, *Ear*, and *Face*. The skull is not one continuous bone, but is composed of eight distinct parts united by ragged edges somewhat like saw-teeth, called *sutures*. These bones are also composed of two thin plates or tablets, united by a spongy, porous portion of bone. The outside plate is tough and fibrous; the inside one hard and glassy, and hence called the *vitreous* plate. The skull contains the Brain, and we here see the wisdom displayed in guarding that important and sensitive organ. The outside plate being tough and yielding, and the spongy portion between the two, serve to diminish the vibrations and shocks in cases of falls and blows. The skull being composed of several bones is also calculated to prevent *fractures* from extending as far as they otherwise would, if it was one continuous bone. In all this we see the hand of Intelligence and Wisdom. And there is probably no science in the world, or collection of facts, which contains so much and so conclusive evidence of the Wisdom and Design of a Great First Cause, as that of the anatomy of the human body.

BONES OF THE HEAD.—SEE SKELETON.

1. Frontal bone—which constitutes the front part of the head, or the forehead.
2. Parietal, or side bones—one on each side, extending from near the ear to the top of the head.
3. Nasal bones, or bones of the nose.
4. Occipital bone (Fig. 2)—which is at the back and lower part of the head.
5. Temporal, or Temple bone—below the Parietal, one on each side, to which the ear is attached.

Besides these there are what are called the Sphenoid and the Ethmoid bones, which are at the base of the skull, and back of the nose, and can not be shown in the plate. The Sphenoid forms the floor of the skull, and has numerous holes or openings through it, affording passages for the nerves and blood vessels.

6. Malar, or cheek-bone—one on each side.
7. Superior and Inferior Maxillary bones—or bones of the upper and lower Jaws. Besides the bones I have named, there are several smaller ones in the head and face, as the small bones of the ear, and others not necessary to mention.

BONES OF THE TRUNK.

THE SPINAL COLUMN: The vertebræ or bones of the spinal column, or back-bone, are twenty-four in number, and are divided into three parts. The first seven of them, which form the bones of the neck (9) are called the *Cervical* vertebræ. The next twelve (x.) which constitute the back-bone proper, are called the *Dorsal* vertebræ. The ribs are attached to these. The remaining five (14) constituting the loins or small of the back, are called the *Lumbar* vertebræ.

Fig. 1.

Front view of the Human Skeleton.

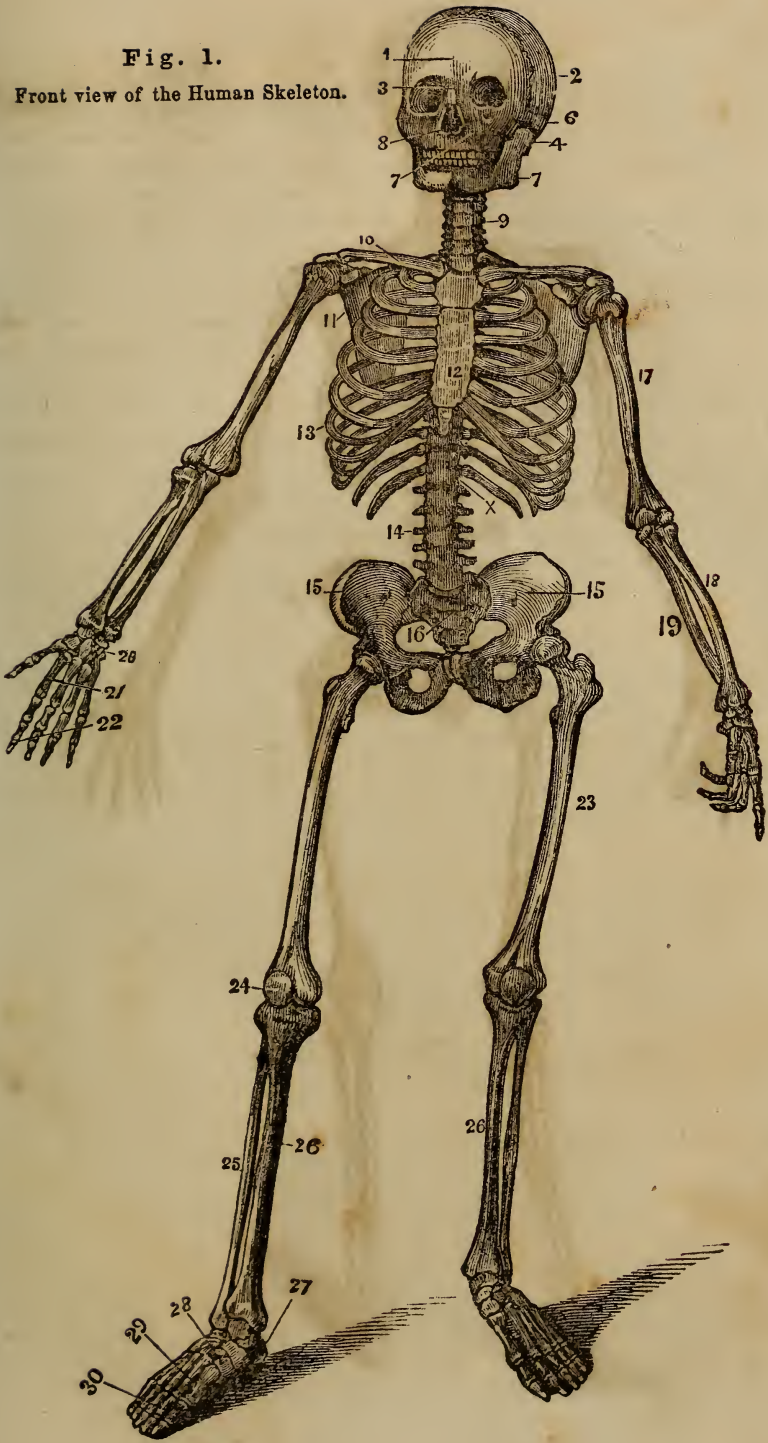
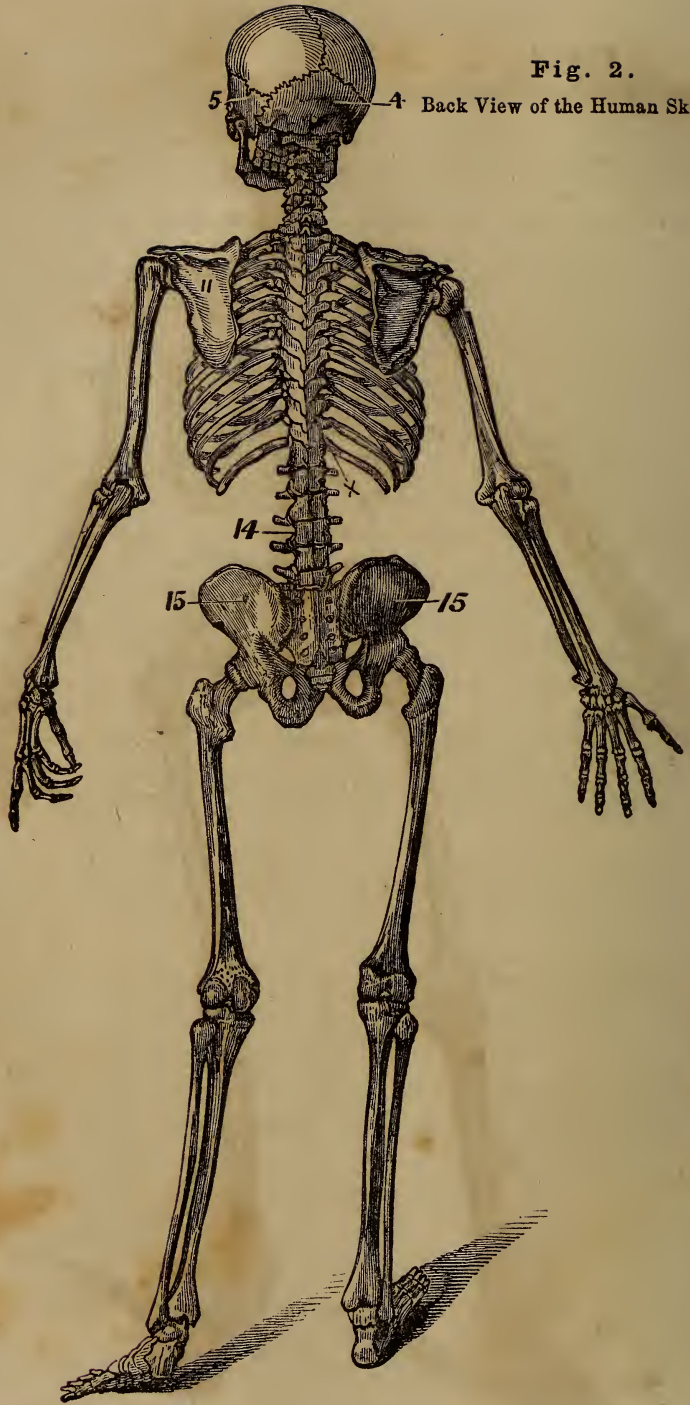


Fig. 2.

4 Back View of the Human Skeleton.



Each vertebra is a separate bone, joined by cartilage, and is of a peculiar shape; yet is so very similar to the vertebræ of the common animals, with which it is presumed every person is so familiar that it needs no description. There is a hole through each one, which, when they are joined together, in the *column*, constitute a canal or tube, for containing the *spinal marrow* or *cord*.

12. The Sternum, or Breast bone. In the child this bone consists of eight pieces, which become united, so as to consist of but three pieces in the adult.

13. The Ribs. They are attached to the spinal column behind, and the first or upper seven, called the *true ribs*, to the sternum in front. The lower five, called the *false ribs* are not attached to the sternum. They are usually attached in front to the lower true ribs, by cartilage.

16. The Sacrum, or sacred bone, so called because it was offered in sacrifice by the ancients. The lower end of this bone is called the *coccyx*, or *os coccygis*. It is a small, separate bone, and terminates the spine.

15. Os Innominata, or nameless bone, the top of which forms the *hip bone*. This part of the bone is called the *ilium*; the lower part the *ischium*; and where the two unite in front, the *pubis*. In the sides of these large bones (the *os innominata*) near the lower part, is a deep socket, like a cup, called the *acetabulum*, in which the head of the femur, or thigh bone is placed. These two large bones, with the sacrum and coccyx, constitute what is called the Pelvis.

BONES OF THE UPPER EXTREMITIES.

10. The Collar bone, called the Clavicle. It unites at one end with the sternum or breast bone, and at the other with the head of the shoulder blade, and serves to keep the shoulders apart and elevated. There are two of them, one on each side.

11. The Scapula or shoulder blade. It is a thin, flat bone, of a triangular shape (see Fig. 2) placed on the outside of the ribs, back of and below the shoulder. It has a large head, containing a cavity or socket called the *glenoid cavity*, which receives the upper end of the *humerus*, and to which it is attached.

17. The Humerus, or bone of the upper arm.

18. The Radius, or bone of the fore arm which turns with the hand in its rotary movements. This bone is situated on the outside of the arm—the thumb side—and articulates or joins with the bones of the wrist to form the wrist joint.

19. The Ulna—the inside bone of the arm, which articulates with the humerus at the elbow, to form the elbow-joint. It is the bone by which the muscles bend the fore arm.

20. The Carpus, or wrist—composed of eight little bones of peculiar shapes, arranged in two rows, and so firmly bound together as to permit of only a small amount of movement.

21. The Metacarpus—or the five bones constituting the palm of the hand. The first range of the bones of the fingers and thumb is attached to them.

22. The Phalanges, or bones of the fingers. The phalanges of the fingers have three ranges of bones, or three joints, while the thumb has but two.

BONES OF THE LOWER EXTREMITIES.

23. The thigh bone—called the Femur or *os femoris*. It is the largest bone in the body, and supports the weight of the head, trunk, and upper extremities, and often much additional weight.

24. The Patella, or knee-pan. It is a small bone connected with the tibia by a

strong ligament, while the tendon of the extensor muscles of the leg is attached to its upper edge. It rests on the fore part of the lower end of the femur, and acts like a pulley in straitening the limb.

25. The Fibula, or smaller bone of the leg. It is much smaller than the tibia, and is firmly bound to it at each end.

26. The Tibia, or large bone of the leg—the “shin bone.” It is of a triangular shape, and enlarged at each end.

27. The heel bone, called the Calcis, and the Astragalus, upon which the tibia rests.

28. The Tarsus, or bones of the instep. There are five of them, which, like the bones of the wrist, are so firmly bound together as to allow of but little movement.

29. The Metatarsus, consisting of five bones also, corresponding to the metacarpus of the hand.

30. The Phalanges, or bones of the toes. They consist of fourteen bones, the great toe having two ranges, and all the others three.

The joints form an interesting part of the body. In their construction every thing shows the display of wisdom, and the strictest regard to the security and the facility of motion of the parts thus connected together. Joints are formed by the aid of Cartilages, Synovial membrane, and Ligaments.

THE TEETH.

The teeth are inserted into the upper and lower maxillary bones, in sockets or openings, termed the *alveola processes*. The teeth differ from other bones in composition and growth; and will not, like bones, unite again when broken. A tooth is divided into two parts, the *crown* and the *root*. The crown is that portion which protrudes from the jaw and gums, and is covered with a hard and highly-polished substance called the *enamel*. The root is the portion inserted in the jaw. This part of the tooth consists of bony matter, and is supplied with nutrient vessels and nerves. It is their nerves which cause them to ache. The first teeth that appear in the infant are called *milk-teeth*, and are twenty in number. They usually disappear, or are shed, about the seventh year or soon afterward. What are called the *wisdom teeth*—*sapientia dentes*—do not appear till the person is twenty years of age. The four front teeth (above and below), are called *incisors*; the next one on each side is called the *cuspid* (eye-tooth); the next two on each side are the *bicuspid*s; the next two, the *molars* or grinders; and the last one, on each side, the wisdom tooth. The incisors, cuspid, and bicuspid, have each but one root; the molars of the lower jaw have two roots, while those of the upper jaw have three.

CARTILAGES.

These are smooth, white, elastic substances, sometimes called *gristle*, which unite bones together, and cover the ends of those which move upon each other, as in the joints. They resemble bone in appearance, but are much softer. There are thin layers of this substance between the joints or vertebræ of the spinal column about the sixteenth of an inch in thickness, which facilitates the bending movements of the

back; and also forming a sort of cushion, they serve to diffuse and diminish the shock in walking, running and jumping. Cartilage is found in all the joints. It is also added to the end of bones to increase their length, as in the front part of the ribs, which consists entirely of cartilage.

LIGAMENTS.

These are strong, white, fibrous cords, or bands, which connect bones together at the joints, and hold them in their places. They are of various breadths; and sometimes they are so interwoven as to form a broad layer which entirely surrounds the joint like a bag. In this case they are called *capsular ligaments*, and serve the purpose also of preventing the escape of the *synovial fluid*, which is intended to lubricate the parts. The shoulder joint is surrounded by one of these capsular ligaments. Ligaments also serve to keep the Liver, Spleen, and other internal organs, in their places. Like the bones, they possess but little sensibility when in a healthy state; but when attacked by inflammation they are extremely painful.

MEMBRANES.

Membranes are thin expanded substances which line the cavities of the body and envelop all the organs. They are of different kinds, and vary in structure and appearance as much as they do in function.

SEROUS MEMBRANE: This envelops the brain, lines the chest and abdomen, and covers the lungs, stomach, intestines, and other organs of the abdomen and chest. It has a smooth, shining appearance, and is constantly moistened by a watery or serous exhalation, in consequence of which it receives its name. It has different names however, in different parts of the body, according to the cavity it lines. In the chest it is called the *pleura*, and when inflamed the disease is called the *pleurisy*. In the abdomen it is called the *peritoneum*, and that which surrounds the brain is known as the *dura mater*, or *strong mother*. In a state of health it is white, but when inflamed it becomes red, the vessels being charged with blood; it is also apt when inflamed to form adhesions to the parts on each side of it, so that the lungs may become glued to the ribs, or the intestines to the internal surface of the abdomen, or to each other. *Dropsies* are caused by the exhalations from this membrane, the water collecting in cavities and not being carried off by the *absorbents*.

MUCOUS MEMBRANE: This membrane lines the nose, mouth, throat, air passages of the lungs, stomach, intestines, and other free passages of the body. In the stomach and intestines it is thrown into folds, which increase the extent of its surface and prevent the food from

hurrying through the alimentary canal with too much rapidity. It is soft, velvet-like in appearance, and is of a pale pink color when in health, but red when inflamed. It secretes a peculiar fluid, of a slimy nature, which is called *mucus*. Blood frequently exudes from this membrane, constituting *hemorrhage*, which may take place from the lungs, stomach, or any other part which it lines. A false membrane sometimes forms upon its surface, which in croup is coughed up from the windpipe, and in other diseases, as dysentery, is discharged from the bowels. This membrane, though ever so much inflamed, never forms adhesions. If it did, the intestines, windpipe, throat, and other free passages might become closed up, when death would be the inevitable consequence.

CELLULAR MEMBRANE: This is a loose and very thin membranous structure, which fills the space between the muscles, and between them and other solid parts, connecting them together without interfering with their functions. It may be seen everywhere between the muscles and the skin, of a light, shining color, giving a smoothness and softness to the surface of the body. It forms a great many little cells, which are kept moist by a watery vapor exhaled from the minute branches of the arteries; and if it should be exhaled in greater quantities than can be removed by the absorbents, it fills and distends the cells, and constitutes cellular or general dropsy.

THE MUSCLES.

THE Muscles constitute that portion of the body which we call flesh, and are the proper name of what is known as *lean meat*. Instead of being in one solid, continuous mass, as might be supposed, from external appearance, the flesh of the body is found to be composed of a vast number of separate pieces or strips, of various lengths and shapes, but seldom more than half an inch in thickness, each enveloped in a thin, transparent membrane, and the whole arranged in layers one above another, giving to the body bulk, form and symmetry. These are called *muscles*, and by their contraction and relaxation produce the various motions of which the body is capable. The human body contains over five hundred—five hundred and twenty-seven it is said—of these muscles, the most of them being arranged in pairs.

In structure a muscle is composed of small bundles of fibers, called *fasciculi*, and each of these fibers is composed again of filaments or

threads. These bundles are nicely enveloped in thin cellular tissue or membrane, and the whole put together to constitute a muscle. A great many of the muscles terminate at one or both ends in what is called *tendon*—sometimes constituting *cords*, as in the wrist and ankle—which is a white, hard, firm, inelastic cellular substance, very strong, and is for the purpose of attaching the ends of the muscles to the bones. In some instances the tendon of a muscle spreads out or expands in its attachment, and then it is called *Fascia* or *Aponeurosis*. This fascia or expansion of tendon becomes quite thick in some places, and serves as a protection to parts beneath, as in the palm of the hand, and sole of the foot.

Upon the arms and legs the muscles are situated around the bones, and serve to invest and defend them, while they also form to some of the joints their principal protection. Upon the trunk they are spread out to enclose cavities, and form a defensive wall, which yields to internal pressure and the expansion of the body.

Muscles may be arranged into several classes, as to their shapes, and the arrangement of their fibers. Some are completely longitudinal—that is, long and spindle-shaped, each extremity terminating in a tendon; as the muscles of the arms and legs: In others the fibers are disposed like the rays of a fan, converging to a tendinous point, and constituting what is termed a *radiate* or broad muscle. Again we find some with their fibers converging like the small feathers upon a quill or pen, to one side of a tendon—or it may be to both sides of it—running the whole length of the muscle. This style of muscle is called *penniform*.

In the description of a muscle, its attachments are expressed by the terms “origin” and “insertion.” The *origin* is the attachment to the more fixed or immovable point, or that *toward* which the muscle draws some other part, in its legitimate action: While the *insertion* is at the more movable point, or part to be acted upon. For instance the principal muscles which move the arm are attached at one end to the scapula or shoulder-blade—this is called their *origin*; while the other end is attached to some portion of the humerus or bones of the arm, and is called their *insertion*. The principal muscles which produce the motions in the lower extremities have their *origin* upon some portion of the large bones of the hip or pelvis, while their *insertion* is upon the femur, or bones of the leg. The interstices between the muscles, especially in young persons, are generally filled with a substance called *adipose* matter, or fat, which gives to the different parts of the body a round and plump appearance.

In conformity with the general divisions of the body, the muscles, like the bones, may be arranged into four parts. 1st, Those of the

Head and Neck. 2d, Those of the Trunk. 3d, Those of the Upper Extremities. 4th, Those of the Lower Extremities. In their distribution they may be said to form two layers, a superficial, and a deep-seated one. Though in some places there are more than this. On the back, for instance, the muscles are arranged in six layers, one above the other, in order to produce the various and complicated movements of the back, neck, arms, chest, and abdomen. All the various movements of the body, and of its different parts, are produced by the muscles, the bones serving, in most cases, as the levers of motion.

Those muscles by which a limb is bent, are called *flexors*, and those by which it is straitened, *extensors*. These two sets of muscles are said to *antagonize* each other: that is, the flexors pull in one direction, and the extensors in another, so that by their alternate contraction and relaxation, two distinct and opposite motions are produced.

The muscles are also classified under the two heads of *Voluntary* and *Involuntary*. The first are such as are under the control of the will, and enable us to walk, run, leap, and perform any other voluntary act. The muscles by which we bend the arm, open and shut the mouth, etc., are *voluntary* muscles, because we call them into action at pleasure, by an effort of the will.

The involuntary muscles are those over which the will has no influence. The heart is a muscular organ, acting with tremendous force in propelling the blood through the arteries; the stomach also, and the intestines have muscular coats, by which they are enabled to contract and relax for the purpose of moving their contents; yet they are uncontrolled by the will, acting independent of it, and are therefore denominated *involuntary* muscles. There are others which are both voluntary and involuntary, and are therefore said to be *mixed*; as the diaphragm, and other muscles of respiration. They perform their regular functions, asleep or awake, whether we will it or not; yet we can, by an effort of the will, cause them, for the time being, to act quicker, faster or slower, as we please.

Muscles are acted upon and controlled by the *nerves*. Contractility is an inherent quality of muscular fiber, enabling it to shorten its substance, like a piece of India-rubber, when the proper stimulus is applied, and again relaxing when the stimulus is withdrawn. This stimulus is the *nervous fluid*, which acts upon the muscles somewhat similar to galvanism or electricity. The velocity of muscular contraction, or rapidity with which the voluntary muscles may be made to act, is truly astonishing. It is often as quick as thought. This may be seen in rapid speaking, or playing upon a musical instrument. Persons have been known to utter distinctly fifteen hundred letters

in a minute, the pronunciation of each letter requiring both contraction and relaxation of the same muscles, thus making *three thousand actions in a minute!* It is owing to the contractility of the muscles, and the wonderful power which the will or mind (which furnishes the nervous stimulus) has over them, that we are enabled to pursue the various avocations of life. "By their action the farmer cultivates his fields, the mechanic wields his tools, the sportsman pursues his game, the orator gives utterance to his thoughts, the lady sweeps the keys of the piano, and the young are whirled in the mazy dance."

The oblique abdominal muscles terminate in a broad pearl-colored fascia, or *aponeurosis*, which completely covers the front or middle portion of the abdomen; while the dorsal muscles, or muscles of the back, blend into one mass of tendon below, which expands and attaches to the sacrum, and back part of the iliac crest, or hip bones. On the wrists and ankles, the long tendons of the muscles are closely and firmly bound down by strong bands, called the *annular ligaments*.

Notwithstanding their great number, the muscles all have names—Latin names, some of them long and difficult to remember. These names generally have reference in their meaning to the character or use of the muscles to which they are applied, so that if we understood the Latin language as well as we do the English, we should, on hearing the name of a muscle, immediately know something of its general character, situation, and use.

It would be as useless, perhaps, in a work like this, to give the names of all the muscles, and their "origin" and "insertion," as it would be difficult to convey an exact idea of them. The only way to get a correct knowledge of the muscles, as to their shape, size, and location, is by seeing them dissected on the real subject. But such a knowledge, even, is of but little practical use to any one except the anatomist or surgeon. It is well to know that we have muscles, and to understand the general character and use of them. It is still more important to know how to take care of our muscles—how to develop them properly and keep them in a healthy condition.

The accompanying engravings will give you an idea, as well as it can be done on paper, of the character, shape, and appearance of the muscles. They exhibit only the superficial or outside muscles, such as would be seen on removing the skin from the body. Underneath them is one or two, and in some places several layers of other muscles. Such as can be seen in the Figures are numbered, and their names and uses given in the following tables.

NAMES OF THE PRINCIPAL MUSCLES, AND THEIR USES.

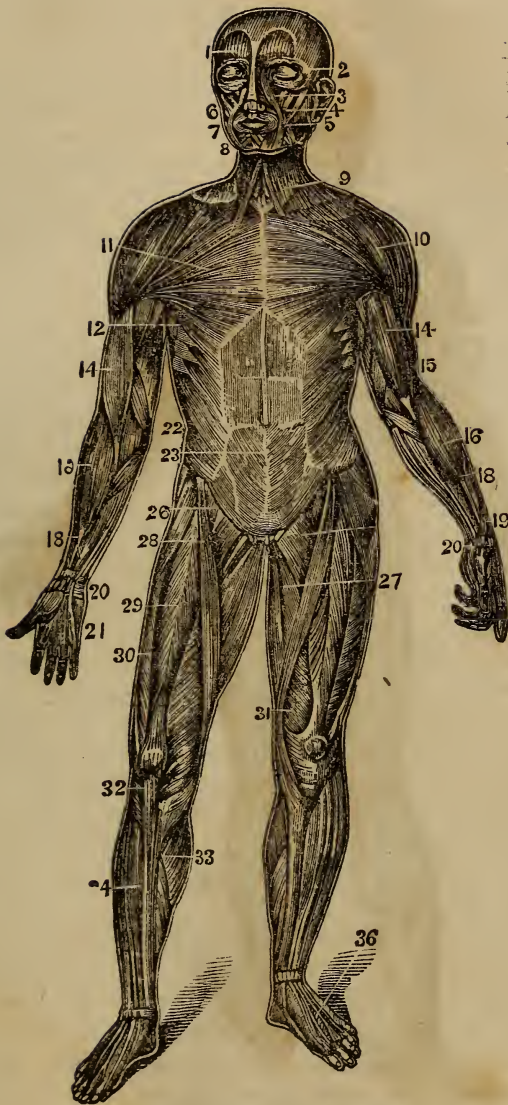
FIG. 3—*Front View of the Muscles.*

1. Occipito-frontalis—to raise the eyebrows, and move the scalp.
2. Orbicularis palpebrarum—to close the eyelids.
3. Levator labia superioris—to elevate the upper lip.
4. Zygomaticus major; 5 Z. minor—to elevate angles of the mouth.
6. Masseter anterior—to bring the jaws together in chewing.
7. Orbicularis oris—to close and pucker the mouth.
8. Depressor labii inferioris—to depress the lower lip.
9. Platysma myoides (and 6, Fig 4)—to bend the neck forward.
10. Deltoid (and 8, Fig. 4)—to elevate or raise the arm.
11. Pectoralis major—to bring the shoulder forward.
12. Latissimus dorsi—to draw the arm backward and downward.
14. Biceps flexor cubiti—to bend the arm at the elbow.
15. Triceps extensor cubiti—to extend the fore arm.
16. Supinator radii longus—to bend the wrist.
18. Flexor carpi radialis longior—also to bend the wrist.
19. Flexor communis digitorum—to bend the digits, or fingers.
20. Annular ligament—a strong ligament which surrounds the wrist, to hold the muscles and tendons down to their place. It is a perfect *wrist-band*.
21. Palmar fascia—or fascia of the palm of the hand—a tendonous structure, spread out to protect the organs beneath.
22. Obliquus externus abdominis—to support the bowels.
26. Psoas magnus—27 Abductor longus—28 Sartorius—these three muscles bend the lower limbs at the hip joints. The Sartorius is called the “tailor’s muscle,” because it is the muscle used in drawing one leg over the other, in the position of a tailor when sewing.
29. Rectus femoris—30 Vastus externus—31 Vastus internus—these three extend or straiten the leg at the knee.
32. The tendon of the patella.
33. Gastrocnemus—to extend the foot.
34. Tibialis anticus—to bend the foot at the ankle.
36. Tendons of the Extensor digitorum communis—to extend the toes.

FIG. 4—*Back View of the Muscles.*

3. Complexus—to draw the head backward.
4. Splenius (two, S. colli and S. capitis)—to draw the neck backward, and rotate the head.
5. Masseter—to close the jaws.
6. Sterno-cleido—mastoideus—to draw the head forward.
7. Trapezius—to draw the shoulder up and backward.
8. Deltoid—to raise the humerus.
10. Triceps extensor—to extend the fore arm; 13, tendonous portion of the triceps; 14, anterior edge of the triceps.
15. Supinator radii longus—to supinate the hand, or turn it upward.
- 17, 22. Extensor communis digitorum—to extend or straiten the fingers.

Fig. 3.



Front View of the Muscles.

Fig. 4.



Back View of the Muscles.

18. Extensor ossis metacarpi pollicis—to extend the first metacarpal bone; 19—its tendons.
20. Olecranon process of the ulna and insertion of the triceps.
21. Extensor carpi ulnaris—to extend the hand.
24. Latissimus dorsi—to draw the arm backward and downward; 25—its tendinous origin.
26. Obliquus externus—to support the bowels.
27. Gluteus medius—to rotate the thigh outward and inward.
28. Gluteus magnus—to draw the thigh backward.
29. Biceps flexor cruris—to flex or bend the leg.
30. Semi-tendinosus—to assist in bending the leg.
- 31, 32 Gastrocnemius, (internus and externus)—to extend the foot.
33. Tendo Achillis—the great tendon or cord of the heel.

Alternate Exercise and Rest constitute the great law of muscular health and development. The muscles should be used, in order that their size and strength may be equal to the demand made upon them. It is a law of the muscular system that whenever a muscle is called into frequent use, its fibers increase in thickness—within certain limits—and become capable of acting with greater force; while on the contrary, the muscle that is little used decreases in size and power. This exercise, or use of the muscles, however, must be properly regulated, and confined within certain limits. Too much, or too long continued exertion, is injurious. Relaxation should quickly follow contraction, or exhaustion of the muscle will be the consequence. So must rest follow exercise, and it must be continued long enough for the nutrition and recruit of the muscles to take place, or they will become lessened in size and diminished in power. Exercise, either for pleasure or profit, should never be carried to the point of languor or exhaustion. When it is desirable to develop or strengthen the muscular system, exercise should be taken moderately at first, and gradually increased as the system can bear it.

Friction upon the muscles—in other words, rubbing them—is very beneficial. It hastens the process of nutrition, and the re-supply of the exhausted nervous fluid. The whole body should be well rubbed once or twice a day. The horse will travel further and easier, if not only rubbed daily, but also at such times as the traveler stops to rest. "It is a matter of surprise," says a popular writer on Physiology, "that the experience and common sense which lead every person who owns a horse, to have him well groomed every day, should not have taught men that the same good thing should be done for the human body, which will in fact be more benefited by rubbing than any animal. Every laborer with muscles or brain, every gentleman

or lady of leisure, who cares to labor easily, enjoy comfort, or appear gracefully, should equally and daily practice rubbing the body from head to foot."

The regular exercise of the muscles should be conducted under proper mental influences. The mind and the body reciprocate in their influences, upon each other. The mind has much to do with the beneficial exercise of the muscles, while inactivity of the muscular system produces ennui, and dullness of intellect, which nothing but exercise can remove. In fine, proper and judicious exercise produces delightful sensations, a clearness of intellect, and elasticity of spirits, that the indolent never know. While, in order to a healthy exercise of the muscles, there should be an active intellect, cheerful disposition, wholesome food, plenty of pure, cool air, and loose warm clothing in cold weather, and loose cool clothing in warm weather.

THE CIRCULATORY ORGANS.

THE HEART.

THE Heart is a very strong muscular body, which propels the blood through the arteries to every part of the system. It is somewhat in the shape of an inverted cone, and is situated in the chest, a little to the left of the sternum or breastbone, its lower end or apex resting on the tendonous portion of the diaphragm, about three inches from the sternum, opposite the space between the fifth and sixth ribs of the left side. The heart is surrounded by a strong membranous sac called the *pericardium*, which protects it, and confines it to its proper place. It occupies an oblique position in the chest, and is almost wholly covered by the lobes of the left lung. The medium weight of the heart, in adults, is from eight to ten ounces, being about an ounce heavier in man than in woman.

The heart has four cavities, two of which are called *auricles* and two *ventricles*; and from its peculiar construction may properly be called a double organ, having two sides, the right and the left, with an auricle and ventricle in each. The compartments of the two sides, are separated by a muscular partition, called the *septum*. The *aorta* or great artery-trunk, and the *pulmonary artery* proceed from the heart—the latter from the right ventricle, and the other from the left ventricle. The large trunks of the veins, called the descending and ascending *vena cava*, and the *pulmonary veins*, terminate or open into the auricles of the heart.

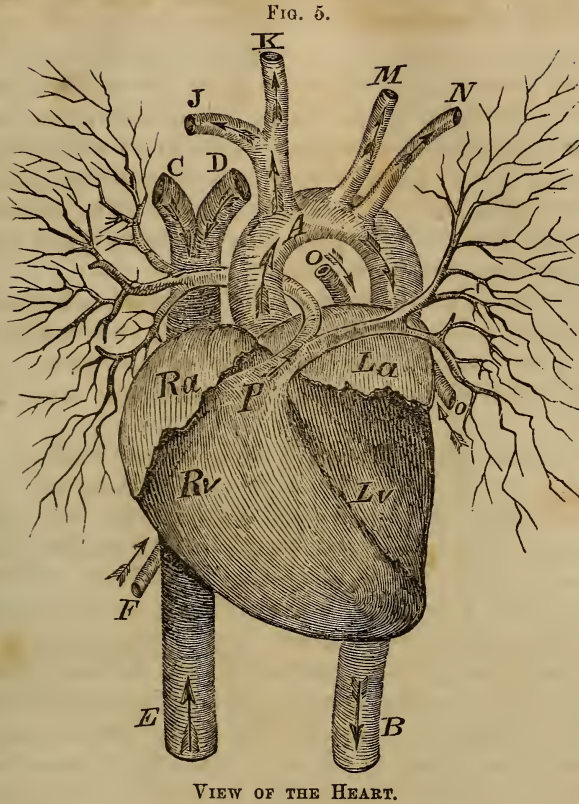


FIG. 5.—Ra, Right auricle; Rv, Right ventricle; La, Left auricle; Lv, Left ventricle; A, Great aorta and its arch; B, aorta descending into the abdomen; C, right subclavian vein, coming from the right arm; D, left subclavian vein, coming from the left arm—these two branches unite and form the descending vena cava; E, ascending vena cava, which returns the blood to the heart from the lower extremities; F, vein returning the blood from the liver, spleen, and bowels; H, arteria innominata, dividing into right carotid artery (K.), which goes to the right side of the neck; and right subclavian artery (J.), which goes to the right arm; M, left carotid artery, going to left side of the neck; N, left subclavian artery, going to left arm; P, pulmonary artery, which rises from the right ventricle and divides, one branch, passing under the arch of the aorta, goes to the right lung, the other goes to the left lung; O, O, pulmonary veins, which return the blood from the lungs to the heart—they empty into the left auricle. The arrows show the course of the blood in the arteries and veins.

The auricles differ in the strength and thickness of their walls from the ventricles, being thinner, and of a bluish color. They serve

as a sort of *reservoirs* or *receivers* of the blood, as it arrives by the veins. The ventricles have their walls thicker than the auricles, because greater strength is required of them, to force the blood out and through the arteries; and the walls of the left ventricle are thicker than those of the right, for the reason that greater power is required of it. The right ventricle only propels the blood to the lungs, while the left forces it to all parts of the body. Each of the cavities of the heart will contain about two ounces of blood. The offices or functions of these parts will be more fully explained when we come to speak of the circulation of the blood.

The action of the heart consists in its *contraction* and *dilatation*, and as incredible as it may seem, it contracts every twenty-four hours, in a healthy, grown person, over *one hundred thousand times!* Asleep or awake, the action of this important and wonderful organ goes constantly on.

The *pericardium*, which surrounds the heart, secretes from its internal surface, a watery fluid, which serves to lubricate the exterior of the heart, and thus prevent friction between the two. Sometimes when diseased a deposit of water takes place within the pericardium and around the heart, constituting *dropsy of the heart*.

The true office of the heart was not fully known till Harvey discovered the circulation of the blood. Yet so long ago as the days of Plato it seems that a tolerably rational idea of its function and of the circulation of the blood was entertained, for in speaking of this organ that writer very prettily observes—"It is the center or knot of the bloodvessels; the spring or fountain of the blood, which is carried impetuously round; the blood is the food of the flesh; and for the purpose of nourishment, the body is laid out in canals, like those which are drawn through gardens, that the blood may be conveyed as from a fountain to every part of the body." It would be difficult for any one at the present day to give in as few words a more correct and expressive idea of the whole subject than is here given by this ancient heathen philosopher.

THE ARTERIES.

The Arteries are strong, elastic, membranous tubes, which arise from the heart by two trunks, and convey the blood, by their innumerable branches, from the heart to every part of the system. They are composed of three coats. The outside, called the *cellular* coat, is firm, strong, and elastic, enabling it to withstand the impulse of the blood as it is sent from the heart. The middle or *muscular* coat is composed of yellowish-white fibers—is thicker than the external coat, but not so strong, as its fibers pass around the tube instead of

lengthwise. The inner coat is a thin, serous membrane, which lines the interior of the artery and gives it a smooth surface, permitting the blood to flow along it freely.

The arteries are enveloped in sheaths of a loose cellular texture (the same which envelop the muscles), which separate them from the adjacent parts, and also enclose the veins and nerves which generally accompany them.

All the larger arteries are deeply seated, by which arrangement they are protected from injury by accidents, while the veins, which do not involve so serious consequences in case of wounds, are generally placed near the surface of the body—often immediately under the skin, as on the back of the hand, and upon the wrist.

FIG. 6.

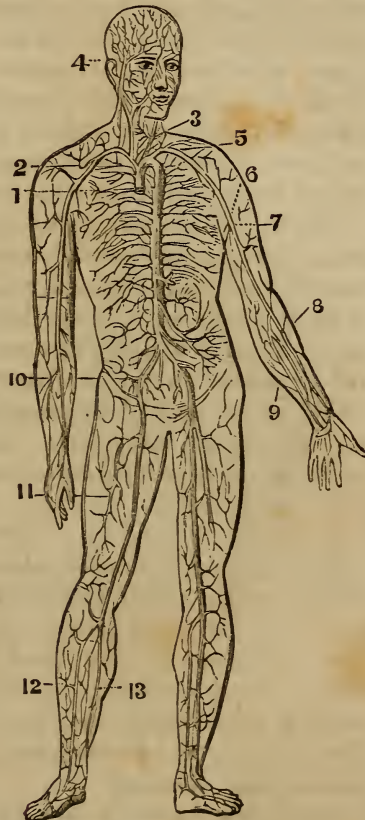


FIG. 6.—THE ARTERIAL SYSTEM:—

1. Commencement of the aorta, where it leaves the heart.
2. Arch of the aorta.
3. Carotid artery—(one on each side).
4. Temporal artery.
5. Subclavian artery.
6. Axillary artery.
7. Brachial artery.
8. Radial artery.
9. Ulnar artery.
10. Iliac artery.
11. Femoral artery.
12. Tibial artery.
13. Peroneal artery.

☞ All of these arteries are in pairs; that is, one on each side, or in each extremity.

THE ARTERIAL SYSTEM.

The Aorta, which conveys the pure blood to all parts of the body, proceeds from the *left ventricle* of the heart, rises toward the left

clavicle or collar bone, and turns in the form of an arch toward the back and left side, and passes down behind the heart, through the diaphragm, along the spine, sending off numberless branches—which also divide and subdivide, like the branches of a tree—to all the internal organs and parts of the body, and finally, in the lower part of the abdominal cavity, it *bifurcates*—that is, divides into two main branches, one passing down each leg, constantly sending off branches, till the whole terminate in what are called *capillaries*—small blood-vessels too delicate to be seen distinctly without the aid of a microscope, and which will be described presently.

From the top of the arch of the aorta three main branches go off. The first, or the one on the right, soon divides, a branch going to the right arm—the right subclavian artery—and the other to the right side of the neck and head—the right carotid artery. The other two branches pass, one to the left side of the neck and head—left carotid—and the other, the left subclavian, to the left arm; all of which divide into innumerable branches, which finally terminate in the *capillaries*. The aorta, with its branches, which divide and subdivide to their ultimate ramifications, thus pervading every part of the human frame, constitute what is called the great Arterial Tree.

The pulmonary artery commences in front of the origin of the aorta, from the *right ventricle*, and ascends obliquely to the under surface of the arch of the aorta, where it divides into two branches, one of which passes under the arch to the right lung, the other to the left lung. These also divide and subdivide in the structure of the lungs, and terminate in the capillary vessels, which form a fine *net-work* around the air-cells of the lungs, and connect with the minute extremities of the pulmonary veins. This artery conveys the impure blood to the lungs, as will be more fully explained hereafter.

THE VEINS.

The veins are the vessels which return the blood to the heart after it has been circulated by the arteries through the various tissues of the body. They are thinner and more delicate in their structure than the arteries. The blood passes through them slower than through the arteries, and not being propelled by force, as in the latter, it is not necessary that they should be so strong in their texture. They are, like the arteries, composed of three coats, the *cellular*, the *muscular*, and the *serous*.

THE CAPILLARIES: Before proceeding further with the veins, it is proper to speak of the Capillaries, as they form the connecting link between the arteries and the veins, receiving the blood from the one and transmitting it to the other. They are distributed through every

part of the body, constituting a complete net-work, and rendering it impossible to insert the point of the finest needle into the skin or any part of the flesh without wounding them and causing the blood to flow. These little vessels are called *capillary* (which means *hair*) on account of their being so small; but a hair, compared with such tubes, says Magendie, is a huge cylinder! They are so small that the aid of a microscope is required to see them. One of the characteristics of *inflammation* is the red appearance of the part; this is owing simply to the fact that the capillary vessels are distended and highly charged with blood. The same is seen when a lady blushes. It is the stagnation of the blood in its passage through these vessels that causes inflammation. The capillaries perform the important functions of secretion and nutrition; they extract from the blood its nutritious materials and convert them into bone, muscle, and the various other tissues of the body.

FIG 7.



FIG. 7.—THE VENOUS SYSTEM:—

1. The right auricle.
2. Descending vena cava.
3. Ascending vena cava.
4. Right and left iliac veins.
5. Right and left subclavian veins.
6. Jugular vein of right side.

THE VENOUS SYSTEM.

As the veins proceed, their various branches, like the branches of a river, coalesce or unite, to form still larger branches, till they finally terminate in the large trunks, which convey the blood direct to the heart. In diameter the veins are much larger than the arteries. They are also furnished with numerous *valves*, particularly the large veins of the extremities, which allow the blood to flow freely toward the heart, but operate to prevent any retrograde movement.

The veins that receive the blood from all parts of the body, follow nearly the same course as the arteries, and at last unite to form two large trunks, called the ascending *vena cava* and the descending *vena cava*. The ascending cava is that which receives the blood from the lower extremities and the regions of the abdomen; while the descending cava receives the blood from the upper parts of the body; and both empty their contents into the *right auricle* of the heart.

There is a peculiarity however in the veins that come from the stomach, spleen and intestines. They unite to form a large vein called the *vena porta*, which enters the liver, and there divides and ramifies that organ like arteries, and then unite again into a common trunk which enters the ascending *vena cava* near the heart. This is called the *portal circulation*.

Besides these there are the two *pulmonary veins*, which rise in the substance of the lungs, from the numerous capillaries, and return the blood from those organs, after it has been purified, to the *left auricle* of the heart.

THE RESPIRATORY ORGANS

THE LUNGS.

THE respiratory organs are the *Lungs* (in animals called the *lights*) the *Trachea* or wind-pipe, the *Bronchia* or bronchial tubes, and the *Air-cells*—which are innumerable little cells at the extremities of the bronchial tubes. The *Diaphragm*, *ribs*, and several *muscles*, also aid in the respiratory, or breathing process.

The Lungs are soft, spongy bodies, occupying the cavity of the chest, or thorax, situated on each side of the heart, and are attached to the neck by means of the trachea or wind-pipe. They consist of two portions, called the *right* and the *left lung*, which are separated from each other by a thin membranous curtain called the *mediastinum*. This curtain stretches from the spine or back-bone to the sternum or breast-bone, and divides the chest into two cavities.

The shape of the lungs, as a whole, corresponds with the cavity of the chest, being rounded or convex next the ribs, and hollow or concave next the heart and diaphragm. In color they are of a grayish red, but in old age change to a livid purple. The great serous membrane, already described, which lines the inside of the chest, called the *pleura* is reflected upon the lungs, and forms their external covering or coat. That is to say, the pleura is *double*, one lamina of it lining the inside of the ribs, or costals, called the *pleura costalis*; and the other—a continuation of the same—which covers the lungs, called the *pleura pulmonalis*. The right lung is the larger (because the heart takes up a portion of the left side of the chest), and is divided into three portions, called *lobes*. The left lung has but two lobes—the heart and its surrounding membrane, the pericardium, being situated between them.

FIG. 8.

- 1, 1. An outline of the right lung.
- 2, 2. An outline of the left lung.
3. The larynx.
4. The trachea, or wind-pipe.
- 5, 6. The right and left bronchial tubes, which go to the right and left lungs, and divide into innumerable branches, which terminate in the little air-cells, 9, 9, 9, 9, a very imperfect idea of which is shown in the Figure.

