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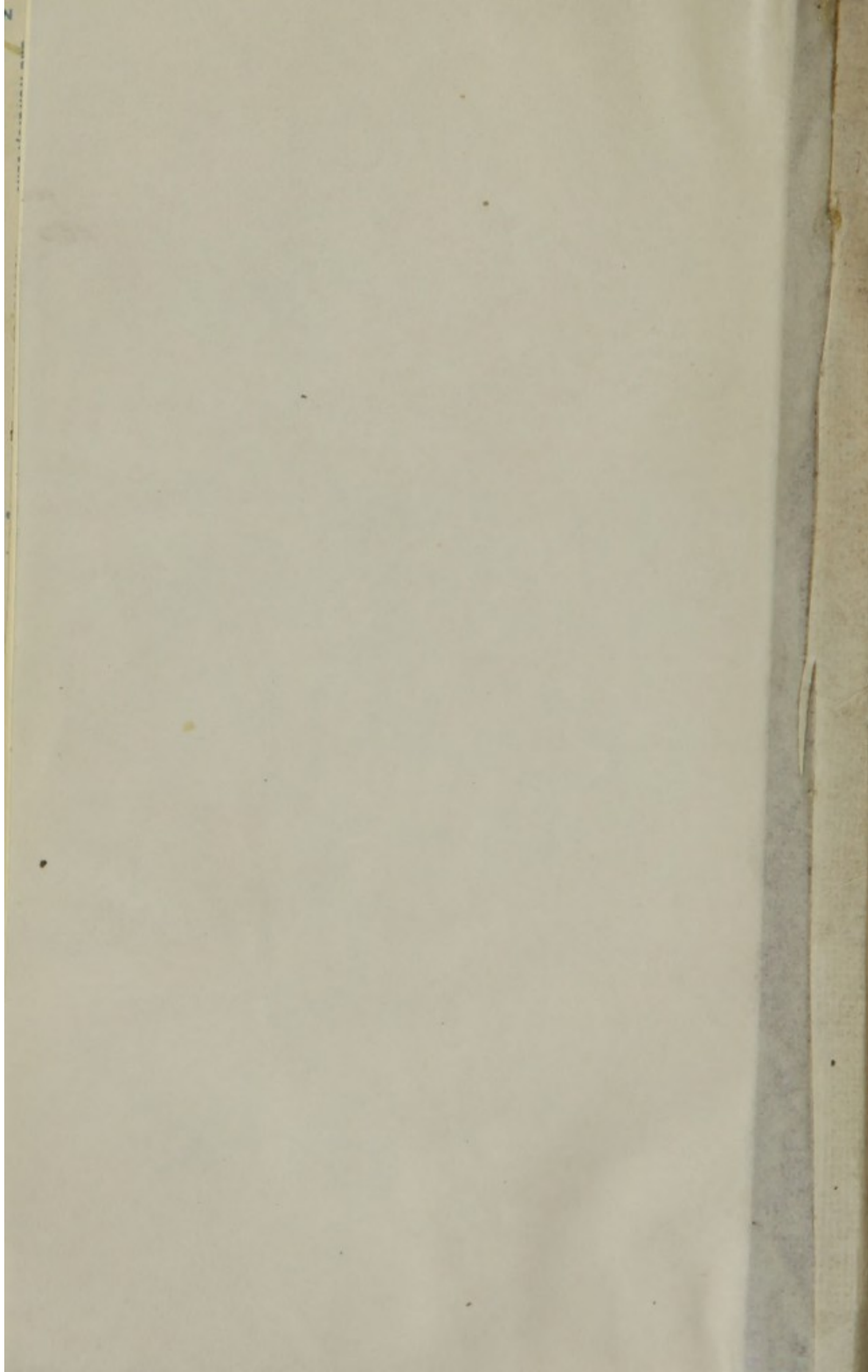
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Esoteric
Anthropology



ESOTERIC
ANTHROPOLOGY.

BY

T. L. NICHOLS, M.D.

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TO THE READER.

I HAVE a few words to say in explanation of the motives, plan, and intention of this work; not to the public, but to the individual reader. I have no public to appeal to or propitiate; but only the person who now reads these words. They are written for him, or her, and are intended to be *private and confidential*.

This is no book for the center-table, the library shelf, or the counter of a bookstore. As its name imports, it is a *private treatise* on the most interesting and important subjects. It is of the nature of a STRICTLY CONFIDENTIAL PROFESSIONAL CONSULTATION BETWEEN PHYSICIAN AND PATIENT, in which the latter wishes to know all that can be of use to him, and all that the former is able and willing to teach. It is such a book as I wish to put into the hands of every man and every woman—yes, and every child wise enough to profit by its teachings—and *no others*.

Moreover, it is such a book as no one has yet written. We have ponderous works on anatomy, dry details of organism, buried in Greek and Latin technicalities, with no more life than the wired skeletons and dried preparations which they describe. We have elaborate works on physiology, and popular books on the same

subject; the former are cumbrous, and incomprehensible to any but a professional reader; the latter are meager and shallow, and neither contain a clear philosophy of life and health. Within a few years there have been some earnest works written upon special subjects in physiology and pathology, which have been very useful; but I know of no comprehensive treatise, which I could confidently recommend.

The books on some of the most important matters treated of in the following pages, are, for the most part, either the result of an unscientific enthusiasm, leading to great errors, or a morbid pruriency of imagination; or, more commonly still, are devices of the boldest and most unscrupulous quackery. Of this latter class, there are scores of books in the market, each containing a portion of truth, but each full of errors, and each intended solely to make money directly by their sale; but still more to bring practice in some special line of medical or surgical quackery. It is a distinctive feature of this class of works, that in every few pages will be found a tempting bait for a personal consultation, or a course of treatment. And this is the design of nine tenths of all the medical books now published.

I write from other motives, and for other purposes. I write, not to get consultations, but to prevent their necessity; not to attract patients, but to keep them away; and to enable them to get health without my further care. I wish to make this book so full, so clear, so thorough, and complete, that every one may understand the structure and functions of his system, the conditions of health, the causes of disease, and all the modes and processes of cure. It is a book for the pre-

vention of disease ; for the preservation of health ; and, as far as that end can ever be attained, for its restoration. Having faithfully and carefully written it, I shall have performed a part of my duty. I shall have done the work at once, and for all, instead of wasting my life in a thousand individual efforts. Henceforth, when a patient consults me, I shall say, with honest old Abernethy, "Read my book !" I wish, as far as possible, to retire from practice ; to devote my remaining years to the more congenial pursuit of education, literature, and social science. But, before I could do this, I felt that I had a great duty to perform. The following pages are the result of my endeavor to perform that duty.

As the material basis of all reform, and all progress of humanity toward its true destiny, the world wants health. Individuals are sick, communities are sick, nations are sick. The very earth is diseased. All must be cured together ; but the work must begin with the individual. Every man who purifies and invigorates his own life, does something for the world. Every woman who lives in the conditions of health, and avoids the causes of disease, helps the race ; and if such persons combine their purified and invigorated lives in healthy offspring, they do a noble work for the redemption of universal humanity.

My heart glows with the exulting thought that this book will be the means by which thousands of men and women may preserve health for themselves, and transmit it to whole generations of strong, wise, and happy beings ; that it may be one of the instrumentalities of a real, physical redemption for mankind, out of which will be developed all moral excellence, intellectual ele-

vation, social harmony, and individual and general happiness.

From the general censure on medical books, especially those written upon any speciality of disease or practice, I wish to except most of the works on Hydropathy. A few have stamped upon them somewhat too strongly, "Come to me and be cured!" but far the greater number bear the impress of a wise and noble philanthropy. Such works it is not my design to supersede. Read them all, and learn and practice all they have of truth. Read Gully, Wilson, Francke, Shew, and the comprehensive and methodical Encyclopedia of Dr. Trall. For what it purports to be, read my own "Introduction to the Water-Cure;" and for the best work of its kind, read Mrs. Gove Nichols' "Experience in Water-Cure," a book every woman should attentively study, and resolutely live by.

But when you have read all these, there will be many things of the most intimate character you will still desire to know; many questions you might wish to ask, much knowledge that might be useful in your efforts to live a true life. To give you this knowledge, in the clearest and most unobjectionable way, is the object of this volume.

Its plan and method are the result of long reflection, and a desire to give just what was necessary to the design, and no more. That design is to give, as far as possible, either what does not exist in any other work, what lies buried in a mass of error, or hidden under scientific disguises, or what must be excluded from works of a merely popular character, and intended for general circulation. Consequently, those portions of

my subject which are satisfactorily treated of in accessible works, are here discussed with brevity, while I have reserved my space and power for topics which are but little known, but which are of great importance to every human being.

The illustrations have been selected from English and German works of the highest authority, with the exception of a few familiar anatomical engravings, which are common property.

Finally, I rely upon the calm judgment of the reader, for whom this volume is prepared, and to whom it is expressly sent, at his or her own desire ; with the public, in this case, I have nothing to do—no apologies to make, and no favors to ask.

And now, my human brother, or sister, all I ask of you is, that, with a clear mind, and a pure heart, a love of the truth, and a willingness to accept it, you read the following pages ; and, so far as the teachings they contain commend themselves to your reason, that you follow them faithfully in a life of purity and devotion to the highest good. There are many things which may be contrary to your preconceived notions. Humanity lies prone under the errors of ages ; and what we cherish as truths, are often among the most hurtful of those errors. The only mischief of error is, that we accept it as truth. The strength of error is in the support of venerated authority. The miseries of mankind are but the symptoms of its errors, of thought and life. There is no disease without a cause, and the cause is closely related to the remedy.

The world is cursed by ERROR and DISCORD—it must be saved by TRUTH and LOVE.

CHAPTER I.

OF MAN AND HIS RELATIONS.

A MAN is an organized being, with the consciousness of existence, and of having certain faculties of thinking, feeling, and acting. By means of his senses, tastes, and attractions, he holds relations to the material universe, to other beings, inferior to or like himself, and, apparently, to superior beings.

Each man is, for himself, and by his own perceptions, the center of his universe. All things relate to him. He is an egotist, in this sense, by the necessity of his nature. His first idea is the consciousness of his own existence; and on this first thought all his knowledge depends.

When man studies his own organization, physical and mental, he finds that he is made with relations of perfect fitness or harmony to nature. The world is full of beauty, and he has eyes adapted to see it, and faculties fitted to enjoy it. His ears are wonderfully adapted to all sounds and their harmonious combinations. His sense of smell is related to a thousand delightful odors. His taste finds exquisite gratification from the aliments best adapted to supply the waste of his system. His pervading sense of touch, modified in many organs,

gives him a world of delights. We can imagine the uses and pleasures of these senses, only by trying to fancy ourselves deprived of one or more of them.

As the senses, feelings, and faculties of man connect him with the whole universe, he can not fail to perceive that his relation with that universe is, or should be, harmonious, and that a beautiful harmony pervades all nature, marking it as a work of design.

From the evident harmonies of man and the universe, comes necessarily the idea of God, as the Creator, or pervading intelligence or soul of this universe of matter and thought. And the idea, or belief in God, comes to man as irresistibly as the recognition of his own consciousness. We have thus three things existing: the individual man, the external nature with which he holds harmonious relations, and the Author of these harmonies of relation, and all things between which they subsist; that is, between *all* things; for nature, to be in harmony with man, must be in harmony with itself, in all its parts.

Out of the harmony of these relations of God, nature, and man, or the individual soul, comes the belief in immortality, which comes directly from a necessary harmony between desire or attraction, and the thing desired; for the eye is no more a proof of light, and the ear of sound, than the "longing after immortality" is a proof of its necessary existence. "Attraction," says a great philosopher, "is in proportion to destiny." God has not mocked man with desires never to be fulfilled, and an ideal never to be realized.

Man desires health, wealth, knowledge, love, happiness; let him only live in harmony with nature, and

they are all his—and they can be his only in proportion as he lives in this harmony.

When man obeys the laws of his own being, he lives in harmony with nature.

When man is in harmony with nature, he is in harmony with God, the Author of all harmonies.

For a man to follow nature, to live according to physiological laws, or to obey God, is one and the same thing. In doing one, he does the other. "For whether we eat, or drink, or whatever we do, let us do all to the glory of God."

God's being is comprehensible, only so far as He is manifested to us in nature. He is visible and tangible in these manifestations and laws. Our best knowledge of God comes out of our own consciousness, we being the highest and most complete reproduction of Himself, of which we have any knowledge. "In His own image and likeness created He him."

God seems to us to be of necessity self-existent, having no maker, and consequently eternal, or without beginning. And as we can not suppose a God eternally idle and alone, or without active manifestation, or life, we are driven to the belief in the equal eternity of the universe. The power of God seems only bounded by possibilities, principles, and laws. God can not do a thing physically or mathematically impossible; nor a thing wrong or morally impossible; and He seems to be subject to certain laws of progress, in virtue of which the world must pass through certain stages of development, before the establishment of entire harmony.

Aside from God, and nature, and man, there seem

to be certain eternally self-existent principles, as truth, justice; and laws, as those of geometry. It did not need God to make the three angles of a triangle equal to two right angles; nor to make truth better than falsehood, and right superior to wrong. All principles and laws which are really such, must be considered either as divine in their nature, a part of the being of God, or as eternally self-existing, and harmonious with Him.

Fourier, in his analysis of universals, defines the first principles of nature as—

1st. The active principle, or SPIRIT.

2d. The passive principle, or MATTER.

3d. The neuter principle, or MATHEMATICS.

Equivalent to God, universe, laws.

In this work, we have to consider man as an organized being, possessing certain faculties and passions, and the relations he sustains, through these, to nature, and to his fellow-beings.

Health is the result of the integrity of a good organization, and the harmony of true relations.

Disease is the consequence of the reverse of both these conditions.

Out of this consideration of man and his relations, come certain thoughts, or principles of thought and action. The reader may not, possibly, comprehend entirely what I have written so briefly, but I think he can easily understand, and must accept, the following propositions, which will aid him very materially in his future investigations.

All truth is God's truth; all truth is equally sacred, and its importance depends upon its relations.

The whole universe is a revelation of the mind, feeling, power, and will of God ; and His nature must be in harmony with His whole revelation.

Man, in his body and his soul, is preëminently a revelation of God ; and, in health, is himself the highest known expression of Divine wisdom and love.

Man, therefore, in his developments, sexes, faculties, instincts, passions, and relations, is to be devoutly studied. If we would learn the will of God, we may find it here ; but as man is, either from immaturity or perversion, in a state of discordance with nature, we can only understand man rightly by studying his harmonious relations.

It is for this reason that human physiology is a central or pivotal science. On it is based a knowledge of God and His laws ; the universe and its divine harmonies ; man and his destiny, social and individual.

We shall see that the subject of HEALTH relates to all these ; that the causes of DISEASE are in the discordances of man and nature, and that the conditions of health belong to the harmonies of the universe.

CHAPTER II.

OF THE ANIMAL, MAN.

THE fully developed man, of the highest type with which we are acquainted, is a beautiful and majestic animal, six feet high, walking erect on two legs ; with an oval-shaped head, balanced upon a perpendicular spinal

column ; with two arms, furnished with prehensile organs of a curious and complex structure. He has a soft, smooth skin, of a rosy white color, and fine hair grows upon the head, chin, and around the virile organs.

The female of this animal is commonly shorter than the male ; more delicately formed ; with longer hair upon the head, and none on the face ; with smoothly rounded limbs, tapering to smaller hands and feet ; with narrower shoulders, wider hips, and a beautiful bosom.

The sexes differ in mental and moral qualities, as will be more particularly noted hereafter.

Man is gregarious in his habits ; the love of society being one of his strongest instincts. He climbs trees, builds houses, and other structures of use and ornament ; makes arms, clothing, and means of artificial locomotion ; subdues other animals to his service ; has an articulate and written language ; produces music by his own natural organs, and by instruments he has invented ; forms statues and pictures ; prepares food by fire, and in a thousand ways shows himself to be the most extraordinary being within our knowledge.

Many animals possess remarkable faculties, and several of those we have mentioned as belonging to man. The differences, so far as they are known, should be carefully noted. Bees have mathematical skill, some kind of language, great industry, and a limited power of adapting themselves to circumstances. In birds there is often seen a high intellectual activity and great pas-sional vigor. In the mammalia, especially the dog, the beaver, the horse, and the elephant, we have reasoning powers, and some of the highest moral attributes. There can be little doubt that some races of men, in

intellect and moral character, are below the average elephant. But with all this, the fact remains, that man is greatly superior to all other animals in his capacity, and generally in his development. He is an instrument of greater compass and power, and more liable to get out of order. His capacity for improvement is a capacity for perversion and depravation. God could not give him the power of progression without also giving him liberty of action; and liberty implies the power of doing wrong. Man could not have had the power of being sublimely great and happy, without the liability to become degraded and miserable. In order to do good, he must have been made at liberty to do evil; and that he might feel the glorious satisfaction of doing right, it was necessary that he should have the dangerous faculty of doing wrong.

God has done His best for man and the world. Could He have done better, He doubtless would; and the world and mankind, in their present stage of progress, are just as far along, and just as well off, as God could possibly have them. Man and the earth are full of present discords, but just as full of the possible harmonies of the future.

It is our work now to study carefully the nature of this complex and wonderful being, man; to see wherein he has strayed from nature; with what results; and how these evils are to be remedied by a return to the path of physical and moral rectitude.

These are one. All the laws of nature, which are the laws of God, are in harmony, and discord is the only sin.

When we examine the structure of this animal, man,

we find it more complicated in its details, more numerous in its parts, more exquisite in its formation, and more admirable in its adaptations, than any of the wonders of nature around us. We must compare man with other organized beings—with vegetables, and other animals—to do full justice to the wisdom and beneficence displayed in his structure, functions, and capabilities for happiness.

Happiness, enjoyment, pleasure, or whatever word may express to us the natural and harmonious action and gratification of the human passions, appears to be the single end or final cause of creation. We are unable to conceive of any other motive. Every faculty is for use, every organ to perform its function, and every function gives, or in some way contributes, to enjoyment. Nothing is made in vain. Every thing in man and out of him, is the result of infinite wisdom, joined to an infinite love; and therefore all tends to one single purpose, the greatest possible happiness of all beings.

We are to study the organization of man, therefore, with a constant reference to its adaptation to happy uses; and we shall find that he has no organ, structure, or tissue, which is not marked with the design of a great artist, who had a special and benevolent motive in making man, and the wisdom and power to accomplish that design. In this study, we can not go one step without faith in God, and an acceptance of His manifestation to our consciousness. This manifestation is nature. I say nothing of any other revelation, because I do not wish to touch in this work upon any disputed questions. Every one must accept what commends itself to his reason as true, or in harmony with his conscious being.

CHAPTER III.

OF THE DIVISIONS OF THE HUMAN BODY.

THE human body, viewed outwardly, is composed of a head, neck, trunk, two superior extremities, and two inferior, with some smaller appendages. Standing before you, a line down the center divides it into two equal and symmetrical portions. This is the case with the body, as a whole, but is not the fact respecting the internal organs, which are not symmetrical, or can not be divided into two equal halves. But the bones are either symmetrical, or in pairs, and so are all the muscles of the system of voluntary and instinctive motion.

The trunk is divided into three cavities : the upper, chest or thorax ; the middle, abdomen ; and the lower, the pelvis. The thorax contains the heart and lungs ; the abdomen contains the stomach, intestines, liver, spleen, pancreas, kidneys ; the pelvis contains the bladder, rectum, the ovaries, uterus, and vagina, in women, and the seminal vesicles and prostate gland in men. In the latter, the most important generative organs are external.

The head is divided into two parts ; the face, which forms a small angle of its anterior inferior portion, and the cranium, an oval box of bone, filled with the brain, a prolongation of which extends about three fourths of

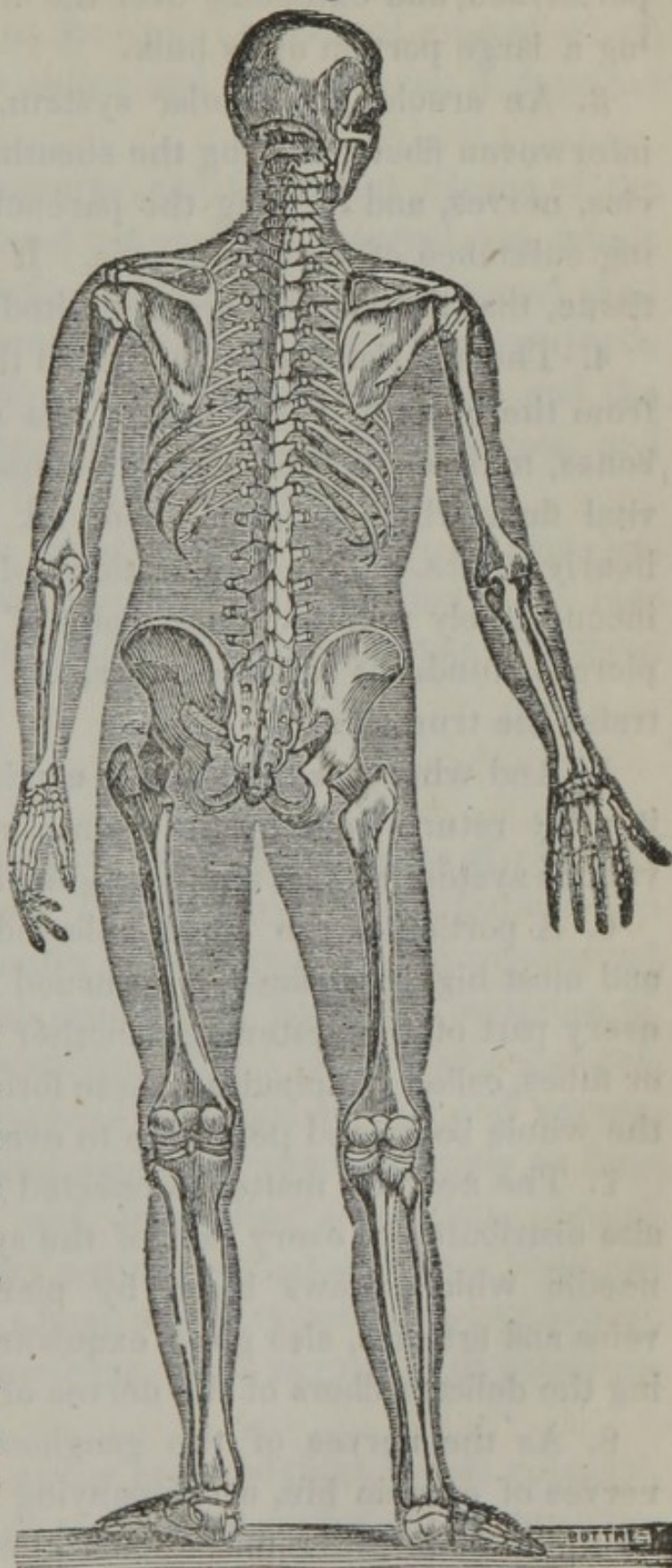
the length of the back-bone, or vertebral column, and branches or fibers from which are sent off to every part of the body.

The whole body is made up of several systems of organs or tissues, which enter into every part of its structure. Thus we have—

1. A bony skeleton, or framework of two hundred and forty bones, with their cartilages and ligaments, giving it form, solidity, and power of motion.

2. A muscular system, consisting of four hundred muscles, with their tendons, by which all motions are

Fig. 1.



RELATION OF BONES TO BULK.

performed, and extending over the whole system, making a large portion of its bulk.

3. An areolar or cellular system, composed of fine interwoven fibers, making the sheaths of vessels, muscles, nerves, and forming the parenchyma, or connecting substance of various organs. It is in, or upon this tissue, that the fat cells are deposited.

4. The arterial system, by which the blood is carried from the heart to every part of the system, supplying bones, muscles, nerves, skin, membrane, etc., with the vital fluid which sustains them all, and repairs their hourly waste. The ramifications of the arteries are inconceivably minute. The point of the finest needle pierces hundreds of blood-tubes, the moment it penetrates the true skin.

5. And wherever the blood is carried by the arteries, it must return from by the veins; so that we have a venous system as vast and pervading as the arterial.

6. A portion of the blood, believed to be the finest and most highly vitalized, is returned to the heart, from every part of the system, by another system of vessels, or tubes, called lymphatics; these form a net-work over the whole body, and penetrate to every part of it.

7. The nervous matter connected with the brain, is also distributed to every part of the system, so that the needle which draws blood by piercing microscopic veins and arteries, also gives exquisite pain, by wounding the delicate fibers of the nerves of sensation.

8. As the nerves of the ganglionic system, called nerves of organic life, accompanying the blood-vessels in their minutest ramifications, these nerves must equally pervade the whole organization.

Here, then, we have eight pervading systems, each of which extends to the entire body, and most of which would preserve its entire and perfect form, if deprived of all the others.

Among the extensive and important tissues of the human body, we must not omit the external skin, which lines the whole surface of the body ; the internal skin, or mucous membrane, which lines its interior parts, which are connected with external apertures ; and the serous membranes, which line the shut cavities, and are folded around the most important organs.

All these tissues and organs we must briefly consider, leaving ordinary and unimportant particulars to the elementary works, in which the student may find them fully described.

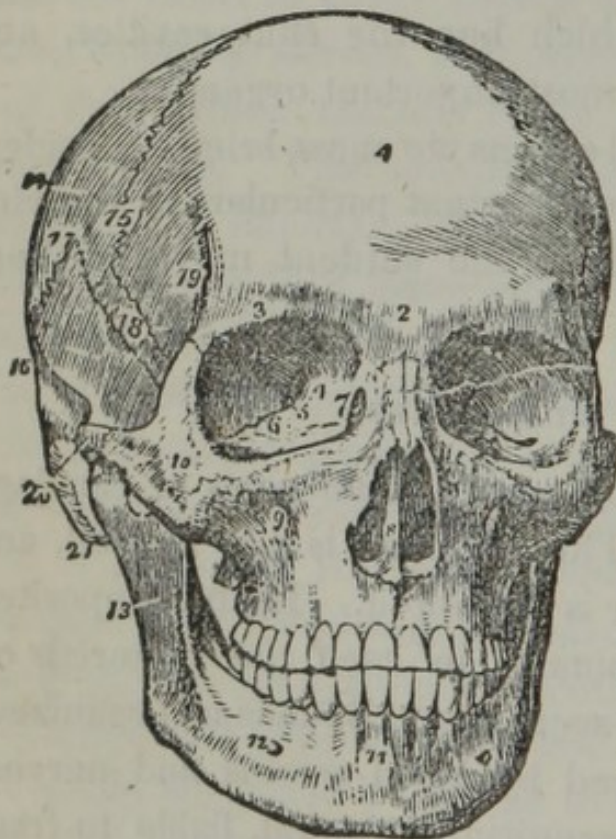
OF THE BONES.