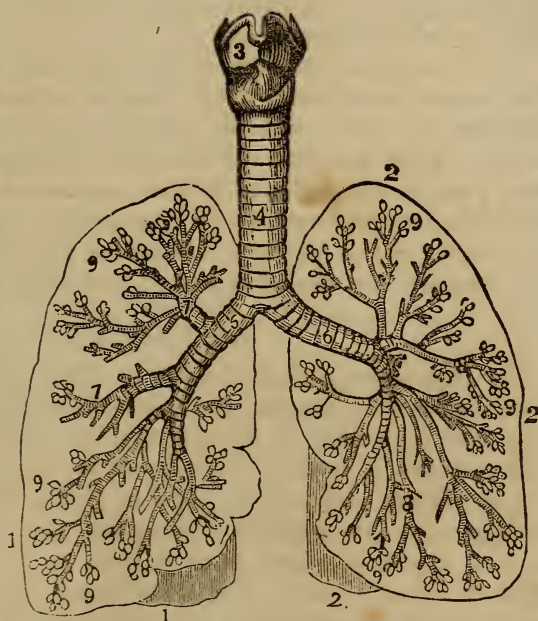


FIG. 8.—THE TRACHEA AND AIR-TUBES OF THE LUNGS.

The Trachea, or wind-pipe, passes down in front of the throat or food-pipe, and may be distinctly felt, being immediately beneath the skin. Just below the top of the breast-bone it divides laterally into two branches, called the *bronchia*, which go direct to the lungs, and there divide and subdivide into an immense number of little tubes, constituting the air-passages of the lungs, which gradually diminish

in size, and finally terminate in what are called the *air-cells*. These cells are small, very thin, and communicate freely with each other. The membrane which composes these cells is continued throughout the air-passages, and is estimated to be equal in extent to near 22,000 square inches. Hence it will be seen that the lungs are capable of containing a large amount of air. The quantity which enters at each *inspiration* is supposed to be about 40 cubic inches, and an equal quantity of course is given out at each *expiration*. Hence, supposing there are 20 inspirations in a minute, which is nearly correct, the quantity of air that would enter and pass out every minute would be 800 cubic inches; and at the same rate it would amount to 48,000 cubic inches in an hour, and 1,152,000, every twenty four hours!

The process of breathing is of the greatest importance in the animal economy. The lungs are the great laboratory of the system, for the purpose of purifying the blood and rendering it fit for circulation, for the purposes of nutrition, and the production of animal heat—as will be explained hereafter.

The cells and air-passages of the lungs are lined with a delicate, thin, mucous membrane, which becomes at times the seat of various disorders, as croup, asthma, bronchitis, influenza, and whooping-cough. It also performs the function of *absorption*, and will take up the poisonous properties of tobacco smoke, the fumes of spirits, and other volatile substances, which often produce very deleterious effects. It is owing to this power of absorption that the best treatment of lung diseases is by the inhalation of medicated vapors.

THE DIAPHRAGM.

The Diaphragm, called also the midriff, is a thin muscular partition between the chest and the abdomen, extending crosswise of the body, and is attached by its margin to the spine, to the lower ribs on each side, and in front to the sternum, or breast-bone. It separates the respiratory organs from those of digestion, or rather the heart and lungs from the stomach, liver, spleen, etc. The diaphragm rises upward within the chest, so as to form an arch, the lungs resting upon its upper surface, while the stomach and liver accommodate themselves to the concavity of its lower surface. It is perforated by the *œsophagus* or food-pipe, which passes to the stomach, and by several other important tubes, among which are the great aorta, and ascending vena cava.

The diaphragm is the principal agent in producing the act of respiration. Every time we breathe, this organ contracts, by which means it descends from its arch-shape to that of a *plane* or level surface, pushing down the stomach and liver with it. This enlarges

the cavity of the chest, while the lungs, which rest upon its upper surface, follow it in its descent, allowing those organs to *expand*, and thereby causing a *vacuum* within them, which is immediately filled by air which rushes in through the trachea and bronchial tubes, filling up the air-cells. This is called *inspiration*. The diaphragm then immediately becomes relaxed (unless prevented by the *will*, as in "holding the breath"), and is pushed up by the organs beneath it, assuming its arched shape again, thus diminishing the size of the chest, which compresses the lungs and causes the air within them to be pressed out or expelled. This is termed *expiration*. An enlargement of the chest therefore is accompanied with *inspiration*, and a contraction of it with *expiration*. In the first, the diaphragm contracts and becomes a *plane*; in the other it relaxes and is pushed up by the abdominal viscera beneath it. What we call breathing therefore is performed entirely on the principle of the blacksmith's bellows, the operation of which is familiar to most persons. There are several of the muscles of the ribs, which assist in expanding and contracting the chest, and consequently in respiration.

THE DIGESTIVE ORGANS.

THE principal organs of Digestion are the Stomach, Intestines, Liver, and some smaller glands that will be noticed under the proper head. The Mouth, Teeth, Pharynx, Œsophagus, Lacteals, Thoracic Duct, and Pancreas, are also sometimes classed among the digestive organs. The mouth and teeth need no description. The pharynx is simply that cavity immediately back of the mouth and root of the tongue, properly speaking, the *throat*—It is the common opening from which both the trachea and Œsophagus commence. The Œsophagus is a large membranous tube through which the food passes from the mouth or pharynx into the stomach. It is a muscular organ, lined with a mucous membrane—and passes down behind the trachea and heart, and terminates in the stomach. The Lacteals, Thoracic Duct, and Pancreas, will be described in their proper places.

THE STOMACH.

The Stomach is a membranous sac or bag, into which the food passes when it is "swallowed," preparatory to the process of digestion. It is situated mainly in the left side of the upper part of the

abdominal cavity, immediately below and in contact with the diaphragm, and extends from left to right. When moderately distended, the stomach of an adult is capable of holding about three pints. The left extremity of the stomach, which is much larger than the right, lies immediately under the lower ribs of the left side, while the right extremity extends only a little beyond the lower end of the sternum or breast-bone, toward the right side, and is overlapped by the left lobe of the liver. It is separated from the small intestines by the *arch of the colon*, which passes immediately below it, from the right to the left side.

The stomach has two orifices or openings. The upper one, which is near the left extremity, is formed by the termination of the œsophagus, and is called the *cardiac* orifice. The other is the opening at the right extremity, which communicates with the intestines, or rather with the *duodenum*, and is called the *pyloric* orifice. This orifice has a kind of valve which is called the *pylorus*—a Greek word signifying *porter*, or *gate-keeper*—because it will not readily allow the food to pass out of the stomach unless properly digested.

The substance of the stomach consists of three coats. The outer, which is called the *serous*, or *peritoneal coat*, is a firm, strong, glossy membrane, which not only covers every part of this important organ, but extends to all the intestines, and also lines the cavity of the abdomen. The middle or *muscular coat* is composed of two layers of fleshy fibers—one layer of which extends longitudinally of the stomach, and the other transversely. These fibers have the power of contraction and relaxation, for the purpose of producing the peculiar motions of the stomach in digestion. The inner or *mucous coat* is soft, velvety, and presents many folds, somewhat resembling honey-comb, and is of a pale pink color in health, but red when inflamed. Within the folds of this coat exist numerous little glands which secrete what is called the *gastric juice*, a fluid which is essential to the process of digestion.

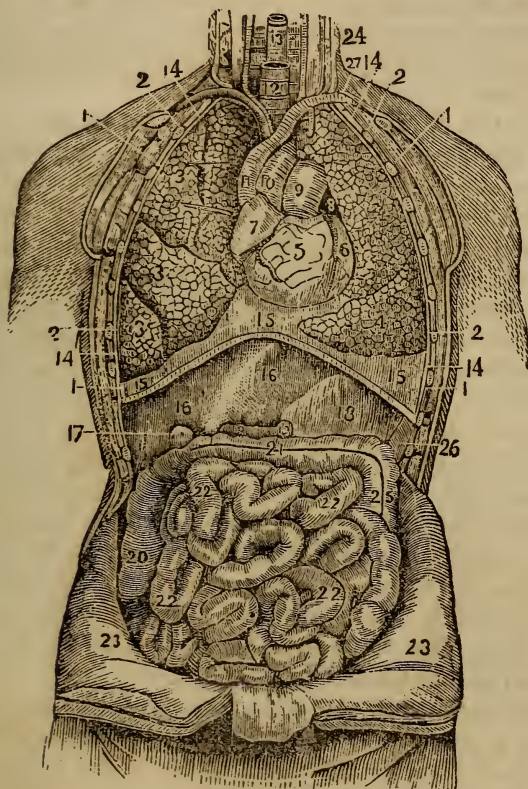
Bloodvessels and nerves are distributed to the stomach more plentifully than to any other organ. It also has a branch extended to it from the *great sympathetic nerve*, which causes it to sympathize so readily with other parts of the body when they are diseased. Let any important organ of the system become seriously affected, and the patient soon becomes "sick at the stomach."

THE INTESTINES.

The Intestines, or alimentary canal, as they are sometimes called, are divided into two parts, the *small* and *large* intestines. The small intestine, in an adult is about twenty-five to thirty feet in length,

and the large one about five feet, being altogether some five or six times longer than the body. They are attached to the spine or backbone, by folds of the *peritoneum*, which is here called the *mesentery*, and which contains the *mesentery glands*. It spreads out from the spine like a ruffle from the bosom of a shirt, having the intestines attached to its edge, and allows them to float somewhat loosely in the cavity of the abdomen.

FIG. 9.



FRONT VIEW OF ORGANS IN THE CHEST AND ABDOMEN.

FIG. 9.—The figures three and four represent the lobes of the right and left lungs; 5, the right ventricle of the heart; 6, the left ventricle; 7, the right auricle; 8, the left auricle; 9, the pulmonary artery; 10, the aorta; 11, the descending vena cava; 12, the trachea; 13, the œsophagus; 14, 14, the pleura, which lines the inside of the chest; 15, 15, the diaphragm, which separates the lungs and heart from the stomach and liver; 16, 16, the right and left lobes of the liver; 17, the gall bladder; 18, the stomach, partly overlapped by left lobe of the liver; 26, the spleen; the duodenum (19, 19,) is partly seen immediately under the left lobe of the liver; 20, the ascending colon; 21, the transverse colon; 25, the descending colon; 22, 22, 22, 22, the

small intestines; 23, 23, the walls of the abdomen turned down. The kidneys lie immediately behind the stomach and liver. The muscles of the chest, and ends of the ribs cut off, are intended to be designated by figures 1 and 2, and the edge of the pleura is seen immediately inside of them, next the lungs.

The structure of the intestines is very similar to that of the stomach—having three coats, the same as that organ, the peritoneal, the muscular, and the mucous. The muscular coat, as in the stomach, consists of two sets of fibers, the *longitudinal* and the *circular*, which, by their alternate contraction and relaxation, produce what is called the *vermicular* (worm-like), or *peristaltic* motion of the bowels—which is for the purpose of moving their contents.

The first portion of the small intestines is the *Duodenum*—so called because it is about twelve inches long. It is considerably larger in diameter than any other portion of the small intestines, and hence has been considered a sort of secondary stomach. It commences at the pylorus and passes obliquely backward to the under surface of the liver—then descends perpendicularly in front of the right kidney, and passes across under the stomach, behind the colon, and terminates in the commencement of what is called the *Jejunum*, which is the next subdivision of the small intestines. About four inches from the pylorus, the duodenum is perforated by the biliary and pancreatic *ducts*, through which it receives the *bile* and *pancreatic juice*—fluids which are essential to the process of digestion.

The *Jejunum* and *Ileum* constitute the remaining portion of the small intestines, and occupy the middle and lower part of the abdomen, and are encircled by the large intestine, which is also divided into three parts, the *Cæcum*, the *Colon*, and the *Rectum*. The jejunum is ten to twelve feet in length, while the length of the ileum is sixteen to eighteen feet. The ileum terminates in the *cæcum*, or commencement of the large intestines.

The small intestines are the seat of an important function. It is in them—but principally in the duodenum—that what is called the *chyle* is separated from the balance of the food, and is taken up by a set of little vessels called *absorbents* or *lacteals*, and finally conveyed into the blood, for the nourishment of the body. These vessels are very numerous, and open their mouths upon the internal surface of the mucous membrane of the bowels. They will be more fully described hereafter.

The large intestines, as I have said, are divided into *cæcum*, *colon*, and *rectum*. The *cæcum* is only a sort of *pouch*, about three inches in length, which receives the lower end of the ileum. It is situated in the lower part of the abdomen, at the right side, just within the

hip bone, where it is tied down so as to be unable to get out of its place.

The *colon* commences at the cœcum, taking an upward course along the right side, toward the liver, where it turns and crosses from the right to the left side immediately below the stomach, and above the small intestines, constituting what is termed the *arch of the colon*. It then makes another turn, and descends along the left side of the abdominal cavity, terminating opposite the cœcum in a sort of double curve, called from its resemblance to the letter S., the *sigmoid flexure*. The *rectum* is a continuation from the sigmoid flexure—is about eight inches long, and is the lower extremity of the intestines.

THE GLANDULAR SYSTEM.

THE glands are soft, fleshy, organized parts, having arteries, veins, nerves, and absorbents, and are designed to separate some peculiar fluid from the blood, which is needed for some of the various operations of the system, or is to be rejected from the body. The process by which such fluids are separated from the blood, is called *secretion*.

The glands differ greatly, both as to size and shape, and in the character of the fluids they secrete. The largest gland in the body is the *liver*, which secretes the bile. The female breast is also a gland, designed for the secretion of milk. The kidneys also are glands.

THE MUCOUS GLANDS: These are a numerous class, are very small, consisting of little bags, formed by a peculiar membrane, and open by minute *ducts*, through which they discharge their contents. They are distributed upon the mucous membrane of the tongue, and that which lines the nose, wind-pipe, stomach, intestines, and bladder, furnishing a peculiar kind of fluid, called *mucus*, with which those parts are lubricated.

THE SEBACEOUS GLANDS are similar in structure to the mucous glands, but secrete an oily or fatty fluid, which forms the *suet* or fatty portion of the body.

Of the SALIVARY GLANDS, there are three pairs—so called because they secrete the *saliva* or *spittle*. The principal of these are the *parotid glands*, situated, one on each side, immediately back of the angle of the lower jaw, between that and the ear. They open by a duct upon the inner surface of the cheek, and furnish the principal amount of the *saliva*, which serves to moisten the food while undergoing the

process of mastication or chewing. These glands are the seat of the *mumps*. The next pair are the *submaxillary*—seated under each angle of the jaw, and open by a duct into the mouth, on each side of what is called the *frenum*, or bridle of the tongue. The other pair are the *sublingual* glands, so called because situated under the tongue, near its back part. They have several ducts, by which their secretion is poured into the mouth.

THE LYMPHATIC GLANDS appear to have no other office than that of receiving and transmitting the lymphatic vessels. They have no excretory ducts. They are very numerous throughout the system, the largest and most familiar to us being situated in the groins, the arm-pits, and along the sides of the neck. In the neck they often become swollen in scrofulous affections, and form large tumors—sometimes ulcers. The glands of the arm-pit and groin are also liable to become diseased. We come now to the larger glands.

THE LIVER.

The liver is of a brown-red color, and in a healthy grown person weighs near four pounds. It is situated in the upper portion of the abdominal cavity, mainly in the right side, under the ribs, and is divided into two principal *lobes*, called the right and left. Its upper surface is convex, or rounded, and corresponds to the concavity of the diaphragm, to which it is attached by several ligaments. Its lower surface is hollow or concave, and is in connection with the stomach and duodenum. Its right lobe is principally thick and massy, but its left is thin, and spreads itself smoothly over the stomach.

In some diseases the liver becomes enlarged and *indurated*, or hard, and may be felt projecting below the ribs in the right front of the abdomen, and sometimes even on the left. It may however be pushed down by the diaphragm so as to appear like an enlargement, in diseases of the chest, as dropsy, when the liver itself is not diseased. It is altered materially in its texture by the processes of disease, becoming in some cases quite soft, and in others extremely hard and firm; and in some instances it acquires an enormous size, weighing from twenty to thirty pounds.

The liver is supplied with bloodvessels, nerves, and absorbents, and has for its office the secretion of *bile*, which plays an important part in the process of digestion.

The Gall Bladder: Belonging to the liver, and attached to the under side of its right lobe, is a membranous bag, or receptacle, large enough to contain one to two ounces of fluid, called the *gall-bladder*. This seems to serve as a kind of *reservoir* to receive the surplus bile from the liver, during the intervals of digestion.

The bile is secreted in the liver, and is conveyed by innumerable little tubes to what is called the *hepatic duct*, through which it passes on its way to the duodenum. From the gall bladder, or *cyst*, as it is sometimes called, proceeds also a duct, called the *cystic duct*, which unites with the hepatic duct between the liver and the duodenum, forming what is termed the *common duct*, which enters the duodenum about four or five inches from the pyloric orifice.

THE KIDNEYS.

The Kidneys (there are two) are of a dark red color, and resemble in shape a certain kind of bean known as the kidney bean. They are five to six inches long, and three to four inches wide, and are situated one on each side of the spine, in the back and upper part of the abdominal cavity, their upper half stretching across the two lower false ribs, and having their upper end in contact with the lower side of the diaphragm. It is owing to this fact—their contact with the diaphragm—that pain is felt in breathing when the kidneys are inflamed.

The office of the kidneys is to secrete the urine, which is collected in little tubes and poured into what is called the *pelvis* of the kidney—a cavity in its center—whence it passes out through the ducts or tubes called the *ureters*—one leading from each kidney, and is emptied into the bladder, which is situated in the bottom of the abdominal cavity and is the receptacle of the urine, where it is collected and retained until discharged from the body.

THE SPLEEN.

The Spleen is a soft spongy body of a dark purple color, situated above and in front of the left kidney, and immediately to the left of the stomach, to which it is connected by small bloodvessels, and by the cellular membrane. It also has an attachment to the lower edge of the diaphragm, near the spine. The spleen varies in size, but is generally about four inches long, three inches wide, and two inches thick. In the animal, this organ is generally called the *melt*.

The spleen sometimes becomes greatly enlarged, and may then be felt below the ribs, to the left of the stomach. This often occurs in typhus fevers, and protracted cases of the chills, or ague—particularly if much *quinine* has been taken. It is plentifully supplied with bloodvessels, but has no excretory duct, or outlet. The real use of the spleen is, as yet, unknown. It has been removed in animals, without being followed with any bad result.

THE PANCREAS.

The Pancreas, which is known in the animal as the *sweet-bread*, is also a glandular body, of a pale-red color, bearing a resemblance in shape to the tongue of a dog. It lies across the spine, immediately behind the stomach, and is in contact at its smaller extremity with the spleen. It has an excretory duct, which opens into the duodenum in connection with the hepatic duct from the liver. The office of the pancreas is to secrete what is called the *pancreatic juice*, a fluid somewhat similar in appearance to the saliva, and pour it into the duodenum, which is supposed to be necessary in the process of digestion.

THE ABSORBENTS.

The Absorbents are small, delicate, transparent vessels or tubes, which exist in every part of the body, and are denominated *Lacteals* or *Lymphatics*, according to the liquids which they contain.

The Lacteals open on the inner surface of the intestines, and suck up or receive what is called the *chyle*, a milk-like fluid of which the blood is formed, and convey it to what is called the *thoracic duct*. In their course they perforate the middle and outer coats of the intestines, pass through the mesentery, and mesentery glands, and terminate in this duct. The lacteals are an important set of vessels, for it is through their agency that the chyle or nutritious part of the food is separated from the refuse, or innutritious, and conveyed to the blood, to nurture and replenish the system. It is probably a *reverse action* of these vessels that constitutes *cholera*; or at least I am persuaded that such a condition exists in that disease.

The Lymphatic vessels arise from every part of the body, and contain a whitish, transparent fluid denominated *lymph*. They form, together with the lacteals, what is called the *Absorbent System*. They are extremely small and delicate, and can not readily be seen with the naked eye. They pass through what are termed the *lymphatic glands*, and in common with the lacteals, terminate in the thoracic duct.

The lymphatics take up fluids from different cavities and parts of the body, and carry them into the circulation, and it may therefore be readily supposed that they often prevent the occurrence of dropsies. They may be compared to a greedy set of little animals, ready to lay hold of and carry off every thing that comes in their way. They seem to have no judgment as to what is good and healthy, but will absorb poisonous and deleterious substances, as well as the most nutritious. It is well known that mercury rubbed on the skin in the form of

ointment, may be absorbed, and produce salivation as effectually as if taken internally. Croton oil rubbed on the abdomen produces purging, and arsenic applied to cancers, and opium to burns, have been absorbed in quantities sufficient to poison the patients. Blood effused under the skin, or nails, producing a dark appearance, is removed by these little vessels. Their office seems to be that of general usefulness, ready to take up and carry off any refuse material, dead matter, or unhealthy deposit, in any part of the system.

THORACIC DUCT.

The Thoracic Duct, which may be regarded as the *trunk of the absorbents*, because it receives the absorbent vessels from almost every part of the body, including of course, the lacteals, though small—being only about the size of a goose-quill in diameter—is a very important organ in the human organization. It commences at the lower end and back part of the abdominal cavity, and passes upward along the spine, by the side of the aorta, as high as the lower part of the neck, on the left side, or opposite the sixth cervical vertebra, where it makes a sudden turn downward and forward, and enters the *left subclavian vein*, just under the left clavicle or collar bone. It pours its fluid, the chyle, into the current of the venous blood, going direct to the heart.

THE NERVOUS SYSTEM.

THE Nervous System consists of the Brain, the Spinal Marrow, and the Nerves which go off from them.

THE BRAIN.

The Brain is the seat of the nervous sensation and of the intellect. It is contained within the skull, and is divided into two parts, called the *cerebrum*, or great brain, and the *cerebellum*, or little brain. The first is situated in front and above the level of the ears; the other below that level and in the back part of the cranium. The cerebrum is divided into two hemispheres, the right and left, by a cleft or fissure extending from the top down nearly or quite two-thirds of the way through it; and into this fissure a portion of the *dura mater*, or lining membrane of the skull dips, serving as a partition between the hemispheres. The portion of membrane which thus dips into

the fissure is called *falx cerebri*, from its resemblance to a sickle. Upon its inferior, or lower surface, the cerebrum is divided into three *lobes*, the anterior or front, the middle, and the posterior or back lobe. The two hemispheres are connected by a dense layer of transverse fibers, called *corpus callosum*.

The brain is surrounded by three membranes, called the *dura mater*, the *arachnoid* membrane, and the *pia mater*. The *dura mater*—which means *strong mother*—lines the inner surface of the skull, and is as its name indicates, a strong, dense, membrane, having a bright, silvery appearance. Next we have the *arachnoid*, which is the serous membrane of the brain. Though it is double, like all the serous membranes, it is very thin and delicate. The *pia mater* is a soft, vascular membrane, which immediately surrounds and invests the whole surface of the brain, and dips into its convolutions. It is copiously supplied with bloodvessels, which afford nourishment to the brain.

The substance of the brain does not, as is sometimes supposed, consist exclusively of a white, pulpy mass, but is more or less fibrous in its structure, and is of two different colors. Upon the upper and outside surface of the cerebrum (the membranes having been removed) the appearance is that of undulating windings, producing small rounded protuberances, called *convolutions*. Remove a portion of the upper part of the brain, horizontally with a sharp knife, cutting through these convolutions, and we have presented a white substance in the center of each convolution, while the outside portion to the thickness of a quarter to a half inch is of an ashy gray appearance—and is called the corticle or *cinericious* portion, while the white central portion is called the *medullary*. In the interior of the brain are several cavities, the two largest of which, extend from the anterior to the posterior of the brain, and are called the *lateral ventricles*. An effusion of serum or water is sometimes deposited in these cavities from the small bloodvessels of the membrane which lines them, producing internal dropsy of the brain.

The cerebellum is only about one seventh as large as the cerebrum, and like that, is composed of white and gray matter, but unlike it also, the gray constitutes the larger portion. The white matter in the cerebellum is so arranged that when it is cut through vertically, that is, up and down, it presents the appearance of the trunk and branches of a tree. Hence it is called *arbor vitæ*, or *tree of life*. The cerebellum is situated under the posterior lobe of the cerebrum, and is separated from it by an extension of the *dura mater*, which is here called the *tentorium*.

At the bottom of the brain is a sort of bulb, some larger than a man's thumb, called the *medulla oblongata*. It is composed of three

pairs of small bodies, called *corpus pyramidale, restiforme, and olivare*, all united together into one body. The medulla oblongata is simply the commencement of the spinal marrow, or that portion of it *within the skull*.

The brain is the foundation upon which the science of Phrenology is based; the moral and intellectual, as well as the physical character, depending upon the quality of its texture, and the relative size and development of its various organs, or convolutions.

THE SPINAL CORD.

The Spinal Column, which is composed of the vertebræ, or bones of the back, contains the spinal cord, the roots of the spinal nerves, and the membranes of the cord.

The Spinal Cord, or as it is sometimes called, Spinal Marrow, extends from the *medulla oblongata* through the opening or canal in the spinal column, down to the second lumbar vertebra, which is just below the small of the back, where it terminates in a round point, or bundle of nerves. It is similar in structure to the brain, indeed it is a continuation of the brain, and is also inclosed in a continuation of the three membranes of that organ. It is round, larger at the top than the bottom, and has three enlargements; the uppermost of which is the medulla oblongata, the next where the nerves leave it which go to the upper extremities, and the third where the nerves of the lower extremities branch off.

The spinal cord is partially divided by an anterior and posterior fissure, into two lateral cords, which are only united by a thin layer of white medullary substance. These lateral cords are each divided by furrows into three distinct parts, or columns, called the *anterior*, the *lateral* and the *posterior* columns. The anterior are supposed to be the *motor* columns or origin of the nerves of motion; the posterior the columns of *sensation*; while the lateral or side columns are devoted to the function of both motion and sensation.

THE NERVES.

The Nerves are numerous long, round, white cords of various sizes, which originate in the brain, and the spinal cord, and are distributed in every direction to all parts of the body. They communicate freely with each other, thereby forming an extensive net-work, and become so numerous in their ultimate ramifications, that you can not prick the skin or flesh with the finest needle without wounding one or more of their branches, and producing pain. The *great sympathetic nerve* however, instead of having but one center or origin, has many

small centers, called *ganglia*, and also numerous communications with the brain and spinal cord.

The great attributes of the nervous system are the capacity of receiving impressions, the endowment of thought and feeling, and the power of putting the muscular machine into action; in other words, the nerves possess the attributes of sensation, thought, and motion. They can not act however independent of the brain. If a nerve, for instance, leading to any sensitive part be cut, that part will immediately lose its sensibility, because the communication between it and the brain is destroyed. So also if the motor nerve leading to any part be cut, or so injured or compressed as to stop the flow of the nervous fluid, that part will lose the power of motion, for the same reason. Every sensation and motion of whatever nature, requires the intervention of the brain. Light may make an impression on the eye, sound on the ear, or some object on the nerves of feeling or touch, but this impression must first be conveyed to the brain, along the nerves, before sensation is effected. If the skull become fractured so as to compress the brain, all consciousness and feeling are lost until the compression is removed. Narcotics, such as opium, are sometimes given for the purpose of producing a temporary relief of pain, but instead of removing the cause of the complaint, they only stupefy the brain, and render it incapable of receiving an impression from the nerves—hence there can be no pain felt while the brain is in this condition.

The various organs of the body are supplied with nerves, which are essential to the proper performance of their functions. If the nerves which are distributed to the stomach were cut, the process of digestion would be arrested. The heart would cease to beat if its nerves were divided, for it is through these nerves that the heart is acted upon by the brain, and made to propel the vital fluid throughout the system. But for these mysterious cords, these electric wires, which connect all parts of the body with the brain, we could neither see, hear, taste, or exercise any of the senses; indeed we could not exist.

The nerves are divided into the *sensible* and *insensible*; the *voluntary* and *involuntary*. The first convey sensibility to the parts to which they are distributed, as the nerves of the skin; the second, like the brain itself, are destitute of sensibility, and exhibit no pain when wounded. The nerves of sight and hearing are of this class. They are capable of being acted upon however by *light* and *sound*.

The *voluntary nerves* are those which control the voluntary action of the muscles, as those of the leg and arm. Hence they are the

nerves of voluntary motion, and are governed by the will. The *involuntary nerves* are such as are not under the control of the will, but that act independent of it, as the nerves of the heart, the stomach, etc.

NERVES OF THE BRAIN.

There are twelve pair of nerves which originate in the brain. They nearly all pass out through openings for that purpose in the base of the skull. Their names and manner of distribution are as follows:

First pair—the *Olfactory* nerve, or nerve of smell. It ramifies upon the membrane of the nose.

Second pair—the *Optic* nerve, or nerve of sight. It expands on the retina of the eye.

Third pair—called *Motores oculorum* goes to the muscles of the eye.

Fourth pair—*Patheticus*, goes also to the muscles of the eye.

Fifth pair—called *Trifacial*, because of its dividing into three branches before leaving the skull, all of which go to the face, jaws, mouth, teeth, nose, and forehead.

Sixth pair—called *Abducentes*, the smallest of the nerves of the brain, and is apportioned to a single muscle of the eye.

Seventh pair—the *Portio Mollis*, is distributed upon the external ear.

Eighth pair—the *Facial* nerve—is distributed over the muscles of the face.

Ninth pair—called *Glosso-pharyngeal*, goes to the mucous membrane of the tongue, throat, and to the glands of the mouth.

Tenth pair—the *Pneumogastric*; this pair sends branches to the throat, lungs, spleen, pancreas, liver, stomach, and intestines.

Eleventh pair—called *Spinal accessory*, connects with the ninth and tenth pair and distributes itself upon the muscles about the neck.

Twelfth pair—called the *Hypo-glossal* nerve, goes to the muscles of the tongue, and is its motor nerve.

NERVES OF THE SPINE.

The nerves that originate in the spinal cord are arranged in thirty-one pairs, each nerve arising by two roots, one from the anterior portion of the cord—which is the *motor* root—and the other the *sensitive* root, from the posterior side of the cord. There is what is called a *ganglion*, that is, a small *bulb* or *enlargement*, found on each posterior root, soon after it leaves the spinal cord. Immediately beyond this ganglion the two roots unite and constitute a spinal nerve, which passes through the opening between the vertebræ on the sides of the spinal column, and thence divide and subdivide, till their minute

branches are lost upon the tissues of the different organs to which they are distributed.

The first eight pairs of spinal nerves are called the *cervical nerves*, because they originate within the cervical vertebræ; the next twelve pairs, for a similar reason, are denominated *dorsal nerves*, the next five, *lumbar nerves*, and the remaining six, *sacral nerves*.

The four lower cervical and the upper dorsal pass into each other and then separate to unite again, thus forming what is called the *brachial plexus*. Six nerves proceed from this plexus, which ramify the muscles and skin of the upper extremities.

The last dorsal and the five lumbar nerves form a similar plexus, called the *lumbar plexus*. From this plexus six nerves also go out, which ramify upon the muscles and skin of the lower extremities.

The four upper sacral unite and form the *sacral plexus*, which sends out five nerves to the muscles and skin of the hips, and to the lower extremities.

THE GREAT SYMPATHETIC NERVE: This nerve is so called from its numerous connections with different parts of the body. It arises from a branch of the sixth, and one from the fifth pair of cerebral or brain-nerves, which unite into one trunk and descend along the spine to the lower end of the sacrum. It communicates by branches with each of the spinal nerves, and with several of the cerebral, and also sends off branches to the different organs contained in the chest and abdomen. Below the vertebræ of the neck it has a ganglion for each intervertebral space, which are supposed to form nervous centers, giving off branches in different directions.

The branches of this nerve accompany the arteries that supply the different organs of the abdomen, and form *plexuses* around them, which take the name of the particular artery with which they are connected—and thus we have the *mesenteric* plexus, the *hepatic* plexus, the *spleenic* plexus, etc. All the internal organs of the head, neck, and trunk, are supplied with branches from it. The sympathetic nerve is supposed to be the *nerve of organic life*, and to preside over nutrition, secretion, the action of the heart, and circulation of the blood, as well as to maintain a communication between different parts of the body, and to be the connecting link between the brain and the abdominal viscera.

PHYSIOLOGY, AND THE LAWS OF HEALTH.

WASTE AND SUPPLY OF THE BODY.

THE human body is constantly undergoing change. The living machine is in continual operation from birth till death; this operation produces friction, attrition, and wearing away; particles become decayed and useless, and are cast off, to be replaced by new ones. Whether asleep or awake, sick or well, this wearing out and change of particles goes on. In the expressive language of Dr. Watts, the poet and philosopher—

“The moment we begin to live,
We all begin to die.”

This is strictly true, applied physiologically to the particles which compose our bodies. But it is also true that while we are dying we are also reviving; that while our bodies are constantly wearing out and decaying by particles, they are as constantly being regenerated and renewed by particles. And this change, this perishing and renewing of particles goes on in every part of the body—in every bone, muscle, and tissue, so that in the course of time, it must be evident our bodies become entirely renewed. It has been said that this renewal of the entire body takes place or is completed once in every seven years. But there is no certainty in this. The probability is that in some cases, as in active healthy children, it is effected in much less time; while in others, as the aged, or the lazy, corpulent, inactive adult, it may require twice or three times seven years. But whether the process requires seven years, or seven times seven, the constant decay and renewal of the body is a well-established doctrine of physiology.

Before proceeding to the subject of Nutrition let us first see what becomes of these worn-out and useless particles, for it is very proper that every one should understand this. The body does not decay and wear away upon the outside merely. If it did, the decayed particles would rub off and be lost—a very simple process. But, as I have said, this decay of particles goes on in every part and tissue of the body, internally as well as externally. Now it is plain that unless

there was some plan provided, some wise arrangement, for the removal of these useless particles from the body, the most serious consequences might ensue. They are not only of no further service, but if retained must act as foreign matter, and produce irritation, fever, inflammation, and perhaps would putrify and poison the whole system. But the necessary provision has been made. All over the body, and all through it, there is distributed a set of little vessels, with their mouths opening on the internal surfaces of all the cavities, tubes, and membranes, and which are continually sucking up and carrying off every dead particle and all foreign matter they can lay hold of. These little vessels are called ABSORBENTS, and have been described in the proper place. The greater portion of them open into the bloodvessels, and consequently pour their contents of decayed and refuse matter into the blood. From the blood a portion of it is separated by the kidneys and passes directly out of the body. Some is thrown into the bowels and passes out in that way. But by far the largest proportion is eliminated from the body through the pores of the skin, along with the perspiration. A free and healthy operation therefore of the absorbent system is very essential to the health of our bodies. If the kidneys fail to secrete their share of the waste material, it is retained in the blood and is carried round in the circulation and distributed to all parts of the system, to become the source of irritation and poison, and may show itself on the surface in blotches, sores, and inveterate eruptions; or it may be thrown upon the lungs and lead to consumption. But above all is it important that the outlet through the skin, through which the greater portion of these decayed particles have to pass, should be constantly maintained in a proper and healthy condition. This part of the subject however comes under the head of Perspiration and Exhalation, and will be noticed in its proper place.

Having seen that our bodies are constantly wearing out, and the manner in which the dead particles are removed, we come directly to the subject of Nutrition, or Supply; for it must be evident that if we are continually losing particles of our bodies, there must be some way to supply new particles to take their place or we should in the course of time become 'mere skeletons,' or entirely wasted away. In order to maintain a proper balance between Supply and Waste, and have all things go on in a healthy condition, we must be as constantly receiving new particles from some source or other, as we are losing old ones. And in childhood and youth, while the body is growing, it is evident that the supply must be greater than the loss. Whence comes this supply?

NUTRITION.

NUTRITION is the renewal of the materials of which the different parts of the body are composed. The Circulation, Digestion, and Respiration, are the three great agents in this vital process. The blood however is the immediate source of nutrition. Every thing of a nutrient character, whether for bone, muscle, nerve, ligament, or other tissue, must first be converted into blood, or incorporated with that fluid, before it can be applied to its intended uses; for the nutritive process is simply a kind of secretion, by which particles of matter are separated from the blood, and conveyed with wonderful accuracy to the particular textures for which they are suited. The nutrient vessels which separate these particles of new material from the blood, may be said to antagonize with those of absorption: While the one class, with most beautiful precision, are constructing and renovating the animal frame, the other are as diligently engaged in pulling down and removing the old material. This process of nutrition, or separating new material from the blood and applying it to the appropriate textures, as bone, muscle, ligament, etc, is effected by a set of minute vessels, the smallest in the human body—so small that they can only be detected through the aid of a powerful microscope. They are the smallest of the Capillaries.

“As the blood goes the round of the circulation, the nutrient capillary vessels select and secrete those parts which are similar to the nature of the structure, and the other portions pass on; so that every tissue imbibes and converts to its own use the very principles which it requires for its growth; or, in other words, as the vital current approaches each organ, the particles appropriate to it feel its attractive force—obey it—quit the stream—mingle with the substance of its tissue—and are changed into its own true and proper nature.” And thus bone attracts from the blood, through its capillaries, the material suitable to make bone, and muscle that which is suitable to make muscle, and so on throughout the different tissues of the body.

Of course all nutrition is derived ultimately from the food we eat, and consequently involves the process of digestion; but the immediate, direct agent for making, developing, sustaining, and renewing the body, is the blood. This being the fact we speak first of that fluid, and its circulation; after which it will be necessary to inquire where and how the blood itself is furnished with the elements of nutrition—which will lead us a step further back, to the subject of digestion and assimilation of food, thus reversing the order usually pursued by writers on this subject.

THE BLOOD.

The Blood is that fluid which circulates in the heart, arteries, capillaries, and veins. In the arteries it is of a bright red or light vermillion hue, while in the veins (except those which convey it from the lungs to the heart) it is of a dark red or purple color. The quantity of blood in the body of an adult person is estimated to be about twenty-five to thirty pounds. Its temperature in a state of health is about 100 degrees Fahrenheit. In some diseases, as scarlet, and other fevers, it rises five to ten degrees above this; while in some others, as the cholera, it falls twenty to thirty degrees below it.

The blood is the most important fluid in the body, for it is not only the sole material from which every part of the body is made but it furnishes the various secretions, as bile, pancreatic juice, saliva, etc., and is the source of animal heat, diffusing warmth throughout the system, and maintaining the temperature of the body at a uniform standard amid the various changes of heat and cold.

The blood contains an immense number of little red globules, which can only be distinguished through a microscope, and which contain, or rather constitute its coloring matter. When drawn from the body and allowed to rest, it separates into two parts, one of which is solid, or of a jelly-like consistence, and is called the *crassamentum*, or *clot*. This part contains the red globules. The other is a watery, transparent fluid, of a slightly yellowish hue, and is called the *serum*. The serum is said to constitute fully one-fifth of the blood, in a healthy state of the body. In diseases, generally, the proportion of serum is increased; consequently there is a diminution of the healthy and nutritive properties of the blood, as the serum is but its watery portion, and probably serves only as a solvent for foreign substances, and as a medium in which to suspend the red globules.

Upon washing the *crassamentum*, the coloring matter disappears, and a whitish substance remains, called *fibrine*, which is the principal material of which the muscles are formed, and probably other portions of the body.

So important is the blood to health and even the existence of our bodies, that it was said by the ancients that "the blood of the body is the life thereof." Whether this be true wholly, or only in part, it is very certain that we can not live, even for one short hour, without this wonderful fluid.

CIRCULATION OF THE BLOOD.

Extraordinary as it may seem, it is only a little over two hundred years since the circulation of the blood was discovered. This

discovery, as the reader is probably aware, was made by William Harvey, an eminent English physician. So strong is the force of prejudice, and so difficult is it to discard preconceived opinions, that instead of receiving the meed of praise from his professional brethren for this brilliant and important discovery, he was violently persecuted by them—so much even that it is said he was obliged to retire to an obscure corner of London, and finally lost nearly the whole of his practice. In his history of England, Hume remarks that no physician in Europe who was forty years of age at the time, ever adopted Harvey's doctrine of the circulation. Yet where is the physician now, or person with any pretensions to science, who doubts it? No doctrine in physiology is better established or more generally understood than that of the circulation of the blood.

The heart, as has been said, is properly a double organ, having two sides or compartments, in each of which there are two cavities, one called the auricle and the other the ventricle. By the muscular contraction and relaxation of the heart, producing alternate diminution and enlargement of these cavities, the blood is forced first from the auricles into the ventricles, and then from the ventricles into the arteries. The dilatation of the ventricles is called the *diastole* of the heart, and their contraction its *systole*.

In describing the circulation of the blood, the right auricle of the heart may be regarded as the proper starting point, as it is the cavity which receives from the veins the blood from all parts of the body, after it has gone the round of the circulation. It is with this auricle that the two great veins (upper and lower vena cava) connect, and into this they discharge their contents of venous blood, which is now of a dark red, almost black color, and is unfit for the nourishment and growth of the body until it has been renewed and purified in the great laboratory of the lungs. From here the blood is forced by the contraction of the auricle through an opening into the *right ventricle*, which is situated immediately below it. The right ventricle in its turn contracts and forces the blood into the *pulmonary artery*, and through it and its branches *to the lungs*. Inside of this ventricle are what are called the *tricuspid valves*, which close upon the entrance from the auricle and thus prevent the blood from regurgitating, or returning to the auricle when the ventricle contracts. There is a similar provision in the pulmonary artery, called the *semilunar valves*, which prevent the blood from returning to the ventricle when it dilates or relaxes.

In the lungs the blood undergoes its great change. It here becomes what may be termed *oxygenized* and *decarbonized*; that is, charged with oxygen, and freed from its carbon, and thereby changed from a

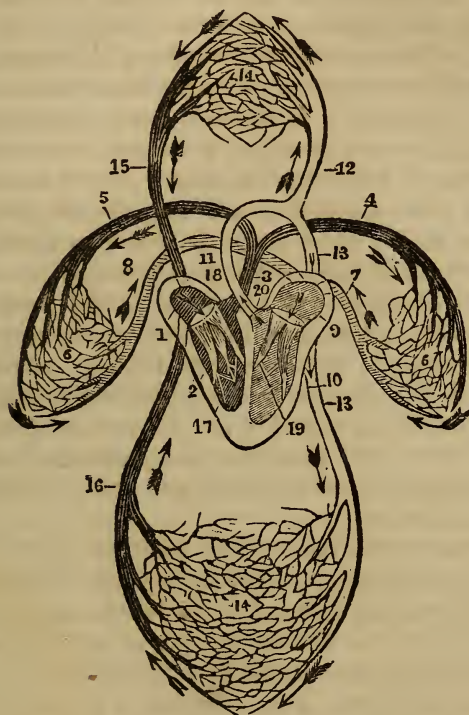
dark purple to a bright red color, and rendered fit for re-circulation, and all the purposes of nutrition. This change is effected by the action of the atmospheric air, taken into the lungs in breathing. The pulmonary arteries divide and subdivide into innumerable branches, which distribute themselves to all parts of the lungs, and finally lose themselves in the minute *capillaries*. These little vessels surround the air-cells of the lungs, forming a kind of net-work around them; so that when air is taken into the lungs, and these cells are filled with it, a chemical action takes place between the blood and the air. The cells and the capillaries are so very thin, that oxygen escapes through them from the air, and unites with the red globules, or iron of the blood, producing a *red oxide of iron*; while at the same time the carbon which the blood has taken up in its round through the body, and which gives to it its dark color, is either burnt up by the oxygen, or escapes through the air-cells and passes out along with the breath when ejected from the lungs. Thus the blood becomes purified and ready for use again. It is now of a bright red color.

From the capillaries of the air-cells the blood now passes into the minute extremities of the veins, which unite with them the same as the arteries, and thence into the two *pulmonary veins* which convey it direct to the *left auricle* of the heart. This auricle then contracts, and forces the blood down into the *left ventricle*. In this ventricle are what are called the *mitral valves*, which prevent the blood from returning to the auricle. The left ventricle then contracts and forces the blood into the *great aorta*, through which, and its numerous branches and their subdivisions, it is distributed to every part of the body. There is also a valve within the mouth of the aorta, the *semilunar*, which prevents the blood from reflowing into the ventricle. The difference between the functions of the pulmonary artery and the aorta is, the former proceeds from the *right* ventricle and distributes only *impure* blood to the lungs, to be purified; the other connects with the *left* ventricle, and distributes *pure* blood to all parts of the body, the lungs included.

The aorta sends off branches to the head, neck, viscera, and upper and lower extremities, which divide and subdivide into innumerable smaller branches, which ramify upon the bones, muscles, skin, and every part of the body, until they are finally lost in the little capillary vessels, the same as the extremities of the pulmonary arteries. Every tissue of the body is full of these capillaries, which form the connecting link between the arteries and the veins. It is while the blood is passing through these, that its nutritive properties are taken up and assimilated to the different parts of the body, by a still smaller set of vessels, which open into these, called the *nutritive*

capillaries. In this way the blood is made to nourish, sustain, and replenish the system. In this way the growth of the body is effected, and all the new particles obtained to supply the continual waste that is going on in the various tissues.

FIG. 10.



AN IDEAL VIEW OF THE CIRCULATION IN THE LUNGS AND SYSTEM.

1, Right auricle; 2, right ventricle; 3, pulmonary artery; 4, 5, left and right branches, going to the lungs; 6, 6, the capillaries of the lungs; 7, 8, pulmonary veins, returning blood to left auricle of the heart; 9, left ventricle; 11, 20, aorta; 12, 13, 13, branches of aorta, ascending and descending; 14, 14, the capillaries, into which the arteries terminate, and from which the veins rise; 15, 16, descending and ascending vena cava. ~~15~~. The arrows show the course of the blood.

Having parted with its nutritive properties, and also lost much of its oxygen, the blood is ready to be sent back to the heart, and thence to the lungs to be again purified and renewed. It has again become quite dark, from the loss of its oxygen, and the presence of carbon. From the capillaries therefore it passes into the extremities of the veins, and thence is collected from all parts into larger veins, all of which terminate at last in the two large trunks, the ascending and

descending vena cava, from which it is poured into the right auricle of the heart, and is ready to proceed on the rounds we have just described. This is THE CIRCULATION OF THE BLOOD.

The motive power that forces the blood through the arteries is the contraction of the heart, or of its ventricles. This force or influence is felt to the very extremities of the arteries, for what we call the *pulse* is nothing more than the motion or wave in the artery—the *impulse* caused by the beating or contracting of the heart. The ventricles of the heart contract, or the pulse beats, about seventy times every minute, in an adult; in children much oftener, and in old age less than that. At every stroke of the heart it is estimated that it forces two ounces of blood into the aorta; and if it contracts at the rate of seventy times a minute, it will only require about three minutes at most for all the blood in the body to pass through the heart, and consequently to go the rounds of the circulation.

The influence which returns the blood to the heart, through the veins is not so well understood. Indeed there is nothing satisfactory known on the subject. We know that it is so returned, and that therefore nature has some sufficient plan for doing it—and this is about all we do know in regard to it. There have been various theories proposed by physiologists, the most probable of which I regard that of nervous or electrical influence, and the muscular contraction of the veins themselves.

As the blood is the medium through which every part of the body receives its nutriment, and as this nutriment is extracted from the blood while it is passing through the minute vessels at the extremities of the arteries, it is evident that in order to have health and strength of the body, there should be a full and free distribution of this fluid to all the parts. To secure this, a proper degree of daily exercise is necessary. The skin should be kept clean, and sufficiently warm, so that the capillaries next the surface do not become closed or congested by chill or cold, or the blood may be concentrated upon internal parts, and debility or disease be the result. Next to having a supply of good, rich and healthy blood, it is important that its circulation be equal; that is, properly and equally distributed to all parts. In case of unequal circulation, the extremities cold, particularly the feet—skin pale or sallow, with other symptoms usual in such cases—rely on ablutions of the body, warm and cold baths, friction upon the surface, and plenty of out-door exercise, to restore the equilibrium, and bring back the health. They will be found better than all the drugs and patent medicines in the country.

DIGESTION.

ALTHOUGH the blood, as we have seen, is the immediate agent of nutrition, by which the body in all its parts is sustained, and developed, yet the blood itself, with all its elements of nutrition, is derived from the food we eat. This change of foreign substances—what we eat and drink, into the material of the body, is one of the most extraordinary phenomena in nature, and is eminently worthy of our study, both as a matter of interest and of utility. When we recollect how various are the articles of food, and how dissimilar most of them are to the blood, it seems scarcely possible that such a change could occur. Yet it does occur daily in our own bodies, although we are unconscious of it. Though we are not acquainted with the precise means by which nature performs this function, or indeed any function, we can point out the organs employed, and the different changes the food undergoes in each one. Commencing then with the food on the table we will follow it from the time it is received into the mouth, noting all the processes and changes through which it passes, until it is finally converted into blood, and building material for the body.

The first stage of the process of digestion is that of *mastication*, which consists in chewing or grinding the food and thus preparing it for entering the stomach. The act of mastication is so well understood that it needs no description, more than to say that it is materially aided by a fluid called the *saliva* or spittle, which is secreted by certain organs heretofore described, called salivary glands. As soon as food is taken into the mouth and the act of chewing commences—particularly if it be dry food, these glands begin to secrete and pour into the mouth through their little ducts this fluid, which serves to moisten the food and help reduce it to a condition suitable for entering the stomach. The saliva, it is thought, also aids in the process of digestion after the food has passed into the stomach.

The next act after mastication is that of *deglutition*, or swallowing—which is also too well understood to need special description. It is proper however to remark here that the food should be well masticated and thoroughly moistened with the saliva before it is swallowed. The habit of taking fluids, as tea, coffee, or even water, along with our food, is by no means a good one. The less fluids of any kind we take at meals the better. One reason of this is that fluids taken into the mouth along with food *prevent the flow of the saliva*. The saliva is a provision of nature for moistening the food; but if the mouth is already full of water, or any other foreign liquid, the saliva will not enter. If drinks must be taken at meals, it should be done when

there is no food in the mouth—after it has been masticated and swallowed; or, which is still better, after the meal has been finished. There are other objections, and serious ones, to the use of fluids at our meals, which will be mentioned as we proceed.

CHYMIFICATION: Soon after the food enters the stomach, which it does through a pipe or tube called the *Œsophagus*, it undergoes the first part of the real process of digestion, by being converted into a homogeneous, semi-fluid mass of grayish pulp, called *chyme*. The previous processes of mastication and deglutition are but preparatory ones. The stomach, as has been said, is a kind of pouch or bag, with strong muscular walls, which by their alternate contraction and relaxation, keep the masticated food in constant motion—churning it from side to side, and thus breaking it still finer and finer, and mixing it more intimately. The grand agent however, in converting the food into chyme is a peculiar fluid known as the *gastric juice*, which is secreted from the inner walls, or lining membrane, of the stomach. This fluid has a remarkably solvent power and will act upon ordinary articles of food with the greatest readiness. It is so powerful even out of the body that a portion put into a bottle, for instance, will dissolve or digest a piece of meat or other food suspended in it, almost the same as though it were in the stomach. The gastric juice differs in its nature according to the character of the food upon which the animal subsists. Thus, in herbivorous animals, that live altogether upon vegetables, as the sheep, or the ox, it can not dissolve flesh; while in exclusively carnivorous animals it can not dissolve vegetables, but in man as in other omnivorous animals it acts equally upon both animal and vegetable food. A somewhat remarkable peculiarity of this fluid however, is that it can not act upon any substance possessing life or vitality; hence it does not injure the coats of the stomach and intestines, with which it comes in contact; and hence also we often find that worms live unhurt in the stomach and bowels. But as soon as they die, they are dissolved by it, or digested. It will also soon destroy the coats of the stomach after death. The natural appearance of the gastric juice is that of a limpid, colorless fluid, slightly viscid, and somewhat acid to the taste.

When the food has become properly digested, or converted into chyme, it passes from the stomach, through the *pyloric orifice* into the *duodenum*, where it undergoes the process of what is termed *chylification*. A peculiarity in this pyloric orifice, or *pylorus*, is that it will not allow the food to pass it without first being properly dissolved by the gastric juice, or *chymified*. All undigested masses, pieces of beef or whatever else it may be, will be refused exit until they are reduced to the proper consistence. Hence the name *pylorus*, which means *gate-keeper*.

CHYLIFICATION: This consists in the separation of the nutritious portion of the food from the innutritious or refuse. In the duodenum the food or chyme as it now is, meets with two other fluids, the *bile* and the *pancreatic juice*. The bile is a dark green, bitter, and alkaline fluid, while the pancreatic juice somewhat resembles the saliva. These fluids are conveyed into the duodenum through small tubes or ducts coming from the organs which secrete them—the liver and the pancreas—as has been fully explained in the anatomy of these organs.

Immediately after the chyme becomes mixed with these fluids it begins to separate into two distinct portions, one of which is the chyle, or nutritious portion, and the other the refuse portion, which passes off by the bowels. The chyle is a white, milk-like fluid. It resembles blood however, in nearly every particular except its color; and hence has been called *white blood*. Indeed it is blood, and only waits the coloring process, to be ready for use in the processes of circulation and nutrition.

ABSORPTION OF THE CHYLE: The refuse or innutritious portion of the food, as I have said, passes off by the bowels; but the chyle is absorbed or taken up by an immense number of little vessels or tubes which open upon the inner surface of the duodenum and small intestines, called *Lacteals*, and is by them carried and emptied into the *Thoracic Duct*, a long tube about the size of a goose-quill, or hardly so large, which runs up along the spine, behind the stomach and heart, and empties into the left *subclavian vein*, at a point under the left clavicle, near the neck. Through this the chyle passes, and is thus mixed with the *venous blood*, and goes with it direct to the heart, and thence to the lungs, where the action of the air, or the oxygen from the air, turns it red, and converts it into real blood. From the lungs it passes back again to the heart, through the pulmonary veins, and is distributed along with the general mass of blood to all parts of the body, through the arteries; thus nourishing and invigorating the system, and supplying the waste that is continually taking place, as well as furnishing additional material for increasing the size of the body during its growth. All the nourishment and strength we receive from our food is obtained in this manner; and all our bones, muscles, and every part of our bodies, are made in this way; the food we eat making the blood, and the blood in turn making the more solid parts. How wonderful! When we reflect that this piece of bread, or this potato, which we are about to eat, *to satisfy our hunger*, will, in a few hours be converted into red blood, flowing through our veins and arteries, and that probably before we rise in the morning from our slumbers and our dreams, it will constitute a part of our

living flesh of our body—the change will appear little less than a miracle!

ADDITIONAL OBSERVATIONS ON DIGESTION.

The absorption of the chyle takes place, principally, from the duodenum, and first portion of the small intestines, called the *jejunum*; less from the second portion, the *ileum*; and still less, if indeed any, from the large intestines. The lacteals commence upon the inner surface of the intestines, and, as has been said in describing these vessels, pass through certain small bodies, called the *mesenteric glands*, which are supposed to exert some influence upon the chyle as it passes through them. The lacteals all terminate in the lower end of the thoracic duct, where there is a sort of enlargement of that vessel, called the *Receptacle of the Chyle*.

The time required for digestion to take place—that is, to change food into chyme, ready to pass out of the stomach into the duodenum, varies according to the character of that food, and the tenderness of the fiber on which the gastric juice is required to act, as also upon the proper or improper mastication of it before entering the stomach. It has been found by experiment that rice, sago, tripe, raw eggs, soused pig's feet, broiled venison steak, and a few other articles, require but about an hour to an hour and a half; while some meats, as broiled beef steak, broiled fresh pork, and mutton, require about three hours, and veal, fried beef, salt fish, salt pork, most domestic fowls, as chickens and ducks, nearly or quite four hours. Turnips, potatoes, beets, carrots, wheat and corn bread, green corn, and apple dumplings require about three hours, and melted butter and old cheese near four hours. Boiled cabbage, four and a half hours, and roasted fresh pork five hours. Radishes, pickles, and raw onions, from six to twelve hours, and sometimes longer. Oily substances, as beef and mutton suet, the greasy portion of soups, and grease generally, are digested with great difficulty.

The medium time for the digestion of a meal, under ordinary circumstances, is about three hours and a half. If we drink freely at the time—especially of ice-water, it will require four hours, or longer.

Moderate exercise after a meal increases the temperature of the stomach, and assists the digestion. It is best, however, always to rest half an hour immediately after eating a hearty meal.

ON DRINKING AT MEALS, AND LIQUID ALIMENTS.

Wine, spirits, water, tea, coffee, and other fluids, are not affected by the gastric juice, and consequently not digested. *All fluids must pass from the stomach—mostly by absorption—before digestion commences.*

Hence, here is another important reason why fluids should not be taken along with our food, or at least should be taken sparingly. They only retard digestion. The habit of soup-eating at meal time is a bad one. It is better to avoid soups entirely, if we are well and intend to eat a full meal. All their watery portion must be absorbed and removed from the stomach before digestion can take place. Soups also, such as we find at the hotels and eating-houses, usually contain stimulating condiments, which excite the mucous membrane of the stomach and produce an artificial and often greatly increased appetite, thereby causing us to eat too much. The stomach should never be excited by artificial stimulants, as peppers, mustard, and the like, for the purpose of increasing the appetite. Nature is the best stimulant, and the best judge as to when we should eat and when we should not.

It is no objection to the truth of this doctrine, to say that milk is healthy and nutritious, and that physicians recommend soups and broths for the sick and the convalescing. In the first place, fully eighty per cent. of the best milk is water. This must be absorbed and removed from the stomach. The remainder, the nutritious portion, is then formed into a kind of *curd*, and is no more a liquid, but a semi-solid. The gastric juice can now act upon it and change it into chyme. But as to the utility of milk at all as food, beyond mere infancy, there is good room to doubt.

As to the utility of broths and gruels for the invalid—this can only be justified upon the following principle. Usually in such cases, particularly in persons recovering from a spell of sickness, as fever, or other acute diseases, there is a morbid craving appetite, sometimes almost furious, and generally demanding things that are entirely improper, as pork, cabbage, cheese, pickles, mince-pie, and the like. In order to quiet the appetite as well as we may with safety to the patient, and at the same time furnish the raging stomach something to work upon, to busy itself with, and, as it were, “keep it out of mischief” for a few hours, we give it a lot of gruel, or weak soup, which, after all, affords it but little nutriment, or not enough to do any harm. The stomach in such cases needs something to fill it up, to distend it somewhat; but if we should do this with strong food, we should at once endanger the patient’s health, if not his life. Upon this hypothesis, only, can the usual practice of giving soups to the sick be justified. But in many cases, perhaps in most, a small quantity of solid food—a crust of bread, or some boiled rice, would be much better.

Another reason why drinks should not be taken at meals is, that, as a general thing, they contain no nutriment, and hence do not help

to satisfy the appetite, although they do help to fill and distend the stomach. We usually eat as much food when we drink a pint of water or coffee along with it, as we would were we not to drink any thing; and if wine, or ale, or stimulating drinks are used, we will be apt to eat more, for they excite the appetite. The consequence is, that, with our *eating* and *drinking*, the stomach will be so much *distended* as to be uncomfortable, and if the habit be persisted in, it will certainly lead to permanent disease of that organ. More dyspepsias and ruined stomachs are produced in this way than people are aware of.

Avoid fluids as much as possible *when you eat*. Remember, that like the saliva when fluid is in the mouth, the gastric juice will not flow, when the stomach is filled with liquids; or if it does, it will be so diluted by them that it can not act upon the food. I have known some of the most inveterate cases of dyspepsia cured entirely by abstaining from the use of drinks of all kinds at meals. But particularly at dinners should we dispense with drinking, for it is then that we usually eat the most hearty. If drinking can not be entirely dispensed with at breakfast and supper, by all means leave it off at dinner—the principal meal—and for at least three hours after, *if you are at all dyspeptic*. Cold water, especially ice-water, is bad at meal-time. It chills the stomach and retards or puts back absorption, as well as digestion, at least half an hour; and absorption of the fluids, you know, must take place before digestion commences. I can hardly say that ice-water is healthy at any time. It should be used with caution—particularly by all who are not in the habit of using it daily.

ON THE QUANTITY OF FOOD.

No very definite or satisfactory rule can be prescribed as to the exact quantity of food necessary for the system. It is generally admitted by intelligent men that we eat too much—nearly twice as much as nature for all practical purposes requires. Philosophers, physiologists, chemists, pathologists, and dieticians, all agree in this. Not of course that every individual eats too much; but that the people of this country, as a people, are given to excessive and unnecessary eating.

The proper quantity of food must necessarily vary according to the age, occupation, habits, and health of a person, and also the climate or temperature in which he lives. Children and young persons require an extra amount of food to furnish material for the growth of the body. The more rapid the growth of the child, the greater the demand for food.

Persons of active habits, and such as labor hard, or exercise a great deal, need more food than those of inactive or sedentary habits. Increased action of the body increases in a proportionate degree the wearing out of the organism, and facilitates the removal of the waste material through the different outlets, especially through the lungs and the skin. This increase in the waste of the body requires of course an additional amount of food out of which new material is to be made to supply the loss. This law holds good however only where labor or bodily exertion is not carried so far as to produce muscular and nervous exhaustion, and consequent debility; for in such case the stomach and whole digestive apparatus would suffer also, and would require that less food be taken, for the time being, or greater debility and perhaps serious disease would be the result.

A sudden change from active, laborious habits, to such as are inactive and confining, requires that the usual amount of food should be diminished. Let an active, laboring man take a trip on one of our fine steamboats requiring several days, and ten chances to one he will soon feel the effects of disregarding this important law of our nature, in the form of dyspepsia, sour stomach, head-ache, and a general derangement of the system. He will be sensibly impressed with the fact that he has either eaten too much, or has not had exercise enough.

In warm weather, or in warm climates, we require much less food, and of a less stimulating nature, than in cold. I have frequently noticed that when in New Orleans I ate much less than when in the upper country, and that I could do as well there on two meals a-day, as on three in the latitude of Cincinnati or Chicago. A certain amount of food is needed for fuel; in other words, a certain amount of carbon, which is obtained from our food is needed for a sort of combustion by its union with oxygen, for the purpose of producing bodily heat, and of maintaining a proper temperature of the system. In warm weather, and even when the body is warmly clothed, a less amount of food for this purpose will be needed. In the arctic regions the inhabitants live almost exclusively on animal food; while under the tropics some nations subsist entirely on vegetable diet, and do not seem to wish or require any thing more stimulating.

The quantity of food must also be regulated according to the health of the individual and consequent condition of the digestive organs. No more should be taken than can be well digested; for unless the food is properly digested and changed, as has been described, it does not invigorate the system, but actually does harm. Large quantities of food at any time oppresses the stomach, and produces languor of

both body and mind, and of course can but be still more detrimental when the system is not in perfect health.

Some writers lay it down as a rule to be observed in regard to quantity, other things being equal, that we should eat no more than is barely sufficient to satisfy the appetite. This however is not a safe rule. We are not always able to distinguish readily between *appetite* and mere *taste*, and hence are liable to eat too much. It is far better to say, never eat till the appetite is satisfied—always quit hungry. Most persons seem to eat just about as much as they can, so as not to suffer from it immediately. The inquiry seems to be—with those who inquire at all—not how little they may eat, but rather how much, without the loss of health as the consequence. It is a better rule, I have said, to leave off hungry, or as some say, never eat quite enough. “Grant Thorburn, whose writings over the signature of Laurie Todd, have interested and delighted many, and who, at the age of ninety, or nearly so, is almost as young in his feelings as ever he was, is accustomed to say to his friends that he never ate enough in his whole life.” But even this rule—to leave off hungry—will not apply in all cases, for some people never are hungry! There was once a sort of half-idiot who always went about asking the people if they didn't wish to know the art of never being dry, or thirsty? The secret was, he said, “always mind to drink before you are dry, and you never will be dry.” A great many people apply this rule to their eating. They always eat before they are hungry, and hence never are hungry. The present fashionable styles of cookery are well calculated to make us mistake taste for appetite, and eat more than we ought, and more than we would of good, plain, wholesome food.

EATING BETWEEN MEALS.

One of the most common sins against the laws of health is eating between our regular meals. At present it is customary in many places and with persons of all classes, to eat so often that they seldom if ever have a good appetite; and what appetite they may have at first is soon spoiled by their over-indulgence in eating. Not content with three meals a-day, they must take a lunch in the forenoon, and another in the afternoon, so that the stomach has no rest during the whole day, and by the time supper arrives, it is so much fatigued and jaded that this meal—which is usually a heavy one—will hardly be disposed of during the whole night. The reward so richly earned is sure to follow. Our sleep is disturbed and unrefreshing; the night is passed in restless anxiety or distressing dreams, and we wake next morning with a bad taste in the mouth, dryness of the throat, dull

headache, loss of appetite, and an unwillingness to rise. Such a course of living, if persisted in will unquestionably bring about a bad state of things, resulting in confirmed dyspepsia, and a general loss of health. The stomach requires a proper degree of rest. It has a muscular coat, which, like all muscular bodies, needs rest after exercise, and must have it—or we will pay the penalty. Of all the organs of the body, there is probably none so much abused as the stomach.

Whether we eat once, twice, or three times a-day—and we should never eat more than three times—we should eat only at our regular meals. Nothing containing nutriment, whether solid or liquid, whether fruits, nuts, or cakes, should be allowed to go down our throats between meals. Apples, oranges, nuts, and the like, of course are intended for us to eat, but it should all be done at our tables, and regular meals. Not however, as the general custom is, at the end, when we have already eaten as much as we ought; but along with our bread and other food, as a part of the meal. And so also should pies, puddings and cakes, if eaten at all. But it is better to avoid all pastries entirely.

It is a mistaken idea among farmers that they can not get along through harvest, during the long hot days, without eating something between meals—especially in the afternoon. They will find on trial that they will be able to endure the heat and fatigue of the harvest season much better without their “four o’clock piece.” It only does harm, by over-tasking the stomach and rendering it unprepared for the evening meal. If you value good health and long life, avoid all eating between your regular meals—every “appearance of evil” of this kind—whether it be lunches, oyster-suppers, apples, oranges, candies, or what not, either in large or in small quantities; for even the smallest portion—a crust of bread or a mouthful of apple—will call into exercise the whole digestive system.

REGULARITY IN EATING.

Another very important rule in regard to eating is regularity. We should make it a point to take our meals at regular hours; and rather than vary from this it is better to miss a meal occasionally. It may be stated as a general law—with here and there an exception perhaps, as there are exceptions to all general laws—that those persons who are most regular in their hours of eating, other things being equal, are the most healthy, and in old age, are the most cheerful, sprightly and youthful in their feelings.

We are to a great extent creatures of habit, and may accustom ourselves to almost any hours for eating, and hence may as well be regular as irregular. The habit of irregular eating often grows up

with us from childhood. Unfortunately for human health and happiness, the young are too often trained up, in regard to this matter, in a way they should not go, and when they become old they dislike to part from it. Too often in childhood is the foundation laid for ruined health and a miserable existence, by the fond but unwise indulgence of parents. And many a child too has been carried away by summer and autumnal diseases, that might have escaped, had it been less indulged, or been properly trained in its habits of eating. Many a child has been *fed to death* by its mother. Locke, the philosopher, has said, that "when a child asks for food at any other time than at his regular meals, plain bread should be given him—no pastry, no delicacies, but simply plain bread. For if the child is really hungry, plain bread will readily go down; if not hungry, let him go without till he is so." This is good advice. But it is still better to give him nothing at all between his meal times. These, of course, should be more frequent than for larger persons; but they should be at regular stated periods. I know it is hard to train up a child in the way he should go, and harder still to train ourselves to proper dietetic habits; but the importance of doing so, whether we eat two, three, or more times a day, is at least equal to the difficulties we may encounter, and is certainly worthy of our best and most considerate efforts.

EATING TOO FAST.

Another very common violation of the laws of health, is in eating too fast. This is almost as bad as eating too much, for it amounts to nearly the same thing. Persons sometimes boast that they can eat a regular meal in five or six minutes. Such persons swallow their food without chewing. This is not really eating in the proper sense of the term. Every one knows, that if we eat fast we can not properly masticate our food; and if there be one law of our nature which is more rigid in its demands than any other, and the violation of which is sure to be followed, sooner or later, by severe punishment, it is that which requires that our food be well masticated before it is swallowed.

As I have said in describing the process of digestion, the food, after it enters the stomach, has to be changed into a soft, pulpy mass, called chyme, which is done by the solvent properties of the gastric juice, and the incessant muscular action of the stomach. This change must be complete; there must be no lumps, or large chunks, or even small ones—but all must be reduced to a perfect semi-fluid mass, before it can pass into the duodenum for chyfication. Do you not see how much labor you can save your stomach by chewing your

food well, or how much you may cause it by neglecting to do so? The stomach, as I have several times said, needs rest after its labor; but if it must be tugging away upon a large chunk of beef-steak, or several of them, and a cold potato, and perhaps a large slice of pickle, from the moment you have swallowed your dinner until supper-time, do you not see that it will get no time to rest? And tug away it certainly will, until the last chunk you have swallowed is reduced to chyme, or it has given out in utter exhaustion, or has made itself sick by bringing on inflammation. It must be plain, therefore, that the habit of swallowing our food half masticated, or less than half, as is done by those who eat fast, is a very bad one.

Another serious objection to fast eating is, that it does not become properly mixed or moistened with the saliva—indeed scarcely at all. The saliva does not commence to flow, or even to secrete, until we commence chewing the food, and it continues to flow only while we continue to chew. But if the food is gulped down without chewing, there will be little or no saliva go down with it, yet the saliva, to some extent certainly, is essential to proper and healthy digestion. It will not answer so well to moisten and wash down the food with water, or other drinks. That will only make the matter worse, for it will retard digestion by preventing the flow of the gastric juice, or by diluting it if it does flow. There is no way so good as nature's own way. Our teeth have been given us to grind our food, and the salivary glands to moisten it, and we should make use of them. Instead of five or six minutes, we should never occupy less than thirty, in eating a full meal, where we can at all command the time; and it is better, especially at dinner, to go over, rather than under thirty minutes. But whether you eat slow or fast, a long or a short time, little or much, always bear this one important thing in mind—masticate your food well, before you send it into your stomach. By so doing you will derive more benefit from it, will not be so likely to eat too much, and will enjoy vastly better health.

RESPIRATION.

IN describing the anatomy of the lungs and the circulation of the blood enough perhaps has been said to give you a tolerably correct idea of the process of Respiration, and of the important relation it bears to Nutrition, on account of its influence upon the blood. Some special remarks upon the subject however may not be amiss, as it is

one of the essential processes of the living economy, without which we could not live, any more than we could live without the blood itself. Every body knows that we can not live without breathing—that if from any cause whatever our breath is cut short, we die immediately. But I apprehend it is not very generally known why this is so, or what is the exact relation the air which we inhale into our lungs sustains to our animal life. This will now be explained.

NECESSITY OF RESPIRATION.

Respiration or breathing is for two important purposes: First, and mainly, for the purpose of purifying the blood; and second, for the purpose of producing animal heat. The organs engaged in respiration are the lungs, the bronchial tubes, and the air-cells of the lungs; and when the change of the blood is included, the pulmonary arteries, veins, and capillaries of the lungs are to be added. Beside these, if we include the mechanical act of breathing, the diaphragm and certain muscles of the chest, are also to be taken into the account.

The purification of the blood is indispensable, so indispensable indeed, that it would soon cause death if it were to remain unchanged. The venous blood is full of poison, which it has acquired in its circulation through the body; and this poison can only be removed by bringing it into contact with the atmospheric air, which is done in the lungs by the process of breathing. This poison is carbonic acid, and results from the union of carbon with oxygen, two agents which have a remarkable affinity for each other when found in the body. Carbon, as I have before remarked, is obtained from our food; it is of the same nature as charcoal, and in itself is quite as harmless as charcoal; but when it unites with oxygen, or, as is really the case, when it is burned up by that vital gas, the result or residuum—what we may call the *ashes*—is carbonic acid, a suffocating, deadly poison. This carbonic acid is the same thing that is sometimes found at the bottom of wells, and in mines, in the form of a gas, usually called “choke-damp,” and which will kill a person or animal immediately, if breathed or inhaled into the lungs. It is also the same as that given off by burning charcoal, which has often caused the death of persons, by suffocation, who have left it to escape into their bed-rooms.

The blood is sent to the lungs for the purpose of getting rid of this poison. It there escapes through the air-cells, and is expired, or thrown off with the breath. This is the reason why people are suffocated, or their health greatly injured, by breathing the same air over again too many times. It becomes more and more charged with this poisonous gas every time it is breathed, and if continued long enough,

will produce death as effectually and certainly as the choke-damp of wells. In badly ventilated rooms, and in buildings containing large public assemblies, people are often poisoned in this way, and if not killed outright, have head-aches nervous depression, and faintings, which often lay the foundation of more serious diseases.

MECHANICAL ACT OF BREATHING.

As has been said, the diaphragm is the principal organ in producing the act of breathing. For a particular description of this muscle, see its anatomy. By its contraction it presses down the abdominal viscera immediately beneath it, and thereby enlarges the capacity of the chest in that direction, allowing the lungs to expand, by following it. At the same time the muscles of the ribs contract and draw them upward and outward. The chest being thus enlarged, downward by the diaphragm, and laterally by the muscles of the ribs, giving the lungs room to stretch out and expand, which they do—a *vacuum* is formed, and the air rushes in through the trachea or wind-pipe, and the bronchial tubes, and fills up the air-cells; and just on the very same principle too that air will rush in and fill up any vacuum. This is called *inspiration*. It is estimated that the whole extent of these air-tubes and cells in the lungs of a grown person is equal to twenty thousand square inches, or more than twenty times the surface of the whole body; and that the quantity of air received into, and expired from them, in twenty-four hours—allowing that we breathe twenty times a minute, and fill the lungs each time—must be near four thousand gallons. But we do not always inhale a full breath—seldom as full as we ought. Many persons injure their health by getting into a habit of inhaling too little air; and some ladies ruin theirs by lacing their chests so that they can not, if they would, inhale more than half as much as they should. It would be much wiser, because much less injurious, if they would compress their feet, like the Chinese ladies, instead of their lungs.

When we inhale the air and inflate the lungs, we are said to *draw* in the breath; but the *drawing*, you perceive, is done by the diaphragm, and intercostal muscles, which enlarge the chest, and the air *forces itself in* and fills up the lungs. When the air has remained in the lungs a sufficient time to purify the blood, the muscles relax, the ribs fall in or press upon the sides of the lungs, the diaphragm rises, being forced upward again by the stomach and liver, and some of the abdominal muscles, and thus the lungs are *compressed*, and the air ejected or forced out. The expulsion of the air from the lungs, or sending the breath *out*, is called *expiration*. And the whole process—

inspiration and expiration, or drawing in and sending out the air—is called *respiration* or breathing.

CHANGES OF THE BLOOD AND AIR.

The manner in which the blood is purified will be better understood by observing the changes which it and the air undergo, when they come in contact with each other. About one-fifth part of the atmospheric air is *oxygen*—the balance *nitrogen*. On examining the air however—the breath—as it comes from the lungs, it will be found that the greater part of the oxygen has disappeared, and that another gas—carbonic acid—has taken its place. This new gas, as has been said, is formed by the union of the oxygen from the air with the carbon in the blood. The venous blood, which is heavily charged with carbon, and which gives it its dark color, is conveyed to the lungs through the pulmonary arteries, and passes from them into the capillaries, which surround the air-cells, forming, as has been said, a fine *net-work*. It is here that the blood is brought in contact with the air—or so near it that it amounts in effect to the same thing. The air is in the cells, the blood on the outside of them in the minute capillaries, the walls of which are so thin and porous that the oxygen escapes from the air, unites with the blood, burns up its carbon, sets free the carbonic acid, which results from the combustion, and which escapes through the cells, takes the place of the oxygen in the air, and is ejected with it from the lungs. Thus the blood becomes changed—oxygenized, as it is sometimes termed; and at the same time the air or breath becomes changed also. The one is made pure—the other impure. And this process goes on constantly; every time we inspire or take in a fresh supply of air, a fresh supply of venous blood is forced into the capillaries, around the air-cells, the previous lot being purified, is sent off into the veins of the lungs and conveyed by them to the heart, for general distribution.

One important effect of this change upon the blood is that it is turned from a dark purple to a bright red color. This is caused partly by the destruction of the carbon and carbonic acid in the blood, as has been described, and partly by the union of oxygen with the iron in the blood. Of the fact that there is a certain portion of iron in the blood there can be no doubt. It has been abundantly proved by chemical analysis. The red globules of the blood are largely composed of this mineral, and by the union of the oxygen with them, they become, to a certain extent at least, a *red oxide of iron*.

IMPORTANCE OF FREE VENTILATION.

It is estimated that an ordinary sized person requires about 40,000 cubic inches of oxygen gas every twenty-four hours, to be used up in breathing, in the manner just stated. About four-fifths of this, or perhaps a little more, is consumed in burning up the carbon in the blood, and is turned into carbonic acid; the balance is used in giving to the blood its color and proper stimulus. From this simple fact, and bearing in mind also that only about one-fifth part of the air is oxygen, any person can form a tolerably correct idea as to the amount of fresh air needed in a given time in public halls and places containing a large number of people. And with the other simple fact before them that about one-fifth of the air or breath that escapes from our lungs—if it was pure when it entered—is carbonic acid gas, and contains little or no oxygen, they can form some idea of the importance and necessity of free ventilation. It is seldom however, that this matter is properly attended to; indeed we have good reason to believe that its importance is very little understood. We often see several hundred persons crammed together into a room where not more air can enter than is necessary for one-fourth the number; and the consequence is they all soon feel uneasy and oppressed, and many of them no doubt suffer afterward still worse; and yet the probability is that few of them ever think of the cause. But above all things is it important that our sleeping-rooms should be well ventilated. Too much attention can hardly be paid to this matter; yet I am sorry to say very little is given to it, as a general thing. Benjamin Franklin somewhere says that it is recorded of Methuselah—though he does not tell us *where* it is recorded—that when he was five hundred years old the angel of the Lord appeared unto him and told him to arise and build himself a house, for he was to live yet five hundred years longer. “If I am to live but five hundred years,” said Methuselah, “it is not worth while to build me a house; I will sleep in the open air, as I have been used to do.” The moral of this is that sleeping in the open air, or where he always had a full supply of pure fresh air, was the cause of his living so long. The hint is a good one, and we should profit by it in the arrangement of our sleeping-rooms.

ANIMAL HEAT.

WE are next to explain, if we can, the source of animal heat, and the manner in which it is generated. I say, if we can, for physiologists do not all agree in regard to this matter. That there is such a thing as animal heat, and that the human system has within itself the power and capacity of generating this heat, and of regulating it according to circumstances and conditions, we know; but the precise manner in which this is done does not seem to be so well understood yet, as some other processes of animal life. Inanimate substances are influenced in their degrees of heat and cold by the temperature which surrounds them, and by other bodies with which they are in contact. Not so however with man. He has a temperature of his own, independent of the surrounding medium in which he lives, and is capable of maintaining this temperature at very nearly the same degree in all seasons and climates, whether the surrounding atmosphere be warm or cold. The standard heat of the human body is about 100 degrees, Fahrenheit. It seldom varies from this, in a state of health; or if it does, it is but little. Perhaps 98 to 102 degrees may be regarded as the limits of variation.

I have said that physiologists do not all agree as to the production of animal heat. This is true however only to a certain extent. All the best authors on the subject agree in this—that the lungs are the principal laboratory of the system for the production of heat, and that it results from the chemical action of the atmosphere upon the blood; or, to speak more correctly, from the union of the oxygen of the atmosphere with the carbon in the blood. Some however maintain in addition to this that there is a constant union of oxygen and carbon, and consequent evolution of heat, going on in the minute capillary vessels throughout the system, and which accounts in part for the change in the color of the blood, from a light red to a purple, or from arterial to venous. This is probably true. One thing is certain: a union of oxygen and carbon can not take place any where, whether in the system, or in the open air, without producing *combustion*, and consequently *heat*. What we call *fire*, or the burning of coal, wood, or any other combustible substance, is nothing more nor less than the rapid union of the oxygen in the atmosphere with the carbon in the substance burned. The union which takes place in the human system between the oxygen and carbon, is not so rapid—not so great, as when it takes place in the open air, in the phenomenon of fire; but so far as it goes it is precisely the same thing; and produces the same result—that of heat.

Probably sufficient has been said in explaining the process of Respiration, and the change of the blood in the lungs, to give you an idea of the manner in which heat is generated in the body. I have there told you that the oxygen escapes from the air we breathe, while it is in the air-cells, and unites with the carbon in the blood as it passes through the capillaries which surround these cells; and that the union of these two agents produces a sort of combustion, which purifies the blood, or rids it of its excess of carbon. In other words the oxygen burns up the carbon. Now nature is a great economizer. Hence this very process by which the blood is purified is turned to a double account. The only way to get rid of the carbon in the blood, which must be done somehow or other, is to burn it up. To do this, it must be brought into contact with oxygen, for without this wonderful gas, combustion can not take place any where; and this, it seems, can only be done, to any great extent, in the lungs, and in the manner already described. But, as has also been said, a union of oxygen and carbon, or combustion, can not take place, either in or out of the body, without producing *heat*. But the living organism requires heat. It must be kept near a certain degree of temperature, or the blood will thicken and stagnate, and the whole machinery of the system soon cease to operate. As the blood flows through every part of the system—is constantly going to and returning from every part, in a ceaseless round of circulation, there can be no better way—none so good indeed—to warm the general system and all its parts, and maintain the required degree of temperature, than to warm the blood. What a happy thought! What a wise arrangement! Warm the blood, and let the blood warm the body! And the very process which purifies the blood, warms it; the very combustion which removes or destroys its carbon—which must be done, and yet can be done in no other way—also, as a natural consequence, heats the blood, and brings it up to the proper degree of temperature. And by the rapid and constant circulation of the blood, this temperature is extended and maintained throughout the system. What wisdom, both in arrangement and in economy, is here exhibited!

As an evidence that heat is generated in the lungs, and in the manner stated, we have but to observe the fact that the body becomes warmed, or its heat increased, by any exercise or other means that causes us to breathe quicker. As a more perfect test let any person, instead of taking any manual exercise, sit or lie down in a cold room and breathe faster and fuller for half an hour, and the result will be that he will grow quite warm, perhaps uncomfortably so. Many of us do this of cold winter nights, without probably ever thinking of the philosophy of the thing, for the purpose of getting warm in a

cold bed. Cold atmosphere is more dense, and consequently contains more oxygen to the cubic inch, than warm atmosphere; and hence the cold atmosphere with which we may be surrounded and which we breathe, actually aids by its coldness in producing the increased amount of bodily heat required in cold weather. A person who sits still by a large fire on a cold day will often be quite chilly, while another who moves briskly about, out of doors, will feel quite warm. The one vainly tries to imbibe warmth *externally*, while the other, by his exercise and consequent increased breathing, produces it *internally*.

Although the principal amount of animal heat is undoubtedly produced in the lungs, yet it probably is not all produced there. A portion of the oxygen which passes through the air-cells into the blood—perhaps one-fifth—instead of being consumed with the carbon, unites, as has been already stated, with the iron or red globules of the blood, which gives that fluid its bright red color. This passes into the general circulation, and while the blood is passing through the capillary vessels, especially in the skin and near the surface of the body, it is thought that a union of oxygen and carbon again takes place, in which more or less heat is evolved. We know that the blood loses its bright red appearance, and that this transformation takes place in the capillaries, where it changes from arterial to venous blood. Hence it must part with its oxygen, and the most reasonable conclusion seems to be that it is used in consuming the carbon that it here meets with.

Some have supposed that animal heat is owing in some respect to nervous influence. If by nervous influence we mean the electricity of the system, this may to a certain extent be true. It may be that electricity has something to do with the production of heat; perhaps it serves as the spark to light the fire, for we know that oxygen and carbon will not of themselves ignite, that they will not commence to burn, in other words, to unite in the form of combustion, without first being started or touched off, by the application of a spark from some source or other. Electricity will do this. And it may be that a constant flow of electricity, a constant application of sparks, is necessary to continue the combustion. Fire will not burn in water, or in a fluid; yet this burning of carbon is in the blood, which is an aqueous fluid. May it not be that the presence of animal electricity keeps up this singular fire, this combustion of carbon and oxygen, in the blood? Allowing the nervous system to be the source of the electricity, and the nerves its conductors, in this way, and this only, I think, may it be said that animal heat is dependent upon nervous influence.

ABSORPTION.

IN describing the process of digestion, I had occasion to speak of the absorption of the chyle from the duodenum and small intestines ; also of the fact that all fluids taken into the stomach were absorbed before digestion took place. These processes are carried on by certain vessels for that purpose, called lacteals and lymphatics, and have already been described. There is still another process of absorption, however, carried on very generally throughout the system, in regard to which it is proper to say something.

By absorption is meant the removal, the sucking-in or taking up, of any substance which comes in contact with the body, or any portion of it, either upon the surface in the lungs, or in the stomach and intestines, which is done by what are called the *absorbents*, a set of minute vessels everywhere distributed through the system, and which act like a set of hungry, ravenous little animals. They will absorb every thing that comes in their way, if they can, whether it be injurious or beneficial, poisonous or healthy ; and as they empty their contents directly into the veins, the blood of course becomes poisoned in this way, and disease, and not unfrequently death is the consequence. It is on this principle of absorption that medicines are often applied to the surface of the body when they can not be taken internally. In such cases the cuticle or scarf-skin is first removed by a blister, as without this, absorption will not take place readily. Yet we know that it will take place to some extent even without the removal of the cuticle. This is proved by the fact that thirst may be diminished by bathing the body in water ; and even hunger to some extent satisfied, by the application of nutritious liquids to the surface. Sailors are aware of this fact, and sometimes, in cases of extreme thirst and destitution of fresh water, let themselves down into the sea water, by which means the blood becomes sufficiently diluted by the water that is imbibed or absorbed through the skin, to greatly relieve the burning thirst, for the time being. But as a general thing, absorption will not take place to any perceptible extent, through the cuticle or outside skin, and probably only, as in cases of bathing, where the body is allowed to remain in the water long enough to soften the cuticle to an extent sufficient to admit of a permeation which otherwise could not occur.

In cases of cuts and abrasions of the skin, persons should be very careful about coming in contact with poisonous substances. Serious, and often fatal cases of poisoning have occurred in this way. Medical students are sometimes poisoned in this way by cutting

themselves while dissecting dead bodies; and occasionally the same fatal results occur to persons in removing the skins from dead animals. Putrified flesh is poison, and if this poison, though ever so small a quantity, is brought in contact with any portion of the body where the cuticle has been removed, or with a cut or sore, it is immediately taken up by the absorbents and carried into the blood, and the person is poisoned. Such poisons are generally fatal. It is on this principle that the poison of snakes and other venomous reptiles act. Vegetable and mineral poisons will act in the same way. Persons can not be too careful in regard to this matter.

But probably the greatest medium through which foreign substances and agents are absorbed into the system is the lungs. Various poisons, vapors, and other hurtful substances and gases which float in the atmosphere, are taken into the lungs in breathing, and by means of absorption are carried into the blood, and the general system. Absorption by the lungs is very rapid and powerful. It is a well-known fact, having been repeatedly proved by experiments, that if a person breathe the vapor of turpentine for a few minutes, it may be detected in the blood and other fluids of the system in a very short time afterward. The vapor of prussic acid, if inhaled into the lungs, will produce death almost instantly. It is also in this way that contagious and infectious diseases, as the small-pox, are communicated. This will account for the origin of many diseases, the causes of which are not readily understood, and will also show us why and how it is that so much sickness is found in crowded tenements, and in cities and streets where there is but little pure air in circulation, and where filth and dirt and decayed matter are allowed to accumulate. It will also account for the fevers and agues of new countries, and certain marshy districts. The malaria, or marsh-miasma arising from swamps in hot weather, and from decaying vegetable matter, floats in the atmosphere, and is taken into the lungs along with the breath, and is absorbed into the blood and diffused throughout the system, until it finally accumulates to an extent sufficient to produce fever and ague or some other disease. These miasmatic poisons and deleterious gases may remain in the system for weeks and even months before they exhibit their effects openly; and hence many diseases, no doubt, are attributed to other causes, or to some unknown cause, which are due to them alone.

If we would enjoy good health, therefore, we must learn to avoid the enemies of health. We must seek pure air, and, in hot seasons at least, avoid swampy and malarious localities, and filthy streets and cities. But if we disregard the most palpable laws of health, and become sick, we should not lay the blame to an inscrutable

Providence, or a hard and cruel fate, but to our own ignorance and temerity, and the transgression of laws which we ought to understand and obey. If the poisons which float in the air we breathe could not penetrate the air-cells of the lungs and enter the blood, then neither could the oxygen of the air, and hence the blood could not be purged of its carbon, and animal heat could not be generated, and we should soon die from impure blood or from the effects of cold. So, too, if the cutaneous and other absorbents could not take up poisonous substances that come in contact with them, and carry them into the blood, then neither could they remove, in like manner, the waste and morbid matter of the system, and our bodies would soon putrify and decompose, in the most horrid manner. All these functions and laws of our being are for the best and wisest purposes—are in fact essential to our existence; and it is our business and our duty to make ourselves acquainted with them. All the laws of nature, whether physical or organic, are inflexible in their operation, and their infringement or disregard is sure to be followed by appropriate punishment. They make no allowance for motive or ignorance, but act upon all alike, whether they be wise or ignorant.

PERSPIRATION.

THE SKIN.

THE Skin is the seat of the important function of Perspiration. It forms the external covering of the body, and to the naked eye, appears to consist of a single membrane. Examination however has shown that it is composed of no less than three layers or membranes.

The first or outside layer is called the *Cuticle* or *Epidermis*, and sometimes also the "Scarf-skin." It is the part that is raised in a blister, and, except on the palms of the hands and soles of the feet, is very thin and transparent. It has no bloodvessels or nerves, and is therefore destitute of feeling, or sensibility. It is perforated with innumerable pores, or minute holes, through which the perspiration passes, and also the hairs. It is constantly wearing out and being renewed. On the palms of the hands and soles of the feet it is very thick, particularly in persons that labor, and being every where without sensibility, it serves as a protection to the true skin, and a barrier against the ready absorption of substances that come in contact with the surface.

The internal layer is called the *Cutis vera*, or *true skin*, and is plentifully supplied with nerves and bloodvessels. So numerous are they, indeed, that you can not insert the point of a needle without producing pain and causing the blood to flow. When examined under a microscope, this layer is found to consist partly of dense fibers which intersect each other in various directions, and partly of minute bloodvessels, capillaries and nerves, which fill up the spaces between the fibers, the whole forming a most complete and compact net-work. Within the true skin are also an immense number of little glands with minute ducts, which penetrate the other layers and open upon the surface, constituting the pores of the skin. These glands are of two kinds, the *sudorific glands* which secrete the perspiration, or the aqueous portion of it, and the *sebaceous glands*, which secrete an oily fluid, which serves to lubricate the external skin and defend it from the action of moisture, and also prevents it from becoming dry and harsh. It is owing to the presence of this oily substance that water or perspiration collects in drops upon the skin.

Between these two layers of the skin, or between the cuticle and cutis, is a thin layer called the *rete mucosum*, the office of which seems to be simply to contain the coloring matter of the different races. In the Negro it is black; in the mulatto yellow; in the Indian a dirty red; and in the European more or less white, as the appearance of the skin may indicate. Were it not for the *rete mucosum* the African would appear as white as we do. It gives to the skin the various colors and shades of color, which are to be noticed in the people of different nations and climates.

THE SOURCE OF PERSPIRATION.

The perspiration, or what we call sweat, is secreted from the blood, by the little glands which I have just mentioned. While the blood is passing through the capillaries of the skin, these glands secrete from it, or absorb its excess of watery fluid, and along with it a large amount of useless and extraneous matter.