Bone is composed of nearly equal parts of cartilage and earthy matter. The cartilage is first formed, and then the earthy matter is deposited. Each is deposited by the blood, which contains in itself the materials of every tissue and every secretion. Bone is an organized, living structure, pierced by blood-vessels and nerves, subject to waste, and requiring renewal, liable to fracture and disease, and demanding reparation. Seemingly solid, it is very porous, so that a piece of bone has been compared to a heap of empty boxes, thrown loosely together. It is, however, more regular in its construction.

Bones are long, as the arm and thigh bones ; cuboidal, as those of the wrist and instep ; or flat, as the shoulder-blade and skull bones. They are joined closely and

immovably, by sutures, or a sort of dove-tailing; by symphysis, as in cartilaginous joinings; or by movable joints, as those of the shoulder and hip. There are ball and socket-joints, allowing the bone to be moved in all directions, while the elbow, knee, ankle, and other joints are called hinge-joints, allowing only of the simple movements of flexion and extension.

Fig. 2.



FRONT VIEW OF THE SKULL.

1. The frontal portion of the frontal bone. 2. Nasal tuberosity. 3. Supra-orbital ridge. 4. Optic foramen. 5. A fissure, called sphenoidal. 6. Another fissure, called sphenomaxillary. 7. The lachrymal fossa. 8. Opening of the anterior nares, the vomer in the center, on which the figure is placed. 9. Infra-orbital foramen. 10. Malar bone. 11. Symphysis, or point of union of the lower jaw. 12. Mental foramen. 13. Ramus of the lower jaw. 14. Parietal bone. 15. Coronal suture. 16. Temporal bone. 17. Squamous suture. 18. Upper part, or greater wings, of sphenoid bone. 19. Commencement of temporal ridge. 20. Zygoma of temporal bone, forming

with the malar, the zygomatic arch, under which is the zygomatic fossa. 21. The mastoid process.

The ends of the bones have a covering of cartilage, and the joints are firmly bound together, and curiously strengthened by ligaments. If the best artist or mechanic in the world were to exert his ingenuity a thousand years, he could discover no better method of

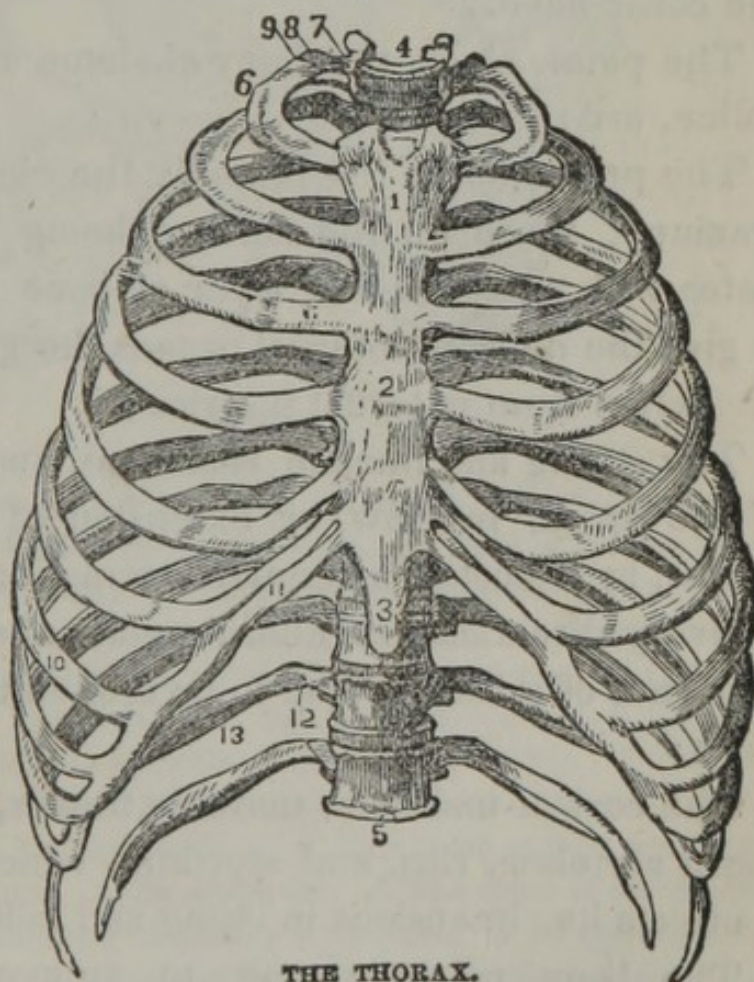
making a skeleton. Had there been any better way of constructing any part of it, God would have chosen that way.

The bony structure of the head is very complicated. There are eight bones in the cranium, and fourteen in the face. The former are mostly flat, and inclose the brain, to which they offer an admirable protection; the latter are of various irregular shapes, forming the nose, jaws, orbit of the eye, roof of the mouth, etc.

An anterior view of the thorax. 1. The manubrium. 2. Body. 3. Ensi-form cartilage. 4. First dorsal vertebra. 5. Last dorsal vertebra. 6. First rib. 7. Head of first rib. 8. Its neck. 9. Its tubercle. 10. Seventh rib. 11. Costal cartilages of the ribs. 12. Last two false ribs. 13. The groove along the lower border of each rib.

The head rests on the spinal column, which is com-

Fig. 3.



THE THORAX.

posed of seven cervical, or neck vertebra, twelve dorsal, or back, and five lumbar, or those of the lower part of the back. This column, which increases in size from above downward, rests, at its base, upon the sacrum, a

wedge-like bone which forms the keystone of an arch, made by the bones of the pelvis, which, in their turn, rest upon the thigh-bones, and these again on the bones of the legs and feet. Twelve ribs on each side are attached to the dorsal vertebra; these curve round in front, and by cartilaginous connections with the sternum, or breast-bone, form the bony case of the thorax, and protect the heart and lungs. The arms are joined to the body loosely, by means of movable shoulder-blades, which are kept in place by muscles, and by means of the collar-bone.

The points about the bony skeleton most worthy of notice, are :

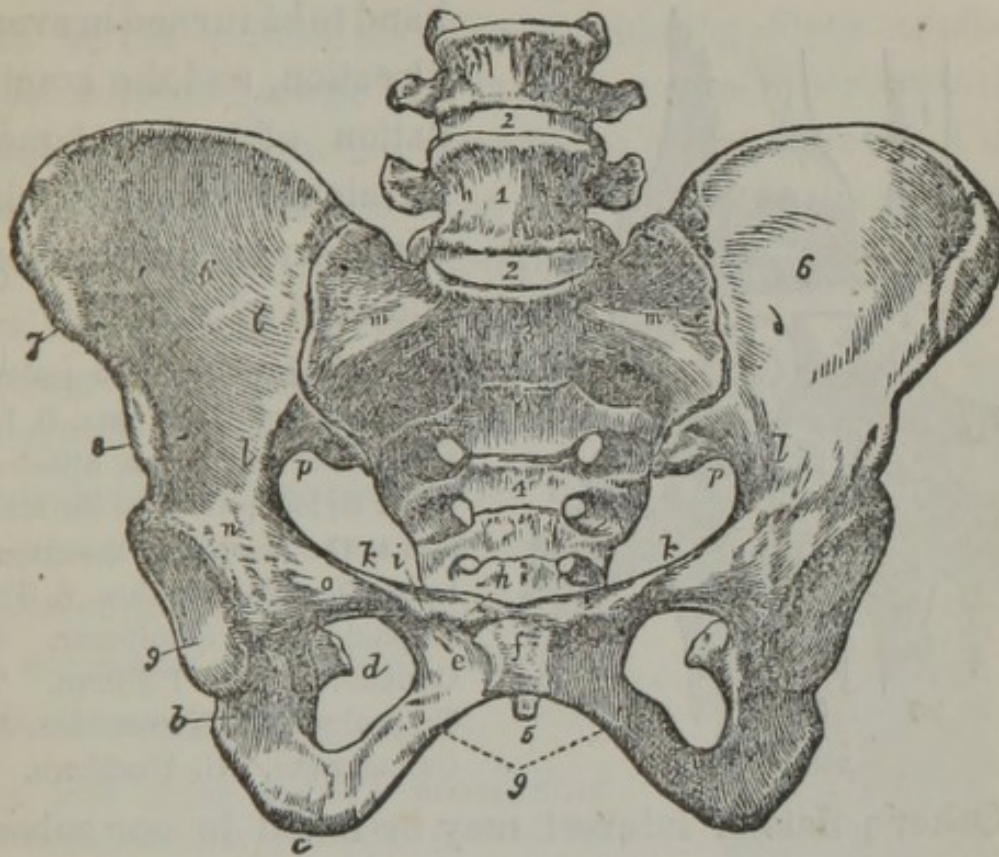
The protection of the brain by the eight bones of the cranium; those on the surface being formed of two plates with a sponge-like layer of bone between, so as to give the delicate internal organs the greatest possible protection from external injuries;

The strong and flexible backbone, and its protection of the spinal marrow, or extension of the brain; so formed as to sustain an immense weight; to bend easily in every direction; to afford points of attachment for hundreds of muscles; and to be broken with great difficulty;

The coat-of-mail-like, movable thorax, formed of the dorsal vertebræ, ribs, and sternum, which expands and contracts its dimensions in rising and falling;

The bony pelvis, strong, to support the weight of the body, and so formed as to sustain and protect the contents of the pelvis; and in the female, larger than in the male, to allow of the birth of a full-grown foetus;

Fig. 4.

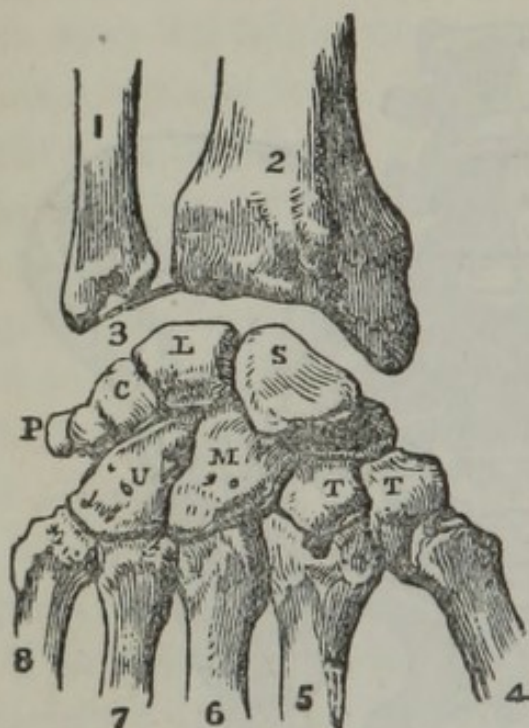


PELVIS.

Front view of a female pelvis, which is broader, its cavity more shallow, and the bones lighter than in the male. 1. The last lumbar vertebra. 2, 2. The intervertebral substance connecting the last lumbar vertebra with the fourth and sacrum. 3. Promontory of the sacrum. 4. Anterior surface of the sacrum, on which the transverse lines and foramina are seen. 5. Lower point or tip of the coccyx. 6, 6. The iliac fossæ, forming the lateral boundaries of the false pelvis. 7. Anterior superior spinous process of the ilium—left side. 8. Anterior inferior spinous process. 9. The acetabulum. *a*. The notch of the acetabulum. *b*. Body of the ischium. *c*. Its tuberosity. *d*. The spine of the ischium seen through the obturator foramen. *e*. Os pubis. *f*. Symphysis pubis. *g*. Arch of the pubis. *h*. Angle of the os pubis. *i*. Spine of the pubes; the prominent ridge between *h* and *i* is the crest of the pubes. *k, k*. Pectineal line of the pubes. *l, l*. The ilio-pectineal line. *m, m*, its prolongation to the promontory of the sacrum. The brim of the true pelvis is represented by the line *h, i, k, k, l, l, m, m*. *n*. The ilio-pectineal eminence. *o*. The smooth surface which supports the femoral vessels. *p, p*. The great sacro-ischiatic notch.

The rolling articulations of the two bones of the

Fig. 26



THE CARPUS.

forearm, allowing the hand to be turned in every direction, and the combination of small bones, forming the flexible joint of the wrist, and the flexible arch of the foot.

1. Lower end of the radius. 2. Lower end of the ulna. 3. Interarticular cartilages, attached to the styloid process of the ulna, and to the margin of the articular surface of the radius. S. The scaphoid. L. Semilunar. C. Cuneiform. P. Pisiform. T. Trapezium. T. Trapezoides. M. Os magnum. U. Unciform.

Other points of interest may be noted in our subsequent observations.

The bones are soft and flexible in infancy, hard and brittle in old age. When broken, they are usually repaired in five or six weeks by the deposition of new bony matter from the blood. But where pieces are taken from the skull, they are replaced by dense membrane; and under the capsular ligament, at the hip joint, and in states of disease, they often refuse to unite.