Perspiration is distinguished into two kinds—*sensible* and *insensible*; a distinction however without any difference, except in quantity. It is said to be insensible, when it passes off from the body in the form of an invisible vapor; and sensible, when it collects on the surface in drops, in the form of sweat. In the one case it is so gradual, and is so rapidly evaporated, that it does not accumulate upon the skin so as to be perceived, and hence is said to be insensible; while in the other, either from exercise, the heat of the surrounding temperature, or the action of some agent taken into the system, the perspirable matter is thrown upon the surface faster than it can be evaporated,

so that it becomes more or less perceptible, and is therefore said to sensible. The process is all the same however, in both cases, the difference being only in degree.

THE USES OF PERSPIRATION.

Most prominent among the uses of perspiration may be regarded that of removing from the system worn-out and useless matter and poisonous gases. It has been shown that through the medium of respiration the blood is oxygenized and purged of its excess of carbon and carbonic acid; but it is probably relieved of a still greater amount of impurities and injurious substances through that of perspiration. It has been ascertained that the average number of pores in the skin to the square inch is about 2,800, and the number of square inches of surface in a man of ordinary size is 2,500, which would give the whole number of pores of the skin as 7,000,000. We need not be surprised therefore at the fact stated by Sanctorius, and other eminent writers on the subject, that from one-half to five-eighths of all that we eat and drink passes off through these pores in the form of perspiration. All physiologists agree that from twenty to forty ounces of matter—thirty ounces being the average—pass off through the skin of a healthy adult every twenty-four hours. A large proportion of this perspirable matter is made up of the decayed and waste particles of the body, which have been thrown into the circulation by the absorbents, and thence extracted by the sudorific glands. As has been stated elsewhere, the constant wearing out of the material of the various tissues of the body, furnishes a large amount of waste matter, all, or nearly all of which, is eliminated from the blood and the system in this way.

Besides the waste material of the body, there are often other irritating and poisonous substances which can only be removed from the system through the medium of perspiration. I have already explained in the proper place the course which every thing that enters the stomach takes in its passage through the system. Fluids are absorbed, and pass directly into the blood. Solids undergo digestion and then pass into the duodenum and intestines, whence all that can be reduced to a semi-fluid state, in the form of chyle, is conveyed into the blood through the lacteals and thoracic duct. When poisonous substances are taken into the stomach therefore, if not ejected by vomiting, induced either by the poison itself or by something taken for the purpose, or removed by artificial means, they will enter the blood, and with it the general system, in the same way; that is, through the absorbents or the chyle ducts. Solid and liquid poisons usually enter the system in this way, through the mouth and stomach,

while poisonous vapors, miasmata, and gaseous substances enter through the lungs and pass directly into the blood by absorption, as has been previously explained. It is reasonable to suppose that more or less poison is taken into the system through one or both of these mediums every day. There is probably not a day or a night but we inhale more or less impurities in the air we breathe. In cities, towns, and in many districts of country, especially in warm weather, there are always more or less animal and vegetable effluvia, and poisonous gases afloat in the atmosphere. And it can not be doubted that we often take into our stomachs irritating and poisonous substances along with our food, to say nothing of our medicines. All such injurious agents, after they have once entered the circulation, can only be removed from the system through the grand emunctories of the blood, the perspiratory organs. By this most admirable provision of nature, the fluids are cleansed, and extraneous matter is eliminated from the body, but for which, debility, disease, and a general derangement of the living machinery would speedily ensue.

Another use of the perspiratory process is to regulate and modify the temperature of the body. As has been shown, animal heat is generated in the system by a sort of combustion resulting from the union of oxygen and carbon. As this combustion, in the coldest of weather, is sufficient to maintain the heat of the system at about 100 degrees, it is evident that if there were not some wise provision for its escape in case of excess, we should be too warm in summer; indeed we should be too warm at all times, and would soon be consumed with burning fever. A large amount of heat escapes from the body by evaporation, passing out through the pores of the skin along with the perspiration; indeed this is its natural outlet, and its escape is the more rapid in proportion to its excess, if the perspiratory organs be in a healthy condition. Every one knows how readily we perspire when the body is heated by exercise; and in very warm weather we often perspire freely without exercise. Exercise, you know, particularly if it makes us breathe faster, augments the heat of the body, and this renders an increase of perspiration necessary. We here see another evidence of the economy and wisdom of nature in employing the perspiratory process for the double purpose of relieving the system of its waste matter and its excess of heat at the same time.

We may still add as another use of perspiration, and one too of no small consequence—that of moistening the surface of the body. The skin, as well as every other part of the body, requires a certain amount of moisture for the purpose of lubrication, to keep it soft, pliable, and in a healthy condition, and also to protect it against the

action of the atmosphere and other external agents, and against the too ready absorption of poisonous substances.

IMPORTANCE OF PERSPIRATION.

The perspiratory process is one of immense importance in the living machine, and can scarcely be over-estimated. There is probably no other single function of the body which holds so great an influence over the health and integrity of the system. If you have read what has been said of its uses, and will but reflect a moment upon the probable consequences that would result in case it should be suspended, you can not help but see that it is of the greatest importance. So apparent is this that it seems almost unnecessary for me to say any thing further on the subject. But as I wish to make my remarks as useful and practical as my limited space will allow, I propose to glance for a few moments at some of the consequences of suspended perspiration, in order that you may the better understand and appreciate the importance of the function.

You know something of fever. Perhaps you have felt its scorching influence. Did you ever notice, or think of, the condition which exists in fever? The skin is hot and dry. The whole system seems filled to excess with heat. The heart beats violently, and the blood rushes through the arteries with unwonted rapidity and violence. *There is no perspiration!* Did you ever think of that? The prominent condition in fever is *suspended perspiration*. In fact this is the immediate cause of fever. There can be no fever when the pores are open, and the sweat flowing freely; when the perspiratory organs are in full play, and the skin is in a healthy condition. Suspended perspiration is not the remote cause—not the exciting, first cause of the disease. It may not be even the second, nor the third cause—for there are often several causes, which combine to produce fever; but it is the immediate cause, the actual, real condition which exists in all cases of general fever. In treating a case of fever, one of the first objects of the physician is to produce a free perspiration. If he can do this, and restore a healthy action to the skin, he will have “broke the fever.” In such cases relaxant and sudorific, or “sweating medicines,” are given. And very often a good emetic of Lobelia and Ipecac will afford immediate relief, because it relaxes the pores of the skin, and excites the sudorific glands, thus inducing perspiration, by which means the confined heat of the body is allowed to escape, and along with it more or less of the accumulated vitiating matter which acts as an exciting cause of the disease. Cleansing the body well with a weak alkali, made by adding a little saleratus, or common ley, to warm water, is often beneficial; because it removes from the

surface the oily matter which is thrown out by the sebacious glands and which is apt to become tough and hard in case of fever, and obstruct the external openings of the pores. But one of the best means of relief in cases of fever is the Hydropathic treatment, or wet sheet. The cold water absorbs the heat from the surface, relaxes the skin, opens the pores, excites the cutaneous glands, and induces perspiration, quicker, safer, and better, probably, than any other means known. A few good "packings" in the cold wet sheet, of an hour to an hour and a half each, will often break up the worst case of ordinary fever, and simply, too, upon the ground of restoring a healthy action to the perspiratory organs.

In fever, I have said, the skin is hot and dry, and there is no perspiration. Let us now look for a moment into the cause of all this trouble and derangement. One of the principal uses of perspiration is to eliminate from the body its worn-out and morbid matter and poisonous substances. Now let there be a check of perspiration, from any cause whatever, and what will be the consequence? If it is but slight, we may have unpleasant feelings, head-ache, perhaps a cough, or it may be the tooth-ache, or rheumatism, with a dry skin, and more or less feverish symptoms. The obstruction however not being very great, nature may overcome it in a day or two, and restore things to their normal condition. But let the obstruction be complete and continued for some time, and then see what follows! In the first place all the fetid and waste matter is retained in the system, and is distributed by the blood through every part of the body. And this offensive matter is all the while increasing in quantity. Soon it begins to act as an irritant and poison. The fluids become vitiated; the muscular fiber irritated; then a sort of general inflammation sets in. Add to this the accumulating heat of the body, which is also very much confined, and you can easily see how we may soon have a fever. In such case the suppression of the perspiratory process may be the primary or main cause of the disease, for the retained waste matter of the system will soon prove a sufficient proximate or exciting cause, even of the worst kind of putrid and malignant fever. If the suppression be permanent and complete, the disease may assume the type of what is termed *continued fever*, in which case it is apt to be more or less malignant in its character. Should it take the *intermittent* form, however, there will be seasons of relaxation and perspiration, during which a sufficient amount of the waste matter of the system may be thrown off, along with the perspiration, to prevent the disease from assuming a putrescent character. This perspiration—during the intermissions—though it probably relieves the system of much offensive matter, is not a natural, healthy process,

but is rather the effect of debility and the relaxation which follows as a consequence after the excitement of the fever.

But again: In certain districts, and at certain seasons of the year, especially in hot weather, the atmosphere is more or less loaded with malaria, and it may be with other poisonous gases. Suppose the perspiratory process be interrupted or suspended at such times, then all of this noxious matter that is absorbed through the medium of the lungs, will be retained in the system, and the probable consequence will be fever and ague. But it may be asked, Do we never have the ague unless the perspiratory function is interrupted? I presume we do. But the probability is that in a majority of cases at least a suspension of perspiration acts as the immediate cause of anticipating or hastening its development. The pulmonary absorption, or imbibition of gases through the medium of the lungs, is very great; and there are no doubt times, in highly malarious districts, when the system takes in more of the poison than can be thrown off by the skin, in which case, if the person remain long enough in the infected district, the poison will accumulate and the disease develop itself, in spite of all that nature can do to prevent it. This is more especially true of persons in whom the perspiratory function is feeble, or whose skin is in an unhealthy condition. In such cases, where the system is already charged to excess with the ague poison, a sudden closing of the natural and only process which affords it an outlet—it may be from simply getting the feet damp, from sitting in a draft of air, exposure to the night air, remaining in a cool, damp room, or any thing that will cause a suppression of the perspiration—may develop the disease immediately. If people would attend properly and understandingly to this important function of the system, this great conservator of health, they need seldom have the ague, and might also avoid many other diseases. You hardly ever see a person have the ague, or chills and fever, whose perspiratory system is in an active, healthy condition—in other words, who sweats freely.

But the ague is not the only complaint that may result from checked perspiration. There are many other diseases which are often induced by a suppression of this function—such, for instance, as diarrhea, dysentery, rheumatism, congestion and inflammation of internal organs, consumption, and diseases of the lungs and throat, neuralgia, and the like, according as the predominant tendency to any particular disease or condition may exist in the system at the time.

The skin should always, if possible, be kept in a healthy condition; and whenever therefore we discover that from any cause whatever its functions have become deranged or suspended, we should lose no

time in resorting to the proper means necessary to overcome and remove the obstruction, and bring about a free and healthy action. Persons will sometimes go for several days, or a whole week, with obstructed perspiration, and the attending symptoms of an attack of fever or some other disease, without doing any thing to remove the difficulty. They know from their unpleasant feelings that they are not well, and they see that they do not sweat any, or if any, very little; the skin most of the time is dry and harsh, accompanied perhaps with occasional flashes of heat—until finally they are prostrated by disease; whereas, if they had made use of some simple means at the commencement, or during the early stage of the derangement, such as the wet sheet, the vapor bath, or a good artificial sweat by means of warm teas, aided in obstinate cases by a *Lobelia emetic*, they might have saved themselves from a long spell of sickness, and perhaps a heavy Doctor's bill. There is nothing like taking time by the forelock, in such cases. Remember that the poison, whatever it may be, that produces the autumnal fevers and agues of our Western country, comes in at the lungs, and must go out, if it goes out at all, through the pores of the skin. Obstruct this outlet for a little while, and you may have the ague, the intermittent fever, or any other disease, a tendency to which may be prevailing at the time. Keep the emunctories of the skin open and free, and there are ten chances to one that you will escape unharmed.

BATHING AS A MEANS OF HEALTH.

WE have seen, I trust, how important a relation the function of perspiration holds in the general economy to the health and well-being of the system. Among the means best calculated to promote a healthy condition of this function, that of frequent bathing may be regarded as holding a pre-eminent rank. Cleanliness of body is one of the necessary conditions of health, because it is essential to a healthy condition of the skin, and, consequently, of the whole perspiratory apparatus. Daily bathing, of some sort or other, is to be recommended at all seasons, but it should be rigidly observed during warm weather. The water to be used for this purpose may be warm, cold, or tepid, according to the time, or as the individual may prefer. But as a general rule, the morning bath should always be cold, or cool; while the warm or tepid bath is to be preferred at night—except in extreme hot weather, when either may be used.

THE SPONGE BATH: In all ordinary cases, the sponge bath may be recommended, on account of its simplicity, and of its being easily obtained at almost all times and places. It consists simply in washing the body all over, by means of a sponge, or cloth, or it may be done with the hands alone, and then wiping dry and rubbing the surface well with a towel. Friction upon the skin is an essential part of the process, and should be used freely and thoroughly, both during the washing and afterward, in drying the surface. It is necessary also that the person immediately after dressing should take free exercise in the open air for a short time, where the circumstances will in any way allow of it. None but very great invalids should be allowed to retire to bed immediately after bathing. The exercise may be taken either in the room, or out of doors, when the weather is favorable, as may be most suitable to the condition of the person.

Cold ablutions of this kind are suitable for all persons and constitutions. They may be used by women, children, persons of old age, and those of feeble health and constitutions. They exert a stimulating and strengthening influence upon the system, give tone and energy to the skin and perspiratory organs, promote the secretions and excretions, tend to equalize the circulation of the blood, and to relieve local congestions. Many a feeble constitution has been made comparatively healthy and robust by persevering in their use. They naturally have also a happy and beneficial effect upon the mind and intellect.

In cold weather, the room in which the bathing is performed may be slightly warmed for sickly and debilitated persons, in order to prevent the danger of their taking cold; but for persons in good health, or sufficiently so for them to get through the operation quickly, and take exercise immediately afterward, this should not be done. As a general thing, a cold room is to be preferred to a warm one, in all cases where the person goes immediately from the room into the open air.

THE SHOWER BATH: When convenient, the shower bath is an admirable thing—to be followed of course with proper friction and exercise. The morning is probably the best time to take it. In order to take this bath properly, it is necessary to have a box or apparatus constructed expressly for the purpose. Most of my readers probably will know how such an apparatus should be made. It is sufficient to say here that it consists, essentially, of an arrangement by which the water is allowed to fall upon the body in many small streams at the same time, and the greater the surface upon which they fall, the better. Usually these baths are so constructed that the streams fall perpendicularly, and strike upon the head and

shoulders only. But sometimes they are so arranged, by means of leaden pipes, coiled around the inside of the box, somewhat like the worm of a still, which are perforated with small holes, through which the water jets out horizontally and strikes the body on all sides, at the same time that it falls upon the head and shoulders from above. This arrangement, of course, is the more complete; but the usual plan is amply sufficient for ordinary purposes. The box should be large enough to permit the person to stand erect in it, and still allow the water to fall one or two feet upon the head. At the top of the box may be placed a large tin basin or vessel, the bottom of which is perforated with small holes. Into this the water may be poured from a bucket by an assistant, or it may be conducted into it from a reservoir above. The bath consists emphatically of what its name indicates—a shower; any way to produce this will answer. Where there are no better means at hand, an assistant may stand upon a chair, or in some elevated position, and pour the water upon the bather from a common watering-pot, which will answer as a very good substitute for a more perfect machine.

The benefit of the shower bath consists mainly in the general shock, and consequent reaction, which it produces upon the nervous system, and the organs of the skin, whereby they are aroused to increased action, the functions of secretion and excretion promoted, and the whole economy more or less benefited. In order to derive the full benefits of the bath, the water must be cold. From a half minute, to one or two minutes, according to the size and force of the streams, is long enough to remain under the shower. Children and feeble persons should be accustomed to the cold water of these baths by first using tepid or but slightly cool water, gradually changing to colder, until they are able to stand it at the lowest temperature. The shower bath apparatus may be recommended as an excellent thing in a family. It is not only a great preserver of health, but it is valuable as an auxiliary in the treatment of many diseases.

THE FULL BATH: This consists in immersing the whole body in water. For this purpose a tub, vat, or bathing trough is necessary, which should be large enough to take in the whole person and be sufficiently roomy to admit of freedom of motion. The water may be warm, tepid, or cold, according to circumstances. At night, it should be warm or tepid; and the person may remain in the bath half an hour.

If cold water is used, it is necessary to prepare the system for it before entering the bath, by first washing the head and neck with cold water, and then the shoulders and chest. This indeed, is proper in all cases of bathing in cold water. It will prevent too great a rush

of blood to the head, and to important internal organs, when the water comes in contact with the whole surface of the body.

The length of time that a person should remain in a cold full-bath is but short. The sudden contact of cold with the surface drives the blood from the capillaries of the skin into the larger bloodvessels, and if continued too long it will necessarily concentrate upon internal organs, and may produce injurious consequences. The time may vary, according to the coldness of the water and the condition of the person. From half a minute to one or two minutes will be long enough. A minute may be regarded as the average time, and if the water is very cold, half a minute will do. During the bath the person should also exercise his limbs as much as he can, and rub himself with his hand or a bathing brush, or have an assistant to do it for him. As soon as he leaves the bath he should quickly dry the whole body, and then make use of severe friction with a coarse towel or brush, to promote a reaction. It is best for him, when he can, to perform the rubbing himself, as it gives the whole body exercise. After dressing, the next thing is exercise in the open air, whenever the circumstances will allow of it.

The cold full-bath is beneficial in all cases where an increased reaction is necessary; where the warmth of the body is unequal and needs to be equalized; where the organs of secretion are to be invigorated; where the circulation of the blood should be determined to the surface for the elimination of morbid matter from the system; and where the skin is in a feeble or unhealthy condition. It is to be avoided however in all congestions and inflammations of important internal organs, in all diseases of the chest, in affections of the brain, and where there is a tendency of blood to the head, in persons of plethoric habits, and where a violent excitement or shock would be likely to prove injurious. In all such cases the warm or tepid bath may be used, not only with safety, but often with great advantage.

Besides these there are several other kinds of baths, principally local in their character, as the head bath, foot bath, sitz bath, and the like, all of which are highly useful under certain circumstances. But as my remarks are intended to show the uses and beneficial effects of frequent ablutions and bathings, to explain the general principle upon which they act, and to urge upon the attention of the reader their necessity and importance, it is not necessary that I should enter into a detailed or special account of the various kinds of baths. The three which I have noticed will include the rest. They all act more or less upon the same principle; and when used as a remedial agent in the treatment of disease, if the affection be local in its character, the application of the water should also be local, and vice versa, if the

disease be general, then should the bathing be general also. For a more extended treatise on bathing and the use of water, as a remedial agent, the reader is referred to some good work on Hydropathy and the Water cure Treatment, where he will find a full description of the different kinds of baths and water applications, with special directions how and when to use them in treating the various diseases.

But in all cases of cold bathing, let it ever be borne in mind that the first and most important thing is to secure what is called a GOOD REACTION. This condition will be manifested by an increased cheerfulness, and by a gentle glow upon the surface of the body. To secure this, the water must be cold, the operation performed briskly, and the friction more or less vigorous, as the case may require. When the cold water first comes in contact with the skin, it usually causes the blood to retreat from the capillaries toward the center of the body. But this should only be temporary. The blood should return again quickly to the surface, and should bring along with it an increase of circulatory and nervous activity.

Should the cold bath, after all proper efforts, be followed by paleness of the skin, dullness and inactivity of both body and mind, with more or less chilliness, it is not likely to be useful, and should, for the time, be abandoned. In such cases—which are rare—it will be best to use tepid water, then that which is slightly cool, gradually lowering the temperature, until, in the course of a few weeks at most, the constitution may be so improved, that the coldest water can be used, followed by the desired reaction.

Finally, in order to derive the full benefit from bathing of any kind, and often any benefit at all, it is necessary to observe some system in the matter. Some people seem to think they can bathe indiscriminately in warm or cold water, and at any time of day that is most convenient. This plan, or rather want of plan, will not do. To many, such a course will be productive of more harm than good. For most persons, perhaps, immediately after rising in the morning is the best time, or as good as any, to take a cold sponge or shower bath. But there are some, particularly females, whose constitutions and general health are too feeble to allow of this. In the morning the system is in a languid and less active condition, and is not so well able to produce a good reaction. Persons therefore of delicate constitutions or feeble health, would do better to defer the operation till the middle of the forenoon, when the system is usually in its best and most active condition. A great change for the better has often been found by adopting this plan. Bathing, like every thing else pertaining to the human system, is subject to certain laws, and it is our business and our duty to find out those laws, and then obey them.

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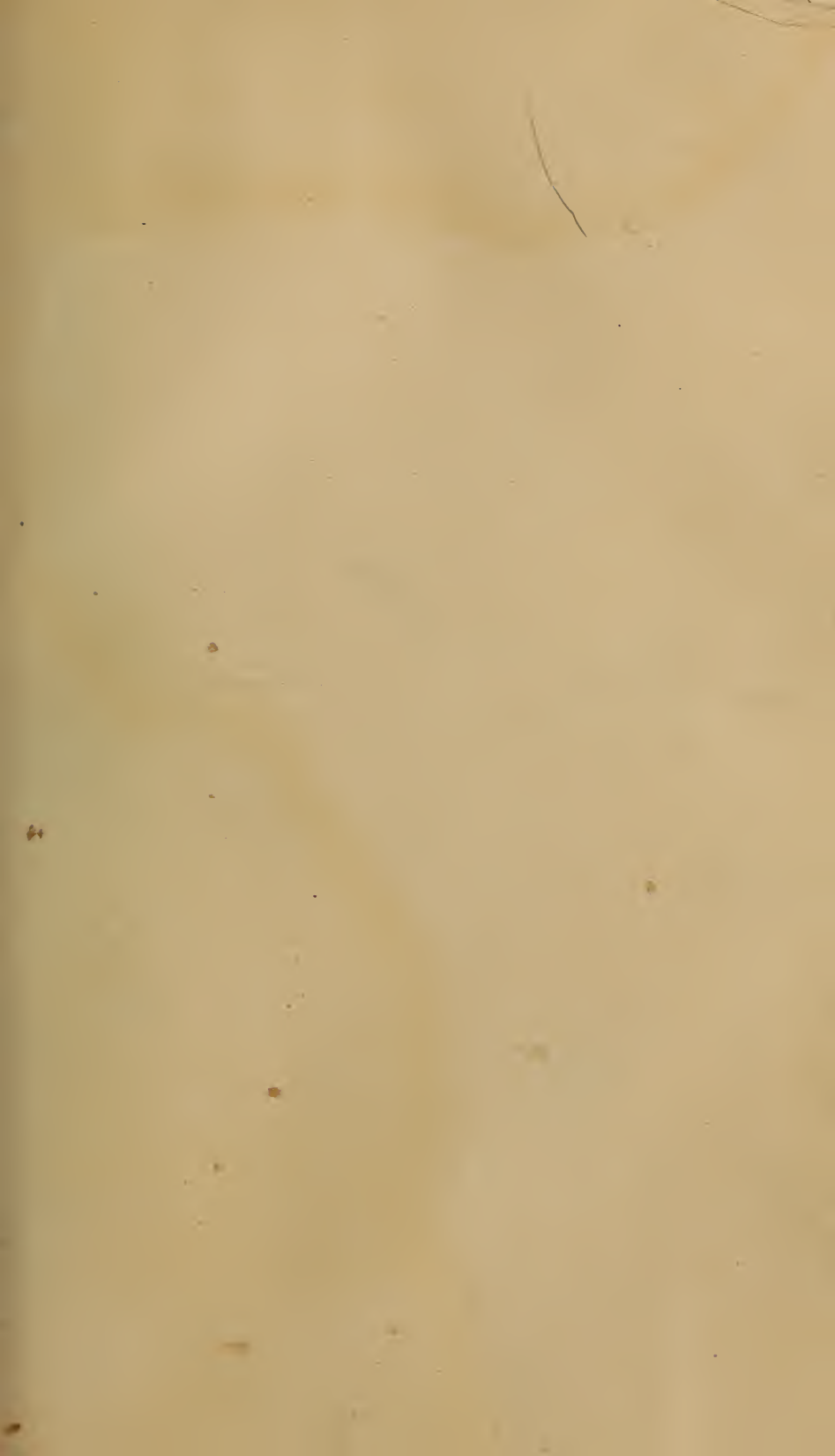
PHYSIOLOGY.

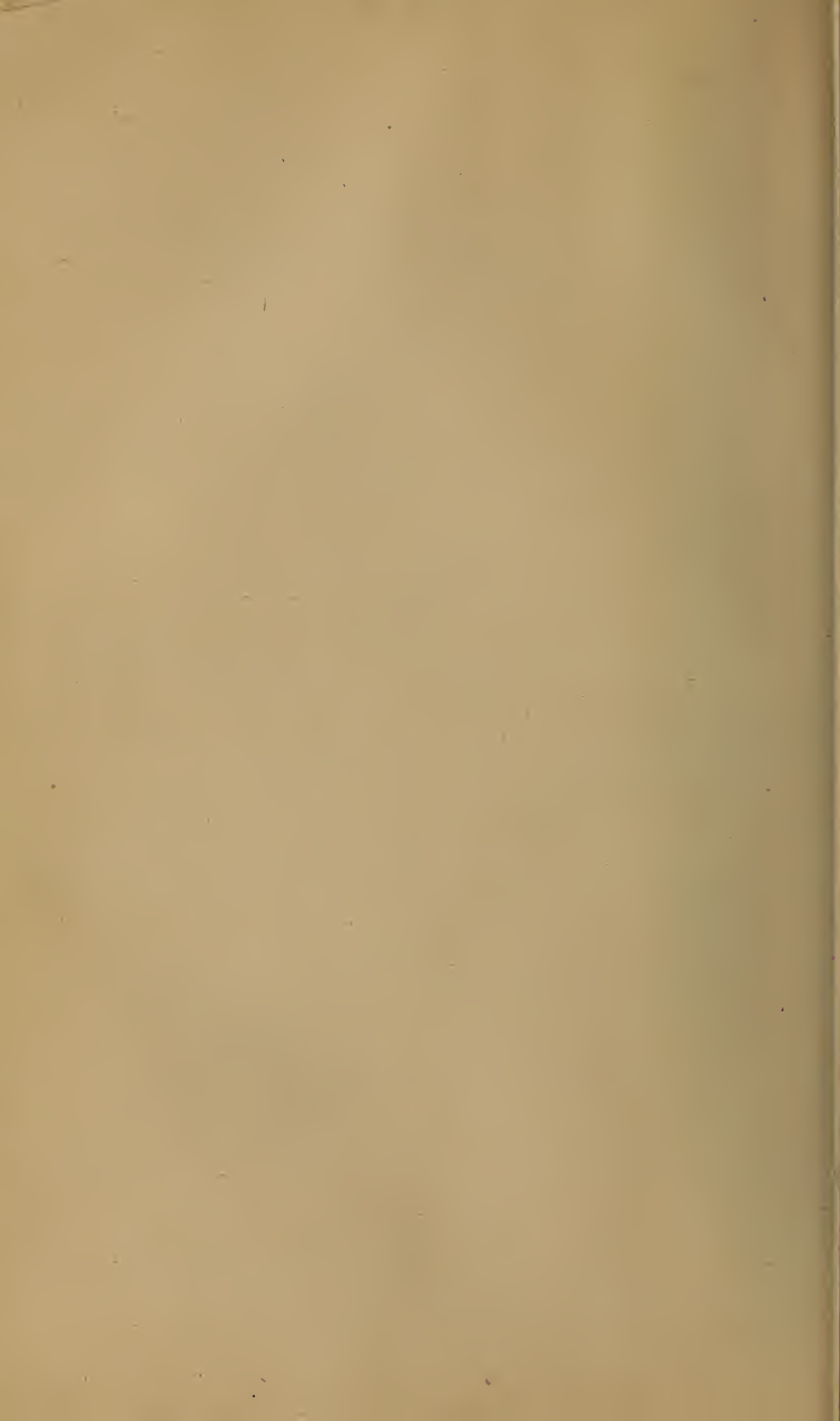
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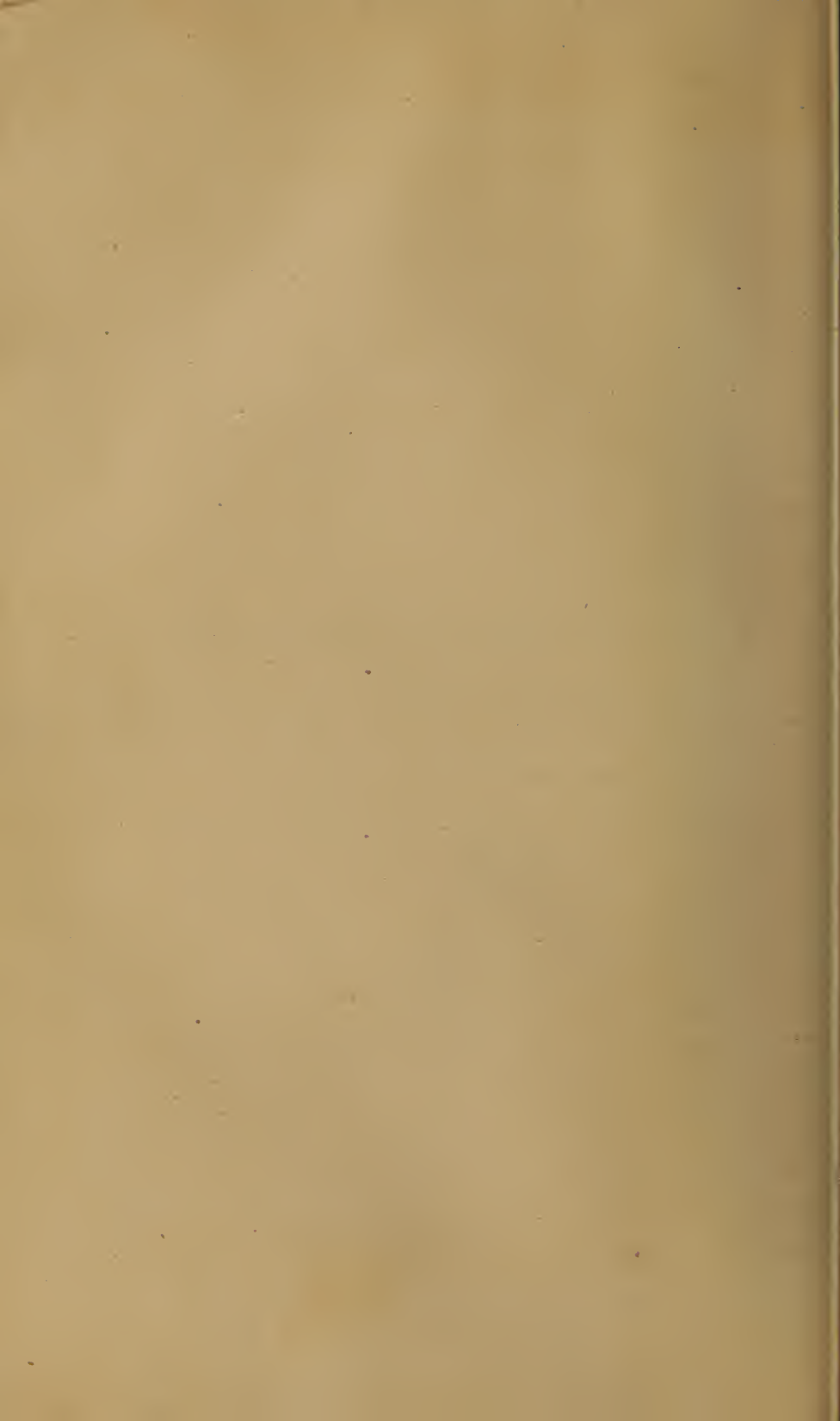




“ADDITIONAL DISEASES
DESCRIBED AND TREATED.

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PHYSICIAN TO THE CINCINNATI CHOLERA HOSPITAL IN 1849.”



SUPPLEMENT.

APOPLEXY.

APOPLEXY is a disease characterized by a sudden loss of feeling, consciousness, and the power of voluntary motion. Its immediate cause is internal pressure upon the brain, from congestion or effusion. It is most usually produced by a *rush of blood to the head*. It generally attacks elderly or middle aged persons, and seldom occurs in early life.

SYMPTOMS: The disease is sometimes preceded by certain premonitory symptoms, such as fullness and weight in the head, dimness of sight, roaring in the ears, confusion of ideas, numbness in some portion of the body, and other evidences of slight partial palsy. But cases sometimes occur without any warning, even in the midst of apparent good health.

When a person is attacked he suddenly falls, losing for the time his sight, hearing, feeling, and power of motion—while the action of the heart and lungs still continue. The veins of the face and neck become turgid with blood, the arteries throb, pulse full, strong, and slow; the breathing is also slow, and the power of swallowing much impaired or entirely lost. This condition may continue for a few minutes only, or for several hours; when, if not fatal, it slowly yields to the power of nature, or the effect of remedies. The patient may entirely recover from all bad effects of the disease, but it is very often the case that partial palsy will remain for a long time, and it may be permanent. The mind also is often more or less permanently injured. Inflammation of the brain may also result as a consequence.

Persons usually recover from the first attack, and may from the second; but the third, of the severe form, generally proves fatal. Profound coma or stupor, small quivering pulse, cold extremities, a cold sweat on the skin, with increasing intervals between breathing, are to be regarded as fatal symptoms.

CAUSES: In some persons there is a hereditary predisposition to apoplexy. It is also said that persons with a certain formation of

body, as a full, plethoric habit, low stature, broad shoulders, and short, thick neck, are predisposed to the disease. It occurs, however, in persons of an opposite formation of body.

A predisposition to the disease is also acquired by certain habits of life, such as high living, habitual intoxication, sedentary pursuits, great indulgence in sleep, and long continued mental exertion.

Among the exciting causes may be named, distension of the stomach by a full meal, immoderate use of ardent spirits, violent exercise, severe fits of coughing, stooping and blowing the fire, and violent passion.

TREATMENT.—The first thing to be done in a case of apoplexy is to equalize the circulation, and thus withdraw the pressure of blood from the brain; and then take measures to prevent a determination of it to that organ again.

Prompt and energetic means are to be employed. Place the patient in an easy position, with the head elevated; remove every thing from the neck that might prevent the free return of blood from the head. Apply cold water freely to the head and face, and as soon as possible place the feet and legs in hot water. Strip the patient, and rub the feet and legs, gradually extending the rubbing up over the body and arms, applying warm water, to which has been added some Cayenne or powdered mustard. This will produce a warmth in the extremities and a free action in the capillary vessels, which will invite the blood to those parts and withdraw it from the brain.

At the same time, if convenient, and the attack seems to be a severe one, preparations should be made to put the patient in a warm bath, large enough to contain the whole body as high as the arms or shoulders; and if the first process does not succeed in restoring consciousness in half an hour, he should be placed in this for another half hour, or until relief is obtained, be it long or short. Keep the head cool all the while.

As soon as the patient has been restored to consciousness and relieved of urgent symptoms, he should be placed in bed, with the head and shoulders somewhat elevated, and hot bricks or rocks placed about his legs and body; and as soon as he can swallow, a brisk, active purgative should be given. For this purpose there is nothing better than the *Anti-bilious Physic* (see Table of Family Medicines), or two parts of pulverized Senna and one of Jalap. Take of this compound a heaping teaspoonful, and as much Cream of Tartar, mix in a little warm water, and give at one dose. It will be well to add a little Cayenne to make it act quicker. If it does not operate in an hour, repeat the dose; and as the bowels are generally constipated in this disease, it would be well to aid the operation by giving

an injection composed of a spoonful of the same physic in a pint of warm water, a large spoonful or two of melted lard or sweet oil, and a little salt or Cayenne.

A large mustard plaster should be applied over the region of the stomach. It will have a tendency to prevent inflammation of the brain.

Diaphoretic or sweating medicines should also be given, such as a tea of the Composition Powder, pennyroyal, catnip, and the like. There is no better way to equalize the circulation than to produce a free and general circulation.

Do not bleed. The lancet never cured a case of apoplexy. It may afford temporary relief, but it will oftener hasten a fatal termination. Give no opium; it will but aggravate the disease. During convalescence the purgatives should be repeated every few days, for a week or two.

After recovery be careful in the diet and habits. Avoid strong, high seasoned victuals, wines and liquors of all kinds. Use mainly a spare vegetable diet. Make use of frequent bathings with friction, and moderate exercise in the open air. Keep the feet warm. Avoid fatigue of both body and mind, and in all things observe strict temperance.

PALSYPARALYSIS.

PALSY has its seat in the nervous system, and is characterized by a loss of the power of motion or of feeling in the part affected, and sometimes both. The most usual form of palsy is that where one side of the body is affected. It sometimes seizes the lower extremities, or all below the hips. In the former case it is called *hemiplegia*; in the latter, *paraplegia*. When confined to a particular limb, or set of muscles, it is called *paralysis*, or partial palsy.

SYMPTOMS: The symptoms of palsy are generally palpable enough, and not easily mistaken. It is apt to come on very suddenly, with an immediate loss of sensibility and the power of voluntary motion in the part affected. Sometimes, however, it is preceded by a numbness or coldness, and perhaps slight convulsive twitchings, and other symptoms similar to those which precede apoplexy.

Sometimes the disease will go off spontaneously, with a diarrhea, or fever. A feeling of returning warmth, and slight pricking pain in the part, with returning sensation and power of motion, may be regarded as favorable symptoms.

CAUSES: Palsy may be occasioned by any thing that prevents the flow of the *nervous fluid* from the brain into the organs of motion, as tumors pressing on the spinal cord, or nerve; pressure from dislocations and fractures of bones; by disease or wounds of the nerves. The long continued exposure to the influence of certain sedative agents; as the handling of white lead, exposure to the fumes of metals and minerals will also produce paralysis. It is also symptomatic of other diseases, as worms, scrofula, syphilis, apoplexy, or may follow them as a result.

TREATMENT.—It is not often that we can do much for the hemiplegic or paraplegic form of the disease, if it is of long standing, especially where both motion and sensation are gone. Yet in the early stage it may often be cured by proper treatment.

At the commencement, if the attack has been sudden and violent, pursue the same course as directed in apoplexy.

There will probably be spasmodic symptoms, violent twitching or contortions of the muscles, perhaps of the face. For this, and to allay spasms and pain, give the following: Sulphuric ether and tincture Lobelia, of each one ounce; tincture Cayenne and Laudanum, of each half an ounce; mix, and give a teaspoonful every ten to thirty minutes, until the spasms subside. The back and spine should be well bathed and rubbed with stimulating liniment, or Cayenne and vinegar, and the same should be applied to the parts affected, using brisk friction with the hand. As soon as urgent symptoms are allayed, other treatment must be employed.

1st. Evacuate the bowels. It will generally be necessary to make use of injections, for the bowels are usually much constipated, and sometimes the lower portion of the body is so paralyzed or torpid that purgatives will not act upon the bowels. And then, too, it is not best to wait for a purgative to act, for it may be that the constipation of the bowels is the principal cause of the difficulty. A dose of some active purgative may be given, and the Anti-bilious Physic, or Senna and Salts, and then give the following by injection: Pulverized Lobelia and Cayenne, of each a teaspoonful; a tablespoonful of common salt, a gill of lard, or castor or sweet oil, and a pint of boiling water. As soon as cool enough, give half of it, by means of a large syringe, and the balance after the first has passed away. This will excite an action in the bowels and induce evacuation, if any thing will.

2d. Purgatives must be given every two or three days, such as the Anti-bilious Physic, or pills made of the extract of Mandrake and Cayenne; or the *Podophyllin* and *Leptandrin* may be used. These last two are concentrated preparations, the first made from the Mand-

rake or Mayapple root (*Podophyllum*), and the other from the "Indian Physic," or Black Root (*Leptandria*), and may be found in most of the drug stores. From one to three grains of each, combined, will be a dose for a grown person. They are both valuable remedies, in many diseases.

3d. The patient should also take the following nervous pills: Extract *Hyosciamus*, 40 grains; extract *Aconite*, 20 grains; *Macrotin*, 20 grains; make into 20 pills, and let him take one every night and morning. The *Macrotin* is also one of the new concentrated remedies, made from the Rattle Root or Black Cohosh (*Macrotys*), and may always be found along with the *Podophyllin* and *Leptandrin*, or may be had of any Eclectic physician.

4th. Some good tonic bitters are also advisable, such as the following: Take the roots of the Indian hemp, called also Bitter Root, Milkweed (*Apocynum cannabinum*), and Prickly-ash bark—a handful of each; bruise, and add a pint of boiling water. When cold, put all into a jug or bottle, and add a pint of good whisky, and an ounce of *carbonate of iron*. Take half a wine-glassful of this three times a day. A handful of the *Ladyslipper* root would be a good addition. The Indian hemp alone is an excellent remedy in all paralytic affections. An infusion made of an herb called *Fever Few*, to be drank freely, cold, is also a valuable remedy in this disease, as well as in *St. Vitus' Dance*, and such like nervous affections.

The extremities and parts affected, should be sponged once or twice a day with cold water saturated with salt, and rubbed well. Attend well to the skin and general system. Any slight attack of palsy will yield readily to the foregoing treatment, unless the patient be very old and feeble.

ST. VITUS' DANCE—CHOREA.

THIS affection also has its seat in the nervous system, and consists in convulsive and involuntary motions of one or more of the limbs. It sometimes, also, affects one side of the face.

The complaint is chiefly incident to young persons, occurring generally between the ages of seven and twenty-one. Girls are more subject to it than boys.

SYMPTOMS: Chorea seldom comes on suddenly. It is generally preceded by symptoms, varying in duration from a few days to several months—such as coldness of the feet and limbs, a tingling sensation

in the parts likely to be affected, heaviness in the extremities, fullness in the head, obstinate constipation of the bowels, difficulty of swallowing, a disposition to gloom, or excessive cheerfulness, and sometimes a remarkable proneness to mischievous conduct.

After a while, irregular muscular twitchings, or spasmodic contractions, are observed in the face, or in one of the extremities. One of the legs will be affected with a kind of lameness, and the patient drags it in an odd and ridiculous manner. Or he can not hold his arm still, but is constantly throwing it about. When he undertakes to carry food or drink to his mouth he makes numerous singular gesticulations, perhaps, before he can accomplish it. The head sometimes partakes of the same convulsive action.

In severer cases the patient seems to have lost nearly all command over the voluntary muscles. When he attempts to walk he usually hobbles along in an irregular manner. Sometimes he can neither walk, stand, nor sit still. The hands and arms are often in continual motion, jerking and flying about in every direction; and the muscular contractions of the face sometimes are extremely severe and ludicrous, giving a continually varying expression to the countenance.

In violent cases, swallowing is sometimes much impeded, the respiration anxious and irregular, the voice altered, and the power of speech very imperfect. In fine, the muscular system seems to be in a state of *revolt*, bidding defiance to the authority and commands of the will. It is truly a singular affection!

CAUSES: This disease may be occasioned by various irritating causes, such as teething, worms, acrid matter in the bowels, repulsion, or driving in of chronic eruptions, as the itch, or drying up of scald-head. It also, and perhaps more frequently, arises from violent affections of the mind, as horror, fright, fear, anger, disappointed love, and religious enthusiasm. Suppression of habitual discharges, especially the menses, may produce it, and in many cases it arises from debility and extreme irritability of the nervous system. It is also said to take place from sympathy, at seeing others affected by the disease.

Chorea, or St. Vitus' Dance, is not a very dangerous disease, as it seldom proves fatal. It is not, however, entirely free from danger, as, if continued long, it may run into Epilepsy, and in this way prove fatal, or render the patient miserable for life. It is also apt to injure the mind, if protracted a great while.

TREATMENT: The indications of cure are, first remove the exciting cause, and then strengthen the nervous system.

Very often the stomach is in a deranged and irritable state. In

such cases give an emetic. It should be composed of equal parts of Lobelia and Ipecac, given with some warm teas.

In a few hours after this give a purgative, which should be repeated once in three or four days. Half a teaspoonful of Beache's Antibilious physic, with one grain of Podophyllin, will do for a dose. Repeat in six hours if it does not operate. When the subject is a young girl about the age of puberty, or you have reason to suspect that the development of the catamenia is concerned, the Podophyllin, or Mayapple root, in some form, should constitute the principal part of the purgative; and it might be repeated every other day, for a few times. Other means should be used calculated to aid in bringing on the catamenial discharge—such as frequent bathing the feet and legs in warm water, sitting over the steam from bitter herbs, drinking warm, diaphoretic and emmenagogue teas, as Composition, pennyroyal, or ginger. A decoction made from the root of the *Ver-vine*, is also valuable in all cases of suppressed or retained menses.

As a nervine and specific in St. Vitus' Dance, perhaps the Scullcap (*Scutellaria Lateriflora*) is the best. It is an herb that can generally be got at Botanic drug stores. An infusion or tea is to be made of this, of which let the patient drink from a half to a pint daily. It may be drunk warm or cold. If you add a portion of the Lady-slipper root, it will be all the better.

There is also another herb, called *Fever Few*, which is valuable in this affection. I have known cases where it alone has effected a cure in the course of a week or two. An infusion or tea is to be made of it, and taken same as the other.

Where the disease seems to be owing to debility of the nervous system, some restorative bitters should be used, such as the following: Take of Comfrey root one ounce, Spikenard root one ounce, Columbo and Gentian roots, of each half an ounce, Chamomile flowers, half an ounce. Bruise the roots, if not already powdered, and cover the whole with a pint of boiling water. When cold, put all in a bottle and add a quart of Madeira, or Malaga wine. Add to this an ounce of red oxide, or carbonate of iron. Half a wine-glass to be taken three or four times a day.

If the case is a very bad one, the following pills should also be taken: Take extract of Hyosciamus, forty grains; Gum Camphor, forty grains; Musk, twenty grains; make into twenty pills, and give one night and morning.

The sponge bath, of cold water and salt, should also be employed, with plenty of friction. Also an occasional warm bath, at night.