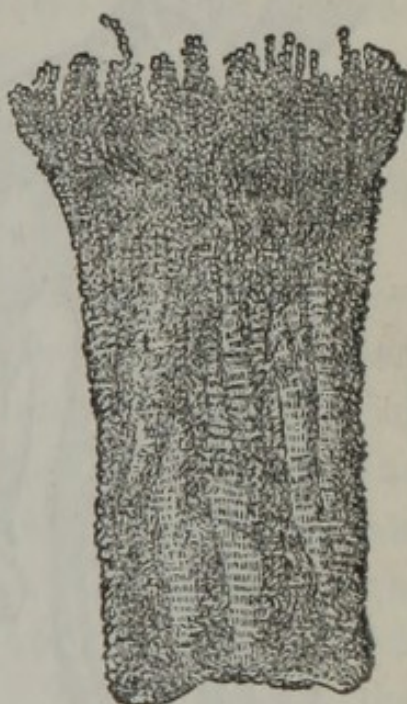
OF THE MUSCLES.

A muscle is a bundle of very minute fibers, each contained in a separate sheath, and each having the property of contracting under the nervous or other similar stimulus. As the whole muscle contracts, by the contraction of its fibers, contracting in its length, and ex-

panding in its circumference, it draws the parts to which it is attached together with a power in proportion to the size of the muscle and the stimulating force applied. The nervous power has, in fact, more to do with the force exerted than the strength of the muscle ; and the force of contraction is often much greater than its own power of cohesion. I compare the contraction or drawing together of the particles or disks, of which the ultimate fibers of a muscle are composed, under the nervous influence, to the development of the magnetic attraction in pieces of iron under the galvanic current.

A view of the fascicular arrangement of the fibers of a voluntary muscle, the fibers separating at the end into brush-like bundles of fibrillæ. The disk-like formation, of which each ultimate fiber is composed, is also exhibited. Very highly magnified.

Fig. 6



The sheaths of the muscular fibers seem to unite together, to form the tendons by which they act on distant parts, when compactness is wanted for use and beauty, as in the wrist and ankle.

The head alone has seventy-seven muscles. There are eight for the eyes and eyelids. The eyeball has four straight muscles, one above, below, and on each side, and two oblique, to give it a rolling motion. One of these, before it is attached to the eye, passes through a pulley, to change the direction of its action. There are eight muscles for the lips, eight for the jaw, eleven

for the tongue, seventeen for the motions of the head and neck ; and it is by the variously combined action of

Fig. 7.



MUSCULAR SYSTEM.

contracts four times as often, during the same period. The whole body of man, in all its parts and organs, is,

these that we have all our movements and expressions. There are seventeen muscles for the movements of the chest, abdomen, and loins. These perform, among others, the important function of respiration. The cavity of the chest is enlarged some eighteen times a minute, by raising the ribs and sternum, and still more by straightening or drawing down the diaphragm, or muscular separation between the thorax and abdomen. When this is done, the air rushes into the lungs, to prevent the vacuum that would otherwise be formed. Next, the three sheets of abdominal muscles contract, force up the diaphragm, draw down the ribs, and forcibly expel the air : and this action is kept up, night and day, sleeping and waking, from the moment of birth till death ; while the heart, a muscular organ,

during all this time, the scene of various but constant action.

Muscles are voluntary and involuntary, or both; conscious and unconscious. We have no direct control over the heart, or the muscular fibers of the stomach, intestines, bladder, uterus. We can govern somewhat those of respiration. The muscles of deglutition are involuntary, mostly, perhaps entirely. When a morsel of food is pressed back by the tongue beyond the fauces, it is seized, and by a series of involuntary contractions, carried slowly through the whole extent of the alimentary canal.

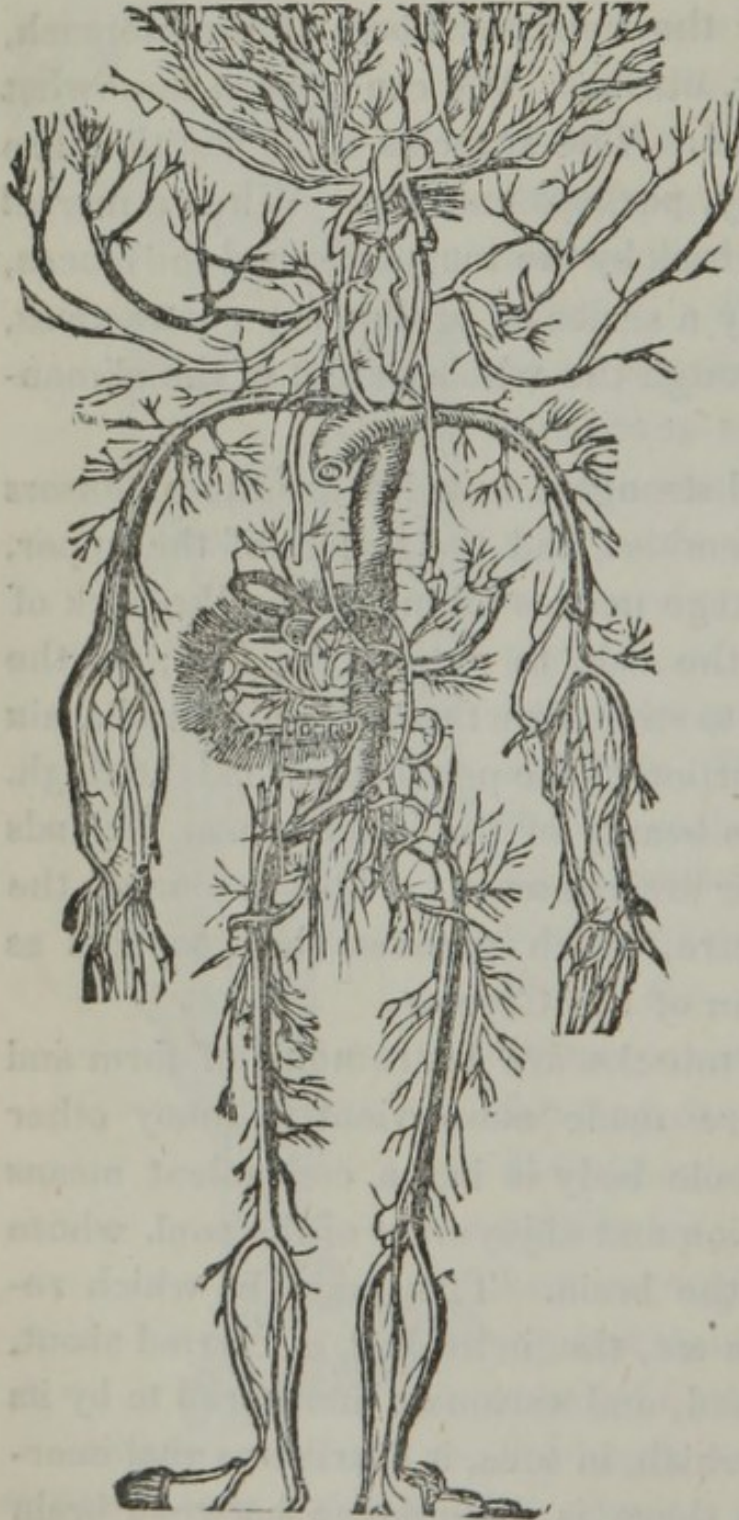
The largest and strongest muscles are the extensors of the lower extremities, and the flexors of the upper. Thus we have large masses of muscle on the back of the leg, forming the calf, to extend the foot; on the front of the thigh, to straighten the knee-joint, and again on the posterior portion of the pelvis, to extend the thigh. How much of the beauty of the human form depends upon this muscular arrangement! This is one of the harmonies of nature, which manifest the goodness as well as the wisdom of the Creator.

The bones and muscles are instruments of form and locomotion, but are made subservient to many other uses; and the whole body is but a convenient means for the manifestation and enjoyment of the soul, whose especial organ is the brain. This brain, in which resides the conscious ME, the individual, is carried about, protected, nourished, and variously ministered to by its bodily organs, to which, in turn, it distributes vital energies. In disease, there is discordance between brain and body—in insanity, the discord is in the brain.

OF THE BLOOD-VESSELS.

The necessity for the constant nourishment of the

Fig. 8.



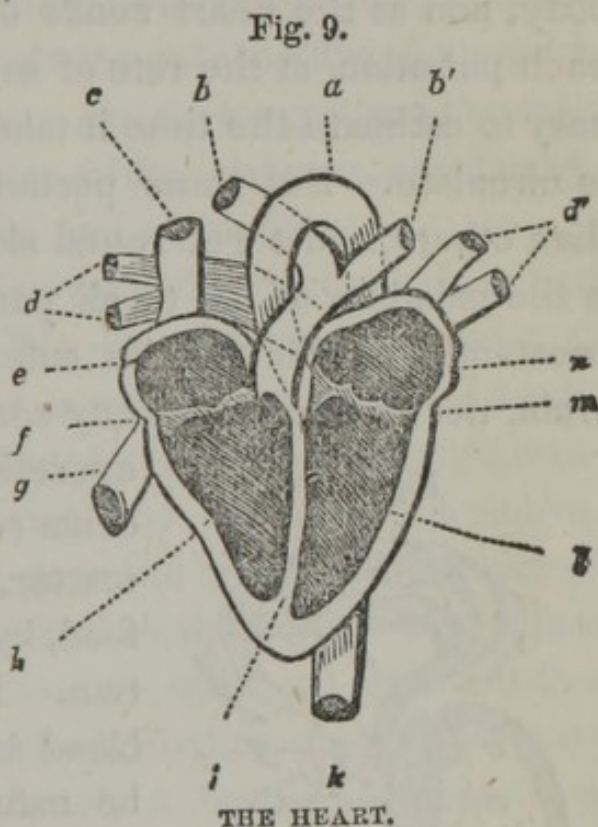
ARTERIAL SYSTEM.

whole body, growing out of a constant waste of matter by its perpetual activity, makes needful a vast system of tubes by which the blood may be carried everywhere, and returned again to the center of circulation. Of the nature of the blood and its changes, we will speak further on. At present, let us look simply at the mechanical arrangements for its distribution, and return.

We have first, in the center of the thorax, a heart, consisting of two parts, right and left,

each having two cavities, an auricle and ventricle. The heart is simply two force-pumps, joined together for convenience. In some of the lower animals, as fishes, there is but a single pump—in reptiles, there are three chambers. Each pump is furnished with beautiful valves, which allow the current of blood to go on, but prevent its return. These valves work constantly for more than a hundred years, in some cases, without getting out of order.

Ideal section of mammalian heart. *a*, arch of aorta; *b*, *b'*, pulmonary arteries; *c*, superior vena cava; *d*, *d'*, pulmonary veins; *e*, right auricle; *f*, tricuspid valves; *g*, inferior vena cava; *h*, right ventricle; *i*, septum ventriculorum; *k*, descending aorta; *l*, left ventricle; *m*, mitral valve; *n*, left auricle.



Now, this is the course of the circulation. The blood, as it comes from all parts of the system, by the veins, is received into the right auricle, or receptacle, of the heart, from which, by a muscular contraction, it is sent into the right ventricle. The right ventricle contracts, and throws the blood it contains, through the pulmonary artery, into the lungs, where it is purified and changed in its color and qualities. This is the action of the right pump. The blood now goes back by the pulmonary veins to the *left* auricle, thence into the left ventricle; which, contracting, forces it into the great aorta, and so

on over the whole body. These two pumps act together. Two auricles contract, then the two ventricles; one pump supplies the lungs, and one the whole body. The right, or lung pump, receives the blood from the body; the left, or body pump, receives it from the lungs.

As there are about twenty-five pounds of blood in the body, and as the heart sends on about two ounces at each pulsation, at the rate of say seventy a minute, it is easy to estimate the time it takes for the whole quantity to circulate. But some portions, having farther to go than others, must get round slower. The living blood is the pabulum of life to all parts of the system. It is constantly distributing its substance to bone, muscle, brain, nerve, etc., constantly sending off secretions and

Fig. 10.



CIRCULATION.

excretions, and it must also receive regularly new supplies of matter, prepared from our food, by the processes of digestion. How important that this blood be pure! that our food be natural, and our digestion well performed! Let the poor dyspeptic think of this!

Ideal view of the course of the circulation. *a*, incloses the four chambers of the heart; *b*, veins bringing dark blood to *c*, right auricle; *d*, right ventricle; *e*, pulmonary artery; *f*, beginning of pulmonary vein conveying the arterialized blood to *g*, left auricle; *h*, left ventricle; *i*, arteries. The arrows show the direction of the current.

From the great aorta which curves over the heart,

and then passes down, near the spine, go off branches to the head and brain, the arms, the internal organs, the lower extremities—in a word, to every portion of the body. These branch off, finer and finer, until at last we come to a system of capillaries, or hair-like tubes, of such extreme minuteness, that they can only be seen by microscopes of the highest powers—so fine, that the red globules of blood, which are only the five thousandth part of an inch in diameter, can no longer pass through them, and only the smaller white globules, and finally, the liquid serum alone can find admission.