EPILEPSY—FALLING SICKNESS.

EPILEPSY is a disease characterized by paroxysmal attacks of convulsions, with temporary loss of sensibility and consciousness, followed usually with coma, or stupor. It is one of the most distressing diseases to which humanity is subject.

The disease comes on in sudden paroxysms or fits, which continue for a few minutes or half an hour, then leave the patient in his usual state, except that he is more or less debilitated and drowsy. The disease is most common among children and young persons, and boys seem to be more subject to it than girls. Its attacks are generally periodical, often monthly, or every new or full moon. Sometimes it occurs much more frequently, and again not so often as once a month.

The disease is often hereditary, several persons in the same family being subject to it, extending down through several generations.

SYMPTOMS: The attack usually comes on suddenly, and the patient falls to the ground—hence the name of *falling sickness*. Where the disease has become seated and habitual, the patient sometimes experiences certain warnings of the attack, such as giddiness, dimness of sight, confusion of mind, loud ringing in the ears, sparks and flashes before the eyes, trembling in the limbs, anxiety, drowsiness, starting during sleep, sullen gloominess, irritable temper, revery; some grow timid and cowardly, others spiteful, quarrelsome, or mischievous. But these premonitory symptoms usually last but a short time, seldom more than a few seconds.

Some persons are warned of an attack by seeing spectres just before it comes on. Others experience what is called *aura epileptica*—a certain peculiar sensation which I believe occurs in no other disease. It is a feeling of chilliness which commences in the feet, or legs, and extends gradually up until it reaches the head, when the patient suddenly becomes insensible and falls, or has the fit. In many instances epilepsy occurs invariably at night, during sleep.

When the patient is attacked he immediately becomes insensible, and more or less violently convulsed. The eyes roll about; the lips, eye-lids and muscles of the face are greatly distorted and convulsed; the patient gnashes his teeth, and foams at the mouth; sometimes the teeth are firmly pressed together, and the jaws fixed.

The face is sometimes pale, but more commonly of a livid, purple color, with a congested state of the veins of the head and neck.

Sooner or later these spasmodic symptoms abate, generally

gradually, and on coming to himself, the patient feels languid and exhausted, and retains not the smallest recollection of what has passed during the fit.

CAUSES: In some persons a hereditary predisposition to the disease exists. Repeated attacks render the patient still more liable to subsequent attacks. It often comes on about the period of puberty, owing no doubt to the important changes which take place in the system at that time.

In some cases the disease is what is called *idiopathic*, that is, owing to malformations of the skull, depressed bones, or a spongy growth upon the internal surface of the cranium; organic derangement of the brain; congestion or effusion of blood upon the brain.

In others it is *symptomatic*, owing to intestinal irritation, as from worms, and other causes; teething; suppression or retention of the catamenia; poisons received into the system. Onanism, or masturbation, is also a fruitful cause of the disease.

Where a predisposition to the disease exists, an attack may be brought on by violent affections of the mind, or of the nervous system; as sudden fright; fits of passion, and the like. Blows, wounds, fractures and injuries of the head may also cause the disease.

TREATMENT. Very little can, or need be done, during the paroxysm, or while the fit is on, except to prevent the patient as far as possible from injuring himself. Every thing should be removed from about the neck.

A great many remedies have, from time to time, been proposed for this disease, and relied on for a time as specifics; but the truth is they sometimes all fail. Where the disease is dependent on malformations of the skull, or organic derangement of the brain, it is very seldom cured, especially if the patient be past the age of puberty.

Where the disease is but symptomatic, depending upon some other derangement in the system, and not directly connected with the brain, it can generally be cured, by removing the cause, and proper attention afterward to the general system.

A general course of treatment, with particular reference also to the cause of the complaint where it can be known, will be the most judicious.

1st. An occasional cathartic or purgative will be proper under any circumstance. And there is none better than the Podophyllum or May-apple, in some form or other. It is an excellent anthelmintic, or worm medicine, as well as a good emmenagogue; and is also good in all congestions and effusions on the brain, whether of blood or serum. The bowels are to be kept loose, and for this purpose the powdered roots of the May-apple and Milkweed (*Apocynum*) may

be given together; or they may be reduced to extracts and formed into pills, giving two or three a day, or enough to keep the bowels open; or pills may be made of extract *Hyosciamus* and *Podophyllin*, and given in the same way; two grains of the former and one of the latter to a pill, one or two taken daily.

2d. An emetic, composed mainly of *Lobelia*, should be given at least once a week. The stomach is generally more or less deranged in this disease, either primarily or secondarily; besides, emetics stimulate the liver, pancreas, brain, and whole nervous system, and promote a healthy action in the skin.

3d. Anti-spasmodics are indispensable. Such as are both anti-spasmodic and narcotic are preferable. The Scullcap, *Macrotys*, *Strammonium*, *Hyosciamus*, are all good. The Mistletoe has also been celebrated in this disease.

A decoction made of the Scullcap and *Macrotys* (Rattle root), of each two parts, and one part of the Mistletoe (when it can be had), to be drank two or three times a day, or half a pint in twenty-four hours. This should be continued for several weeks.

Also: Take of the tinctures of *Strammonium* and *Hyosciamus* equal parts, mix, and give from ten to thirty drops three times a day. Commence with ten drops, and increase one drop each dose till you reach thirty, or till a slight dizziness is produced, if it takes forty or fifty drops, and then continue at that.

4th. Tonics: Great benefit is to be derived in many cases from the use of tonics. There is generally weakness and debility of the whole system, and then the disease also sometimes assumes the form of masked or dumb ague. In such cases tonics are indispensable. For this purpose Quinine may be used, made into pills with extract *Hyosciamus*. Let there be from one to two grains of Quinine to the pill, and give from three to six a day.

Or a tonic and anti-spasmodic bitters may be used, such as Peruvian bark, Columbo, Virginia snake-root, Rattle root (*Macrotys*'s), and Lady-slipper root, equal parts of each, in spirits, or wine. This is an excellent preparation, and may be used freely.

Nitrate of silver is a remedy highly recommended by many, and no doubt will often effect a cure. If continued a great while, it is apt to show itself on the skin of the face and hands, turning it a blue-black, or dark metallic color. It is given in doses of one-eighth to one-fourth of a grain, three times a day—usually in the form of a pill, mixed with extract *Hyosciamus*: Or in the following recipe: Take Nitrate of silver, 10 grains; Musk, 40 grains; Gum Camphor, 1 drachm; Ext. *Hyosciamus*, 2 drachms; make into 80 pills, and give one night and morning.

I will name another remedy, which is very simple, you will think, but which has been very highly spoken of in some parts of France. It is this: As soon as a person is taken with a fit of epilepsy, or as soon after as you can, cover the face with a black silk handkerchief, tying it about the head and neck, so as to cover the entire face, loosely, with but a single thickness of the handkerchief. It is said to be certain and infallible; the patient, it is said, will recover from the attack almost immediately, or it will render it much lighter; and by continuing to do this for a while, it is said the disease may be entirely broken up. In some parts of the country, where this remedy is known, it is said that men, on seeing persons fall in the street with epilepsy, have instantly pulled from their own necks their black cravats and thrown them over the face of the sufferers, and produced almost instant relief! It is certainly a cheap remedy, and is worth trying, at all events. A person afflicted with the disease might keep a large handkerchief, or piece of black silk about his neck, so as to apply it himself, on the first indications of an attack; or if he could not, some one that might be near at the time could do it, without much delay. No measure should be left untried because it is simple or ridiculous, that offers to cure so dreadful a disease as epilepsy.

CATALEPSY.

CATALEPSY is a very remarkable disease. It consists in a temporary suspension of consciousness, sensibility, and volition—the body remaining in the precise condition in which it was when the attack came on. There is no muscular contraction, rigidity, or spasm. The respiration and circulation continue the same. It seems to be a soft of *trance*, or *ecstasy*; and may last for but a few minutes, or it may continue for hours, or even several days.

The attack generally comes on suddenly, without any warning. The patient falls, or becomes perfectly helpless and unconscious, and every part of the body remains in precisely the position it was at the moment of the seizure. When the patient recovers, he has no recollection of what has occurred, and will commence acting or talking at the point he left off when attacked, the same as if nothing had happened. The period occupied by the attack is a perfect blank in the patient's existence; he does not even recollect that he has been affected.

In most cases, especially if the attack has been of short duration,

the patient suffers no inconvenience afterward. Sometimes, however, in protracted cases, there will be some feeling of weight and pain in the head, lassitude, and dullness of mind, after the attack has passed off.

Catalepsy is sometimes complicated with other affections, or may terminate in them, as chorea, somnambulism, hysteria, and even epilepsy. As a general thing, however, it is not a dangerous disease.

CAUSES: Catalepsy may be induced by various causes. It may arise from intense passion; from long and hard study; from a morbid state of the alimentary canal; worms; plethora; suppression of accustomed evacuations. Persons of a nervous temperament are said to be most subject to it. It occurs most frequently in females, and very often about the age of puberty. Suppression or irregularities of the menstrual discharge is one of the most common causes of the disease.

TREATMENT: During the paroxysm, cold water may be thrown upon the face and body of the patient, and stimulating applications, as No. 6, Tincture Cayenne, or Davis' Pain-killer, made to the spine, with friction, in order to break up the cataleptic state. If these fail, and the paroxysm seems likely to last a good while, stimulating injections may be administered, such as an infusion of the Composition powder, or warm water, and oil or lard, with a little Cayenne and salt in it, or No. 6.

As soon as the patient can swallow, a brisk purgative should be given, especially where there is reason to believe there are irritating matters in the bowels.

The after treatment should be upon general principles, with a view also to the exciting cause, the constitution, condition, and temperament of the patient. All the secretions and excretions must be regulated, and the stomach, bowels, and skin, kept in a healthy condition. Medicines of a restorative, nervine, and sometimes of an anti-spasmodic character should be given. Sometimes emmenagogues, or medicines that will promote the menses, must be employed. Where this is indicated, a decoction of the *Vervine root* should be freely used. It is one of the best remedies for suppressed or retained menses known. An occasional physic of the *May-apple root* should also be given, in such cases, and the feet, legs, and lower part of the body frequently bathed in warm water. Moderate diet and free exercise should be observed.

HYSTERICIS—HYSTERIA.

HYSTERIA, or **Hysterics**, as it is commonly called, is an affection peculiar to females, and is characterized by a sense of suffocation, stupor, rumbling noise in the bowels, followed by the sensation of a ball rising from the stomach to the throat; sometimes convulsions; laughing or crying without any apparent cause; interrupted sleep, sighing, and more or less flatulence.

SYMPTOMS: Attacks of hysteria are sometimes preceded by low spirits, anxiety of mind, a flow of tears, difficult breathing, palpitation of the heart; a pain is felt in the left side of the stomach, which advances upward into the throat as though it was caused by a ball. Next the patient feels like suffocating, grows faint, followed by stupor and perhaps insensibility. The body and limbs may be more or less agitated; there may be alternate fits of laughing, crying, and screaming, wild and incoherent expressions, followed by a temporary delirium. The spasms at length go off, followed by belchings of wind, sighing and sobbing, and the patient returns to her usual state of health, with little or no recollection of what took place during the fit—feeling, however, more or less pain in the head, and soreness over the body.

Hysteric fits are seldom attended with danger, and the complaint is never fatal, unless it runs into epilepsy or mania.

CAUSES: This disorder usually arises from the operation of certain passions upon a feeble constitution. Females from puberty to the age of thirty-five, are most subject to it. It chiefly affects those of a sanguine temperament, relaxed muscular habit, and great nervous sensibility. It is also more likely to occur in those in whom the menstrual discharge is stopped too suddenly, or habitually obstructed.

TREATMENT. Not much is necessary to be done during the paroxysm, or fit. The patient's dress should be loosened, so as to allow of free circulation and respiration. Cold water should be sprinkled, or dashed over the face, the body placed in a recumbent position, the head elevated, and free air admitted. The temples, abdomen, and extremities may be rubbed. Do not confine the patient to the bed. Use no more force than is necessary to keep her from injuring herself or the attendants. Allow her as much latitude and liberty of motion as possible; and if she is inclined to roll upon the bed, or the floor—let her roll.

As soon as the patient is quiet enough, or has sufficiently recovered, the feet and legs should be bathed in warm water, and an emetic

given, of Lobelia, or Lobelia and Ipecac. The object should be to equalize the circulation, and allay the nervous excitement. An emetic will remove the phlegm and mucus which have collected in the stomach and throat, while it also throws the blood to the surface and extremities, and makes an impression upon the brain and nervous system.

Should the paroxysm be likely to last a good while, and it is not convenient to give an emetic, the following *Expectorant tincture* may be given, which will soon clear the throat of phlegm, and will often break up the spasm in a few minutes. It is a preparation that should always be kept on hand, as it is good in all cases of spasms, convulsions, suspended animation, pleurisy, hooping-cough, and wherever an expectorant and anti-spasmodic are indicated. To make it, take Blood root (Red puceoon) 1 oz.; Lobelia seed, pulverized, 1 oz.; Ipecac, 2 oz.; Cayenne, one-half oz.; good whisky, one quart. Let stand a week. Dose for a grown person, from a half to a table-spoonful, repeated as often as necessary. If the patient can not swallow, the same may be given by injection.

After the paroxysm is over, the patient should take a mild purgative, to cleanse the bowels. And if we wish to effect a permanent cure, the bowels must be kept in an open and healthy state. A pill composed of the extract of May-apple root, or of the Butternut bark, with a little Cayenne or powdered cloves added, may be taken every night or every other night, for this purpose, or any good vegetable pill that will act gently on the bowels.

Asafetida is a celebrated remedy in this complaint. Women generally have an aversion to it on that account. It is a good agent, however, and a pill of it, about the size of a small pea, may be taken once or twice a day.

A mild emetic should be given once a week, composed of Lobelia and Ipecac, with pennyroyal tea. Emetics will impart tone and energy to the stomach, liver, and nervous system.

If the patient is feeble and debilitated, some restorative medicine will be necessary, as a bitters composed of Spikenard, Gentian, Chamomile flowers, and a little cloves and nutmeg, in wine or spirits. The patient should be treated kindly. Nothing harsh should be said to her, calculated to arouse the passions, or excite the mind. She should exercise often in the open air; never overload the stomach, and use a light, nutritious, but easily digested diet.

GIDDINESS—VERTIGO.

VERTIGO, or giddiness, called also dizziness, is very often but symptomatic of some other disease, as hysterics, dyspepsia, over-determination of blood to the head, foul or sour stomach; it may also be a premonitory symptom of apoplexy.

SYMPTOMS: It consists of what is called a "swimming in the head;" every thing seems to the patient to go round; he staggers, and sometimes is in danger of falling.

Very little danger attends the complaint, unless it be caused by too great a fullness of blood in the vessels of the brain. If this be the case, it should be attended to in time, or it may terminate in apoplexy or palsy. When giddiness arises from some disease, it will disappear by the removal of that disease. In females, it often proceeds from difficult or obstructed menstruation.

TREATMENT. First ascertain the cause of the difficulty, and then remove it. If it be a mere symptom of some other disease, that should first be removed. If a primary affection, seated in the head, or is from a disordered stomach, a purgative should be given, and repeated occasionally. The Mandrake or May-apple, especially if the brain be the seat of the complaint, will be the best for this purpose. An occasional emetic may also be given with advantage, especially if the stomach be out of order. The feet should be bathed frequently, and rubbed well. Equalize the circulation, withdraw the blood from the head to other parts of the body, keep the bowels open, and the stomach cleansed, and the difficulty will soon disappear.

FAINTING, OR SWOONING.

FAINTING is too common and too well known to need any description. It is produced by various causes; among which may be named great loss of blood, and in some persons the sight of blood; violent passions of the mind; severe pain and suffering; excessive joy; disgusting sights; fright; excessive eating and drinking; offensive odors; impure and confined atmosphere; and intense study. It is also a symptom of other diseases, particularly of the heart and brain. Persons of weak and delicate constitutions are liable to it from very slight causes. If it occur frequently in a person otherwise appar-

ently healthy, and without any known cause, a diseased state of the heart or brain is to be apprehended.

TREATMENT. A person who has fainted or swooned should be immediately laid in a horizontal position, the clothes about the chest and neck loosened, and cold water sprinkled freely in the face. If the fainting has taken place in a tight or crowded room, the patient should be immediately removed to where there is plenty of fresh air. The hands, legs, and arms, may be freely rubbed.

Spirits of ammonia, or the salt of hartshorn, should be held to the nose. The hartshorn, or "smelling-bottle," is a very good thing in such cases; and ladies who are subject to fainting spells, generally carry it with them.

A teaspoonful or two of compound spirits of lavender, with some spirits of hartshorn, is very good, to be taken internally. There should be about four times as much lavender as hartshorn, or in about that proportion. A teaspoonful of No. 6 is also good. It may be diluted with a little brandy, or other spirits. But in a majority of cases, pure air and a little cold water in the face, are all that will be required.

Persons subject to fainting should avoid all crowded assemblies, and places where the air is impure or confined. They should also avoid mental excitement, and too much fatigue. And by all means they should avoid tight-lacing.

BLEEDING FROM THE LUNGS.

THIS complaint is usually called "spitting of blood." It consists in coughing up small quantities of bright red blood, sometimes quite frothy, and is usually preceded and accompanied by heat and pain in the chest, irritation in the wind-pipe, and more or less saltish taste in the mouth. Hemorrhage from the lungs may easily be distinguished from that of the stomach, as in the latter case the blood is vomited up, usually in large quantities, and of a much darker color, and more or less mixed with the contents of the stomach; whereas, the blood from the lungs is of a florid color, is thrown up in small quantities, by coughing or hawking, and is more or less mixed with a frothy mucus.

CAUSES: Bleeding from the lungs is, as a matter of course, owing to a weakness of those organs, or to the tender and delicate character of their structure, allowing of easy rupture of the air-cells and

small capillaries. It may be brought on by over-exercise and violent exertion, as running, jumping, wrestling, singing loud, or blowing on wind instruments. Also by plethora, hectic fever, coughs, and colds upon the lungs. It may also be induced by the suppression of some accustomed discharge, particularly that of the menses. It most usually occurs in persons with narrow chests, high shoulders, and who are otherwise delicately formed, and of a sanguine temperament.

Spitting of blood is not always to be considered a primary disease; nor is it necessarily connected with consumption. It is often only a symptom of some other disease, as pleurisy, and lung fever; and in some fevers, it appears as a *crisis*, denoting a favorable termination.

Occasionally the blood thrown up is of a dark or blackish color; this, however, only shows that it has remained a longer time in some of the air passages, before being thrown up. The complaint is not attended with any danger, where it is not connected with consumption, or where it leaves no cough or other affection of the lungs. When it occurs in persons of a weak, lax fibre, and delicate constitution, it is more difficult to cure.

TREATMENT.—One of the best and most common remedies for spitting of blood, is salt. A teaspoonful should be taken, dry, and repeated occasionally. This, in most all mild cases, will be found sufficient, as an internal remedy. External measures should be made use of, as bathing the feet in warm water frequently, and the sponge bath to the whole body, warm or cold, with friction in order to equalize the circulation, and thus prevent too great a determination of blood to the lungs, which might cause the difficulty to grow worse.

A decoction or strong tea, made of the leaves of the *Bugle weed*, (*Lycopus Virginicus*), is one of the best remedies known for bleeding at the lungs. As much as a pint a day should be drank, cold, for several days, to prevent a return of the hemorrhage. It is a very good addition to use a portion of the Beth root and Juniper Berries, along with the Bugle weed.

A tincture made of equal parts of the Black Cohosh root, (*Macrotys*) and Blood root, (*Sanguinaria Canadensis*), is also a valuable remedy, especially if there is any liability to consumption. It may be taken in teaspoonful doses every three hours during the day, and continued. An occasional purgative will be advisable.

In more severe cases, the patient should be kept quiet, and a powder composed of one grain of Cayenne, and half a grain each of Ipecac and pulverized Opium, every two or three hours, until relief is obtained. Small quantities of a decoction of Black Cohosh and Beth root, should also be taken at short intervals.

BLEEDING FROM THE STOMACH.

THIS disease is generally known as vomiting of blood, and consists in a discharge of blood by the mouth, usually in considerable quantities, attended with vomiting.

CAUSES.—It may be caused by blows upon the region of the stomach, or any thing that will produce too great a determination of blood to that organ. It may also arise from ulceration of the stomach. Most usually, perhaps, it arises from debility and relaxation of the blood-vessels of the inner coat of the stomach. It is sometimes brought on by a suppression of the menses.

Bleeding from the stomach may be distinguished from that of the lungs, by the discharge being preceded usually by a feeling of weight, pain, and anxiety, in the stomach, and unaccompanied with cough. The blood is discharged by vomiting, and in a greater quantity than when it comes from the lungs. It is also of a darker color, and is usually more or less mixed with the ingesta or food.

TREATMENT.—If the affection seems to be but slight, a few doses of common table salt and vinegar, may be sufficient to suppress it. Alum water may also be given. If these fail, give a strong tea of the *Beth root*. The *Bugle weed* is also good—a strong tea made from its leaves, to be taken cold at different times during the day.

If it arise from suppressed menstruation, measures must be taken to restore that discharge. A decoction of the Vervine root should be given three or four times a day; a purgative of the Mandrake root, and such means employed as will be calculated to divert the blood from the stomach to the extremities and surface. Bathe the feet, and promote perspiration.

BLEEDING FROM THE NOSE.

THE blood-vessels which expand upon the internal surface or lining membrane of the nose, are very easily ruptured; hence an unusual determination of blood to the head, will often produce bleeding at the nose. Some persons are much more liable to the complaint than others; and males are more subject to it than females.

Usually the blood only flows from one side of the nose, but sometimes it is discharged from both, in which case it becomes more alarming.

CAUSES.—Great heat, violent exertion, bending the body with the head downward, and whatever determines the blood to the head, may excite bleeding at the nose. It is also often caused by picking the nose.

It sometimes commences without any warning; while at other times it is preceded by heaviness in the head, giddiness, flushed face, itching in the nostrils; and sometimes by cold feet, and a chilly sensation all over the body. Habitual costiveness, may also be regarded as a cause.

TREATMENT.—In all ordinary or slight cases, cold water freely applied to the back of the neck, the face, and snuffed up the bleeding nostril, will soon check it. Pressing externally, on the side of the nose that is bleeding, with the thumb or finger, so as to compress the ruptured vessels, and continuing it for a quarter of an hour or so, will often stop it.

If these measures fail, take a piece of very dry and hard salt beef that which has been smoked is best, and grate it into a powder, and push of this up the nostril, as far as possible, until it is filled, and let it remain. This never fails.

In habitual or frequent bleeding at the nose, it will be necessary to give a brisk purgative, repeated occasionally, and make use of measures to equalize the circulation. Keep the feet warm and the head cool.

BLEEDING FROM THE URINARY ORGANS.

SOMETIMES, though it is not a very common occurrence, blood will be passed off with the urine. If in but small quantities, it will be known by clots of blood being deposited at the bottom of the chamber, and by its staining linen a red color, by which means it may be distinguished from the high colored urine, common in some diseases. Voiding of bloody urine, denotes danger, particularly if it is mixed with purulent matter, as it then shows that there is ulceration somewhere in the urinary passages.

CAUSES.—It is sometimes a symptom of other diseases, or may be induced by external injuries, blows, bruises, or falls; by straining, and lifting a heavy weight, jumping, or hard riding on horseback. It may also arise from stone in the bladder, the kidney, or lodged in the duct, which leads from the kidney to the bladder. It may also arise from severe inflammation of the bladder. It is often caused by strong, irritating, diuretic medicines.

SYMPTOMS.—If the bleeding proceeds from the bladder, caused by a stone being lodged in it, or by inflammation of that organ, it may be known by a sense of heat and pain, at the bottom of the abdomen or bowels, and perhaps much difficulty in making water. If it comes from the kidney or urinary duct, caused by a stone, it will be attended with a sharp, acute pain, and feeling of weight in the small of the back, and perhaps to one side.

TREATMENT.—The treatment in this complaint, should consist mainly in giving emollient diuretics and astringents. The *specific* in this, and all similar diseases of the urinary organs, is the *Marsh Mallow*. There are two kinds of the Mallow, the high and low, and they grow in nearly all parts of the country. Either will do. A strong decoction is to be made of the leaves, buttons, or roots, and drank freely,—from a pint to a quart a day. A decoction of Mullein leaves and horse-mint, is also very good. A little horse-mint or spearmint may be added to the Marsh mallow.

If calculi or stone in the kidney, or ducts, is suspected, emetics and cathartics should also be given.

INFLAMMATION OF THE BRAIN.

INFLAMMATION of the brain is of two kinds; that which affects the substance of the brain itself, and that which is located in the membranes only. It is often symptomatic of other diseases, as fevers, eruptive diseases, and sudden constipation of the bowels.

CAUSES: Whatever produces a great determination of blood to the head may cause inflammation of the brain, or of its membranes; as fits of passion, intense study, intemperate use of ardent spirits, and exposure to great heat of the sun. Fractures of the skull, blows upon the head, suppressed evacuations, and the repulsion of cutaneous diseases, may also produce it.

SYMPTOMS: Inflammation of the brain is generally attended with flushed face, redness of the eyes, pain in the head, wakefulness, intolerance of light and sound, and more or less inflammatory fever. If the substance of the brain is affected, there will also be delirium. There is also apt to be pain in the stomach, which arises from sympathy. The head is usually hot, and the feet cold; and the bowels generally costive. The disease may prove fatal in a few days, or it may continue for months. Sometimes the patient becomes quite delirious, and raves in a state of complete phrensy.

TREATMENT: Efforts should be made to restore the blood to the

extremities, and thus divert it from the brain. Bathe the feet in the warm alkaline bath, made by adding a little saleratus, or ley, or ashes, to warm water. This should be done two or three times a day. Make cold applications to the head, face, and neck—keep the head cool, as well as you can, and give a brisk active cathartic, of the *hydragogue* kind, by which is meant purgative medicines that produce watery discharges from the bowels. There is nothing better—perhaps nothing so good—for this than the powdered Mandrake root and cream of tartar, with a little Cayenne or cloves. Give of the combined powder a teaspoonful every hour, till it operates. Jalap and cream of tartar will do if you can not get the Mandrake. The cathartic should be repeated every morning or evening, till the patient gives evidence of being out of immediate danger.

Apply a mustard draft to the back of the neck, and a large one also over the stomach and abdomen.

Some sweating powders or tincture should be given, to keep up a determination to the surface, and promote general perspiration. For this purpose use the tinctures of Lobelia and Blood root, and the wine of Ipecac, in equal parts, to be given in teaspoonful doses about once an hour. Or these three articles may be given in powder, in six to ten grain doses every hour.

At night, apply mustard drafts to the feet and legs. And if there is great pain in the head, and the cold applications do not relieve it, apply a warm fomentation made of *hops* simmered in vinegar, enclosed in a thin muslin, and repeat occasionally. Should the patient be very restless, and unable to sleep, let him drink freely of hop-tea at night.

Cupping or leeching may be advisable; it will have a tendency to relieve the vessels of the head, and produce a sort of counter-irritation that may be beneficial.

The patient may be allowed to drink lemonade, water made acid with cream of tartar, and also spearmint tea, with a little sweet spirits of nitre in it. This latter will act as a diuretic, which will prove of much advantage. The Podophyllin, in three grain doses, with a teaspoonful of cream of tartar, is an admirable purgative in this disease.

INFLAMMATION OF THE LUNGS.

WHEN the substance of the lungs, or the mucous membrane which lines the air-cells and passages of the lungs, is the seat of the inflammation, it is called *pneumonia*; when the membrane which covers or

envelops the lungs (the pleura pulmonalis), is inflamed, it is called *peripneumonia*. The treatment is about the same in both cases, however, and does not require separate descriptions. Inflammation of the lungs is liable to attack all classes, and at some seasons, and in certain sections of country, it is very prevalent. When it occurs during the winter and early spring, it is by some called *winter-fever*, and often proves very dangerous.

CAUSES: The most common cause of this disease, probably, is from taking cold, which settles upon the lungs. This causes a *check of perspiration*, which closes the capillary vessels of the skin, and determines the blood upon the lungs. It occurs most frequently in the winter season and early spring; and persons of robust constitutions and large lungs, are most subject to it. It may occur, however, and sometimes does, at all seasons of the year. Persons who have had a severe attack of the disease, become thereby more liable to subsequent attacks.

SYMPTOMS: Inflammation of the lungs commences with a dull pain in the chest, or in one side of it, if but one lung is affected, with difficulty of breathing—especially if the patient lies upon the side affected—with cough, dryness and heat of the skin, and more or less thirst. At first the pulse is full, hard, strong, and very frequent; but as the disease advances it sometimes grows weak and soft, but continues very frequent. The cough is usually moist, and the matter spit up is a white, tough, and frothy substance, sometimes streaked with blood. The tongue is coated at first with a white fur.

As the disease proceeds, the face is apt to become of a dark purple, the vessels of the neck become turgid and distended with blood; the breathing becomes quick, short, and very difficult, threatening suffocation. When death takes place, it is generally from an effusion of blood into the cellular substance of the lungs, thus preventing circulation through those organs, and also occasioning suffocation. It may also prove fatal by terminating in suppuration and gangrene. When suppuration has taken place, it may be known by frequent slight shiverings, an abatement or absence of pain, a sense of fullness in the part. The patient can also lie on the affected side without causing much inconvenience.

When the disease proves fatal, it is generally between the third and seventh days.

FAVORABLE SYMPTOMS.—If in the course of the disease, a copious flow of urine should set in, or a diarrhea, or profuse sweat over the whole body, or even a hemorrhage from the nose, they are to be regarded as highly favorable, showing that the disease has most likely passed its *crisis*. Also a copious expectoration of thick, whitish

or yellowish matter from the lungs, is to be regarded as highly favorable.

TREATMENT.—The treatment in all cases of inflammation of the lungs, should consist mainly in emetics, diaphoretics, (or sweating medicines), expectorants, with external means for aiding perspiration and the equal distribution of the blood; and in case the tongue becomes coated, dark, brown, or yellow, cathartics that act on the liver. I lay down the following as a proper course to be pursued in a bad case; which can be varied according to circumstances.

First, you may commence by letting the patient sit for half an hour, with his feet and legs in warm water, and drink some warm sweating teas, as the Composition powder, with a little powdered Blood root added, or Pennyroyal and Sage. In the mean time, boil in a large pot or kettle, a quantity of bitter herbs, as Hoarhound, Tansy, Hops, Boneset, Smartweed, Horsemint, and Peach leaves, a handful of each, or of as many as you can get. Then take the vessel from the fire, strip the patient, and seat him over it, with a blanket thrown round his shoulders, and allowed to fall to the floor around him, and outside of the chair, so as to confine the steam arising from the herbs and hot water in the vessel, and at the same time allow it to come in contact with his body as high as his neck. Continue this for half an hour, occasionally throwing into the vessel a hot brick or rock, to raise the steam; wet the face and head with cold water, if the patient feels faint, and let him continue supping a little of the warm teas.

Next wipe him off quick and put him in bed, and give immediately a thorough emetic, composed of equal parts powdered Lobelia seed, Blood root and Ipecac. Take a large tablespoonful of the compound, and pour on it a pint of hot water, stir, and let stand fifteen minutes, and then commence giving it in half a teacupful every five to ten minutes, until the patient has vomited thoroughly, three or four times. During the intervals between vomiting, let him drink freely of Pennyroyal, Sage, Composition, or Boneset tea.

After the emetic is through with, place hot bricks, or boiled corn in the ears, about the patient in bed, keep him well covered, continue the warm tea occasionally, with a very little of the emetic infusion added, so as to keep the stomach slightly nauseated, and let him sweat. After continuing this for three hours, and the patient has sweat pretty well, he may be wiped dry and furnished with dry linen, and allowed to rest or sleep.

A large mustard draft may then be placed over the chest and region of the lungs, and kept on as long as the patient can bear it—an hour if possible; and he should commence taking in broken doses, some

suitable expectorant and diaphoretic. You can probably find nothing better than the same emetic infusion which I have recommended, given in from a half to a tablespoonful, according to the strength of it. Or the same articles may be given in powder, in doses of five to eight, or ten grains, repeated every hour. Or the tinctures of Lobelia and Blood root, and wine of Ipecac, equal parts, may be given in teaspoonful doses, once an hour. Or the Expectorant Tincture, made of pulverized Lobelia seed, and Blood root, each one oz.; Ipecac two oz.; Cayenne one half oz.; Whisky or dilute alcohol, one quart,—digest one or two weeks; of this, a teaspoonful every hour.

The emetics are to be repeated once in twenty-four hours; and it may be well to repeat the steaming over bitter herbs as often, or employ the common vapor or steam bath.

At first the tongue will be coated with a white fur; but if it changes to dark brown or yellowish, a cathartic must be given, such as will act on the liver and secretions. The Anti-bilious Physic and powdered Mandrake will be suitable, or three or four pills made of extract Mandrake root, and powdered Blood root and Cayenne. This is one of the best liver and anti-bilious pills in the world, and good wherever an efficient and speedy cathartic is needed. Give three or four of these pills, and repeat in six hours, if they do not operate. The bowels should be kept in a lax state by giving one of these pills, or a small quantity of the powder of Mandrake and Blood root every night or morning, so as to gently act on the liver. The Podophyllin may be used instead of the Mandrake.

Continue the expectorants all the while, night and day, if the case is a bad one.

Should the disease assume any thing of a periodical nature, be intermittent, like the ague, or intermittent fever, quinine should be given. You may combine it with the expectorant, or give it in any other way, so as to give during one day about twelve grains, after which omit it, for several days, or entirely, if not indicated any more.

It may be well occasionally to apply a fomentation of herbs, over the chest and lungs, as warm as can be borne, such as Hoarhound, Catnip, Tansy, and the like; and also repeat the mustard draft once a day. But rely mainly upon emetics, nauseating expectorants, and sweating. The Skunk Cabbage (root) is also a good expectorant in this disease, and may be combined with the other articles, in either powder, tincture, or infusion.

BILIOUS AND TYPHOID PNEUMONIA: Sometimes inflammation of the lungs appears as an epidemic, in certain localities, during the winter season, when it becomes very malignant, and is apt to assume a bil-

ious or typhoid character. It is sometimes, in such cases, called Winter-fever, and the "Cold Plague," and is very fatal, if not properly treated.

In such cases, pursue the same course of treatment as the foregoing, only, if possible, more thorough and vigorously. Instead of the skin being hot, in this form of the disease, there is usually a remarkable coldness of the surface and extremities. The feet and legs should be bathed frequently in warm ley water—and the following powder should be given, in addition to the other medicines: Take pulverized Ipecac, two drachms; pulverized Gum Camphor, two drachms; salt of Hartshorn (carbonate of ammonia), two drachms; pulverized Opium, one-half drachm; triturate, or rub all together, well, in a small mortar, and give at a dose about eight grains every three or four hours. Or the Dover's powders may be given instead, or the *Diaphoretic Powders*. (See Table of Family Medicines.)

Anti-bilious purgatives will be necessary; and if the disease assumes a typhoid character, quinine and stimulants must also be given. Emetics, and external application of heat, and expectorants, are indispensable. If the pulse continues too frequent, give also tincture Digitalis, ten to fifteen drops, three or four times a day.

PERIPNEUMONIA: If the inflammation should only be seated on the external membrane of the lungs, the *pleura pulmonalis*, the symptoms may vary somewhat from those of inflammation of the substance of the lungs. The pain will generally be on one side, and will be sharper and more acute, more like pleurisy. There will not be that difficulty of breathing and sense of suffocation; but breathing will cause more pain in the part.

If the case is not a very bad one, an emetic, a good sweat, a mustard draft over the seat of the disease, and the use of No. 6, and the tinctures of Lobelia and Macrotys (Rattle root), equal parts, in teaspoonful doses once an hour, will generally be sufficient. Tincture of Cayenne may be used instead of No. 6. Should it, however, be severe, involving more or less the substance of the lungs, pursue a similar course to that recommended for inflammation of the lungs, or treat it the same as a case of pleurisy.

PLEURISY.

PLEURISY is an inflammation of the *pleura*, or membrane which lines the internal cavity of the chest. The disease prevails most in

the spring season, though it may occur at any other season; and persons of a sanguine temperament, and who are much exposed to vicissitudes of heat and cold, are most liable to it.

CAUSES: Sudden cold coming in contact with the skin or surface of the body; drinking cold water when the body is heated by exercise and in a profuse perspiration; sleeping out of doors, or in damp places; a check of perspiration from exposure to a draught of cold air. Any thing that suddenly obstructs perspiration may produce pleurisy. It may be caused by violent exercise, or by hard lifting. The sudden striking in of small-pox, measles, or any eruption, may also produce it.

SYMPTOMS: Pleurisy, like most other forms of inflammation and fever, usually commences with a chill, or chilly sensations, followed by heat, thirst, and other febrile symptoms. After a few hours the patient is seized with a sharp, acute pain in one side, usually in the region of the short ribs, which gradually extends toward the shoulder-blade, and toward the fore-part of the breast; the pain increases, and sometimes becomes very violent. It may or may not be attended with coughing and expectoration. The matter that is coughed up is generally more or less mixed with blood. The pulse is strong and vibrating, feeling like a tense cord.

TREATMENT. In the first place give teaspoonful doses of tincture Lobelia and No. 6, equal parts, repeated every ten minutes till four or five doses are taken. Ten to fifteen drops of laudanum may be added to each of the first three doses. If you have not the No. 6, tincture of Cayenne may be used in its stead.

The patient should bathe his feet in warm water, and drink some warm tea—the best is made of the Pleurisy root, Boneset, and Blood root, equal parts. This will prepare the system for an emetic, which must be given by all means. No matter what the patient says, or how much he may object—*give an emetic*. This is the “sheet-anchor” in this disease. Let it be composed of Lobelia and Ipecac, given along with the above-named tea. If the case is bad, make use of the vapor-bath, or steaming over bitter herbs, before giving the emetic.

After the emetic place hot-bricks, rocks, or hot corn about the patient in bed, and apply a mustard-plaster over the seat of the inflammation.

Continue the above-named tea, or something of a similar nature, occasionally giving a dose of the tincture, and keep the patient sweating, if possible, twelve hours—and then give a cathartic.

Equal parts of tinctures Lobelia, Blood root, Macrotys, and Cayenne, to be given in teaspoonful doses, every hour or two, is also an excellent preparation. If necessary, repeat the emetic. Pursue an

efficient course, and you can not fail. If the action of the heart is very great, and the pulse too frequent, give also tincture Digitalis, ten to fifteen drops three times a day. Do not bleed; it is almost certain to do injury.

CHRONIC FORM. Pleurisy, not unfrequently becomes chronic, in which case the pain in the side or chest is not severe, but is a sort of soreness, with oppression, and vague uneasiness; short and dry cough, with difficulty in taking a full breath. The pulse is too frequent, and there may be night sweats, with more or less enlargement of the chest.

THE TREATMENT for chronic pleurisy should be of a milder character. A mild emetic given about once a week. It should be given slowly, in broken doses, and occupy fully an hour.

Bathing the lower extremities in ley or salt water daily, with rubbing, should be observed.

But one of the best things is what is termed an *Irritating plaster*, to be applied and constantly worn for some weeks, over the seat of the inflammation. This may be made of Burgundy pitch, beeswax, and a little rosin, all melted together, and while warm, stir in a little finely powdered Blood root, May-apple root, and Poke root. Make it of a consistence that it will stick to the skin; spread it thin on a bit of muslin, as large as the two hands, apply it, a little warm, and let it remain for a week, and then renew, until it produces pustules, and more or less of a running sore. Continue it for weeks, if necessary.

Mild hydragogue cathartics are to be used, and diuretics; such as the Mandrake, or Podophyllin, and cream tartar, with a portion of Nitre or Saltpetre. The *Iodide of potassa*, is a great remedy in this affection. Dissolve one drachm in four ounces of water, and take a teaspoonful once a day. For the cough, take tinctures Macrotys and Blood root, and vinegar of Squills, of each one oz.; extract Licorice, one oz., dissolved in three oz. hot water; Mix the whole, and take in tablespoonful doses, every one, two, or three hours, as the cough may require.

INFLAMMATION OF THE STOMACH.

INFLAMMATION of the stomach does not occur very often as an independent or primary affection, but is most usually the result of, or connected with some other disease.

CAUSES. Caustic and irritating substances taken into the stomach.

The corrosive mineral poisons, and some vegetable poisons, often prove fatal, by causing inflammation of the stomach. The habitual use of alcoholic drinks, sometimes produces the disease, and where there is a predisposition to it, even eating to excess. Drinking large quantities of cold water, is also among the causes.

It is very liable to occur in the course of some fevers, especially Bilious and Yellow fevers, and sometimes during the small-pox and measles.

SYMPTOMS. In severe cases there is a burning pain in the stomach, with constant nausea and vomiting, and great desire for cold drinks. The pain is increased by pressure on the stomach, and by a deep inspiration. The patient can not bear warm drinks—they are instantly thrown up; and even cold water if much is taken, soon produces distress, by distending the stomach.

The tongue is either red at the tip and edges, with a whitish fur in the middle,—or is red all over.

The bowels are always constipated, unless they are also inflamed.

The pulse is frequent, small, and corded. Breathing short and hurried; skin hot and dry, and the urine high colored.

The patient prefers to lie on his back, with his legs drawn up; is low spirited, restless, has a feeling of extreme debility, with an expression of countenance indicating anxiety and distress.

If the disease continue to advance and grow worse, the tongue becomes smooth, red, and dry; the skin becomes cool and pale; pulse more frequent, feeble, and thread-like; the body becomes much emaciated; debility and restlessness increase, and delirium sets in.

Hiccough, vomiting of dark colored matter, cold extremities, or a complete cessation of pain, without improvement in other respects, are to be regarded as fatal symptoms.

In the milder forms of the disease, of course the symptoms will be of a milder character also. Instead of severe burning pain, there may be but a feeling of unusual warmth and constriction in the stomach, and instead of incessant vomiting, but a slight nausea, and so on.

The disease varies in duration from two to six weeks, and may then subside into the chronic form. Milder cases generally soon yield to proper treatment; but if neglected, may run on for weeks, and then terminate in a lasting chronic disease.

TREATMENT. Here is a case in which it will not do to give emetics. Every thing calculated to irritate the stomach, whether food, drink, or medicine, must be withheld.

The bowels must be opened, and if it can not be done by giving

cathartics, it must be done by injections. Oily substances will generally be retained. Equal parts of castor oil and sweet oil, with a portion of magnesia, can be given, in tablespoonful doses, repeated hourly till they operate, or five or six doses are taken.

I have often found the following to be an admirable preparation, as a cathartic in this disease. Five or six grain doses of the Neutralizing Physic, with half a grain of Podophyllin, and a grain of Ipecac in each dose, given in a spoonful of cold water, once every two hours, till six or eight doses are taken, or an operation produced. To prepare the Neut. Physic, see Table of Family Medicines and Recipes. If the stomach will not retain this, omit the Neut. Physic, and give the other two, in the quantities named, in half a spoonful of cold water.

Apply a large mustard plaster over the stomach, until a powerful impression is produced. It is well to make use of injections, and it may be well to give from an eighth to a fourth of a grain of morphine occasionally—not oftener than once in two hours.

But you must rely principally upon external applications. After the mustard has been taken off, apply constantly over the stomach flannel cloths, dipped in a hot infusion of hops boiled in vinegar and water, or in hot water alone. Continue this for hours. Bathe the feet and legs in warm ley water, and apply hot bricks to the patient in bed. Repeat the mustard plaster occasionally.

Give mucilaginous drinks, as gum arabic water, and infusion of slippery elm, or marsh mallow, cold, and a little lemonade.

CHRONIC FORM. When this disease becomes chronic, the digestion will be bad, with sour stomach, flatulency, heaviness and oppression after eating, belchings, and more or less pain and soreness in the walls of the stomach. The stomach seems to be tense, and sore to the touch; the soreness is usually confined to one spot, and is of a stinging character. The appetite is more or less impaired, and there is often nausea. The bowels are generally very costive; but sometimes a mucus diarrhea occurs. Ardent spirits, or stimulants of any kind, taken into the stomach, produce a burning sensation, and also a redness on the surface, especially the face. The tongue is usually clean, or a brown fur in the middle, smooth, and of a bright red, with pimples on it somewhat like the granulations of the strawberry.

Chronic inflammation of the stomach usually results from the acute form; though it is sometimes chronic from the start, and often results from the use of liquors and other stimulants.

TREATMENT. In the treatment of this form of the disease, almost every thing depends upon proper diet. Nothing but the blandest and least irritating diet should be used. If the disease borders on

the acute form, with slight feverish symptoms, mucilaginous articles, as tapioca, sago, arrow root, gum arabic, and elm bark, and decoction of barley, should be used. If there is no fever, and not much debility, a more nutritious diet may be used, as boiled rice, stale bread, crackers, mush and milk, and gruels. Milk is an excellent thing, and cases have been cured, by living on bread and milk alone for a while. The addition of a little lime-water makes it still better. Alcoholic and stimulating drinks, coffee, and the like, are to be avoided.

Costiveness must be prevented or overcome by the use of laxatives and mild cathartics. This may often be done by the use of bread made of unbolted flour.

An irritating plaster worn over the sore part of the stomach will also do good.

When there is evidence of ulceration of the stomach, a pill should be given twice a day, composed of three grains of extract Hyosciamus and one grain of powdered sulphate of iron (copperas), with half a grain of Ipecac, continued two or three weeks, or until relief is obtained. Bathing the whole surface and rubbing with a coarse towel should also be employed daily.

INFLAMMATION OF THE BOWELS.

INFLAMMATION of the bowels is characterized by acute pains in the abdomen, costiveness, more or less fever, and sometimes vomiting.

CAUSES. The disease may be caused by obstinate and long continued costiveness, by wounds and injuries to the intestines, by severe colic, by eating unripe fruit, and by exposure of the lower extremities and abdomen to cold.