By this means, blood is everywhere supplied, in just the quantity required. We have it when we want it, where we want it, and as much as we want. In sensitive and active organs, there are many and large arteries, and abundant capillaries, and the supply is active. Thus, four large arteries go to the brain, which receives a large portion of all the blood in the body. But this is not all. Here, at this point, we must call attention to a fact of deepest import, which further on will be more fully illustrated. The heart, a beautiful mechanical contrivance—the most perfect of forcing-pumps—can only send the blood, with a certain force, estimated at fifty pounds, into the main artery. It can not influence the distribution to one of its branches. It can send it faster or slower, and with more force or less; but this is all. It can not send blood where it is specially wanted. It can not send it one hour to the brain, producing active thought and vivid emotions, and the next hour to the stomach, to aid in digestion, and the next to the organs of generation, producing the most vivid emotions of desire, and sensations of pleasure. The heart does

not direct the blood to the pregnant uterus, to nourish the growing germ, nor to the broken leg, to furnish an extra supply of bony matter.

For all this, some other power is needed ; a power guided by intelligence, a power which resides in the nervous system, and which is intimately related to the hidden principle of life. Who can comprehend this power, which resides in vegetables, in all animals, and supremely in man ? Later, I shall have much to say respecting this power and its manifestations.

OF THE VEINS.

As the blood is sent, with a vigorous impetus, from the left ventricle of the heart, through a system of dense, tough, cylindrical tubes, called arteries, over the whole body, by the branchings and ramifications of these vessels, and the networks, or anastamosis, they everywhere form with each other, until the great branching tree or vine expands to millions of twigs and hair-line tubes of microscopic fineness ; so, in order that this same blood may be carried back to the heart, there must be other sets of minute tubes, venous radicles, gradually uniting and enlarging, until the blood is poured through two great tubes, ascending and descending into the right auricle. Both arteries and veins have the power of expansion and contraction, and do expand to accommodate unusual quantities of blood, and do contract, to force their contents onward to their destination. The large veins generally follow the course of the arteries. In many parts, there are two veins accompanying one artery ; but there are also many veins which are external, lying directly beneath the skin,

and they are so distributed over the surface, as I believe, that the venous blood may have the influence of air and light. The larger veins in the lower extremities are provided with numerous valves, to prevent the blood being forced back upon the capillaries, by its own weight, or by muscular pressure.

The blood is forced back to the heart through the veins, by capillary action, and not by the pressure of the heart; and this action continues after the heart has ceased to act, so that the arteries are commonly found entirely emptied of blood, and filled with air, while all the blood in the body is found in the distended veins. This proves that the action of the heart has no more to do with the circulation of the blood than to throw it within reach of the capillaries, which have a circulating power of their own. In fact, trees and all plants circulate their juices without a heart, and so do many of the lower orders of animals.

OF THE LYMPHATICS.

Diffused over the whole body, and penetrating all its organs, is a third set of tubes, small, transparent, furnished with valves at short intervals, and, what is peculiar, entering and emerging from little knots, or ganglia, or glands, which are scattered over the body, but which are found, in large numbers, on the sides of the neck, in the armpits, the groins, and upon the mesenteric folds of the intestines. These tubes convey white blood, or lymph, from every part of the system to the descending vena cava, where it mixes with the current of venous blood, returning to the heart.

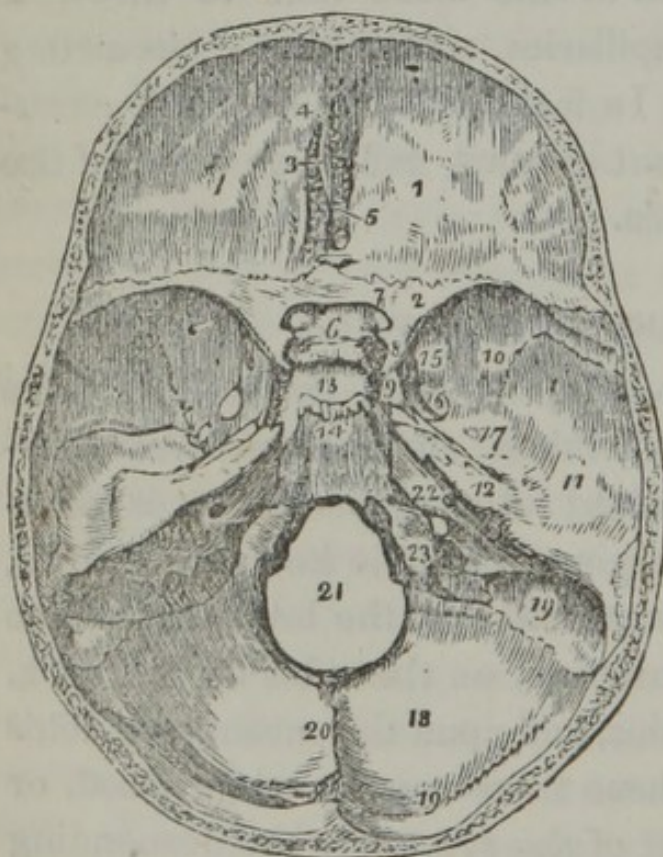
But the lymphatics of the intestines are called lac-

teals, and convey a portion of the nutriment elaborated by digestion, through the thoracic duct, to the same destination. The anatomy of these vessels has been but lately understood, and their physiology is yet but little known. Of these lymphatic glands, I shall speak further, when treating of the glandular system.

OF THE BRAIN AND NERVES.

The hollow of the skull, from the top of the head down to a line formed by the base of the orbit of the eye, the opening of the ear, and the top of the back of

Fig. 11.



INNER BASE OF THE SKULL.

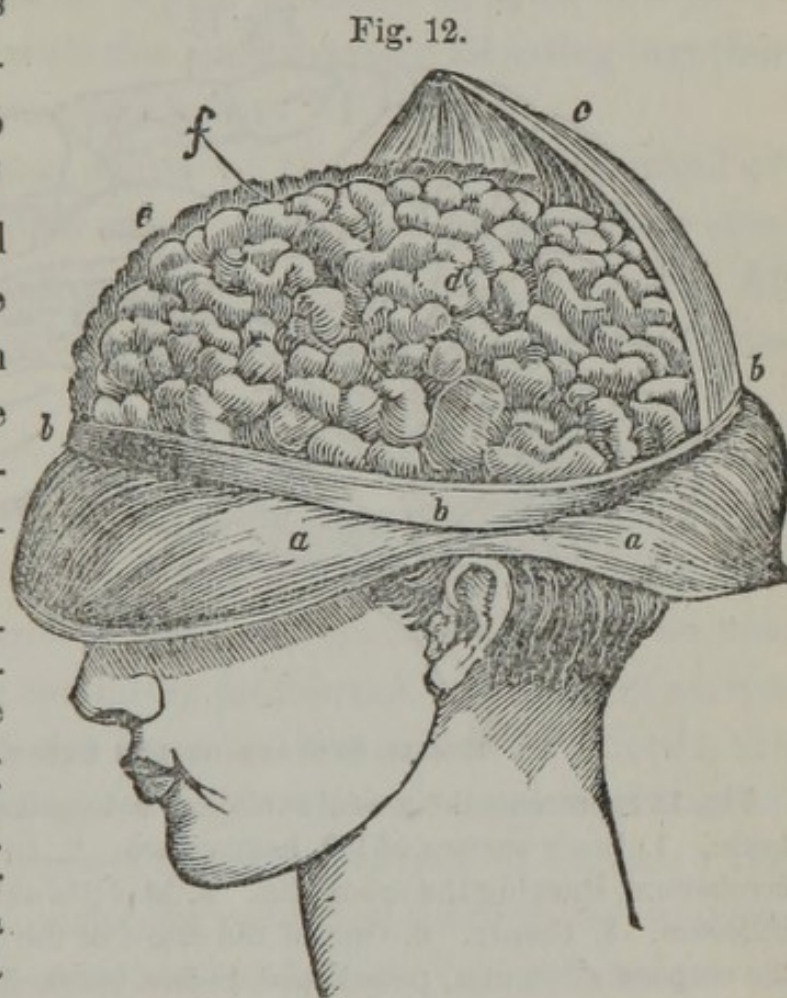
1, 1. Frontal space filled by the anterior lobes of the brain. 5. Cribriform plate of the ethmoid bone for the passage of the olfactory nerves. On each side of 6 are the passages of the optic nerves. 13, 14. Body of sphenoid bone, on each side of which are the middle lobes. 21. Foramen magnum, or opening for spinal cord, below which are the lobes of the cerebellum.

the neck, and in its entire breadth, is completely filled with a pulpy mass,

grey without, and of a pearly white within, called the brain, or encephalon. It is divided into a large anterior

and superior portion, the cerebrum, and a smaller posterior and inferior portion, called the cerebellum; in the center, between these, a prolongation of the brain, containing fibers from both, passes down into the hollow of the vertebral column. The portion within the skull is the medulla oblongata; the re-

The external surface of the cerebrum. *a, a*. The scalp turned down. *b, b*. Cut edges of the skull bones. 3. The dura mater suspended by a hook. 4. The left hemisphere.



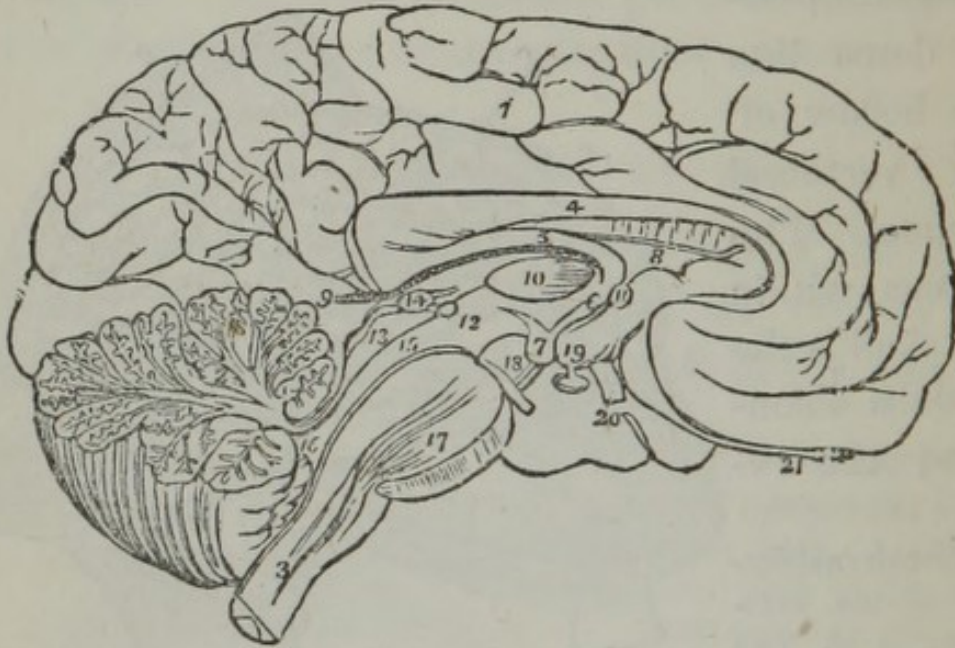
THE BRAIN EXPOSED.

mainder is the spinal cord. It is about half an inch in diameter, and, like the brain, is composed of both grey and white matter, and its different parts have distinct functions. Brain and spinal cord are divided into two equal halves by the median line, so that all its organs and nerves are in pairs, and one side may be diseased or paralyzed, while the other is healthy and active.

The cerebrum is believed to be the organ of sensation, thought, and most of the sentiments and propen-

sities or passions. The cerebellum seems to preside over muscular motion and the generative function. The propensities or instincts, which we possess in common

Fig. 13.



MESIAL SURFACE OF THE BRAIN.

Fig. 13 represents the mesial surface of a longitudinal section of the brain. 1. Inner surface of left hemisphere. 2. Divided center of the cerebellum, showing the arbor vitæ. 3. Medulla oblongata. 4. Corpus callosum. 5. Fornix. 6. One of the crura of the fornix. 7. One of the corpora albicantia, pea-shaped bodies between the crura cerebri. 8. Septum lucidum. 9. Velum interpositum. 10. Section of the middle commissure in the third ventricle. 11. Section of the anterior commissure. 12. Section of the posterior commissure. 13. Corpora quadrigemina. 14. Pineal gland. 15. Aqueduct of Sylvius. 16. Fourth ventricle. 17. Pons varolii, through which are seen passing the diverging fibers of the corpora pyramidalia. 18. Crus cerebri of the left side; the third nerve arising from it. 19. Tuber cinereum, from which projects the infundibulum, having the pituitary gland appended to its extremity. 20. One of the optic nerves. 21. The left olfactory nerve terminating anteriorly in a rounded bulb. Those who are curious in anatomical and meaningless barbarisms, will find more in the books.

with the lower animals, are found in the lower portion of the brain; the higher faculties, and those peculiar

to man, are found in the upper portion. Generally the forehead is intellectual; the top of the head, moral and religious; the side, worldly; the lower, passional and selfish. The lower organs connect us with the physical, the higher with the spiritual; and all acting together make up a harmonious being.

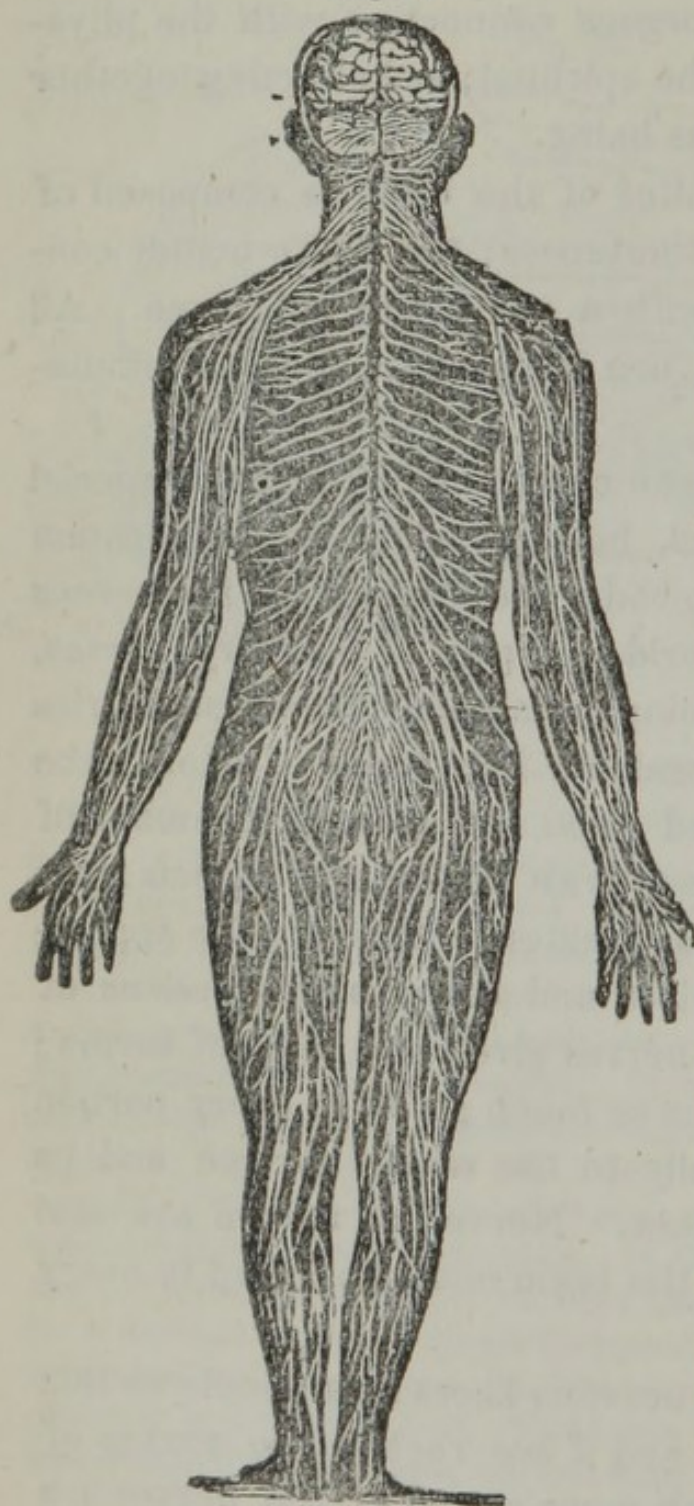
The outer grey matter of the brain is composed of cells of microscopic minuteness; the white matter consists of tubes, filled with a still softer substance. All these cells, tubes, etc., are of incomprehensible minuteness.

The brain, as the true center of life, and the special residence of the soul, holds constant communication with every part of the body, and through the five senses with the external world. A pair of olfactory nerves, distributed over the lining membrane of the nose, carries to the center of the brain an impression of odors; the optic nerves, expanded upon the internal chamber of the eye, are impressed with pictures of objects; the auditory nerve, curiously extended through the apparatus of hearing, receives and conveys impressions of sound; the gustatory nerves give us all ideas of savors; and nerves of sensation or touch go off to every portion of the body, especially to the whole surface and its more sensitive portions. Nerves of motion are also sent off in pairs from the brain and spinal cord to every muscle in the body.

The distribution of nervous fibers is as minute as that of the blood-vessels; and if we reckon the nerves of organic life, it is much more so. Yet the nerves are everywhere nourished by the blood, as the blood is everywhere controlled by the nerves. Blood is formed

under the nervous influence, and nerve matter is continually furnished by the blood. Which is first? If

Fig. 14.



NERVOUS SYSTEM.

either, it is the highest, the nerve. The spinal cord is the first part seen; the brain expands at the end of the spinal cord.

I hold that spinal cord, and brain, and blood are formed under the influence of nerve matter belonging to the system of nerves of organic life, called the ganglionic or sympathetic system. When I have given a general outline of anatomy, so that all parts and their relations may be better understood, I will give my ideas on all these problems, giving facts, as far as facts are known, and then drawing what seem to me to be rea-

sonable and harmonious deductions. For any deduc-

tion in science to be true must not agree merely with one or two facts, but with every fact in nature. There must be harmony through the whole scale.

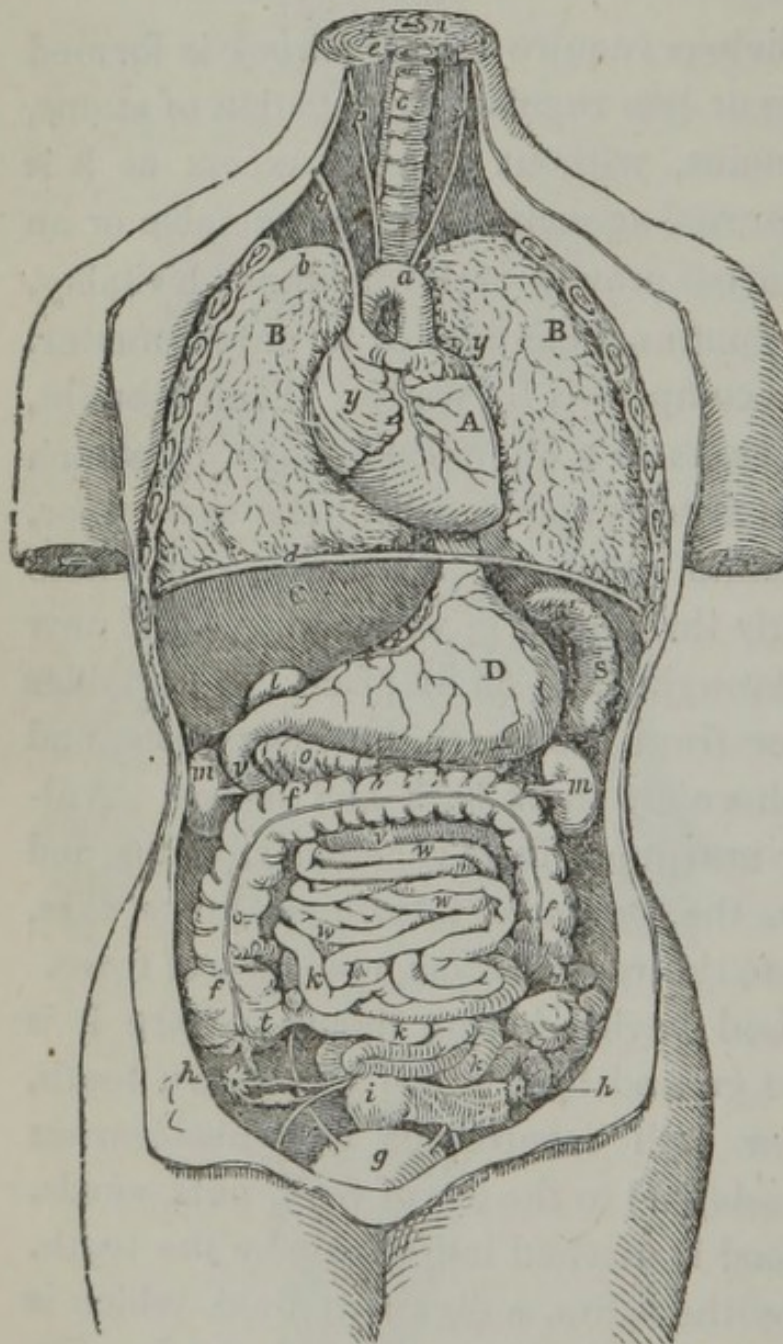
OF THE ORGANS OF DIGESTION.

All organized beings require food. A rock is formed by a simple, more or less regular, aggregation of atoms, and there it remains, without change, except as it is acted upon by external agencies. But a vegetable or an animal has an internal growth or development, a vitality, and is subject to continual changes of form and matter. Every action is accompanied by waste. Each thought, each motion, necessitates a chemical change, by which matter is made unfit to remain longer in the system, or, at least, in the same relations. The waste or effete matter is constantly thrown off in various ways, and new matter must be brought in to fill its place. Vegetables gather this matter from the earth, by their roots, and from the atmosphere by their bark and leaves. Animals obtain their nutriment from vegetables, water, and air. In animals, the stomach, intestines, lungs, skin, etc., correspond to the roots, leaves, and bark of trees.

Digestion of food begins in the mouth, where it is cut, crushed, and ground by a set of thirty-two teeth, which differ from both carnivorous and herbivorous animals, and are adapted to the use of fruit, nuts, seeds, and roots. As food is mashed into a pulp by the teeth, it is moistened by the saliva, a digestive fluid, which is secreted from the blood by three sets of glands—the parotid, around the ear; the submaxillary, beneath the angle of the jaw; and the sublingual, under the tongue. When the food is sufficiently mashed and moistened, as

it always should be, and mixed with the saliva, which is very necessary to its proper digestion, it is pressed back by the tongue into the pharynx, a membranous

Fig. 15.



VITAL SYSTEM.

A. Heart. B, B. Lungs. C. Liver. D. Stomach. E. Spleen. *m, m.* Kidneys. *g.* Bladder. *d* is the diaphragm which forms the partition between the thorax and abdomen. Under the latter is the cardiac orifice of the stomach, and at the right extremity, or pit of the stomach, is the pyloric orifice, below are the large and small intestines. *i.* Uterus. *h, h.* Ovaries. *g.* Bladder.

and muscular pouch, which forms the upper part of the throat. The opening of the windpipe is closed by a valve, over which the food

passes in safety, and the contractions of the pharynx, and the esophagus, as the narrower portion of the tube

is called, force it down through the thorax into the stomach, which is an expansion of this tube, lying a little to the left, below the diaphragm.

When the food has been acted upon by the gastric juice, which is secreted by the glands of the stomach, and has been rolled about and churned by the contraction of its muscular coats, a portion of it already prepared to enter the circulation, is absorbed by the veins, as is the water we drink, alcohol, and other substances, while the remainder passes through the valvular or constricted pyloric orifice into the smaller intestines.

Ten inches in length of the tube below the stomach is called the duodenum. Digestion still goes on, and in this tube, the food, converted into chyme, in the stomach, receives the addition of two important elements—the pancreatic juice, from the pancreas, similar to saliva, and the bile from the liver. These change the chyme into chyle, which is now rapidly taken up by the lacteal absorbents.

We have now some twenty-five feet of small intestine, in all of which several interesting operations are performed. The veins are taking up such matter as can penetrate their coats; the villi, or little nipples, which contain the lacteal vessels, are selecting their matter by a kind of secreting process, which I shall soon describe; while millions of glands, with their follicles, or openings, are pouring out matter, either to aid in the digestive process, or to be cast out of the system. The entire length of the intestinal canal is a vast collection of organs, each performing its own vital function.

The small intestines open, by a valvular orifice, into the beginning of the large intestine, at the lower part

of the right side of the abdomen. Here the contents become fœcal, having the appearance and odor of excrements, which arises from the secretions of glands peculiar to this portion of the intestines. From the cœcum, with which the large intestine begins, we have the ascending colon, passing up on the right side, the transverse colon crossing over, a little above the navel, and the descending colon passing down on the left side, when it turns backward, and becomes the rectum, terminating at the anus, where a strong round muscle keeps a tight grasp of this extremity of the digestive apparatus. Of the matter taken into the mouth, in a healthy state of the digestive organs, very little finds its way out at the anus. The bran of wheat and corn, the skin and seeds of fruit, woody fiber, and other indigestible matter, is mixed with a much larger quantity of excrement, made up of waste matter of the system, poured into this canal by millions of glands, which separate it from the blood. This is evident from the fact that there may be copious evacuations from the bowels day after day, when no food has been taken.