SYMPTOMS. Burning and acute pain in the bowels, which shoots round the navel; usually obstinate costiveness; vomiting of bilious or dark colored matter; urine high colored; pulse quick, hard, and contracted; some fever, thirst, and great loss of strength. The patient is constantly belching up wind.

TREATMENT. Soak the feet in warm ley water—apply warm fomentations over the abdomen, flannel cloths dipped in hot ley water—and give a large tablespoonful of cold-pressed Castor-oil, with half as much Olive oil, and half a teaspoonful of spirits turpentine, and repeat it every two hours till an operation on the bowels is effected. After the second or third dose is taken, it should be aided by an injection of the same with a little warm milk and molasses, and a

teaspoonful of salt dissolved in it. If these means, after repeated trials, do not succeed, give more powerful injections; a tablespoonful of the Anti-bilious Physic, as much salt, a teaspoonful of Cayenne, a large spoonful of lard, and a pint of hot water; add a spoonful tincture Lobelia, and give the whole, warm, with a large syringe, and have it retained a while by external pressure.

In severe cases, it is good treatment to apply to the abdomen hot fomentations made by boiling in vinegar and water such herbs as hoarhound, wormwood, tansy, and hops, and inclosed in flannel or muslin, to be changed and repeated often.

If the costiveness can not be overcome, put the patient in a warm bath for half an hour.

Occasionally leave off the hot fomentations, and apply a large mustard plaster over the abdomen.

After the bowels have once been opened, a tablespoonful of castor and olive oil may be given once or twice a day, with fifteen or twenty drops oil of turpentine in it, to keep them open. A tea of senna and manna, with a teaspoonful of Epsom salts, is also good. No harsh or drastic purgatives should be given.

If mortification should be apprehended, apply over the bowels a poultice made of a decoction of the Wild Indigo (*Baptista tinctoria*), root or leaves, and give a little of the tea or infusion of the same internally, say two or three tablespoonfuls every three or four hours. This is one of the most powerful anti-septics known, and is good in all cases of putrid affections, sore throat, and the like, both internally and externally.

INFLAMMATION OF THE KIDNEYS.

THIS affection is characterized by pain in the region of the kidneys, shooting down toward the bladder, or lower part of the abdomen, sometimes vomiting, numbness of the thigh, high colored urine and frequently discharged, constipation of the bowels, pain in the small of the back and in the groin, with more or less fever.

CAUSES. It is often produced by the formation of stone or calculus, in the kidney, but may be brought on by the use of irritating diuretic medicines, by severe exercise, riding on a rough horse, hard lifting, and by cold settling upon the kidneys.

TREATMENT. The first thing done should be to relax the system, and produce perspiration. This may be accomplished by giving an emetic, slowly, at first, of Lobelia. After which, apply over the

region of the kidneys a hot fomentation of hops, wormwood, and tansy, simmered in vinegar and water, with a little bran mixed with them.

Then give the following *diuretic drops*—sweet spirits of nitre, 2 oz.; oil of sweet almonds, 2 oz.; spirits of turpentine, 1 oz.; mix, and give a teaspoonful every three or four hours during the day, in a cup of warm spearmint tea.

Let the patient also drink freely of a decoction made of marsh mallows (leaves or root) and mullein leaves—or either of them, if both can not be had. The horsemint may be added; it is a good diuretic in this complaint, and will give the decoction a more agreeable flavor.

If the pain is severe, or of long standing, use the following liniment; oil of juniper, one-half oz.; oil of spearmint, one-half oz.; spirits of turpentine, one oz.; tincture of cayenne, one oz.; laudanum, one oz.; alcohol, one-half pint; cut the oils in the alcohol first, and then add the others. Bathe the small of the back, and over the region of the kidneys freely with this, and let the patient sit with his back to the fire, or apply a warm iron or brick, to drive the liniment in.

Should there be much disposition to vomit, give a little saleratus in peppermint tea. A pill of opium, or forty to fifty drops of laudanum may be given occasionally, in case of excessive pain, and the patient placed in a warm bath.

A purgative should be given every day, if the patient is of a costive habit; and after the urgent symptoms are removed, a strengthening plaster should be worn on the back for a week or two.

INFLAMMATION OF THE BLADDER.

THIS disease will be known by a burning pain in the region of the bladder (bottom of the abdomen), frequent and painful discharges of urine, an almost constant desire to make water; hard pulse, and symptoms of fever. Sometimes there is great difficulty in voiding the urine, or a total stoppage; often a frequent desire to go to stool, with sickness at the stomach and vomiting. Sometimes there is a discharge of mucus and blood along with the urine.

CAUSES. The use of acrid diuretics, as cantharides; stricture in the urethra; irritation from a stone being lodged in the bladder; mechanical injury, and the usual causes of inflammation.

TREATMENT. The treatment in this case must be very similar to

that for inflammation of the kidneys. The warm hip bath—the patient sitting in warm water, which extends above the hips—should be employed twice a day, and the *diuretic drops* named for the preceding disease, should be given in spearmint or horsemint tea. Fomentations of bitter herbs, should be applied over the lower part of the abdomen.

A decoction of the *marsh mallows* should be drunk constantly; it is a sovereign remedy in diseases of the urinary organs, and may be relied upon, as a *specific* in this.

A purgative should be given every day. The patient must abstain from every thing of an acrid or stimulating nature, both of food and medicine.

In severe cases, apply a mustard plaster or blister over the region of the bladder. A decoction of burdock and mullein is also good, as a drink.

INFLAMMATION OF THE SPLEEN.

ACUTE inflammation of the spleen is characterized by heat, pain, and some swelling in the left side, immediately below the ribs, with more or less fever. The pain is increased by pressure. It often comes on with a shivering, like that of an ague, followed by heat and great thirst. It is often connected with the ague, or chills and fever, and is frequently a result of that disease. It often results also from the continued use of quinine. Persons of a plethoric and sanguine habit of body, are most subject to it. It is also liable to become chronic.

TREATMENT. Commence with a hydragogue cathartic, the Antibilious physic, or Mandrake, with cream of tartar.

Make use of measures to produce perspiration,—a good sweat, if possible.

Apply stimulating liniment and warm fomentations to the part.

The purgatives should be repeated every second or third day, and if relief is not soon obtained, give an emetic—bathe the feet in warm ley water, and apply a mustard plaster over the part.

The disease sometimes becomes chronic, in which case the spleen becomes enlarged and hard, forming what is sometimes called an “ague cake.” In this case apply a plaster, and renew it occasionally, made of the yellow of eggs and salt. Give an occasional purgative, and an emetic once a week.

INFLAMMATION OF THE EAR—EAR ACHE.

INFLAMMATION of the ear, producing "ear-ache," is principally seated in the nerves of the ear and its membrane, and is usually brought on by exposing the head to cold, or to a current of air. It may be caused, however, by any exposure, as getting the feet wet, check of perspiration, or cutting the hair too short in cold weather.

TREATMENT. Bathe the feet in warm water, and drop into the ear a few drops of the following: Take equal parts of laudanum, sweet oil, and honey, one part also of tincture cayenne, or No. 6, may be added; mix, and from a warm teaspoon drop into the ear five or six drops, and stop the ear tight with cotton. Repeat every hour or two.

If the pain is very great, steam the ear and side of the head over bitter herbs, and apply a hop fomentation, or a poultice made of roasted onions. Give also an active purgative.

An excellent remedy for ear-ache, is as follows: Take three or four roasted garlies, and while hot mash, and add a tablespoonful of sweet oil and as much honey, and laudanum; press out the juice, and drop of this into the ear, warm, occasionally. Onion juice is also good, in place of the garlic. If matter forms in the ear—if it gathers and breaks,—inject warm castile soap-suds, and cleansing and healing washes, into the ear, by means of a small syringe, and apply poultices.

INFLAMMATORY SORE EYES.

THIS affection is so well known, that it needs no description. It is sometimes caused by foreign bodies getting into the eyes, or by what are called "wild hairs," which grow through the eyelids. In such cases, the offending cause must be removed.

Where it is caused from cold settling in the eyes, determination of blood to the parts, etc., make use of measures to equalize the heat and circulation of the body, to withdraw the determination of blood from the head; and apply poultices and eye washes, to allay inflammation.

It will almost invariably be found in acute ophthalmia or inflammation of the eyes, that the head or forehead is too hot, and the feet and extremities too cold, showing an unequal circulation. Hence the feet should often be bathed in warm water; and cooling applications may be made to the head.

Apply to the eyes a poultice made of pulverized elm bark, stirred in warm milk and water. This is the best poultice that can be used. The wilted leaves of Stramonium (Jimson) are also good in severe cases to apply over the eyes.

Use the following cooling eye-water: Take sugar of lead, and sulphate of zinc, of each half a drachm; common salt and loaf-sugar, of each one drachm, or a teaspoonful; rain water, half a pint; let stand, shaking occasionally, two days; then strain or filter through white flannel,—when it is ready for use. Wash the eyes with this, two or three times a day. An excellent eye-water is also made, by steeping half an ounce each of good green tea and Yellow root, (*Hydrastis canadensis*), in a pint of boiling rain water. You may add to it, a drachm of sulphate of zinc. When cold, strain through white flannel.

Give an active purgative, which should be repeated every two or three days. Continue the washes through the day, and the poultices at night.

CHRONIC SORE EYES. Where inflammation of the eyes has been neglected, or has existed for a long time and become *chronic*, it will be well to give a cathartic once or twice a week, and apply to the edges and internal surface of the eye-lids, the following *Ointment*: Take fresh (unsalted) butter, two ounces; white wax, two drachms; melt these together in a saucer or earthen vessel (but do not make very hot), and when nearly cold, stir in half a drachm each of red precipitate and finely pulverized sulphate of zinc, and incorporate or mix well. Apply a little of this twice a day. Either of the eye-waters above named may also be used, and occasionally at night, an elm poultice, if much inflammation.

The following is also an excellent remedy in chronic sore eyes: Dissolve half an ounce of gum camphor, in two ounces of pure *Turkey oil*; a few drops of alcohol must first be poured on the camphor to make it pulverize, then (when pulverized in a mortar), add the oil, and rub in the mortar till dissolved. Anoint with this, two or three times a day.

SCROFULOUS SORE EYES. Chronic sore eyes is very often owing to a scrofulous condition of the system. In such cases, only the lids will be affected; the edges very red, and sometimes turned out, and it may be ulcerated. If the affection is owing to a scrofulous diathesis, as it is called, the above ointment should be used, and a course of treatment adopted, calculated to remove the scrofulous taint from the system. The following syrup should be used: Take of Yellow parilla root, 2 lbs; Burdock and Yellow dock root, each 1 lb; bark of the root of Bittersweet and Sassafras, each half a pound; May-

apple and Blood root, each about two ounces; bruise, and boil the whole in five or six gallons of water, down to one gallon; add, while hot six pounds of white sugar, strain, and bottle for use. To each pint, add half a drachm of hydriodate of potash, dissolved in an ounce or two of water, and take a wineglassful three times a day. It will be apt to keep the bowels loose enough, and will act as a powerful alterative and cleansing medicine to the whole system.

INFLUENZA.

THIS disease is characterized by an increased secretion of mucus from the membranes of the nose, mouth, and bronchial tubes, attended with sneezing, cough, thirst, fever, and loss of appetite.

CAUSES. It is generally epidemic, or endemic, prevailing throughout a certain district, and affecting usually a large proportion of the inhabitants; hence it is supposed, in such cases, to be owing to a certain peculiar condition of the atmosphere at the time. When it appears in a mild form, it is not considered dangerous; but when it rages as an epidemic, with highly inflammatory symptoms, and is not attended to in time, unfavorable and sometimes fatal consequences may result.

SYMPTOMS. The disorder usually commences with sneezing, coughing, and chills succeeded by heat, hoarseness, sore throat, followed with pain or soreness in the lungs, and stomach. There will be increased expectoration of mucus, running at the nose, pain in the chest, back, shoulders, and head, especially in the forehead. The eyes become red and bloodshot, and there is general debility and weakness.

TREATMENT. Let the patient drink freely of boneset and hoarhound tea, bathe the feet two or three times a day in warm ley water, and take the vapor bath once a day, and a very few days will generally suffice to break it up. If there is much difficulty in expectorating, or in breathing, give occasionally a teaspoonful of tinctures Lobelia, Blood root, and wine of Ipecac.

For cough and sore throat, give the following: Take a teacupful of good vinegar, add half as much honey, and a heaping teaspoonful of Cayenne; simmer a few minutes over the fire, and when cold, give a teaspoonful occasionally, or whenever the cough is troublesome. It is a splendid remedy, and acts almost like a charm. A purgative should also be given.

QUINSY, OR INFLAMMATORY SORE THROAT.

THIS is a disease of the tonsils and mucous membrane of the throat. It is most common among young persons.

CAUSES. The most common causes are a sudden cold; check of perspiration; wet feet, damp beds, moist, cold air, and the like. The disease generally occurs in the spring, and sometimes, like influenza, prevails as an epidemic.

SYMPTOMS. The more common symptoms are, sore throat; difficulty, with pain, in swallowing; redness and swelling in one or both of the tonsils; dry throat; foul tongue; hoarseness; difficulty in breathing, and more or less fever.

As the disease advances, the throat swells, and swallowing and breathing become more difficult; the dryness of the throat and thirst increases; the tongue swells, covered with a dark, crusty coat; the pulse is full, hard, and very frequent; hearing becomes impaired, sometimes complete deafness occurs, owing to the swelling of the tonsils, or as they are sometimes called, the "almonds of the ears." Sometimes the throat swells so that swallowing is almost impossible, and the patient is threatened with suffocation. The disease generally terminates in resolution; that is, it gradually yields and goes away; but it sometimes ends in suppuration, or, gathers and breaks.

TREATMENT. In the early stage of quinsy it is best to give an emetic. Let it be of Lobelia, or Lobelia and Ipecac combined. This forms the common emetic, and there is none better, nor so good. Let the patient, while taking the emetic, drink warm sage tea. Sage is a sort of specific in this disease.

Boil for half an hour a handful each of hops, wormwood, sage, boneset, hoarhound, catnip, or at least three of these articles; and let the patient steam his throat over them, as the hot vapor rises. Put some of the same in a coffee pot, with some vinegar added, and let him inhale the vapor into the mouth, throat, and lungs, as warm as he can bear. This will give immediate relief.

As an external application, make the following liniment: Take oil of sassafras, sweet oil, spirits of hartshorn, spirits of camphor, oil of pennyroyal, tincture of Cayenne, and spirits of turpentine, of each one ounce. Bathe the neck and throat with this, frequently, and apply a piece of flannel around the neck.

The following gargle is also excellent, and should be used, or something similar to it: Take a small handful of sage, and as much sumach berries or bark; boil in three pints of water down to one; then add

a heaping teaspoonful each of pulverized alum, borax, and saltpetre, strain, and sweeten with honey. Gargle the throat with this frequently, and occasionally let the patient swallow a little of it. Indigo water is also a good gargle; so is a decoction of sage and vinegar, with a little borax dissolved in it.

An old and infallible remedy, if the throat and tonsils are much swollen, is to simmer a quantity of sage in a little hogs' lard, and give the patient from a teaspoonful to a tablespoonful, three or four times a day, as warm as can be borne. This is also good to apply externally, mixed with a roasted onion poultice.

The principal danger in this disease is from suffocation, caused by swelling of the throat.

It will be well to repeat the emetic; and if the throat is much swollen, give it slow, in small doses, to relax the system; after which, give in larger quantities.

Cathartics should also be given, and the feet frequently bathed in warm water.

PUTRID SORE THROAT.

THIS disease differs from quinsy in the fact that there is not so much swelling in the throat, and consequently not that difficulty in swallowing. There are also cankers, sores, and ulcers in the back part of the mouth and throat. It is attended, also, with more or less fever, chilly sensations, hoarseness, and sometimes vomiting and purging. The disease is sometimes very malignant and dangerous; the ulcers change from an ash-color to a livid, and then to a black; when, if not checked, putrid symptoms appear, followed by gangrene, resulting in death in a few days. The symptoms are very similar to those in malignant scarlet fever.

CAUSES. The cause of this disease is supposed to be a specific contagion. At any rate it is often communicated in this way. It will also arise from cold and exposure, in persons predisposed to the disease.

TREATMENT. This is a dangerous disease; and yet, if properly treated, is very easily cured.

In the early stage, give an emetic; and if the bowels are not already quite loose, a cathartic also.

Bathe the throat externally frequently with No. 6, or tincture of Myrrh and Cayenne. The same liniment recommended for quinsy may also be used.

The patient should frequently swallow a spoonful of *top yeast*; and if the pulse sinks, and the patient becomes very weak, the system may be stimulated by giving also some porter, ale, or strong beer.

As a specific, take a tablespoonful of Cayenne, as much common salt, and simmer them a few minutes in a pint of water and good vinegar, equal parts; when cool, strain, and give of this a tablespoonful once an hour.

A plaster of the common rosin soap is very good to apply warm on the throat.

The following gargle should also be used: Take sumach berries (or the bark of root), white oak bark, red elm bark, and blackberry root, a handful of each; make a strong decoction; add to a pint a lump of alum the size of a walnut, and when cool, strain, and use it as a gargle, and apply it to the ulcers, frequently. It is an infallible remedy.

BRONCHITIS—ACUTE FORM.

THIS is an inflammation of the lining membrane of the bronchial tubes, or air passages. Persons who are in the habit of speaking much, or singing, are very liable to it, especially in cold weather, or changeable climates. It may be either acute or chronic. The *causes* are the same as those of inflammation of the lungs, and, where there is a predisposition to it, long and loud speaking or singing may bring it on.

SYMPTOMS. Acute bronchitis usually commences with a cold, slight cough, chilliness, oppression and tightness of the chest, and some fever. As the disease advances, these symptoms increase, the breathing becomes more difficult, with a sort of wheezing, and sometimes hoarseness. At first the cough is dry, but after awhile there is a copious secretion of tough, white mucus thrown up, which sometimes changes to a yellowish or greenish color. There is usually severe pain in the head; the tongue is covered with a white, mucous coat; frequent pulse, and dry skin.

TREATMENT. Our principal reliance in the acute or inflammatory form of this disease should be on emetics; and probably the best that can be used here is equal parts of the tinctures of Lobelia and Blood root, given in tablespoonful doses every five minutes, with some pennyroyal or boneset tea, until thorough vomiting has taken place.

In bad cases, apply bitter herb fomentations to the breast and throat, and let the patient inhale the vapor into the lungs.

Give as an expectorant and diaphoretic, a tea of pennyroyal, boneset, and Sanguinaria (Blood root); keep the bowels open with a mild purge occasionally.

CHRONIC FORM. Bronchitis often becomes chronic, as a sequel to the acute form, or as the result of neglecting a bad cold. It is attended with a troublesome cough, expectoration of a whitish frothy matter, loss of appetite, a quick pulse, high colored and scanty urine, and other symptoms more or less similar to the acute form.

TREATMENT. A mild emetic, same as for the acute form, given in broken doses. Repeat once a week.

Mild cathartics, sufficient to keep the bowels in a lax condition, are also proper—such as pills made of the extract of white-walnut bark, with a little powdered Mandrake and Blood root; or any good vegetable purgative.

Let the patient bathe his feet frequently in warm water, at least every night, and use the following preparation: Take the acetic tincture of Sanguinaria (Blood root tinctured in vinegar), tincture of the Macrotys (Black Cohosh), tincture of Balsam Tolu, and wine of Ipecac, of each one ounce; sweet spirits of nitre, two ounces; mix, and take from one to two teaspoonfuls three or four times a day. Also, inhale the warm vapor of herbs, as hoarhound, tansy, catnip, dog-fennel, and the like, and, to effect a radical cure, apply an irritating plaster to the upper part of the breast, and wear it, occasionally renewing it, for several weeks.

INFLAMED BREAST.

THE breasts of women are very often the seat of painful inflammation and swelling, which not unfrequently gathers and breaks. Women are most usually subject to this distressing complaint during the first weeks of nursing; and it is generally caused by taking cold in the breast, and by a stoppage or retention of the milk.

TREATMENT. The best thing I have ever known to "scatter" the swelling and subdue the inflammation, if not gone too far, is the application of a *mink skin*. A fresh one is the best; but a dry one will do, by being softened in warm water. Apply it, or enough of it to cover the whole breast or mammary gland, with the flesh side next the breast, and continue to wear it there for some days, except

when removed for the child to nurse, or to discharge the milk. It will sweat out the disease. It should be perfectly soft and pliant, and with the fur on.

An ointment should also be applied occasionally, made by frying a little of the bark of Bittersweet root and Jimson leaves in some lard.

If the swelling grows worse, and is likely to gather, a poultice of powdered slippery elm moistened with warm ley water should be applied. When it has come to a head, so that you can see that matter has formed, it should be lanced; but it is always best to poultice and let it break of itself. After it is open, continue the poultice, and wash the ulcer with the tincture of myrrh and aloes, occasionally injecting some into the opening. A decoction of wild Indigo and white oak bark is also very good as a wash. When the inflammation has been subdued by poulticing, heal with some good salve.

In case you wish to dry up the milk of the breast at any time, apply frequently a liniment of soft soap and spirits of camphor.

ST. ANTHONY'S FIRE: ERYSIPELAS.

THIS disease is characterized by a shining red inflammation of the parts affected, accompanied with more or less swelling, and a distressing irritation, with a stinging, smarting, itching, burning sensation. The irritation is sometimes so great as to almost set the patient crazy.

It is generally superficial; that is, affecting only the skin; and most usually attacks the face, ears, and head; sometimes only the feet, hands, and legs; at other times it may appear on the back, but may spread over most of the body. It occasionally becomes deep-seated, and is apt to gather and break; it is then called *phlegmonous erysipelas*.

In the progress of the disease, after a few days, especially where it is confined to the face and head, it is apt to form a number of little vesicles or blisters, containing a yellowish fluid, which will sometimes be thin and watery, and at other times tough and sticky, adhering to the parts. Sometimes, in bad cases, these vesicles will run together, forming a complete mass or scab; the face will be greatly swollen, the eyes perhaps closed, and the patient will suffer great pain in the head, with fever, thirst, restlessness, and perhaps delirium.

When it appears on other parts of the body, it is not apt to form

blisters; but the burning and itching will sometimes be intense and excruciating. It will remain on the surface a few hours, perhaps, in red, burning spots, slightly raised or swollen, and then go in and disappear for a while, often rendering the patient very sick at the stomach; and then perhaps appear again, and so continue for several days: It is a very distressing complaint, and when it affects the face and head is often dangerous.

CAUSES. This disease undoubtedly arises from impurities and humors in the blood, caused by morbid secretions being retained in the system. This state of things may be induced by derangement in the function of digestion; by suppressed perspiration; and by overheating the blood. It also arises from wounds and injuries sometimes, and it is then called *traumatic erysipelas*. In some persons its attacks are periodical, coming on once or twice a year; and persons who have suffered from frost-bite are apt to be troubled with it in the frost-bitten parts, during the winter and spring seasons.

TREATMENT. There is no doubt but the digestive apparatus is more or less deranged in this disease; and this derangement may be the exciting cause. It is always well, then, to commence the treatment with a pretty thorough emetic. It will do good besides cleansing the stomach, by rousing the organs of secretion and excretion to a more healthy action.

If the attack seems likely to be very bad, the vapor bath, or steam ing over bitter herbs, should then be employed, and a thorough sweat produced. After this a purgative should be given, such as the Antibilious Physic, with double as much magnesia. The stomach will generally be found in a sour, or acid condition, and for that reason an ant-acid, as magnesia, or chalk, or bicarbonate of soda, should be used freely. I prefer in this case the magnesia.

The vapor bath, or steaming, is very important; where the eruption appears more or less over the body, and there is great heat, itching and pain, it will generally give immediate relief, where every thing else has failed. If the disease is located about the face and head, the parts affected should be steamed over a decoction of bitter herbs, as catnip, tansy, boneset, hops, etc., two or three times a day. And in the mean time, apply over the affected parts a poultice of *cranberries*, made by boiling a pint or two of the berries, soft, allowing plenty of juice to remain; then take about a teacupful, juice and berries, mash, and mix in a little powdered elm bark, or a little wheat bran, spread thin on a cloth, and apply. Renew two or three times a day. The cranberry poultice, is considered by many a specific in this disease. When it affects other parts of the body, bathing with the juice or decoction of cranberries may be sufficient.

If you should not be able to check the disease, and vesicles or blisters should form, and ulceration take place, you must poultice with elm bark and hop yeast; and it would also be well to wash the ulcers with a decoction of the wild Indigo, either of the root or leaves.

Various washes have been recommended to be applied to the affected parts, either to cool down the inflammation, or kill the humor. Among the best is equal parts tinctures Lobelia, Blood root, add vinegar, to be applied three or four times a day. A decoction of the common Smartweed (*polygonum punctatum*), and also of the May weed (dog fennel), is highly recommended as a wash, to be used cold. As a cooling wash, a solution of borax and sugar of lead, is sometimes very good—two drachms of each to a pint of rain water. These washes, of course, are to be used before vesication or blistering takes place.

The patient, during the whole treatment, should drink freely of a tea made of Burdock root, Sassafras bark, and Elder flowers.

In the chronic form of the disease; that is, where it is known to be in the system, by its appearing every few months upon some parts of the body, in order to eradicate it from the system, and effect a permanent cure, a course of constitutional treatment must be adopted. Some good cathartic pills should be taken, one or two a day, to keep the bowels loose. Also the following preparation; take of the Wild Indigo root, Blood root, and Poke root, an ounce of each, dry, or double the quantity if green; Holland gin, or good whisky, one pint; let stand a week to form a tincture. Add to it two drachms of hydriodate of potash, dissolved in an ounce of water. Of this, take a teaspoonful three times a day. At the same time make a decoction of Yellow dock root, bark of the Bittersweet root, Sassafras root, and Elder blossoms, and take a wineglassful three or four times a day. This may be made into a sirup, if preferred, by adding, when hot, a pound of white sugar to each quart. Bathe the whole surface two or three times a week, in weak ley water, and avoid all spirits, malt liquors, coffee, and every thing of a stimulating nature. This treatment should be pursued, for at least a month or two.

IN TRAUMATIC ERYSIPELAS, which rises from wounds, by appearing on the edges of the wound, and spreading from there over the surface,—touch the edges occasionally, with tincture Cayenne, or No. 6, to excite a healthy action, and poultice with slippery elm. If there is appearance of gangrene, wash with a decoction of the Wild Indigo, or Smart weed, and add some yeast to the poultice.

IN PHLEGMONOUS, or deep seated erysipelas, which generally appears about the thighs, or hips, rely on poultices of elm bark and weak ley, and repeated purgatives and emetics.

BLACK TONGUE ERYSIPELAS.

THIS is an awful disease; but fortunately does not occur very often. When it does, however, it is generally as an epidemic, and proves very fatal. It usually commences with a sore throat; soon the tongue, throat, and whole neck begin to swell; the tongue and inside of the mouth turn black; the outside of the neck becomes of a livid purple, in spots, which gradually change to dark green, or black, when, if relief is not soon obtained, mortification closes the scene, or the patient dies from suffocation.

In this disease, the most thorough and vigorous treatment must be employed from the very start. Thorough emetics of Lobelia, repeated often, at least once a day; frequent doses of tinctures Myrrh and Cayenne, or the No. 6. Myrrh is an antiseptic (anti-mortification), and Cayenne a powerful stimulant—two things highly essential in this complaint. Follow the emetic with an active purgative.

Bathe the neck with a liniment composed of equal parts oil Sassafras, oil pennyroyal, spirits turpentine, and tincture Cayenne, and apply to the throat and neck a hot fomentation of Smart weed and Dog fennel, made by boiling a handful of each, the whole to be put in a thin cloth and applied to the neck as hot as can be borne. When they become cool or dry, put them back into the same vessel and decoction (which should be kept hot for the purpose), and apply again, and so continue. The patient should also drink a little of the same decoction occasionally, as warm as he can swallow it.

In case gangrene or mortification is threatened, apply to the neck a strong ley poultice made with elm bark or bran, with a teacupful of hop yeast. The patient should also swallow a tablespoonful of yeast every little while. After poulticing for a couple of hours, change to the fomentations again, and so alternate. If you have, or can get the Wild Indigo, let the patient take a tablespoonful of a decoction of it once in two or three hours; and also add some to the poultice, and wash the neck with it occasionally. Pursue the above course, in the most efficient manner, and you will seldom fail, if you begin in time. Under the regular, slow, old school treatment, four out of every five with this disease will die. The disease generally occurs in the winter season; hence you will see the propriety of laying in a stock of medicines—of herbs and roots, at the proper season—not only for this disease, but for others as well.

CHOLERA MORBUS.

THIS disease is characterized by vomiting and purging, with griping, pain and cramps in the stomach and bowels. It prevails generally during hot weather. The discharges from the bowels are at first thin and watery, but after a little while they become more bilious; the retching, vomiting, purging and pain, become more severe and frequent, and during the intervals, there is great sickness and distress in the stomach; sometimes there are cramps in the muscles of the abdomen and extremities. There is great thirst, and desire for cold water; but nearly every thing taken into the stomach is thrown up in a very short time. As the disease advances, the pulse becomes small and feeble, the extremities cold, countenance pale, expressive of great distress, a cold sweat breaks out, succeeded by great prostration.

CAUSES. Cholera morbus is more common some years than others, prevailing sometimes as an epidemic, and seems to be owing to some peculiar poison or acid generated in the system. When the tendency to the disease exists, the use of indigestible and irritating food and drinks, unripe fruit, or even ripe fruits that contain acid, or soon run into a state of fermentation, vegetables, green corn, and the like, will often bring it on. At such times, when the disease is known to be prevailing, the daily use of antacids, especially of a little weak *white ley*, will generally neutralize the poison acid in the stomach, and prevent the disease.

TREATMENT. There is of course great irritability of the stomach, the patient throwing up nearly every thing he swallows. A very good thing to settle the stomach as well as to check the purging, in this disease, is the following domestic preparation: Take ground black pepper, a tablespoonful; as much table salt; half a tumblerful of warm water, and as much good cider vinegar. Give of this, a tablespoonful (to an adult), every minute or two, stirring the mixture each time, till the whole is taken. The first tumblerful may be vomited up; if so, repeat the dose. It will seldom be vomited the second time. This is also an admirable remedy in Cholera. It may be relied on in Cholera morbus, and in genuine Cholera—if taken at the commencement; and, I have cured Cholera with it, alone, when the patients have been in a state of collapse.

A tablespoonful of black pepper boiled in half a pint of milk, and given gradually in small doses, will sometimes quiet the stomach; so will peppermint tea with a little saleratus dissolved in it. But if all efforts of this kind fail, give an emetic of Lobelia and Ipecac. After

which, as soon as the stomach is sufficiently quieted, give the *Neutralizing powder*, either in the form of powder, or in a liquid state. If in powder, about an even teaspoonful to an adult, every half hour, or hour, if in liquid, take an ounce of the powder, and add half a pint of boiling water, sweeten with loaf sugar (and you may add a little good brandy), and give a tablespoonful once an hour. This is to be continued till it acts upon the bowels, and the discharges are changed in color and consistence, after which it can be given less frequent.

At the same time the feet and legs should be bathed in warm ley water,—after which a mustard plaster should be applied over the stomach. It is a good plan also, to apply a warm fomentation of hops and vinegar to the bowels, or cloths dipped in the decoction of the same.

In making an infusion of the *Neutralizing powder*, as directed, it may be improved by adding to it a dozen powdered cloves, and a little cinnamon bark. These are both good astringents, and are also calculated to quiet the stomach. If there is much pain in the bowels, thirty or forty drops of laudanum may be given also (to an adult), and repeated in an hour or two if necessary.

Endeavor to produce and keep up a perspiration, by the use of sweating teas; the *Diaphoretic powders* (see *Table of Family Medicines*), and the employment of hot bricks, or external heat, about the patient.

After the urgent symptoms have been allayed, and sufficient of the *Neutralizing physic* has been taken to act upon the bowels, you may give something more astringent. A strong decoction of *burnt corn* is very good. Parched corn, ground in a coffee mill, and boiled in milk, or in water, is a very good diet. So is parched or browned rice, and then boiled soft. A strong decoction of the *Blackberry root* may be made, to which some cloves and cinnamon have been added, and the patient take half a teacupful, two or three times a day. *Burnt Rhubarb*, is also a splendid remedy in this and all bowel complaints. To prepare it, burn an ounce or two of powdered *Rhubarb* on a shovel, or in an iron vessel, till it is quite black, stirring it the while, and give of this to a grown person, from a half to an even teaspoonful three or four times a day. You may combine with it half as much of the *Diaphoretic powder*. And after the first twenty-four hours, if the patient is improving, or the discharges from the bowels are pretty much checked, it would be well to add also to each dose, one-fourth of a grain each of *Podophyllin*, and *Sanguinin*, and one half grain of *Leptandrin*, until five or six doses have been taken. This will excite a healthy action of the liver and secretions, and prevent a sudden constipation of the bowels, which must be avoided, or

inflammation may take place. A grain or two of Ipecac, may be added to each dose, instead of the Diaphoretic powder.

CHOLERA INFANTUM. When this disease affects children, which it often does during the summer months, it is usually called Summer Complaint, or Cholera Infantum. There is generally not so much sickness at the stomach; but the discharges from the bowels are frequent, and usually of a watery, greenish, or white frothy character. Sometimes, if neglected, it will run into dysentery, or bloody flux.

THE TREATMENT should be about the same as directed for cholera morbus, varying it according to age and circumstances. Rely principally on the Neutralizing Physic, made into an infusion or syrup, and given freely. After giving this for a couple of days, give also a strong tea, or decoction of blackberry root, strawberry leaves and root, cherry-tree bark, cinnamon and cloves, sweetened with white sugar. The *Geranium root* (called alum root, crow-foot, etc.), is also an excellent remedy in this complaint. An ounce of it, bruised or powdered, may be boiled in a pint of sweet milk, and given three or four times a day, half a teacupful at a time. The burnt Rhubarb may also be given in small doses, with a little sirup or molasses. But no matter what else is given, give occasionally of the Neutralizing Physic. Attend well to the skin; bathe the child twice a day in warm saleratus water, or weak ley, and rub the surface well, so as to promote, if possible, a healthy action in the vessels of the skin. Let the diet be light—as rice, boiled milk, with a little flour stirred in it, and the like.

If the disease assumes the form of dysentery or flux, which will be known by there being more or less blood mixed with the discharges, and they will be small in quantity and more frequent—give the following: Take Podophyllin, two grains; Leptandrin, four grains; Ipecac, four grains; white sugar, twenty grains; triturate the whole well in a small mortar, till thoroughly mixed: divide into eight equal powders, and to a child from two to four years old give one every three hours till four powders are taken; from four to six years old, six of the powders, in the same way; over six years, all of them; and under two years, two of the powders, divided into four doses. They may be given in a little water, in a spoon. After these have been taken, which will operate freely on the bowels, give the Neutralizing Physic, and, if necessary, injections of cold water, and apply cloths dipped in cold water, to the lower bowels and abdomen. A dose of castor oil, with a few drops of spirits of turpentine, may also be given.

MILK SICKNESS.

THIS is a peculiar disease, confined to certain districts of country in the West and South. It is called milk sickness, from the fact that it is generally, if not always, acquired from eating the milk, butter, and cheese, which have been obtained from cows infected with some peculiar poison, which they obtain either from drinking the water or cropping the herbage in the infected districts. What this poison is, no one as yet has been able to demonstrate. Some think it exists in some undiscovered vegetable or plant; while others believe it to be a mineral poison, existing either in the water in certain localities, or in the earth, from whence it rises in the form of a vapor during the night, and settles upon the grass which the cattle eat. My opinion is that the latter theory is the true one; but then it is only an opinion, for there is nothing certain known as to the real cause.

An attack of the disease is sometimes preceded for a few days by a feeling of languor, lassitude, and general weakness, with a foul tongue and very offensive breath; but it very often comes on suddenly, and is characterized by severe vomiting, great thirst, and burning at the pit of the stomach, and obstinate costiveness. It is very difficult to cure, and often proves fatal.

TREATMENT. Prompt and efficient measures are required to cure this disease. The most important object to be effected is an action upon the bowels. The most obstinate constipation generally exists, and it will require the most active and powerful measures to overcome it.

In the early stage of the disease it is best to give an emetic; and when I say "emetic," I always mean Lobelia and Ipecac. This will have a tendency to settle the stomach for a while, so that it may retain the cathartic medicine. There is often no better way—and none so good—to settle the stomach and allay vomiting, than to give a thorough emetic.

Next give some active, quick cathartic. There is probably nothing better than the Anti-bilious Physic, with a little cream of tartar. Apply at the same time a large mustard-plaster over the stomach; and in half an hour after giving the physic, give a powerful injection, relaxant and cathartic, composed of a tablespoonful of the Anti-bilious Physic, as much salt, and a teaspoonful of the emetic powder, to which add near a pint of hot water, and as soon as cool enough give it by means of a large syringe, and require the patient to retain it as long as possible. If this does not move the bowels within an

hour after giving the physic, repeat the dose, following it with another injection. Should these measures fail after repeated trials—which they seldom do—give ten drops of croton oil—repeat the dose every hour, and at the same time rub a teaspoonful of the oil upon the abdomen, over the region of the bowels. You need not be afraid to use the croton oil in this disease. A whole bottle has been given in a single case, without producing any deleterious effects. But the Anti-bilious Physic, or Jalap and Senna, will in most cases be sufficient, with proper injections.

The bowels, when once opened, must be kept open, by occasional doses of the Physic; and an attempt should then be made to sweat the patient. The vapor bath, with proper diaphoretic teas, and the use of hot bricks, should be employed. If you can keep the bowels open for two days, and give the patient a good sweat, you will cure your case.

BILIOUS AND CRAMP COLIC.

BILIOUS colic, sometimes also called Cramp colic, is characterized by excruciating pain in the region of the navel, thirst, feverish symptoms, vomiting of bilious matter, and costiveness.

The attack generally commences with a bitter taste in the mouth, followed by vomiting of a yellow greenish matter. The bowels are constipated; little or no discharge of urine; the pain about the navel will sometimes shift from place to place; a sort of hoarseness usually attends the patient throughout the disease, and more or less fever. Sometimes there are cramps in the stomach and limbs.

TREATMENT. In two important respects—vomiting and costiveness—Bilious colic very much resembles the Milk sickness; and therefore is to be treated in a very similar manner. Endeavor to allay the irritability of the stomach, by giving in small and frequent doses peppermint tea, with a heaping teaspoonful of saleratus dissolved in a half pint of it. Apply over the stomach and bowels a large mustard plaster, wet with vinegar—first bathing the abdomen with spirits of turpentine. If this does not stop the vomiting, give an emetic.

As soon as the stomach will retain medicine, commence giving something to move the bowels; either the Anti-bilious Physic, or the following, which in this case is one of the best: Take Epsom salts, eight ounces; muriatic acid, two drachms, or two teaspoonfuls; boiling water, one pint; after it is cool, add half an ounce essence of peppermint and as much essence of anise, to give it a flavor and make

it more palatable: Dose, a tablespoonful every half hour till it operates, or the whole is taken.

After the mustard has been on as long as it can be borne, remove it and apply constantly to the abdomen, flannel or other cloths, dipped in hot water. This will have a soothing and relaxing effect.

If the costiveness is obstinate, and the medicine does not take effect, active injections must be given, such as the Anti-bilious Physic, emetic powder, salt, and a little Cayenne, with warm water and hogs' lard. The bowels once open, keep them so, and produce perspiration.

An excellent remedy in this disease, highly prized by some physicians, is a saturated tincture of green walnuts, made by slicing the walnuts when green, and adding enough whisky or dilute alcohol to cover them, and let them digest a week or two. Dose a teaspoonful every half hour, till relief is obtained.

PAINTERS' COLIC.

THIS disease differs somewhat from other species of colic, being more violent, the costiveness more obstinate, and attended with more or less paralysis of the bowels and muscles of the abdomen. It is generally caused by inhaling the vapors arising from the different preparations of lead, or from handling them; painters are most liable to its attacks, hence the name of Painters' Colic. It is also called *Lead Colic*, or *Colica Pictorum*.

The disease usually commences gradually, with pain in the stomach, which extends downward into the bowels, centering about the navel, and, in the more violent stages, shooting off from there toward the sides of the abdomen, accompanied with spasms in the muscles and intestines. There is usually sickness at the stomach, some vomiting, thirst, anxiety, quick contracted pulse, pallid countenance, with the most obstinate costiveness. As the pain increases, the muscles of the abdomen become contracted into knots, and very painful to the touch; the intestines seem also to be contracted, or so paralyzed that nothing will pass them. There is great danger in this disease of inflammation of the bowels, which soon runs into gangrene, and destroys the patient.

TREATMENT. The treatment in this form of colic, should be very similar to the bilious form. The first thing to be done, is to overcome the constipation of the bowels. If there is vomiting, give medicines to allay it. Then make use of strong purgatives, with hot fomenta-

tions to the bowels. Narcotics and relaxants are also indicated, to relieve the pain, and overcome the spasms. As a narcotic and anodyne, use the extract of *Hyosciamus*; take twenty grains, form into six pills; give one every two hours. At the same time give the Anti-bilious Physic, and aid the operation with purgative, stimulating and relaxing injections. A portion of the physic, with a little salt, a teaspoonful of tincture or powder of Lobelia, and hot water, may be used as the injection, to be repeated according to the urgency of the case. Sometimes it will be well to add a little Cayenne to it. Apply hot fomentations to the bowels, and if the physic does not operate in two or three hours, give the Croton oil, three or four drops at a time, in a spoonful of Castor-oil, or a little milk, and repeat every two hours. Also rub a little of the Croton oil on the abdomen, over the bowels. In other respects, treat the same as a severe case of bilious colic. It is sometimes well to put the patient into a warm bath, for half an hour, or even longer, in order to relax the muscular system, and overcome the spasm of the intestines. After you have got an operation on the bowels, you may give the following pills: Extract *Hyosciamus*, forty grains; *Ipecac*, twenty grains; pulverized *Opium*, ten grains; *Podophyllin*; ten grains; make into twenty pills, and give one every three or four hours.

RETENTION OF URINE.

FROM various causes, as inflammation of the neck of the bladder, of the prostate gland, from the effects of gravel, stricture of the urethra, and the like, the urine is liable to be retained in the bladder, or perhaps in some other of the urinary organs, either partially or wholly, and thereby causing great distress.

TREATMENT. The following will generally be found sufficient in all ordinary cases: Make a pint of strong Spearmint tea, add to it half a gill of good Holland gin, and an ounce of spirits of Nitre; let the patient drink the whole of this, at three or four times within an hour. Repeat the same within the next two hours, if the first is not sufficient. Or take essence Spearmint, essence Juniper, and spirits of Nitre, of each one ounce; give a tablespoonful every half hour till relief is obtained. If there is much pain and suffering, add twenty drops of laudanum to each dose, for three or four times.

At the same time let the patient sit over the hot vapor of bitter herbs, with a blanket around the waist or shoulders, so that the steam may be confined to the lower part of the abdomen and region of the

bladder. After which let him go to bed, and apply a hot fomentation of the herbs, or cloths dipped in the water of the same, to the lower abdomen, as hot as can be borne, renewing often. Continue giving one or the other of the preparations I have recommended. Or if you can not get them give freely of a strong tea of watermelon seeds, or if not these, of pumpkin or cucumber seeds.

This course will generally succeed in a few hours, at most. But if it fails, put the patient in a hot bath, or as warm as can be borne, for ten, fifteen, or thirty minutes. This, with the use of proper diuretics, as spearmint, spirits nitre, a tea of melon seeds, cleavers, and the like, can hardly ever fail. Opium, or laudanum should always be given, if there is much pain.

Browned or parched egg-shells, finely powdered, and given in half teaspoonful doses every hour, is said to be a specific.

If owing to severe stricture, or stone lodged in the neck of the bladder, all these and similar measures fail—which they will not do once in a hundred cases—a catheter must be introduced; in which case it will be best to send for a physician, or some one who understands using the instrument.

Should there be any inflammation or soreness in the parts, give for a few days a decoction of Marsh mallow and Mullein, and pursue a course similar to that recommended for inflammation of the bladder.

INCONTINENCE OF URINE.

By incontinence of urine, is meant an inability to retain it, or an involuntary discharge of it. The difficulty mostly occurs in children; but sometimes adults are troubled with it. It usually occurs at night, during sleep. There is also sometimes a constant disposition to void the urine, every few minutes, owing to slight inflammation or irritation of the bladder or urethra.

TREATMENT. Where the difficulty is not dependent on the cause just stated, it is usually owing to a lax and debilitated condition of the parts, and must be treated with tonics and astringents, such as act more or less on the urinary organs.

Take the muriated tincture of Iron, one ounce; tincture of Cantharides, half an ounce; mix, and to a child give three drops for each year of its age, three times a day, and let it drink of a cold decoction several times a day, made of Cherry-tree bark, Bayberry bark, and Dandelion root.

Proper attention should be paid to the skin. The difficulty is often owing to checked perspiration, or an unhealthy condition of the perspiratory function. The cold bath, or washing the patient in cold water, should be employed morning and evening, and the patient, if a child, should be made to void the urine just before going to bed. The difficulty is often owing wholly to a neglect of this habit, and consequently, to the carelessness of parents and those who have charge of the young.

In all ordinary cases of incontinence of urine, whether in young or old, the tincture of cantharides will generally be found sufficient. To an adult, it should be given in ten to fifteen drops twice a day, and to children less in proportion to age.

GRAVEL.

THIS disease is caused by a collection of sand, or the formation of stone, or calculous substances, in some of the urinary organs, as the kidneys, ureters, or bladder.

The agents which form the gravel or stone, are no doubt, originally contained in what we eat and drink. When the system is in a healthy state, and all the functions are duly performed, these calculous substances pass off by the proper secretions; but when, owing to debility of the urinary organs, especially the kidneys, there is an excess of what is called uric acid in the system, a chemical union takes place between it and the calculous particles, thus forming stone, or larger particles, until sometimes these formations become too large to pass off through the urinary ducts, and the consequence is, the difficulty or disease known as gravel. The calculous body may lodge in the kidneys, or in the ureters; or it may pass down into the bladder, and if not destroyed or removed, will give rise to inflammation in the part, and other distressing symptoms.

SYMPTOMS. One of the leading symptoms in this disease, is a frequent desire to void the urine. This is especially the case when the gravel or stone is in the bladder. There is great irritation about the neck of the bladder, which sometimes extends along the urethra.

If the stone is lodged in the kidney, there will be a fixed pain in the small of the back, or region of the kidney; sometimes acute and severe. The severest pain, however, is generally experienced when the stone is passing down from the kidney through the ureters to the bladder, especially if it become lodged in its passage—so severe

sometimes as to occasion fainting and convulsions. There is pain in the loins, a numbness in the thigh on the side affected, often nausea and vomiting, and suppression or retention of urine. The urine will be of a brown red color, caused by a deposition of sand of that color, which will settle at the bottom of the vessel—by which you may readily distinguish the disease from mere inflammation of the kidneys, or bladder. When the gravel or stone is lodged in the bladder, there will be pain in that organ, sometimes very distressing, accompanied with more or less inflammation, and an itching along the urethra. When the person is voiding urine, the stream will sometimes be suddenly stopped for a spell, caused by the stone closing the passage at the neck of the bladder.

TREATMENT. A fit of the gravel, particularly if the urine is retained, or voided with difficulty, is to be treated the same as directed for Retention of Urine. If the pain is severe, as is generally the case, give first of all an opiate; to a grown person, from forty to sixty drops of laudanum; and then make use of the measures recommended for retention of urine; suitable diuretics, warm fomentations, and if need be, the warm bath.

As soon as the urgent symptoms have been relieved, a hydragogue cathartic should be given; the Anti-bilious Physic, or Podophyllin, with cream of tartar. The patient should then take such remedies as are calculated to destroy or dissolve the stone, and counteract the tendency in the system to its formation. There are numerous remedies recommended for this purpose. Among the best I know of, is the following: Take half a pound of the root of *Queen of the Meadow* (which may generally be had at a Botanic drug store), and half as much *Horsemint*; make a strong decoction by boiling two gallons of water down to two quarts; strain and add half an ounce powdered Nitre (saltpetre) and one ounce Carbonate of soda. Take of this half a teacupful three or four times a day. Also, take half an ounce of Castile soap, and twenty drops oil of Juniper; make into sixty pills, and take two three times a day.

The juice of red onions is said to be a solvent for the stone. A gill, or half a teacupful, is to be drank morning and evening, for three days.

If there is inflammation of the bladder or kidneys, adapt the treatment to the case, as recommended under those complaints.

There is an herb which grows in some parts of the West, perhaps generally called *Gravel root*, which is said to be a specific in this disease, when used freely in the form of decoction. I am not acquainted with it, but doubt not that it possesses valuable properties.

EXCESSIVE FLOW OF URINE—DIABETES.

THIS disease is characterized by frequent discharges of large quantities of urine. It is usually attended with costiveness, voracious, or increased appetite, and yet with great debility, emaciation, and more or less hectic fever. The urine is generally sweet, containing a large quantity of saccharine matter, or sugar. The quantity of urine is often enormous, being greater sometimes than both the food and drink taken into the stomach! Patients have been known, in bad cases, to pass three or four gallons of urine in twenty-four hours!

CAUSES. The causes of this disease are not well understood. There seems in some persons to be a hereditary predisposition to it. It is probably owing mainly to a perverted or diseased action of the kidneys. There appears to be a preponderance of saccharine matter in the system, or a disposition to its formation, and a deficiency of counteracting agents. Where a predisposition to the disease exists, it may be induced by various causes—as exposure to cold and damp air, a poor diet, venereal excesses, continued use of mercury, the excessive use of sugar, and such vegetables as readily form saccharine matter; anxiety, grief; and various diseases, as rheumatism, gout, retrocession of cutaneous eruptions, etc.

SYMPTOMS. The most striking symptom, especially in the earlier stages of the disease, is an increase in the quantity of urine, accompanied, as a matter of course, with a frequent desire to pass it; the patient being often compelled to rise for that purpose two or three times, or oftener, during the night. The disease is apt to come on very insidiously and gradually, and may progress for months without exciting much notice, until other symptoms begin to succeed.

The appetite is usually much greater than in health, sometimes voracious; while digestion is generally imperfect. There is apt to be uneasiness in the stomach after meals, with flatulence, sour belchings, and irregularity in the bowels.

Great thirst is a never-failing attendant. The patient wants to drink nearly all the time, and this fact often attracts his attention before he is aware of the true nature of his condition.

Perspiration is very imperfect, or totally suppressed; the skin is dry and harsh; the gums often red, swollen, and sometimes ulcerated. The tongue is white and foul in the center, with red edges; the mouth dry and parched, and the taste vitiated.

As the disease progresses, the patient complains of pain and weakness in the loins, and region of the kidneys, followed with general

debility, swelling of the legs and feet, emaciation, hectic fever, cold feet, sense of weight at the pit of the stomach, difficulty in breathing, easily fatigued, with a tendency to sleep, general languor, and depression of spirits. The disease, if not checked, may prove fatal in five or six weeks; but it usually runs longer, sometimes for several years, before it wears out the constitution.

TREATMENT. Restorative medicines constitute the principal agents to be used in this disease. The following compound should be used: Take Beth root, Black Cohosh root, Geranium root, and Cherry-tree bark, say four ounces of each; let the whole be powdered and well mixed; then take of the compound about half an ounce, pour on it a pint of boiling water, stir, and when cold, drink that quantity during each day, at intervals. Continue this throughout the treatment, or till the whole is taken.

The following pills should also be taken, to act on the liver, skin, and secretions:

Podophyllin,	10 grains.
Sanguinin,	20 do.
Cayenne,	40 do.
Ipecac,	20 do.

Make into 40 pills, with extract of Dandelion, and take one night and morning.

Attend well to the skin: sponge the body all over every night, with the warm alkaline or saleratus bath, and rub well. A strengthening plaster should be worn on the back, over the kidneys.

The following restorative bitters may also be used: Gentian, Spike-nard, and Colombo roots, Chamomile flowers, Balm of Gilead buds, and Peruvian bark—of each one ounce; powder or bruise all, and cover with three half-pints of boiling water; when cool, add a quart of good Holland gin, and take half a wineglassful three times a day. If there are feverish symptoms, take a dose—ten grains to half a teaspoonful—of the Diaphoretic powders at night.

If the patient does not improve under this treatment in a couple of weeks, give also an emetic once or twice a week, an active purgative of Mandrake and Cream of tartar, and three pills night and morning, composed of Cayenne and Quinine, each 30 grains; extract of Dandelion, one drachm; make into 40 pills. After these are taken continue the previous treatment.

Proper diet is an important matter. This should consist principally of fresh meats; beef is the best. Little or no vegetables; avoid as far as possible every thing from which *sugar* can be extracted—and drink as little as possible.

SCURVY.

THIS disease appears to consist in a vitiated state of the humors or fluids of the system, tending to ulceration and decomposition of the solid parts.

CAUSES. Scurvy, on land, prevails mostly in northern latitudes, in low marshy districts, or near where there is a great deal of stagnant water, and is caused probably by cold, moist air. It is also occasioned by long continued and constant use of salted provisions, salt and smoked meats, to the exclusion of vegetables; hence the reason of its prevailing so much among sailors. It may also proceed from the suppression of accustomed discharges, as the menses; and from depressing passions. Neglect of cleanliness, confined air, unwholesome food, want of exercise, and any thing that tends to weaken the system, or vitiate the fluids, may cause it.

SYMPTOMS. Generally the first symptoms are softening, ulceration, and bleeding of the gums, attended with an offensive breath, and perhaps frequent bleeding at the nose. There will also be a feeling of weariness, shortness of breath, and fatigue, after a little exertion. As the disease advances, there will probably be swelling of the limbs, or a wasting away, and yellowish, or livid spots will appear on the skin, or scaly eruptions. The face is generally pale, or of a leaden color. Finally other symptoms come on, as decay and looseness of the teeth; hemorrhages of blood from different parts of the body; obstinate ulcers; scaly eruptions all over the body; pains in the breast and bones; hectic fever; and the patient is carried off by dysentery, dropsy, or mortification.

TREATMENT. The only certain way of curing this disease is to reverse, as far as possible, that state or combination of things which produces it. Change the habits, locality, and diet of the patient. If it is thought to proceed from a sedentary life, or depressing passions, the patient should take daily exercise in the open air, or engage in some out-door employment, and be placed amid associations calculated to divert the mind and inspire cheerfulness. If the disease has been brought on by the long use of stale and salted provisions, the proper remedy will be a diet consisting mainly of fresh vegetables, fresh bread, milk, cider, and vegetable acids. If fresh vegetables can not be had, then pickled vegetables are the next best. Sour Krout is an admirable remedy. As a drink, butter-milk, and the whey of sour milk, are good. Cider vinegar is also of service, and should be mixed with most of the food.

Besides the diet, particular symptoms and conditions will require particular treatment. For sore and ulcerated gums, use the compound tincture of Aloes and Myrrh, as a wash ; or take Gum Myrrh, Aloes, and extract Licorice, of each half an ounce ; pulverize, and add four ounces or a teacupful of hot water, stir, and when cold put the whole in a bottle, and add half a pint of good brandy ; let stand four or five days, shaking occasionally, and then strain through flannel, and use this as a wash to the gums and ulcers of the mouth and throat, three or four times a day.

If there is diarrhea, or dysentery, use the Neutralizing Physic, and other remedies suitable to that condition. If constipation, laxative medicines ; if pains in the bowels, fomentations, emollient poultices, and anodynes, or opiates ; if oppression in the chest and difficulty of breathing, mustard plasters, and relaxing expectorants ; if pains or contractions in the limbs, swelling of the joints, etc., steam over bitter herbs, and use stimulating and emollient liniments, with friction. If the skin becomes affected, with spots, scabs or scales, wash the whole surface once a day with a water made acid with vinegar or a little muriatic acid ; if ulcers form, apply a poultice of yeast and elm bark, and heal with the green, or other good salve.

It will be well also for the patient to drink from a half to a pint daily of a decoction of such articles as Burdock, Yellow parilla, Marsh mallow, and Dandelion root.

RICKETS, OR CURVATURE OF THE SPINE.

THIS is a peculiar disease, seated principally in the bones, called sometimes *Disease of the Spine*, and is owing to a deficiency of earthy deposit in the formation and growth of the bones. It usually occurs in children of a scrofulous constitution. Owing to the soft condition of the bones, they are often not able to support the body, and more or less deformity will occur ; it may be only a slight curvature in the bones of the legs or in the back-bone ; but in bad cases, the deformity is sometimes so great as to change the whole figure and appearance of the person ; the head becomes enlarged ; the ribs too straight or too much curved ; the breast-bone rises or projects outward, and the spine or back-bone will have two or three curves, shortening the body to near one half its proper length, and otherwise distorting its general appearance. The abdomen is sometimes greatly enlarged. The skin and flesh become flabby, the body wastes away, and the teeth become loose and drop out.

TREATMENT. This disease is to be treated in the main as a case of scrofula. If it is neglected long, it will be difficult or impossible to prevent deformity; but if proper treatment is commenced early, this may be prevented.

The patient should be bathed or washed twice a day with salt and water, and rubbed well, commencing at first with the water slightly warm, gradually using colder each day, till it may be used quite cold. Stimulating liniments should be applied to the spine and the joints, once or twice a day, such as Linseed oil, oil Sassafras, oil Hemlock, tincture Cayenne, and Gum Camphor, of each one ounce, or equal parts.

It is also well to bathe the surface occasionally with astringent tonics, as a decoction of White oak and Dogwood bark.

The patient must also take some good alterative and anti-scrofulous remedy, such as a decoction or syrup made of the following: Yellow dock root, one pound; Bittersweet, bark of root, and Yellow parilla root, of each, half a pound; Blue flag root, one-fourth of a pound and Blood root, two ounces; boil in two gallons of water down to two quarts, strain, and while hot, add three pounds of white sugar, and when cold, add one ounce of oil of Winter-green, cut in half a pint of alcohol. Give of this from a tablespoonful to half a wine-glassful three times a day, according to the age of the patient. If less than two years old, a teaspoonful will do for a dose.

The patient should take frequent exercise in the open air; wear loose clothes; use a nutritious diet; and, what is very important, be made to carry something heavy on the head several times every day, if nothing but a block of wood, or a stone. This is calculated to give exercise and action to the muscles of the back, and to the spine itself, and will, if continued, in a majority of cases prevent curvature of the spine, and in many cases where the curvature is but slight, will counteract and cure it.

LOCK-JAW—TETANUS.

THIS is a dangerous affection, and consists in a contraction of a part or the whole of the muscles of the body; but more especially the muscles of the jaws.

CAUSES. It is almost invariably caused by wounds or injuries of the tendonous portions of body; though sometimes it will arise from any wound, especially in warm climates; and occasionally from other causes. Punctured wounds, that is, such as are made with a pointed

instrument, as a nail, are the most likely to induce lock-jaw; and wounds in the bottom of the feet, or palms of the hands, where the tendons are most numerous, are the most liable to bring it on. Piercing the foot with a nail, by treading on it, is very apt to result in lock-jaw, particularly if the wound is allowed to heal and close at the surface before it has healed from the bottom. Any wound that injures a tendon, and is allowed to heal at the surface speedily, may induce the disease.

SYMPTOMS. Lock-jaw sometimes makes its attack suddenly, very soon after the injury; but more usually comes on gradually, beginning with a slight stiffness in the back part of the neck, which increases, rendering it difficult and painful to move the head. Next there will be pain and stiffness at the root of the tongue, rendering it difficult to swallow; tightness across the chest, and pain in the diaphragm, or just above the pit of the stomach, shooting through to the back. Next a stiffness is felt in the muscles of the jaws, and they soon become locked, so that it may be impossible to open the mouth. There may or may not be contraction and stiffness in the limbs and other parts of the body.

TREATMENT. First, as to preventing its occurrence. No wound, where we have reason to believe the tendons have been injured, especially in the bottom of the foot or palm of the hand, should be allowed to close up and heal immediately; and particularly if it has been made by a nail or other pointed instrument. If it is, it will be almost sure to induce tetanus. Such wounds should be immediately laid open with a sharp instrument or knife, and some caustic potash, or lunar caustic applied, to produce a *running sore*; and then poultice. Probably the best plan, where, for instance, a nail or pointed instrument has been run into the bottom of the foot, is to immediately open the wound a little at the surface with the point of a sharp pen-knife or lancet, and push into it a small piece of nitrate of silver (lunar caustic), about the size of a grain of wheat, or even larger, as far as it will go, or a fourth to a half inch, and allow it to remain, putting a little shoe-wax plaster, or a bandage over it. It will smart and burn, but it should be allowed to remain till it dissolves and produces a sore. Then poultice, and keep the wound open and running, till it heals from the bottom, and there will be no danger. Where the wound is large, incised, or lacerated; that is, produced by cutting or tearing, wash it, and inject into it a solution of nitrate of silver, of the strength of about ten grains to an ounce of water. The best poultice is made of weak ley and powdered elm bark. The wound may also be washed with strong ley, or a solution of vegetable caustic.

Second. If lock-jaw has set in, or given symptoms of its approach, give Lobelia and Cayenne. Bring the patient as soon as possible under the influence of Lobelia. To break the attack and produce relaxation of the muscles, give strong tinctures of Lobelia and Cayenne, two parts of the first and one of the latter, in table-spoonful doses. If the jaws are set, and can not be pried open, open the lips, and pour it down by the side of the teeth, then close the lips, and it will find its way into the mouth and throat, and will eventually overcome the spasm. Repeat this preparation until relaxation is produced; and in severe cases, give injections of Lobelia, Cayenne, and Laudanum.

As soon as the spasm is overcome, the patient should be steamed over bitter herbs, or the vapor bath, and kept under the influence of Lobelia. He should also drink freely of a decoction of the Nerveine, or Lady-slipper root.

It is also proper to give a Lobelia emetic, and occasionally a dose of Laudanum. But rely upon the Lobelia; it is the best and safest anti-spasmodic known.

SMALL-POX—VARIOLA.

THIS disease is too well known to need a particular description. It is always caused, or communicated by contagion; that is, caught from others who have it. It is usually divided by medical writers into two kinds, the *distinct* and the *confluent*; but they are both the same disease, in different degrees of severity. The *distinct* form is the mildest, where the pustules or scabs are fewer, distinct from each other, and do not run together. On the other hand, it is said to be *confluent* when the pustules, especially on the face, hands, and arms, run together and form one continuous scab, and of course is much more virulent and dangerous.

When the virus or contagion has once been taken into the system, the disease can not be prevented; but it may be greatly modified, both by immediate vaccination, and by a course of diet and preparation of the system. It is, therefore, well to understand something of the *premonitory symptoms*.

As soon as it is known that a person has been exposed to the disease, he should be vaccinated, even though he has been vaccinated before. Vaccination will often modify the disease, if done at any time before the appearance of the eruption on the surface. The patient should also be put on light diet, should purge frequently, and

drink freely of sassafras tea, in order to thin the blood, and reduce the system, all of which is calculated to render the disease lighter, when it does come.

As a general thing, persons have the disease but once; it is very contagious, however, and most persons that are exposed to it, if not previously vaccinated, will take it. Occasionally an individual is met with that seems entirely unsusceptible of taking it, though exposed to it ever so much; a few cases have also been known of persons having the disease the second time.

PREMONITORY, OR FIRST SYMPTOMS. Small-pox commences first with chilly sensations, alternating with flashes of heat, and great pain in the small of the back; with pain in the head, soreness of the throat, dislike to motion, nausea, and perhaps vomiting, thirst, and stupor. The disease approaches very much like an attack of the ague, or chills and fever. The fever becomes more continuous, and on the third or fourth day the eruption appears on the face, neck and breast, in small spots like flea-bites, which increase for the next four or five days; during which time the eruption appears more or less over the whole body. It is always worse on the face, and sometimes the eye-lids become so much swollen as to be entirely closed, producing complete blindness for the time. About the eighth day the process of suppuration, or formation of matter in the pustules, is complete; and about the eleventh, the inflammation subsides, and the pustules begin to decline and dry up, and finally scale off, and disappear about the fourteenth or fifteenth day.

TREATMENT. I suppose that in most cases of small-pox, a physician will be called. Yet I have no doubt that there are many old ladies in the country, and some not so old, as well as non-professional men, who can treat a case of small-pox as well as half the physicians. It is a disease which requires mild treatment and simple remedies.

In the first stage, before the appearance of the eruption, you may not be able to tell whether it is small-pox or some other febrile disease; but the treatment should be about the same in either case.

Bathe the feet well in warm ley water, and if there is sickness at the stomach, there is nothing better to allay it perhaps, than frequent sups of warm spearmint or peppermint tea, with a little saleratus dissolved in it. After bathing the feet as I have directed,—and it will be well if you have washed the body all over with the same, or with warm saleratus water—and if the nausea and vomiting are sufficiently allayed, give a purgative. There is nothing better than the Anti-bilious Physic.

After the bowels have been cleansed by the action of the Physic,

should there be any sickness at the stomach, or vomiting, give a mild emetic of Lobelia and Ipecac, or Ipecac alone, with Catnip tea.

Attention must now be paid to the skin. Such medicines must be given as will act gently upon the skin and cutaneous vessels, but not enough to produce copious or profuse perspiration. And this action must be kept up, moderately, throughout the whole course of the disease.

As a tea, which should be drunk constantly, or at short intervals, there is nothing better perhaps, than an infusion made of about two parts of Catnip and one of Saffron—to be drunk warm. It acts gently upon the skin, produces a slight determination to the surface, and will assist nature to throw out the eruption. A little Sassafras bark is also a valuable addition to it.

The feet should be bathed for twenty or thirty minutes at a time in ley water, as hot as can be borne, and the whole surface washed with the same two or three times a day, previous to the appearance of the eruption; and it may be continued once or twice a day after the eruption has appeared, until vesication or scabbing has taken place. It is especially well to bathe and wash the body with warm water, if there is much fever and heat, notwithstanding the eruption; and a little saleratus, or common ley, should always be added to the water; it helps to open the pores and keep the skin cleansed, by removing the oily, sebaceous matter from the surface.

If there is great pain in the head, bathe it with vinegar and water, and apply mustard plasters to the bottom of the feet, and the ankles.

To aid in removing the phlegm and mucus from the throat and bronchial tubes, and for sore-throat, give occasionally a teaspoonful or two of the *Expectorant tincture* (See Table of Family Medicines), and also use as a gargle a decoction of sage, with honey and borax.

In bad cases, where there is a tendency to putrescency, the patient should take half a teacupful of hop yeast three or four times a day; and if there is great prostration, debility, and sinking, a little Quinine or Peruvian bark should be given, in some whey, or buttermilk.

The *Diaphoretic powders* may be given in eight or ten grain doses, two or three times in twenty-four hours, if there is much restlessness; especially at night should a dose be given.

As a common drink, or infusion to be used all the while—previous to the full eruption, as a *sudorific*, that is, to act gently on the skin, —there is probably nothing better than a tea made of Sassafras bark and Catnip. It should be taken warm, and a teacupful or two as often as three or four times a day. It is especially good in *bringing out the eruption*. A little *saffron* may be added to it, if convenient; and if the Catnip can not be had, use Saffron and Sassafras.

After the eruption has appeared, the above infusion may be left off, and the following used. Take, say an ounce of the powdered root of the *Macrotys* (Black cohosh), to a pint of boiling water, and give of the infusion one or two tablespoonfuls every three hours, warm. This should be continued, with very little other medicine, through the second stage, or till the pustules begin to dry up, and decline, and the patient begins to grow better. The *Macrotys*, or Black cohosh, called also Rattle root, is an important remedy in small-pox. The patient should be kept under the influence of it, from the first appearance of the eruption, until he becomes convalescent and out of danger. It keeps the eruption to the surface, prevents a *retrocession* or going in, and will bring out the eruption again, in case it has gone in. The *infusion* of the root is perhaps the best form in which to use it; but if the root can not be had, the concentrated preparation, called *Macrotin*, may be used in doses of a half, to a whole grain, given three or four times a day. Or the tincture of the root may be used in teaspoonful doses, once in three or four hours.

The bowels, of course, are to be kept open and in a lax condition; but no harsh or active purgative must be given. The best thing for this purpose is about two tablespoonfuls of sweet oil, to be taken every night at bedtime, or a tablespoonful of sweet oil, and as much of the *Neutralizing cordial*.

Should there be symptoms of *Pneumonia*, that is, should the lungs become affected, as sometimes happens, give an emetic of Lobelia, Blood root and Ipecac; and keep the patient afterward under the influence of the emetic, by giving occasionally teaspoonful doses of equal parts of tinctures of *Macrotys*, Lobelia and Blood root; or the same articles may be given in infusion, in tablespoonful doses.

If the face swells much, and there is much suffering on this account, bathe it frequently with warm milk and water, and keep it well lubricated with sweet oil. And to prevent *pitting*, that is, to prevent the face, and other parts from being *marked* by the pox, cover the parts with small pieces of silk, moistened with pure sweet, or olive oil, and keep the room as dark as possible. Exclude the light entirely, if you can, most of the time. Attend strictly to these directions, and you may prevent pitting entirely, even in the worst of cases. It will also be necessary, sometimes, to tie or confine the patient's hands, or he may injure his face.

Pursue the foregoing course of treatment, and you will succeed in nearly every case, I care not how bad it may be. Rely upon the *Macrotys*: it is nearly a specific in this disease. By its use the *secondary fever*, which is so much to be dreaded, and which is often so very dangerous, in the worst forms of the disease, may generally be pre-

vented, or very much modified. The patient will also convalesce, and gain his strength much more rapidly, after the disease has passed off, where this article has been freely used.

Sometimes, in the confluent form of the disease, the bowels become affected with a putrescent diarrhea, tending to gangrene and mortification. In such cases give powdered charcoal and nitre, or saltpetre, a tablespoonful of the former and half a teaspoonful of the latter, at a time, three or four times a day; also, plenty of hop yeast, and occasionally a dose of sweet oil and spirits of turpentine.

In case the eruption should recede, or *strike in*, at any time during the second stage, give the *Macrotys* freely, in larger doses, and put the patient into a warm bath. The tincture of the *Iris Versicolor* (Blue Flag), is also good in such cases, given in teaspoonful doses, every two or three hours.

REGIMEN. The patient should be kept cool, and as easy as possible. The diet of course should be light, such as corn-meal gruel, buttermilk and water, mush and buttermilk, roasted apples, lemonade, toast and water, and the like. The room should be kept well cleansed and aired, the linen and bed-clothes changed often, and all noise and disturbance, as far as possible, prevented.

VARIOLOID. This is a modified form of small-pox, modified by the influence of *vaccination*. It is generally mild, and without danger, and is to be treated the same as a case of genuine small-pox, only that the treatment should be graduated according to the mildness or severity of the symptoms. Sometimes the disease is very mild, requiring scarcely any treatment; at other times it approaches very nearly to a genuine case of small-pox, and requires a full course of treatment.

SALIVATION—MERCURIAL DISEASE.

THIS disease is caused by the use of Mercury in some form or other; most usually as Calomel; and next perhaps in the form of Blue Pill. It is too common, and too many have had painful experience from it, to need any description, more than to say that it consists, in its primary effects, in a very sore mouth—sometimes, in bad cases, attended with looseness and falling out of the teeth, swelling of the tongue, ulceration of the throat, gums, and cheeks, and a profuse discharge of saliva or spittle. In its secondary, or constitutional effects, the bones become affected and painful, and the patient suffers more or less with what is termed Mercurial Rheumatism, and a general debility and wasting away of the flesh, or emaciation.

TREATMENT. As soon as a person finds that he is salivated from the use of Calomel or other preparation of Mercury, he should of course stop taking it (if he has not already done so), and commence taking sulphur and cream of tartar—two parts of sulphur to one part of cream tartar, mixed in a little molasses or honey, so as to form it into a kind of paste. A full teaspoonful of this should be taken two or three times a day, or sufficient to operate slightly on the bowels. Sulphur or powdered brimstone, should be used freely in the mouth, so that it may come in contact with the parts affected.

In addition to this, if there is ulceration of the gums or mouth, sprinkle occasionally a little powdered *red chalk*, or *red keel*, as it is usually called, on and into the sores. It may generally be had at a drug-store. It is the best absorbent and remedy in such cases I have ever found.

Cooling and healing gargles should also be used. The following is good: Take about an ounce each of Sage, Privet leaves, and Yellow root (Golden seal), and make a pint of decoction by boiling a little while; then strain and add a teaspoonful of burnt alum, and as much borax, and gargle and wash the mouth often with it.

In order to eradicate the mercury from the system, or where it has become constitutional, producing mercurial rheumatism, and pains in the bones, some powerful *alterative* should be taken, such as a strong decoction of the roots of Burdock, Blue Flag, and Yellow Parilla; about one pound of the Flag to two pounds each of the other two; and to every quart of the decoction add a drachm of Iodide of Potassium. Take a wineglassful three times a day, and continue its use for several weeks. Keep the bowels open with a pill taken once or twice a day, made of extract of Mandrake and powdered Blood root, or half-grain doses each of Podophyllin and Sanguinin.

NURSING SORE MOUTH.

THIS is a disease which sometimes affects women during the period of nursing, or suckling of the infant. It consists in a cankerous sore mouth; the cankers or sores having a white grayish appearance. They appear on the inside of the mouth and cheeks, and sometimes the disease extends down the throat, even to the stomach and bowels. It is a disease of the mucous membrane, which lines the mouth, throat, and alimentary canal, and is mostly confined to mothers while nursing. The child is also generally affected with it, the disease resembles very much what is known as the *thrush*. It some-

times appears during the latter months of pregnancy; and I have known a few cases where it did not seem to have any connection with either pregnancy or nursing. In such instances the disease has probably been caught from others, or has existed in the system a long while, and become constitutional.

CAUSES. The disease is most probably owing to improper treatment during or immediately after confinement—impurities that should have been purged from the system, having been allowed to remain and become mixed with the blood and other fluids of the system.

TREATMENT. The best remedy that I have ever found—and I have never known it to fail—is the *Iodide of Potassa*, or Hydriodate of Potash, as it is sometimes called. Take two drachms of this and put it into a small glass bottle, and add four ounces of rain water, and take a teaspoonful twice a day. This quantity will generally be sufficient to cure the case; but if it is not, a second bottle should be taken, in the same way.

Astringent and cleansing gargles should be used, such as recommended for mercurial sore-mouth, or *salivation*; or a decoction of Bayberry bark, Yellow root, and Sumach berries (or bark), with a little burnt alum and borax added. In case there is a diarrhea, as there will be if the disease extends to the stomach and bowels, the patient may also take two or three times a day a tablespoonful of this decoction, and once in two or three days a dose of the Neutralizing Physic.

If the patient is nursing, the child should be weaned, as it is almost impossible to effect a cure while it continues to nurse. If it has the disease also, the same remedies may be given it, in properly reduced quantities.

GOITRE—BIG-NECK.

THIS is an enlargement of the *thyroid gland*, which is situated in front of the neck, or wind-pipe. The affection is also called *Bronchocele*, and in common language, Big-neck, and sometimes Derbyshire-neck. It only affects females—girls and women—and is not to be considered dangerous, though it is often troublesome, and sometimes greatly disfigures the neck, on which account it is very much detested by those who are troubled with it. There is no particular cause that can be assigned for it, any more than it seems to be hereditary or constitutional in some families.

Its cure is very difficult, slow and tedious, and perhaps can never

be entirely removed by medical treatment; though it may generally be greatly relieved.

TREATMENT. The chief reliance is upon external applications, in the form of *washes* and *ointments*. The best I have ever found for this purpose is made as follows: Take Iodide of Potassium, one drachm; Iodine, ten grains; simple cerate, or lard, one and a half ounces; mix the whole well into an ointment, and rub a little on the enlargement once or twice a day, and wear a flannel round the neck. The ointment, owing to the *Iodine*, will color the neck for the time being; but this may be endured for the sake of the good it will do. The color will gradually disappear after ceasing to use the ointment. It should be continued, however, for several weeks, or at least until the quantity named has been used. If it should produce excoriation or soreness of the skin, omit it for a few days.

At the same time the neck should be washed once or twice a day in strong salt water. The patient may also take the same articles used in the ointment, in the following way: Take Iodide of Potassa, one drachm; add half an ounce, or about two tablespoonfuls of water, to dissolve it; then add to it one ounce of tincture of Iodine; commence by taking ten drops of this at a dose, once a day, increasing one drop every day until you get to twenty; and then continue a that till the whole is taken. It can be taken in sweetened water, or any other medium desired. Small doses of Mandrake, Blood root and the Iris, or Blue Flag, may also be taken, once a day, sufficient only to keep the bowels slightly loose, and to act on the glandular system. They may be taken either in pills, powders, or tincture; or the Podophyllin, Sanguinin, and Iridin may be used, being preferable on account of the smallness of the dose. In this case, take about half a grain of each once a day, combined with as much pulverized white sugar.

TETTER, OR SALT RHEUM.

THIS is an inveterate and very troublesome eruption, or "breaking out," which appears on different parts of the body, but most commonly on the backs of the hands, or on the face. It appears usually in very small vesicles, which break and discharge a thin, corrosive, and irritating fluid, attended with severe itching. Sometimes scabs form upon the affected parts, which, after a time, dry up and scale off, or disappear, to be succeeded by others. The affection is too common and too well known to need any further description. It may

be proper to state, however, that there are several kinds of tetter, as the *dry tetter*, which is the most common and simplest form of the disease; the *pustulous* variety, which appears at first in the form of separate pustules, which gradually run together and form clusters; the *miliary tetter*, which appears indiscriminately over the body, but most usually on the breast, or about the groins and scrotum; and the *eating*, or *corroding tetter*, which appears usually in the form of small and painful ulcerations, which run together and collect into larger spots, accompanied with more or less inflammation, and discharge large quantities of thin, watery matter. The treatment in either variety, however, should be about the same, except that for the mild or dry form, nothing but external applications will be required; while in the others it may also be necessary to make use of some alterative or constitutional treatment.

TREATMENT. In the first place, wash the part affected with the following: Take an ounce or two each of Yellow dock root and Blood root, mash or bruise, and put to them half a pint of alcohol and as much good vinegar; let stand a week or two to digest. This should be applied once or twice a day, and the following ointment applied as often: Take fresh butter, four ounces; Venice turpentine, one ounce, and Red Precipitate (Red Oxide of Mercury), three drachms; mix the whole together well, and apply a little to the part affected, once or twice a day, after washing with the tincture I have named. This ointment will cure any tetter, even without the use of any thing else. It will also cure Ringworm, and any kind of Itch.

The following is also a valuable remedy for tetter and ringworm: Take equal parts, say one ounce each of tinctures Lobelia, Cayenne, and Stramonium (Jimson) seeds, and Oil of Amber; mix, and wash the parts two or three times a day with it.

In case it is necessary to use an alterative, to purify the blood, make a strong decoction of the roots of Burdock, Yellow dock, Yellow parilla, and Sassafras bark, and to each pint of it add one drachm of Iodide of Potassa: Dose, a wineglassful, morning and evening.

POISON FROM THE WILD IVY.

THE poison Rhus, or Wild Ivy, commonly called Poison Vine, grows very common in some parts of the Western country, and some people are very liable to become poisoned with it, whenever it comes in contact with them. Many persons are entirely unsusceptible to its poison, and can even handle it without experiencing any evil effects from

it whatever; while others are so susceptible to its influence that they will be affected by it by merely coming into its immediate vicinity, especially while the dew is on and the air moist; and if they touch it, are sure to be poisoned. It most usually affects the hands and face, and in severe cases resembles a bad case of erysipelas, swelling the face very much, even to the closing up of the eyes; blisters raise upon the skin, from which a thin, yellowish fluid exudes, and the patient suffers very much. It may extend to any other part of the body with which the poison is brought in contact. Cases have been known where it has disfigured the face worse than small-pox does, and partially destroyed the eyes, and even produced death.

TREATMENT. I regard sweet, or olive oil, as an antidote to this, as well as to most vegetable and animal poisons. It is to be taken freely, internally, from a half to a pint, or more, in a day. If the case is a bad one, let the patient take about two ounces at a time, every two hours, till at least a pint has been taken. At the same time bathe the face, hands, and parts affected, with sweet oil, and cover with bits of silk or thin muslin.

The bowels are apt to be costive, and if the oil does not operate within twelve hours after commencing to take it, give a dose of the Anti-bilious Physic, or a grain or two of Podophyllin, with a little cream of tartar.

Repeat the oil next day, and the next, if thought necessary, or until the disease and swelling begin to recede and give way. There is no danger in the sweet oil; it may be taken freely, even to a quart a day; and may be relied on as an infallible remedy.

If ulcers or sores form, wash them out with a strong solution of potash. Get a little pure potash, and moisten it with just enough water to dissolve it, and drop a little of this into the sores, and wash the surface with it, by means of a brush or feather. If there is much swelling, or inflammation and pain, apply a poultice of elm and sweet milk. Keep the bowels loose, and occasionally give a dose of the Diaphoretic powders, to keep up a determination to the surface. But rely on the sweet oil.

SNAKE BITE.

THE symptoms attending the bite of the venomous reptiles, as the rattlesnake, the moccasin, and the copper-head, are such as not to be easily mistaken, and generally commence to exhibit themselves very soon after the bite. They are nausea and vomiting; swelling. com-

mencing in the part bitten, and extending more or less rapidly over the whole body; full, strong, excited pulse; the eyes become blood-shot; sometimes there is bleeding from the nose, mouth, and ears; and, in extreme cases, a bloody sweat breaks out; great pain all through the body, and extreme suffering. These are the symptoms of a bad case. Some persons seem to be much less susceptible to the poison than others. In such the symptoms approach more gradually; and if the bite has been in the foot or hand, the swelling may not extend beyond the limb that is bitten. But the bite of the more venomous snakes, such as I have named, is always to be regarded as dangerous.

TREATMENT. The first thing, if it can be done immediately after the bite, should be to draw a cord tightly around the leg or arm (if the bite has been on either), a short distance above the place bitten. The cord or ligature should be drawn tight enough to prevent the blood from circulating in the veins, which will tend to check absorption, and prevent the poison from passing into the system. Then bruise two or three onions, and mix with them a handful of salt, and apply this over and around the part bitten, first scarifying or enlarging the wound with a sharp instrument, or penknife. It would also be well to open a vein near the bite, or at least below the ligature or cord, so as to let out as much of the poisoned blood as possible. This you can readily see is highly important. The blood which has been stopped by the ligature has of necessity become charged with the poison, by absorption; hence if it is allowed to pass into the body, as it would do as soon as the ligature was removed, it would poison the whole circulation. Let it out if you can, but do not remove the ligature, so long as the patient can bear it, unless you see that the swelling has extended above and beyond it. In that case the ligature can do no more good. Continue the onions and salt, renewing them often. The juice and bruised leaves of the common yard plantain are also good to apply to the bite.

Internally, give the patient *all the whisky he can drink*—by which I mean *all he can hold!* From a quart to a gallon should be drunk in six or eight hours. You need have no fears of making the patient drunk. You may fill him with whisky, and then let him swim in it, and it will not make him drunk, so long as the poison of the snake remains in the system. This is about the only thing that whisky is really good for. It is a complete antidote to snake bite, if taken freely, and may be relied on in any and all cases. It should be drunk like water, for a few hours, and continued at short intervals, until the patient gives signs of intoxication, when the quantity should gradually be diminished, as the disease is now beginning to recede.

Keep him "under the influence of liquor," however, till you are sure he is out of danger.

The patient should also take a gill of sweet, or olive oil, once every two hours, until four or five doses are taken. It will hasten the cure, and also act on the bowels. The oil may also be rubbed over the swollen parts of the body. As soon as the swelling begins to go down, and the patient seems to be out of danger, or past the worst, give an active purge of Anti-bilious Physic and Mandrake, or Podo-phyllin, and follow it with a large dose of sweet oil. You may rely on whisky and sweet oil to cure any snake bite; or the bite or sting of any reptile or insect.

HYDROPHOBIA.

I WILL omit all preliminary remarks, as to the character, cause, and symptoms of this terrible and always to be dreaded affection, and proceed directly to tell you what to do in order to prevent, and to cure it. Every body, I presume, knows that hydrophobia is *madness*, caused by the bite of a mad dog, or other rabid animal, while laboring under the disease.

PREVENTIVE TREATMENT. Immediately, or as soon as possible, after the bite of an animal suspected to be rabid, the wound should be washed and cleansed out with a liquid called *Aqua Ammonia*, which can always be had at any drug store. If this can not be done immediately, on account of having to send a great distance for the Ammonia, the next best thing is strong ley, or a strong solution of saleratus. The next thing to be done after cleansing with either of these articles, is to *cut out the wound*; that is, cut out with a sharp instrument the flesh around the wound, so as to take out the entire wound. After this is done, encourage bleeding, if it does not bleed freely without, by the application of a *cupping-glass*; that is, by *cupping* the wound. Care should be taken, of course, not to wound an artery in cutting. A skillful physician or surgeon should perform the operation, if one can be had in time.

After the wound has been cut out, and has bled freely for a while, wash it out again with the aqua ammonia, and then cauterize the whole wound with the *potassa fusa*, or *caustic potash*, and apply a poultice of elm and yeast; and thus bring on suppuration as soon as possible, and keep up a *running sore* all the while.

As soon as convenient, say within twelve hours, give the patient a thorough emetic of Lobelia, Ipecac, and Blood root, equal parts, and

follow it with an active hydragogue purgative, say of equal parts Anti-bilious Physic, powdered Mandrake, and cream of tartar; or three grains of Podophyllin may be used instead of the Mandrake. The emetic and purgative are to be repeated once a week—and oftener, if the patient should manifest any hydrophobic symptoms.

Next, procure a quantity of the common *gray ash bark* (sometimes called black ash), and of the scull-cap (*scutelaria lateriaflora*), an herb which grows plentifully in some parts of the West, and can generally be had at any Botanic drug-store, or of an Eclectic physician. Of these make a strong infusion—two parts of the ash bark to one of the scull-cap—of which the patient is to drink about a pint a day, cold. He can take, say a gill, four or five times a day. If the scull-cap can not be had, use the ash bark alone. Continue this course for *forty days*, should no symptoms of the disease appear; and after that the emetics may be repeated once in two weeks, and a less quantity of the infusion taken. The bowels, however, must be kept open and loose all the while. *Never allow the patient to become costive.* Some laxative and alterative pills should be taken every day, or every other day, such as Podophyllin, Sanguinin, Leptandrin, and Iridin, 20 grains of each, made into 40 pills, with extract of Dandelion, and take one pill a day.

The wound is to be kept open, and a running discharge kept up, during the whole course of treatment; whenever it begins to heal, apply the vegetable caustic, or caustic potash, and continue to poultice.

And now, if you are *sure* the patient was bitten by a mad dog, or animal under the influence of hydrophobia, this course of treatment should be continued for at least three months, gradually lessening the quantity of the infusion, after the first forty days, to a half-pint or gill a day; and occasionally it may be omitted for a few days at a time. It is better, however, to drink a quart every day for a whole year than to die with the hydrophobia.

About the thirteenth to the fifteenth day there usually appears under the patient's tongue, it is said, several small *pustules*, containing a yellowish watery fluid. This is about the period when the first paroxysms are apt to make their appearance, and the pustules on the under surface of the tongue are not only regarded as among the premonitory symptoms, but as containing the virus, or *peculiar poison*, which causes the disease; and it is believed that if they are opened as soon as they appear, or before the poison is absorbed, and thoroughly cleansed, the disease will be prevented. They should, therefore, be looked for from about the twelfth day, and as soon as discovered, should be punctured, and the mouth washed out with some strong alkaline solution, as potash, saleratus, or aqua ammonia.

I recollect very well that, when I was quite a boy, there were for several seasons in succession, a great many mad dogs in our neighborhood, and that I used to hear it said that there was in the under side of a dog's tongue a little something in the shape of a worm, and called "the worm in the tongue," the removal of which, it was said, was an infallible preventive to the disease, though the dog might be bitten ever so many times afterward, by a mad dog. I also know that a great many persons performed the operation upon their dogs of removing "the worm," and I never knew of any such ever having the hydrophobia. I know there are medical writers and physicians who deny and ridicule all this about "the worm in the tongue," and even the appearance of the pustules under the tongue; but it is probably upon the same grounds that many persons deny a great many other things—simply because they do not understand them, or see how they can be true.

The foregoing measures, if thoroughly carried out, it is believed will prevent the development of the disease, and completely eradicate the virus from the system. In every case, so far as known, where this course has been followed, it has been successful, even in instances where other persons bitten by the same dog, and not subjected to this treatment, have died of the disease.

TREATMENT FOR HYDROPHOBIA. Where the disease has developed itself, and paroxysms have actually appeared, the first thing to be done after properly confining the patient (if that should be necessary), should be to put him under the influence of *Lobelia*. The compound tincture, or what is called Thomson's Third Preparation, is perhaps the best; but if you have not this, the strong, saturated tincture of the *Lobelia* seed, two parts, to one part tincture of Cayenne, will do. Give it freely, in tablespoonful doses, every few minutes, even to the extent of producing what was formerly called the "alarming symptoms." There are no symptoms that can be produced by *Lobelia* so "alarming" as those of hydrophobia. Apply drafts of mustard and Cayenne, moistened with vinegar, to the feet and legs, first applying spirits of turpentine. Make use of powerful counter-irritation along the whole course of the spine, by the application of strong stimulating liniments.

If the original wound has been allowed to heal, it must be cauterized with caustic potash, and a poultice applied, so as to get up and keep up a discharge from it.

As soon as practicable, submit the patient to the vapor, or alcoholic bath. The latter is probably the best, and is produced in the following way: Strip the patient and seat him in a chair, with a blanket thrown around the shoulders, and allowed to fall to the floor,

outside of the chair; place under the chair, on the floor, a saucer or vessel with alcohol in it, and set it on fire, and let it burn. If it burns too rapidly, add a little water to the alcohol, or some whisky. When it burns out, add more alcohol, and continue it till you have produced a copious perspiration. Continue it at least half an hour. At the same time, commencing a little while previous to the hot bath, it might be well for the patient to take small doses of aqua ammonia, and continue it during the bath. Professor King, of the Eclectic College of Cincinnati, recommends the ammonia very highly in such cases. You may combine it with equal parts each of tinctures Lobelia and Cayenne, and give of the compound in teaspoonful doses every five minutes, in a little scull-cap, Lady-slipper, or ginger tea.

If the patient can not sit up to take the bath, he must be confined in bed, and hot bricks or rocks wrapped in cloths wet with vinegar and water, placed about him, so as to get up an external heat in this way, giving him at the same time the Lobelia, Cayenne, and ammonia. Produce, if possible, a thorough sweat; the ammonia will tend greatly to aid the process, as well as to counteract the poison, and drive it out of the system through the skin.

The patient should be kept well under the influence of Lobelia for at least twenty-four hours, and whenever there are signs of a relapse, increase the quantity. If the patient can not swallow, give it by injection, in the form of an infusion of the seed or herb. The ammonia may also be continued, in small quantities, say a teaspoonful once every hour or two.

As soon as the effects of the paroxysm have passed off, or you have got a complete intermission, commence giving the preparation mentioned as a preventive—the infusion of gray ash bark and scull-cap. If you can not get the scull-cap, use the Lady-slipper root, and if not that, the bark alone. Continue the infusion throughout, and resort to the Lobelia every time there is the least return of the symptoms. Keep the bowels regular, and the skin open and active by repeated washings and friction.