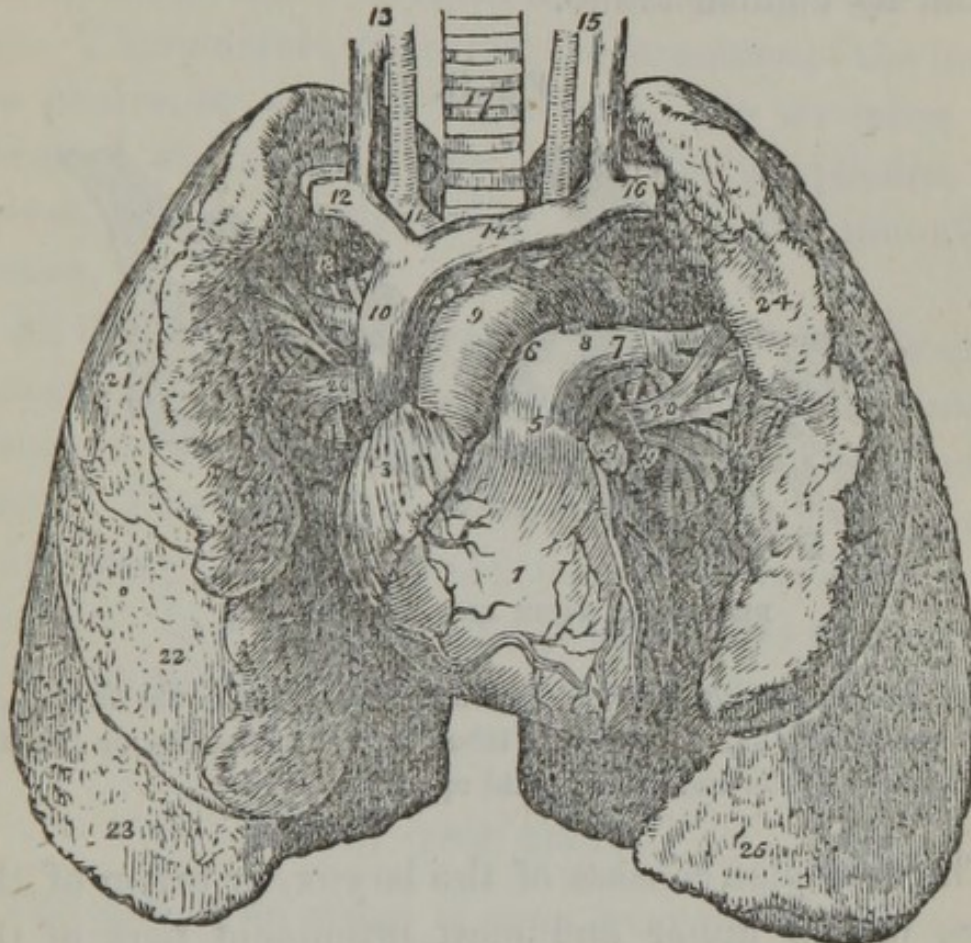
The intestines are everywhere enveloped by a thin, shining, serous membrane, called the peritoneum, which also lines the sides of the abdomen, and covers its viscera; and they are gathered in their length to a kind of ruffle, called, in its different parts, the mesentery, mesocolon, and mesorectum. In the mesentery and mesocolon are found the arteries that supply the intestines, the veins, nerves, lacteals, and lacteal glands.

OF THE LUNGS.

The entire cavity of the thorax, excepting the space

occupied by the heart, large blood-vessels, and esophagus, is completely filled by the lungs, of which there

Fig. 16.

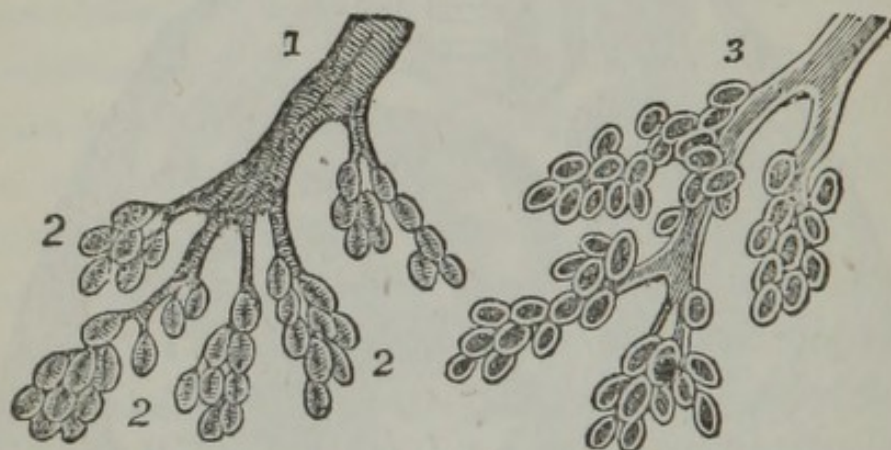


HEART AND LUNGS.

Fig. 16 represents the anterior aspect of the anatomy of the heart and lungs. 1. Right ventricle; the vessels to the left of the number are the middle coronary artery and veins. 2. Left ventricle. 3. Right auricle. 4. Left auricle. 5. Pulmonary artery. 6. Right pulmonary artery. 7. Left pulmonary artery. 8. Remains of the ductus arteriosus. 9. Aortic arch. 10. Superiör cava. 11. Arteria innominata; in front of it is the right vena innominata. 12. Right subclavian vein; behind it is its corresponding artery. 13. Right common carotid artery and vein. 14. Left vena innominata. 15. Left carotid artery and vein. 16. Left subclavian artery and vein. 17. Trachea. 18. Right bronchus. 19. Left bronchus. 20, 20. Pulmonary veins; 18, 20, from the root of the right lung; and 7, 19, 20, the root of the left. 21. Upper lobe of right lung. 22. Its middle lobe. 23. Its inferior lobe. 24. Superior lobe of left lung. 25. Its lower lobe.

are two. They are of nearly the same structure in birds and mammalia as in man, a spongy mass, made up of air-tubes, air-cells, and blood-vessels, all bound together by cellular tissue.

Fig. 17.



BRONCHIAL TUBE AND AIR-VESELLES.

Fig. 17 represents the bronchial tube and its division into air-cells, as much magnified. 1. A bronchial tube. 2, 2, 2. Air-cells, or vesicles. 3. A bronchial tube and vesicles laid open.

The windpipe consists of the larynx, or organ of the voice, in the upper and most prominent part of the throat, which opens from the pharynx, just back of the root of the tongue; the trachea, a tube three or four inches long, made up of cylindrical rings and strong membrane, and its branches, or bronchia, which fork off to the right and left lung, and afterward divide like the branches of a tree, and are covered with masses of air-cells, into which they open, and which are clustered upon them like leaves on a tree, or more like grapes on a stem; the cells on each twig opening into each other. There are many millions of these cells, and the internal surface of the air-tubes and cells in the lungs is estimated at 150 square feet, or ten times the

surface of the body. Around each of these minute cells is a network of arterial and venous capillaries, and it is through the coats of these that the air acts upon the blood, giving it oxygen, and receiving from it carbon. There enters, then, into the structure of the lungs, the pleura, or external membrane; the air-tubes and vesicles; the arteries, the veins, the lymphatics, the nerves, and the areolar tissue, which holds them all together.

All the blood passes through the lungs, to be brought into contact with the atmosphere; their animal membranes forming no barrier to the chemical action of gases. This contact of the air with the circulating fluids is necessary to all organized beings—to vegetables and animals. In vegetables this contact takes place in the leaves, in fishes by the gills, in the higher animals by lungs.

OF THE LIVER.

The size of an organ is *some* measure of its importance. The liver is an irregular-shaped, brown mass, weighing four pounds in health, but often much enlarged in disease. It lies on the right side of the abdomen, under the diaphragm, opposite the stomach, and partly covered by the short ribs. The liver is a collection of a vast number of glands, each of which separates the bile from the blood. The blood thus purified is the venous blood gathered from the stomach and intestines, and which contains a portion of the nutritive matter. All these veins gather into one common vein, the vena porta, which enters and branches out in the liver into minute vessels; the purified blood collects in another

set, and goes to the ascending vena cava. The gall bladder is attached to the liver, and serves as a reservoir for the bile, until it is needed in the process of digestion.

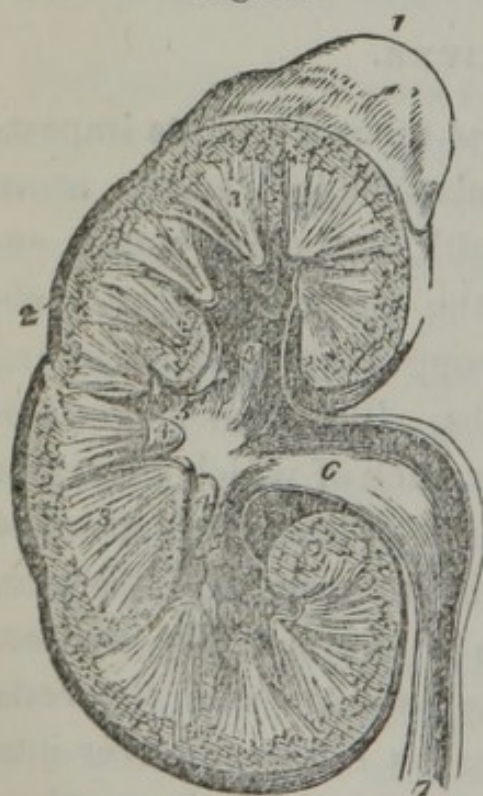
OF THE SPLEEN.

This is a large glandular organ, situated at the left of the stomach. It has no excretory duct, no known secretion, and its function is not understood. It is conjectured to be a large lymphatic gland. It is liable to inflammation, and to enlargement and hardening in malarious diseases.

OF THE KIDNEYS.

These are hard bodies, of a flattened, oval shape, lying on each side of the spine near the last ribs. Each kidney is a collection of tubes and glands, ending in

Fig. 18.



SECTION OF THE KIDNEY.

a central cavity, which opens into long tubes, called ureters. The office of the kidneys is to separate urine from the blood, which is conveyed by the ureters to the bladder.

Fig. 18 is a section of the kidney surmounted by the supra-renal capsule; the swellings on the surface mark its original constitution in distinct lobes. 1. Supra-renal capsule. 2. Vascular portion. 3, 3. Tubular portion, consisting of cones. 4, 4. Two of the papillæ projecting into their corresponding calices. 5, 5, 5. The three infundibula; the middle 5 is situated in the mouth of a calyx. 6. Pelvis. 7. Ureter.

This separation of the urine, or rather the solid matters it contains, from the blood, is so important a matter, that certain death attends its suspension for a short period.

OF THE BLADDER AND URETHRA.

This is a membranous and muscular pouch, resting against the pubes, in the middle, anterior portion of the pelvis. It terminates below in a tube, called the urethra, through which the urine is discharged. In men, the urethra is eight or nine inches long, when at its full extent. In women, it is not more than two inches. The urine is retained in the bladder by a sphincter muscle at its neck.

Showing its muscular fibers. 8. Left ureter 9. Left portion of seminal vesicles. 11, 11. Lateral lobes of the prostate gland. 14. Urethra tied with a cord.

Fig. 19.



URINARY BLADDER.

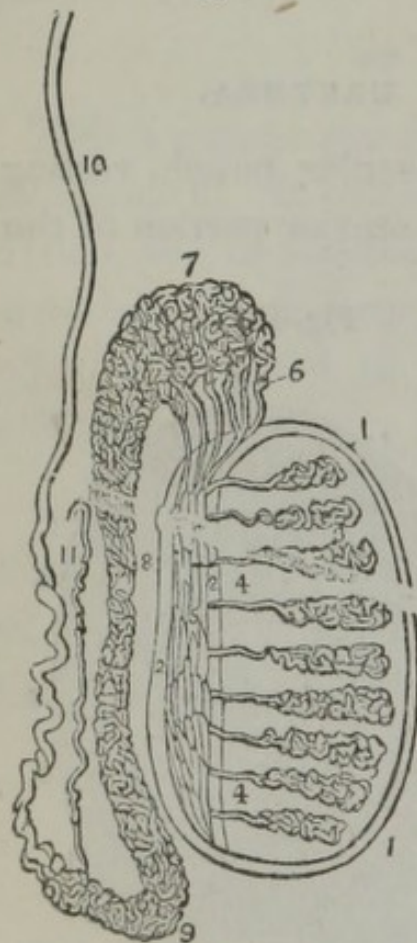
OF THE MALE ORGANS OF GENERATION.

These consist of the testicles, or sperm-preparing organs, the seminal vesicles, the prostate gland, the penis, and their appendages.

The testicles are egg-shaped glands, each consisting

of several hundreds of minute, convoluted tubes, ending in a single vessel, which conveys the semen, or vitalizing fluid, secreted by these organs, into the seminal vesicles, where it is mingled with a

Fig. 20.



ANATOMY OF THE TESTIS.

cles, where it is mingled with a secretion from the prostate gland, and is held in readiness to be ejected through the urethra, during the sexual orgasm.

Fig. 20 represents the minute structure of the testis. 1, 1. Tunica albuginea. 2, 2. Mediastinum testis. 3, 3. The lobuli. 4, 4. Vasa recta. 5. Rete testis. 6. Vasa efferentia; six of them only are shown in the diagram. 7. Cervi vasculosi, constituting the globus major of the epididymis. 8. Body of the epididymis. 9. Its globus minor. 10. Vas deferens. 11. Vasculum aberrans.

The testicles, in an early stage of foetal development, are formed close by the kidneys, and gradually descend to the lower part of the abdomen, where they pass through openings, and are lodged in the scrotum, suspended between the thighs, and just below the penis. They do not always emerge from the body.

The prostate gland is a small body about the size and shape of a chestnut, just beneath, and partly surrounding the neck of the bladder. See Fig. 19. Its secretion seems to be a vehicle for the semen.

The penis is, in many respects, a remarkable organ. Small in infancy, it attains at puberty to a length of from five to seven inches, and is about five inches in circum-

ference. Its shape is that of a cylinder, not perfectly regular, with a soft, delicate cushion, called the glans penis, at the end. This is the most sensitive portion of the organ, and in performing the sexual function, is the seat of exquisite pleasure. A soft skin loosely covers the organ, so as to be movable, and to fall down in a fold, so as partly, and in some cases wholly, to cover the glans penis.