A number of well marked cases of hydrophobia have been cured by this plan. Indeed, so far as I can learn, there has never been a failure. Do not conclude, therefore, that hydrophobia is incurable.

THE MAD STONE. I have never had any experience with what is called the Mad Stone, but have always heard of its uniform success. No means calculated to prevent this terrible disease should be left untried. I would therefore recommend that whenever this celebrated stone or talisman can be found, it should be tried. Make use of it first, wherever convenient, and then pursue the course I have recommended as preventive treatment.

WOUNDS AND INJURIES.

WOUNDS are divided into several kinds, according to the instruments or agents, generally, by which they are made; as, 1st, *Incised* wounds, which are made with a sharp-cutting instrument—a common cut, or incision with a knife, is an incised wound. 2d, *Punctured* wounds, which are made with a pointed instrument; as a needle, a nail, or a bayonet. Sometimes a wound is both punctured and incised, as when made with a dirk, which both *punctures* and *cuts*. 3d, *Lacerated* wounds, as when done with a rough or dull instrument, as a saw, or stone, or when torn and lacerated. 4th, *Contused* wounds, which means simply *bruises*, the skin not being severed or broken, but the parts beneath becoming black or blue; in other words, “blood-shot.” 5th, *Gun-shot* wounds, made by a ball discharged from a gun or pistol. Besides these, there are what are called *Poisoned* wounds, such as are occasioned by the bite of snakes, and other poisonous reptiles.

TREATMENT OF WOUNDS. The first thing to be done in the treatment of a wound, especially where blood-vessels are severed and there is much hemorrhage, is to *stop the bleeding*. If the bleeding is but slight, or there is no artery severed, the free application of cold water may be sufficient to check it; or salt and water, or a solution of alum in water. If these fail, and the wound is open or lacerated, sprinkle on a portion of powdered burnt copperas; to make which, burn upon a hot iron shovel a portion of copperas, until it decomposes and becomes dry and of a red color; then pulverize it, and it is ready for use. It forms an excellent *styptic* for such purposes. After sprinkling on a quantity of this, enough to thinly cover the surface of the wound, or the parts of it from which the hemorrhage proceeds, place over it a pleget, or bunch of lint or cotton, or a bit of old muslin folded, and apply a bandage.

If an artery has been severed, which you will know by the blood being of a bright red color, and coming out in jets or spurts, caused by the pulsations of the heart, the only certain way to stop it is to tie the artery. If you can not do this, and the bleeding is very profuse, you must send for a physician. If the wound is upon either of the extremities, you can stop the flow of arterial blood, for the time being, and until a physician can be brought, by tying a cord tightly around the leg or the arm, as the case may be, so that it be above the knee or the elbow, as well as above the wound. There being but a single bone in the thigh and in the upper arm, you can,

if you make your ligature tight enough, stop the flow of arterial blood entirely, in the parts below it. But if the wound is in some other part of the body, as on the trunk, the head, or neck, and the patient is likely to bleed to death, if the hemorrhage is not soon stopped, you must look for the artery, get hold of it, and tie it. This you can generally do, if you will but try sufficiently. Wash out the wound with cold water, and then watch for the place where the *light red blood* spurts out; get hold of the artery either with a pair of forceps, or tweezers, or with your fingers; if you do not succeed the first time, keep trying till you do; draw it out a little, and have some one to tie it with a silk or flax thread, which you will leave long enough for the ends to hang out of the wound, by which the thread can be drawn out when the artery sloughs off and the wound is sufficiently healed. If a large vein is severed, instead of an artery, the blood will be of a dark purple color, and will flow out in a steady stream. If you can not stop it by other means, it must be tied, the same as an artery.

Having succeeded in stopping the hemorrhage, and having removed any extraneous or foreign substances that may have been in the wound, as splinters, dirt, sand, or any thing of the sort, you will proceed to bring the lips or edges of the wound together, so that it may heal, if possible, by what is called *the first intention*; that is, without suppuration or the formation of matter. This can generally be done in incised wounds. For this purpose you will need what is called *adhesive plaster*, which may be had at any drug store. Cut it in strips from a quarter of an inch to an inch in width, according to the size of the wound, and long enough to reach over each side far enough to adhere well to the sound skin and hold the lips of the wound together. Bring the edges of the wound together carefully and as close as you can; warm the strips of plaster a little, and stick them on, across the wound, leaving a little space between each to allow any fluid to escape that may run from the wound. Place over the straps a bunch of lint, or cotton, or compress of muslin, and over this a bandage.

MEDICATION. Many physicians and surgeons recommend nothing to be applied to a fresh wound, in the way of medication, but cold water. In a majority of cases perhaps this will be all that is necessary, except that a little tincture of *Arnica* might be added to the water, with advantage, in the proportion of thirty drops to a pint of water, and then pour the water from one vessel into another, several times, to mix them well. With this moisten the pleget or compress three or four times a day. The *Arnica*, however, is more suited to contused and lacerated than to incised wounds. One of the best prepa-

rations, if not the very best, that I have ever found for fresh wounds, is equal parts of tinctures of aloes and opium. Pour on to or into the wound a little of this twice a day, and keep the compress moistened with cold water, and it will be all the treatment necessary, unless suppuration takes place.

PUNCTURED WOUNDS, if very deep, should not be allowed to heal at the surface very speedily, and consequently should not be closed up with adhesive plaster. They are very apt to become inflamed and suppurate, and may lead to very serious consequences, if allowed to heal by the first intention at the surface. If you have reason to believe that tendons are injured by the wound, treat it as directed under the head of Lock-jaw. If the wound is of a serious nature and there is threatened inflammation, active hydragogue purgatives will be necessary, as the Anti-bilious Physic and cream of tartar, and the patient may also take a dose of laudanum or opium occasionally.

LACERATED WOUNDS hardly ever heal by the first intention. There is one favorable circumstance about lacerated wounds, however; they are not apt to bleed so much as incised wounds. You can generally stop the hemorrhage sufficiently by the application of cold water, or a solution of alum or salt, or at any rate by the use of the styptic powder I have named. You should, however, do all you can to prevent inflammation, or make it as light as possible. After you have checked the hemorrhage and cleansed the wound, bring the parts and edges together as well as you can, and retain them by means of strips of adhesive plaster, and, if necessary, sutures, or stitches with a needle and thread; and then, in order to the process of healing by the first intention and to prevent inflammation, wash the whole wound with a solution of *nitrate of silver*, about the strength of ten grains to an ounce of water; and continue to apply a little of this once a day, by pouring it into the wound, and once a day the tinctures of aloes and opium—using one, say in the morning, and the other in the evening. I consider the nitrate of silver the best and most certain anti-inflammatory agent known. Any incised wound, I care not how large it may be, and almost any lacerated wound, if not too badly mangled, may be made to heal by the first intention; that is, without inflammation and suppuration, by the judicious use of this article in solution. It may sometimes be well to use it at first as strong as twenty grains to the ounce of water, gradually reducing in after applications. I first learned this of old Dr. Gourrier, who lives on the coast about one hundred miles above New Orleans, and who was for fifteen years a surgeon in the army under Bonaparte.

CONTUSED WOUNDS. The best application that can be made to wounds of this character, which are in plain language nothing but

bruises, more or less severe, is the tincture of Arnica in cold water, in the proportion of thirty or forty drops (not more) to a pint of water. It is a Homeopathic remedy, and a very valuable one, and can generally be had at drug stores. A little of the tincture should always be kept on hand by every family. Keep the wound wet with this, by wetting the compress several times a day with the water containing the Arnica, and if the wound is extensive, or there are any internal bruises, let the patient take a spoonful two or three times a day of the same dilution, or of one containing ten drops of the tincture to a tumbler of water. A purgative may also be necessary, in case of internal injury.

In case of a gun-shot wound, if it is a bad one, or the ball has lodged in the body or part, of course it will be necessary to have a physician or surgeon. If the ball has passed through, and the wound is not serious, it can be treated as any other punctured or lacerated wound.

As to Poisoned wounds, I have already given, under the proper head, the treatment for snake bites. For the bites of other reptiles, and stings of insects, as spiders, scorpions, and the like, sweet oil is the remedy, to be taken internally, in quantities proportioned to the severity of the case, and applied externally. The application to the part of aqua ammonia is good for the sting of the wasp, hornet, bee, yellow-jacket, and the like. So also is the juice of the common yard plantain. Indigo and vinegar is also said to be good.

WOUNDS OF THE HEAD. These are usually more dangerous than wounds on other parts, because the brain is liable to be injured. In treating a wound of the scalp or head, the hair should first be shaved off, then remove extraneous and foreign substances, if any in the wound, stop the bleeding, and bring the divided parts together as well as you can, and confine them with strips of the adhesive or sticking-plaster. If the skull is fractured, and some portion of the bone depressed upon the brain, it should be raised, if possible. If you can not do it, send for a physician. Treat as directed for incised and other wounds. If danger of inflammation of the brain, give active cathartics, make cooling applications to the head, and bathe the feet in warm water.

CONCUSSION OF THE BRAIN. In concussion of the brain, which is caused by blows on the head, or falling with the head upon a hard substance, causing stupor, insensibility, and perhaps vomiting, bleeding at the nose, etc., give active cathartics and purgative injections, with cooling applications to the head; bathe the feet in warm water, and then apply mustard to them, over the stomach and between the shoulders. Do not bleed the patient.

WOUNDS OF JOINTS. When a joint is wounded, as the knee, for instance, the limb should be placed in that position which will best allow the edges of the wound to come together; and then all motion or use of the joint, for the time, must be avoided. In other respects treat as other wounds. If there is much discharge of the *synovial fluid*, in other words the *joint-water*, you should endeavor to check it the same as if it were hemorrhage of blood, by the application of astringent liquids, or a little of the red styptic powder, or burnt copperas. If swelling and inflammation, apply the elm poultice, and heal with the Black or All-healing Salve.

PROUD FLESH. Sometimes in wounds that do not heal by the first intention, but inflame and suppurate, and become a running sore, there will occur a *fungous* growth, called usually "proud flesh," which will prevent the wound from healing. When this is the case, sprinkle on this fungus portion a little powdered burnt alum, or Blood root, a few times, and if these should fail to remove it, use the vegetable caustic, or caustic potash. Then poultice, and use the Black or some other good healing salve.

FRACTURES AND DISLOCATIONS. In all cases of fractures of bones or dislocations of joints, unless there is some one present or near by who sufficiently understands the mechanism of the human frame and is fully competent to the task of managing the case, a physician should be sent for at once. The friends or persons present, should in the mean time, make use of such measures as the urgency of the case seems to require. If the injury is a compound fracture, by which is meant that not only the bone is broken, but that the skin and flesh are also separated and torn, so that the ends of the bones, perhaps project, and there is much bleeding, proper efforts, such as have already been indicated for the purpose, should be made to check it, and if need be, take up and tie an artery or vein. If the patient suffers much pain, he might also take a dose of laudanum and a little spirits.

In case of a dislocation, if there is no one present that can reduce it—that is, put the head of the bone back again into its place—and there is likely to be swelling of the part—and there always is more or less—there should be constant applications made to the part of warm water, as hot as can be borne, by means of cloths, until the the physician arrives. This will prevent the swelling, and keep the parts in a relaxed condition, both of which are highly necessary. And if the parts have swollen much, the free application of hot water will reduce it, and relax the muscles, so that the reduction, or replacing of the bone, can much more easily be effected.

ULCERS AND OLD SORES.

MEDICAL writers usually divide ulcers into several kinds, 1st, the *Healthy*; 2d, the *Irritable*; 3d, the *Indolent*; 4th, the *Varicose*; and 5th, *Specific*. The Healthy ulcer, if it is proper to call it an ulcer at all, is one that heals up by healthy suppuration and granulation, without difficulty, such as usually results from wounds that do not heal by *the first intention*. Should it not heal thus readily and healthily, it becomes an ulcer belonging to one of the other classes. The Healthy ulcer (See Treatment of Wounds), seldom requires any thing more than poulticing and the use of some good healing salve.

The specific ulcer is such as attends a particular or specific disease, as Syphilis, Scrofula, and the like, which you will find properly treated of under the diseases to which they belong. It therefore remains for me to speak particularly of the remaining three kinds.

THE IRRITABLE ULCER. You have an ulcer, no matter where; it may be on the hand, the foot, or the leg, or any where else. It is very sore to the touch, tender, and easily made to bleed. It is of a red, or dark purplish appearance, discharges but little matter, and that of a thin, watery, or bloody character, and it may be very corroding and fetid. The granulations in it are spongy and imperfect, and of a dark red hue. The ulcer is bounded by a sharp, overhanging or shelving edge, sometimes ragged, or what is called *serrated*, that is, like fine *saw-teeth*. The parts around the ulcer are red and swollen, and usually hard. This is an *Irritable ulcer*.

TREATMENT. The treatment should be of the most soothing and emollient kind. Warm fomentations; warm poultices; and soothing applications. One of the best is the carrot poultice. If the irritability is very great, the poultice should be moistened with the infusion of Lobelia herb, or a little laudanum. Fomentations of hops and poppy leaves is excellent. Continue such applications till the soreness and inflammatory tendency are removed. Sometimes dry applications will be found to have a better effect than moist; such as sprinkling on common flour, or pulverized chalk or magnesia. These may be used for a few days, in alternation with poultices and fomentations. Do not compress or bandage very tightly.

If there are constitutional symptoms, such as thirst, chilliness, and feverish symptoms, nervous prostration, and irritability, the general system must be attended to. If the skin is dry and harsh, the alkaline bath, that is, sponging and washing the whole body with warm water, in which a little saleratus has been dissolved, should be employed once or twice a day. If the bowels are disposed to be cos-

tive, mild cathartics must be given; and it may be well to give an occasional emetic, and make use of means to produce a healthy perspiration and action of the skin.

When the irritability and pain have been removed from the ulcer, change your applications to simple dressings, such as some good healing salve or ointment. The Black or All-healing Salve is very good.

THE INDOLENT ULCER. This is the most common ulcer to be met with, and is exactly the reverse of the Irritable ulcer, in almost every respect. The edges of the sore are *everted* instead of *inverted*; that is they turn out, instead of hang over, and are rounded, thick, glassy, and quite regular. The granulations in the ulcer, instead of being red and sensitive, are quite insensible to the touch, and of a dull pale appearance, and are generally located at the bottom of the excavation or sore, being, in short, of a *fungous* appearance and character. The secretion or matter, instead of being thin and watery, is thick, of a yellowish color, and adheres quite firmly to the base of the ulcer.

Indolent ulcers are often very difficult to cure. They occur most frequently on the lower extremities, about the legs and ankles, and are oftener to be met with in males than females.

TREATMENT. The treatment of this class of ulcers, like the symptoms, is the very opposite of that of the Irritable ulcer. Stimulating applications are to be made, the first effort being to change the sore from its sluggish, indolent character to a healthy activity.

If there is fungous or callous growth in it, apply the powdered vegetable caustic, or powdered Blood root; sprinkle it on freely, and cover with a plaster of salve, or a poultice. This course will in a day or two, loosen the pus, or matter in the ulcer, so that it may be washed out clean. Wash out with a strong solution of saleratus, and occasionally with a solution of *Nitrate of silver*, about the strength of twenty grains to an ounce of water. Apply it with a feather. If the edges are hard and swollen, touch them with the *Lunar caustic*, and it may be well to scarify them a little with a sharp instrument; after which apply warm fomentations or poultices. By the free application of *caustics*, either in powder or solution, or both, once or twice a day, and softening poultices, you will effect such a change in the character of the ulcer, that in the course of a few days it will most likely assume a healthy appearance and begin to heal.

If it becomes *irritable* and inflames, apply emollient poultices, the carrot or elm poultice, till the inflammation and irritability are reduced.

The next step will be to heal up with proper salves. One of the best I have ever used in such cases is the *Green salve*, made as follows :

Take Rosin, Beeswax, and Lard, of each one ounce ; Verdigris, one drachm, ground in oil ; mix all together, and stir till cold. Dress twice a day with this ; and each time wash out the ulcer with a lotion composed of equal parts of tinctures of Myrrh, Aloes, and Blood root. If any fungous, or proud flesh appears, sprinkle on the powdered Blood root, or burnt alum, or vegetable caustic, and occasionally wash out with a solution of Nitrate of silver. And in very indolent cases, it may be well to apply occasionally a rag wet with the solution of Nitrate of silver, carefully protecting the sound parts around the ulcer. Leave this on for a few hours, and then apply the salve. The worst ulcers of this kind may readily be made to heal, by the free use of Nitrate of silver in solution, even when every thing else seems to fail.

It may be necessary to apply the caustic potash occasionally to the edges of the ulcer, or to touch them with a piece of the lunar caustic.

The Black Salve may be used instead of the Green, or in alternation with it, using one a few days, and then the other. One of the best poultices in these cases, is made of a decoction of the Wild Indigo root, thickened with a little powdered elm bark. If tendency to gangrene or mortification, sprinkle on freely of powdered charcoal, and add yeast to the poultice. To touch the edges of the ulcer occasionally with a lotion of Oil Amber and tinctures Blood root and Cayenne, equal parts, is sometimes very good to make them heal.

Constitutional treatment should not be neglected. Bathe the surface frequently ; keep the bowels in proper condition, with laxative and alterative medicine, occasionally giving an active cathartic. It may also be well, in ulcers of long standing especially, to take something to purify the blood, and the general system, such as a syrup or decoction of Burdock, Yellow dock, Yellow parilla, and Sassafras roots, Elder flowers, and Cherry-tree bark. To each pint add one drachm of Iodide of Potassa, and take a wineglassful two or three times a day.

THE VARICOSE ULCER. This class of ulcers almost invariably occurs on the lower extremities, generally about the ankle and sides of the leg. There is always a *varicose* or swollen condition of the veins in the part, hence the name. In other respects the ulcers may be either irritable or indolent. They are usually very tender to the touch, and often very painful when the part is exercised. Nearly all the small veins in the vicinity are involved, and the bluish red color of the sore extends to some distance around. The leg will often be greatly swollen or enlarged, mainly on account of the engorged state of the veins.

TREATMENT. If the ulcer be of the *Irritable* or the *Indolent* character, treat it accordingly. The only peculiarity of treatment called

for is for the engorged and enfeebled state of the veins in the part affected. For this use astringent and tonic washes, as a decoction of White oak bark, with some alum dissolved in it; also tinctures of Nutgall and Catechu. If the ulcers appear to be indolent, use also tinctures of Cayenne, Myrrh, and Oil Amber, as a wash. It will be well also to submit the limb, or the part affected, once or twice a day to a steaming over bitter herbs. This is very important, and will have an excellent effect.

In addition to this, and what is perhaps of the greatest importance, apply what is called a *roller*; that is a compression or bandage, by means of a long strip of muslin, about two or three inches wide. Let it be long enough to wrap the foot and leg from the toes to the knee, or above the swelling. Begin at the toes, and wind round, drawing pretty tight, so as to compress as much as can be borne, and continue winding till you get above the swelling, allowing the edges of the roller or bandage to overlap each other a little. Remove it at least every morning and evening, to wash and dress the ulcers, and, if need be, foment or steam over bitter herbs, and then apply again, each time drawing the roller a little tighter. This will reduce the swelling and the engorgement of the vessels, and in the course of a few days the ulcers may be in a condition to commence healing. Occasionally it may be necessary to poultice; but at all other times continue the bandage, and heal with salve and the proper washes. If the edges of the sores are hard, and will not heal, scarify them and apply stimulants and astringents, and occasionally a little caustic.

It is very common to meet with cases of this kind, called "Old Sore Legs," originating from fever, or from drinking whisky, or from injuries to the part, which have been neglected. In all such cases, you can succeed in effecting a cure, if you will pursue the above course, rigidly, and for a sufficient length of time. Make use of the bitter herb fomentations, the astringent and stimulating washes, and the roller compress, and you will succeed.

The constitutional treatment should be more or less such as recommended in case of the other kinds of ulcers.

BLACK SALVE. For directions to make this salve, see "All-healing Salve," page 744. The Red Lead and Camphor must be added.

TABLE OF FAMILY MEDICINES,

With Directions for Preparing and Using Them.

ANTIBILIOUS PHYSIC.

THIS is probably the best and safest cathartic or purgative known. It is preferable to any of the articles usually given as purgatives, being more speedy in its operation, and always free from any danger or deleterious effects. It may be given in all cases where a purgative is needed, and to persons of all ages.

PREPARATION. Take pulverized Jalap, 4 oz.; finely pulverized Senna, 8 oz.; pulverized Cloves, 1 oz.; mix well, and sift through a fine sieve. The materials should all be of the best quality.

DOSE. For a grown person, from one to two drachms, or from an even to a heaping teaspoonful, given in a little warm water, which may be sweetened, and if preferred, a little brandy or spirits added, grated nutmeg, and the like, to render it palatable and agreeable. Children from six to twelve years of age, may take from one-third to one half as much, and under six, one third, one fourth, or less, according to age. When it is desired to have it operate quick, a few grains of Cayenne should be added to it, and a teaspoonful or two of Cream of tartar. In all cases of Dropsy, inflammations, and Congestions, the Cream of tartar should be added, as it causes copious watery discharges, thereby reducing the fluids of the system. It may also be improved in such cases, by combining with it about an equal part of the powdered Mandrake, or if the Podophyllin is preferred, two or three grains of it to the dose, for a grown person.

NEUTRALIZING POWDER.

PREPARATION. Take of the best pulverized Rhubarb, and Saleratus, each say one ounce; pulverized Peppermint leaves, half an ounce; let each be finely pulverized, then mix, and pass through a fine sieve.

DOSE. When given in substance, from ten or fifteen grains to a teaspoonful, is a dose for a grown person, repeated several times during the day. If it is given as often as once an hour, ten to twenty grains is enough at a time. It is used for Dysentery, Diarrhea, and Summer Complaints, and it is generally well to combine with it a little of the Diaphoretic Powder, say five or six grains to each dose. A favorite prescription of mine in Dysentery, is Neutralizing Powder, 20 grains, Diaphoretic Powder, 5 grains, Leptandrin, 1 grain,—to be given once every two hours, till six, eight, or ten doses are taken.

When you wish to give it in liquid form, or in syrup, and it is generally best to do so for children—take say a heaping tablespoonful of the compound, add half a pint of boiling water, simmer a few minutes, and when cool, strain, and sweeten with loaf sugar, and give it in doses of a teaspoonful to a tablespoonful, repeated every half hour, or hour, according to the urgency of the case.

This is one of the best preparations known for Dysentery, Diarrhea, Summer Complaint in children, and the like. Every family should keep a supply of it on hand, especially during the summer or sickly season.

ALTERATIVE, OR LIVER POWDERS.

Take Podophyllin, and Sanguinin, of each, 10 grains; Leptandrin, 20 grains; White sugar, 40 grains; triturate, or rub the whole together well in a small mortar, and divide into 40 powders, and take one night and morning; if they operate much on the bowels, take but one a day.

USES. Valuable in Liver Complaint, Torpidity of the Liver, and as an Alterative, to act on the secretions of the system generally. A complete substitute for Blue Pill, and free from any danger.

COMPOSITION POWDER.

PREPARATION. Take Bayberry one pound, good Ginger one half pound, Cayenne and Cloves, of each one ounce; the whole to be finely pulverized and well mixed.

USES. To be made into a tea, and drunk freely, in the proportion of a large tablespoonful to a pint of boiling water. It may be sweetened if preferred. Valuable in colds, and where you wish to produce perspiration. Also good to take before taking an emetic, to prepare the system, and wherever a Diaphoretic or sweating tea is needed. It is the original Thompsonian Composition Powder.

DIAPHORETIC POWDER.

PREPARATION. Take of pulverized Opium, 30 grains, or half a drachm; pulverized Gum Camphor, two drachms; Ipecac, one drachm; Cream of tartar, one half ounce; mix, and triturate well in a mortar.

DOSE. Ten grains to half a teaspoonful, once in three or four hours. It is valuable as a sweating powder, good in Fevers, Dysentery, and wherever an Anodyne and Diaphoretic are needed. When to be given as often as once in two or three hours, and to be continued a good while, it should be given in small doses, of from five to ten grains. It acts gently on the skin, and promotes perspiration without increasing the heat of the body.

EMETIC POWDER.

For all ordinary purposes, equal parts of powdered Lobelia seed, or herb, and Ipecac, are sufficient. In some cases, however, particularly where the Lungs are affected, as in Pneumonia or Lung Fever, it is best to combine a portion of the Blood root. Thus: Take pulverized Lobelia seed and Ipecac, of each, two ounces; pulverized Blood root, one ounce; mix.

USE. In either case, when you wish to give an emetic, take a heaping tablespoonful of the compound, pour on it near a pint of hot water (but not quite hot enough to scald), stir it, and let it steep a few minutes; then, the patient having already prepared for it by drinking a pint or more of Composition, Pennyroyal, or Boneset tea, commence giving the emetic infusion in half teacupfuls, every two or three minutes, till all is taken, or he has vomited two or three times thoroughly. If one portion does not produce thorough or sufficient vomiting, prepare another, and continue in larger doses, till it does. Between each time of vomiting, a little tea should be drunk; and at the close, the patient should take some gruel, and remain quiet for an hour or two

COMPOUND SPICE BITTERS.

PREPARATION. Take Poplar bark, Bayberry, Yellow root (Golden Seal), of each four ounces; Colombo and Bitter root (Indian hemp), of each two ounces; Cloves and Race Ginger, of each one ounce; Cayenne, half an ounce; all to be finely powdered and then mixed; to which, add as much finely powdered loaf sugar as the whole of the others, and pass the whole through a fine sieve.

DOSE. A teaspoonful in a little water, warm or cold, or a little wine, or any thing else preferred. This is an excellent bitter for weak stomach, dyspepsia, loss of appetite, general debility, and wherever a tonic and restorative bitter is needed. It is very convenient and pleasant to take.

IMPROVED NO. 6, OR COMPOUND TINCTURE OF MYRRH.

PREPARATION. Take best gum Myrrh, six ounces; Cayenne, Balsam of Fir, and Nutmegs, of each one ounce; good Brandy, two quarts; bruise the solid articles, and let stand two weeks to digest, shaking once or twice every day; then strain or filter. Or it may be made for immediate use, by putting the whole in a stone jug, and placing this in a warm sand bath, or in a vessel of boiling water, for twenty-four hours, shaking frequently,

DOSE. A teaspoonful is an ordinary dose for a grown person. Good in colic, pains in the stomach and bowels, diarrhea, headache, sick stomach, and wherever a powerful stimulant is indicated. It is also valuable as a wash or external application, for sprains, bruises, and foul ulcers, and old sores. It is a preparation that no family should be without.

ANTISPASMODIC TINCTURE.

PREPARATION. Take Lobelia seeds, pulverized, 4 ounces; Ladyslipper root, powdered, 4 ounces; Cayenne, 2 ounces; diluted Alcohol (diluted with half as much water as Alcohol), one quart. Digest two weeks, shaking frequently, then strain or filter.

DOSE. From a teaspoonful to a tablespoonful, according to urgency of symptoms. Valuable in spasms, convulsions, fits, lock-jaw, suspended animation from drowning, lightning, falls, or any other cause, and in all violent attacks of disease. The doses should be repeated every five, ten, or twenty minutes.

EXPECTORANT TINCTURE.

PREPARATION. Take pulverized Lobelia (seed or herb), powdered Blood root, and powdered Rattle root (Black Cohosh), of each three ounces; Alcohol and good Vinegar, of each one pint; digest for ten days or two weeks, then strain or filter, and add four ounces each of wine of Ipecac, and tincture Balsam of Tolu, and one ounce strong essence of Anise. A portion of honey may be added, if preferred.

DOSE. One to two teaspoonfuls, repeated as often as circumstances require. Highly useful as an expectorant in coughs, colds, and all affections of the lungs. A similar preparation may be made, by combining equal parts of tinctures Lobelia, Blood root, Rattle root, Balsam Tolu, and wine or syrup of Ipecac.

CATHARTIC AND ANTIBILIOUS PILLS.

PREPARATION. Take Podophyllin, one drachm; pure Cayenne, one drachm; Sanguin, one half drachm; Ipecac, one half a drachm; soft extract of Mandrake, enough to form a pill mass; make into 60 pills. This is the best pill I have ever used, as a

cathartic and Liver pill, and to act on the secretions generally. As a cathartic, the dose is from two to four pills, for a grown person, and as an alterative and substitute for Blue Mass, one pill once a day, or every other day.

DR. JORDAN'S CHOLERA REMEDY.

I am about to give you my Great Cholera Remedy. I see no reason why it should not be made public. I first discovered and used it with great success in the Cincinnati Cholera Hospital, in the summer of 1849, when the disease raged so terribly in that city, and throughout our whole country. Since then, I have given the recipe to a number of my friends, who have prepared and used the medicine, not only in Cholera, but in all bowel diseases, who generally, I believe, esteem it very highly. I doubt very much if there is a preparation or medicine known, equal to it in Cholera, Cholera Morbus, or any form of Diarrhea, or that may be so confidently relied upon. The recipe is well worth the price of this book, to any family that will prepare and keep the medicine, and use it when indicated. It is prepared as follows :

Take Gum Guaiacum,.....	2 oz.,
Prickly Ash Berries,.....	2 oz.,
Cloves,.....	2 oz.,
Cinnamon Bark,.....	2 oz.,
Gum Camphor,.....	1 oz.,
Gum Kino,.....	$\frac{1}{2}$ oz.,
Best French Brandy,.....	1 Quart.

Reduce all the articles to a coarse powder, and digest in the brandy ten days or two weeks, shaking the vessel well two or three times a day, so that the ingredients may be kept loose, and not allowed to become impacted at the bottom ; after which, strain and press out. Then take—

Oil Anise,.....	2 drachms,
Oil Peppermint,.....	2 drachms,
Good Alcohol,.....	4 ounces.

Cut the Oils in the Alcohol thoroughly, by shaking well, and then add the whole to the other, when it is ready for use.

Dose. From one to two teaspoonfuls every five, ten, fifteen or thirty minutes, according to the urgency of the symptoms. In Cholera, it should be given frequently, and if there is nausea and vomiting, small doses are preferable—a single teaspoonful every five or ten minutes, till urgent symptoms are checked ; then give it less frequent. It should always be given alone, unmixed or undiluted with any thing else. In ordinary diarrhea, a dose of one or two teaspoonfuls taken once an hour, will be sufficient. It is also an excellent remedy for colic, or pains in the stomach or bowels, and will generally settle the stomach very soon in case of nausea and vomiting. It may be regarded as a standard remedy, and should always be kept in the house.

It may be made for immediate use, by submitting to a gentle heat for a few hours. In this case Alcohol may be used instead of Brandy. Take one quart of Alcohol, dilute it with one pint of water, put it in a stone jug with the ingredients first named, and boil the jug in a vessel of hot water for two or three hours, leaving a little opening at the mouth, for the steam to escape. It must also be shaken or stirred frequently. When cool, strain, press out, and add the oils, cut in Alcohol as directed. It is best, in making it in this way, to submit to but a gentle heat, hardly to the boiling point, and occupy at least twenty-four hours in the process.

The Prickly Ash is an essential ingredient, and must not be omitted. If you can not get the berries, use double the quantity of the inner bark of the tree.

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Still more especially is a judicious and scientific work of this kind, written in familiar language, and free from medical terms, useful to those who may be so situated, that they can at once command the services of a regular physician. Such a book has a legitimate office, in which it interferes with the rights and duties of no one. We find many things in it respecting the preservation of health and management of disease, which commend themselves to the common sense of all. It is sufficient to say of the author's treatment of diseases, and the remedies recommended, that they have the testimonial of some of the most eminent physicians in the country.

[From the Rushville (Ind.) Republican.]

DR. GUNN has spent a great deal of labor and time on the work—over three years, we are told—in order to make it as near what it ought to be, and as near perfect as possible. It describes the various diseases in plain language, and whenever technical terms are employed they are fully explained, and then gives the treatment for each, generally recommending the most simple and harmless remedies, yet such as are sufficiently efficacious to cure the disease. The work also contains a list of all the medicines known or in use, including herbs, barks, and roots, with a full description of each, and their properties and uses, together with a great number of medical receipts, and a vast amount of valuable information, not strictly medical. In fine, it seems to be a kind of family medical library, containing about all that the people need to know in regard to medicine and the human system, to enable them to successfully treat all the ordinary diseases common to the country.

[From the Christian Herald, Cincinnati, January 28, 1858.]

GUNN'S NEW DOMESTIC PHYSICIAN.—A week or two since we noticed, very favorably, Dr. Gunn's "New Domestic Physician, or Home Book of Health," but omitted to state that the publishers are disposing of it wholly through regularly appointed agents, in each county. We are satisfied, from the excellent success that has attended the efforts of those who have been at work in selling this book, for a few months past, that substantial men, of middle age and small capital, can find no better business in these hard times.

[From the West Liberty (O.) Banner, Nov. 13, 1857.]

A NOBLE BOOK—It is the greatest book of the age—*without an equal*. It should be owned, read, studied and practiced by every family and every individual every where. Who doubts that "An ounce of Prevention is worth a pound of Cure?" There is not and never has been an author of a domestic or general medical work to compare with Dr. Gunn. His old work was worth many times its price, and sold more extensively than any other. This is not a new edition of his old book, but an entirely new work. It is in every sense a *most valuable* book, and stands without a rival. Nobody should be without it, whether in sickness or in health.

[From the Missouri Democrat, St. Louis, December 24, 1857.]

It would be much better for both the physician and the patient, if the people generally possessed a more accurate knowledge of medicine, and the human system. They could then more readily distinguish the educated and skillful physician from the empiric and pretender, while they could also treat many of the simple and less dangerous diseases themselves, and thus often avoid, by taking them in time, a long spell of sickness, or a longer doctor's bill.

There is—and we are glad to see it—a growing demand among the masses for this kind of knowledge. It is a legitimate demand, and should be met by proper works on the subject. Every family stands in need of a volume that will serve as a safe and reliable guide, in cases of sudden illness and in all ordinary complaints, as well as one that gives plain rules for the preservation of health. Such a work, we believe, has at length been published. It is a new work by an old and well-known author. We allude to a work recently published at Cincinnati, entitled "*Gunn's New Domestic Physician, or Home Book of Health*." The work is written by Dr. John C. Gunn, of Louisville, Ky.—the renowned author of the old work—"Gunn's Domestic Medicine," which in its day had the most extensive sale of any medical work ever published. This, as may reasonably be supposed, is a much superior work to the old one. It is written in a beautiful style, yet so simple and plain, that a child may understand it. The work contains an appendix on anatomy and physiology, and the laws of health, by Dr. J. H. Jordan, of Cincinnati, which is an important addition. It is, without question, one of the most valuable books of the day, and while we recommend every family to provide themselves with some good work of this kind, we would also recommend them to examine *this work* before procuring any other.

[From the Sidney (O.) Journal, Sept. 11, 1857.

As an author of a family medical work Dr. Gunn has no equal. His style is excellent, and his ideas clearly expressed. His work is comprehensive and complete. Indeed, to enumerate the merits of this work, is unnecessary—it speaks for itself. We consider it one of the most important (or rather *the* most important) family work ever published. No one should neglect an opportunity to procure it.

[From the Shelby County, Ohio, Democrat, Oct., 1857.

You can make no better, handsomer or more useful addition to your library than this work. While it ornaments your shelves or adorns your center table it contains that which is more valuable than gold, if you will but heed its teachings. Get the book, and if you follow its directions your doctor bills will be but few, and you will obtain a knowledge of medicine and the human system, that will be worth to you ten times the cost of the book.

[From the Herald and Era, Indianapolis, January 9, 1858.

GUNN'S NEW DOMESTIC PHYSICIAN.—Most of our readers, we presume, know something of Dr. Gunn's old work, known as "Gunn's Domestic Medicine," as it has been a sort of household companion in hundreds and thousands of families for the last fifteen or twenty years, and is still regarded by many a most valuable book. The present book purports to be an entirely new work—more elaborate, more complete, and certainly it is much larger. The old book, though very popular in its day, is a work of the past generation, and must be greatly behind the times in many respects. If the former one was a good work, the new one must be much better. There is much good reason in favor of this conclusion. It is by the same author, written some twenty-five years later; has the advantage of his long experience in the profession; has been prepared, as is stated, and we doubt not, with great care, and with a direct view to the wants of families, and the non-professional reader, and seems, so far as we are able to judge, to come fully up to the times.

[From the Olney (Ills.) Times, January 8, 1858.

There is no book (save the Bible) of more use in a house, especially where there are children, than a good Medical Book—one fully adapted to the wants and comprehension of parents, and the people generally. Such a work, we are pleased to say, is now being circulated, and offered for subscription in our county.

Who has not heard of Dr. Gunn? the world-renowned author of the old work—"Gunn's Domestic Medicine." Here is a new work, much larger, and, being of recent date, must be much better, by the same author. Do you want to have a physician in the house—one that you can rely on at all times? Then get Dr. Gunn. Do you wish to escape sickness, or preserve the health of your family?—get a copy of this work. Would you like to inform your mind on the subject of medicine, health, disease, and the construction, laws, and operations of your own physical system?—then get this book, for we know of none so well calculated to give all this information. It contains something on all subjects—especially on all connected with health and disease.

[From the Wilmington (O.) Watchman, January 22, 1858.

We would call the particular attention of our readers, and particularly those who are heads of families, to the *fact*, that the justly celebrated Dr. J. C. Gunn has written another *great* and *good* work. Dr. Gunn's name is a household word; his reputation as a popular writer is too well known and appreciated by the people of this county to need any recommendation, from any source, to substantiate the merits of the work. His name is a sufficient guaranty.

CERTIFICATES.

WEST LIBERTY, Ohio, Nov. 1857.

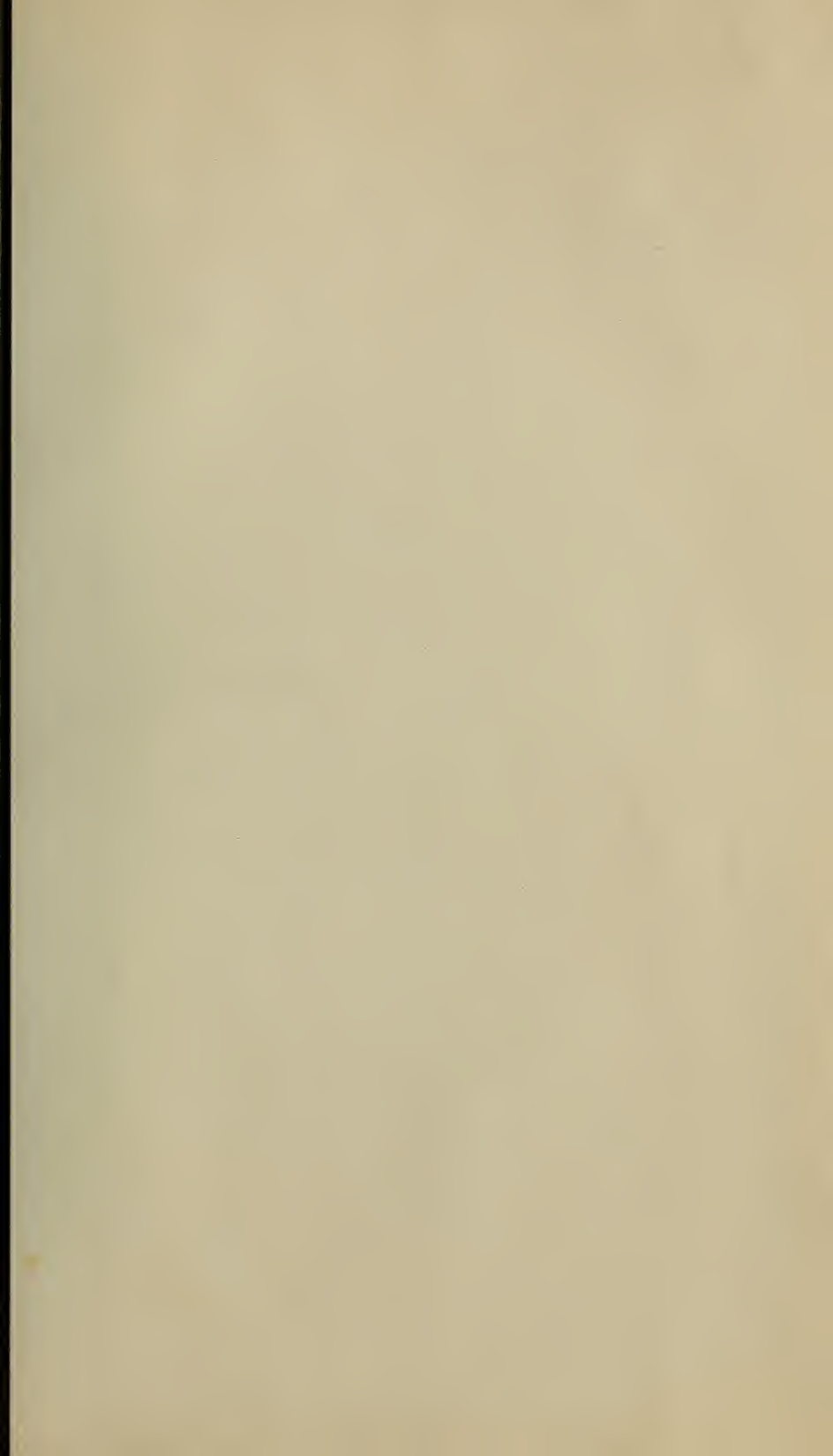
Having carefully examined Dr. Gunn's "New Domestic Physician, or Home Book of Health," I unhesitatingly say that I believe it to be a valuable work, and should be found in the library of every family. It is written in a plain and communicative style, and is divested of all technicalities, in order that it may be a household companion.

DR. I. C. TAYLOR.

I have been permitted to peruse and examine Doctor Gunn's new work on Domestic Medicine, which, considering its adaptation to the wants of the people, in many accidental emergencies, and sudden attacks of disease, at times and places when the aid of a physician may not be attainable, I heartily commend it as one of the most valuable works ever published.

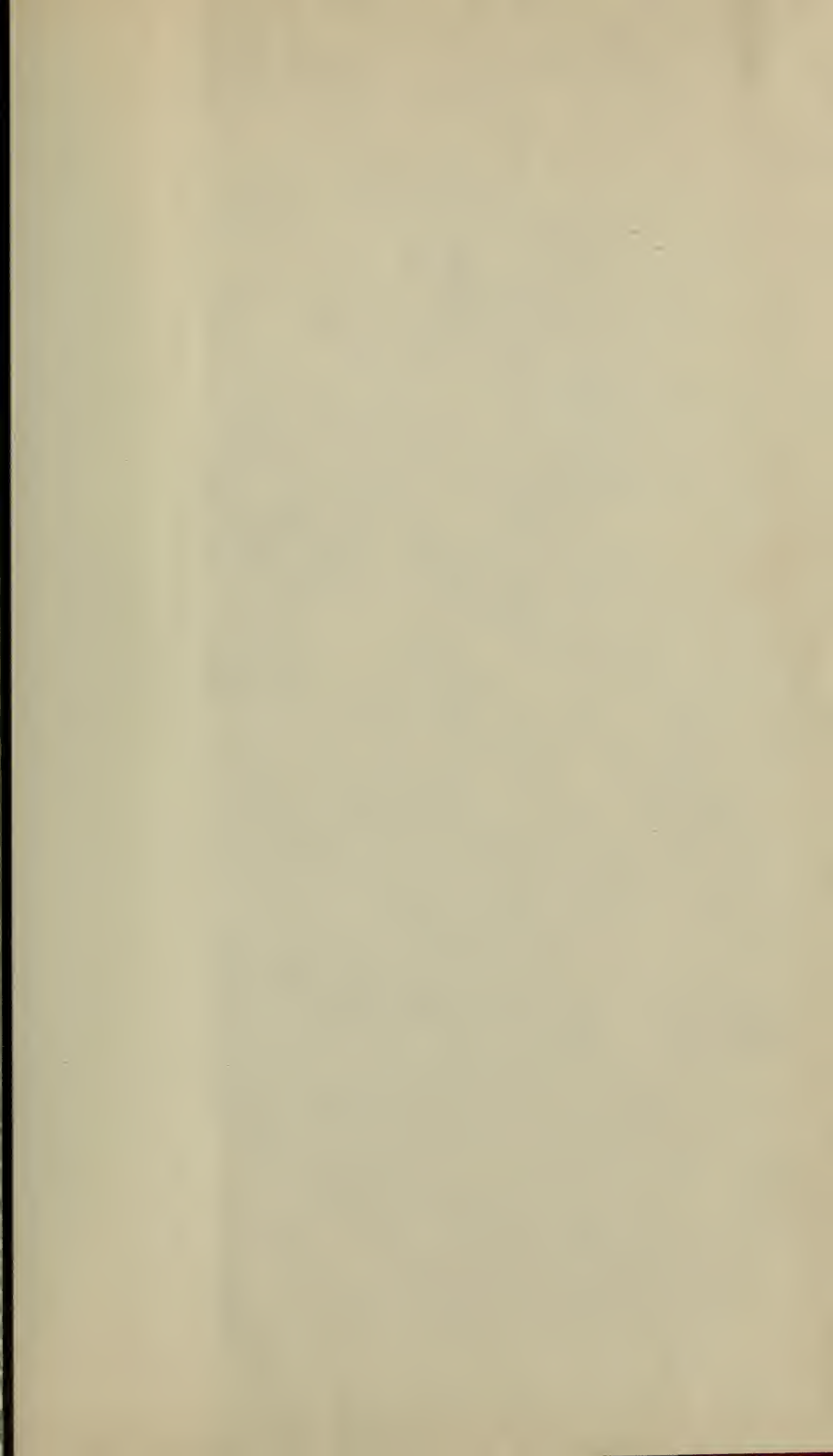
Aside from the practical utility of this volume, the author's style of writing can not fail to improve the reader with its classic beauty. Every intelligent physician should aid in its circulation among his patrons.

S. N. ECKER, M. D., Covington, Ohio.









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