1. Glans penis. 2. Orifice of urethra. 6. Corpus cavernosum. 8. Bulb.

The internal structure of the penis is very curious. In repose, it is small, soft, flabby, and easily compressible; but when in vigorous erection, it is distended, hard, and unbending. The change from one state to the other occurs in a moment, at a word, a thought, or a touch. The nature of this

Fig. 21.

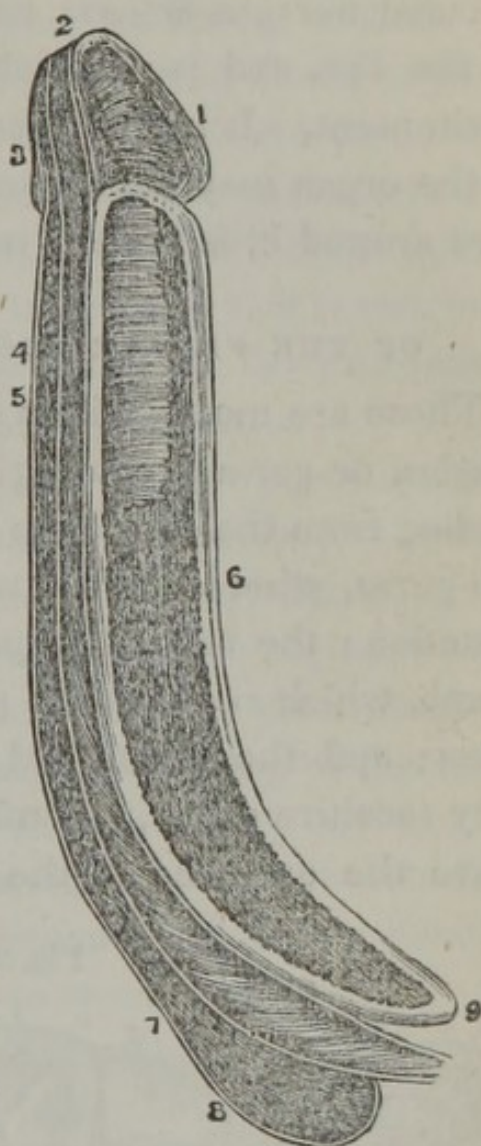
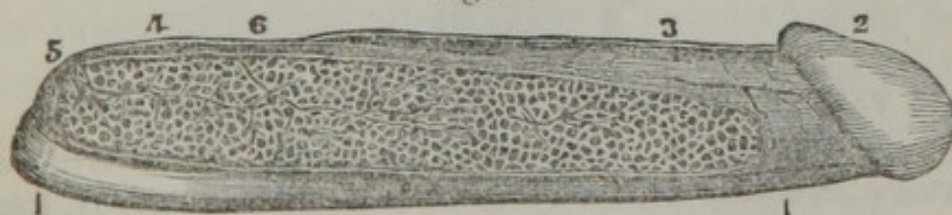
VERTICAL SECTION OF THE PENIS
AND URETHRA.

Fig. 22.



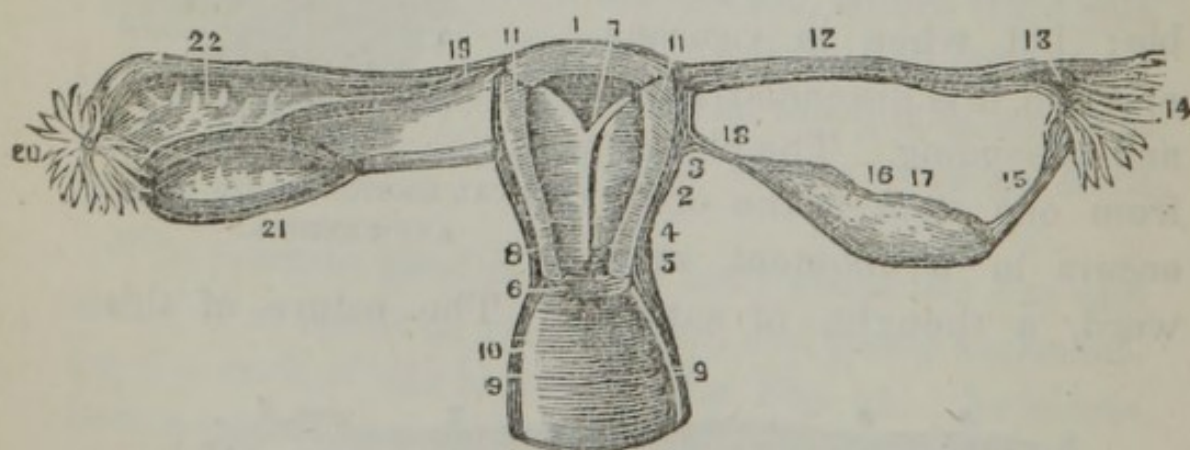
ARTERIES OF THE PENIS INJECTED.

change has not been well explained. There is a rush of blood to the part, where it seems to accumulate; but this is probably not the fact. I believe that it is a peculiar nervous action; and it is the same as is seen in the lips, and particularly the nipples, under similar excitement. It is true that a turgid and stiffened state of the organ may be produced by putting a ring or ligature around it, but this is not a true erection.

OF THE FEMALE ORGANS OF GENERATION.

These are mostly within the pelvis, and consist of the ovaries, or germ-preparing organs; the fallopian tubes, leading from the ovaries to the uterus, or receptacle of the germ, where it remains during the whole term of gestation; the vagina, or passage to the mouth of the womb, which receives the penis during the sexual congress; and the lesser and greater lips and clitoris, a very sensitive organ, resembling the penis, and situated above the entrance of the vagina. The mons veneris

Fig. 23.



UTERUS, PART OF THE VAGINA, OVARIES, AND FALLOPIAN TUBES.

9, 10. Section of vagina. 6. Mouth of the uterus. 17, 21. Ovaries. 12, 22. Fallopian tubes. 14, 20. Fimbriated extremities. 11, 11. Passage from fallopian tubes into uterus, which is laid open.

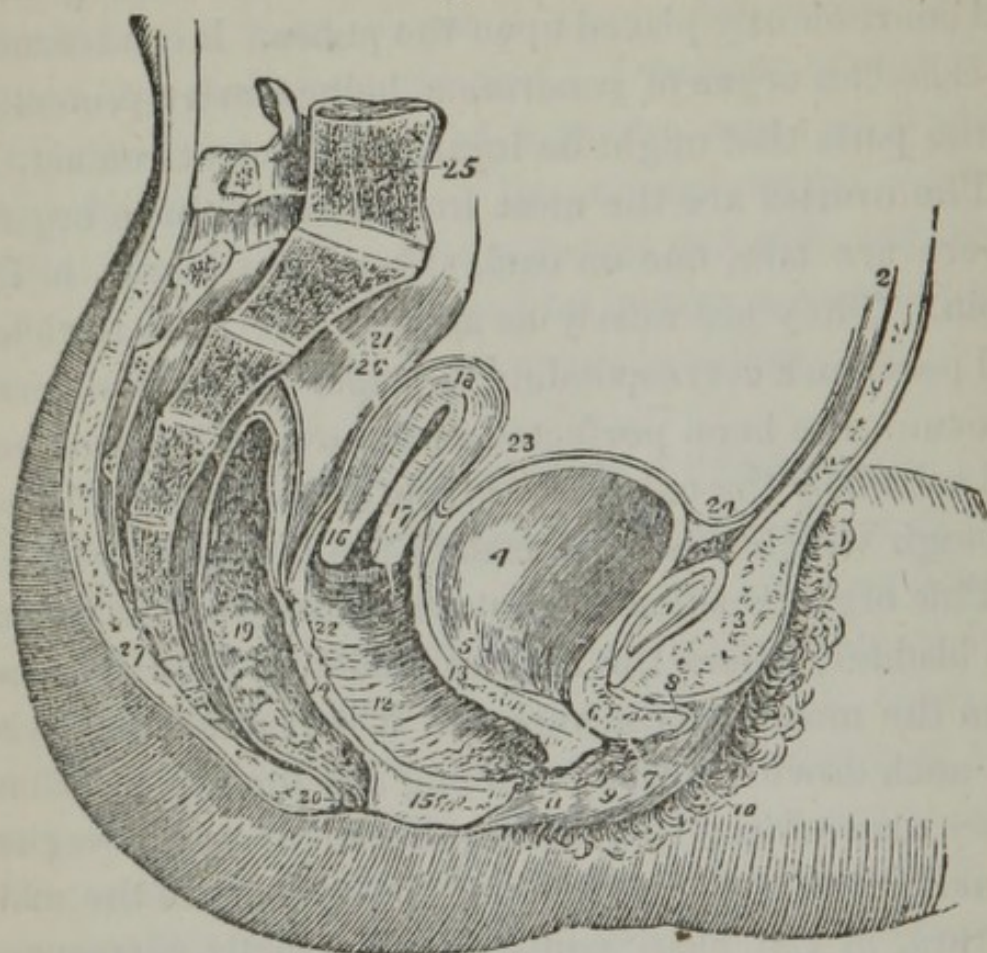
is merely a cushion of fat, covered with curling hair, and conveniently placed upon the pubes. It can scarcely be called an organ of generation, being a mere protection to the parts that might be injured by violent contact.

The ovaries are the most important of these organs. There are two, one on each side of the uterus, in the groin. They are nearly as large as the male testicles, and perform a corresponding function. When the germ, or ovum, has been perfected in the ovary, it is cast out, and seized by the extremity of one of the fallopian tubes, through which it is conducted to the uterus.

This organ is situated centrally in the pelvis, behind the bladder, before the rectum, and four or five inches from the mouth of the vagina. It is pear-shaped, with the neck downward, and opening into the vagina, which closes around it. Passing the forefinger up the vagina, its mouth can easily be felt, and the opening of the male urethra, in the glans penis, should exactly correspond with the mouth of the vagina, so that the semen may be injected directly into the uterus, which, in a healthy and harmonious orgasm, opens to receive it.

In its healthy, unimpregnated state, the walls of the uterus are about half-an-inch in thickness, muscular and vascular; and the cavity scarcely larger than a kidney-bean. After impregnation it expands so as to contain a fœtus, weighing, in some cases, fourteen pounds, with membranes, afterbirth, and fluid weighing as much more. In cases of twins, where there are two fully formed fœtuses, and two placentas, the bulk is even greater. The uterus expands rapidly, and its minute and imperceptible arteries acquire great size; but in a few hours after birth, it contracts to nearly its previous dimensions.

Fig. 24.



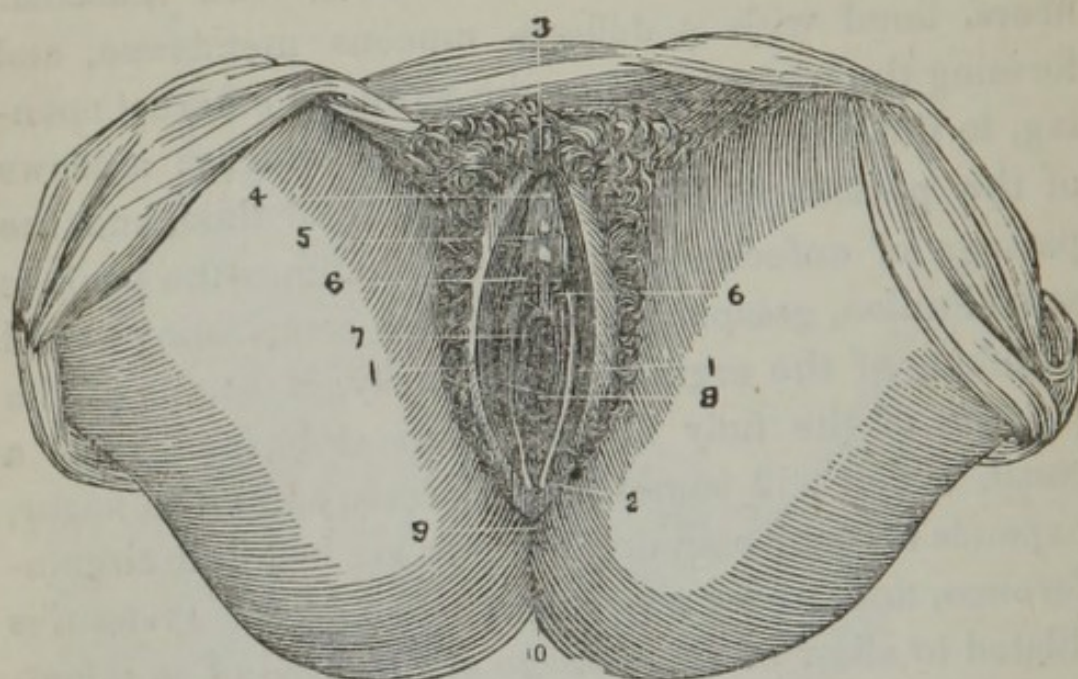
VISCERA OF THE FEMALE PELVIS.

Fig. 24 is a side view of the viscera of the female pelvis. 1. Symphysis pubis. 2. Abdominal parieties. 3. Collection of fat, forming the prominence of the mons veneris. 4. Bladder. 5. Entrance of the left ureter. 6. Canal of the urethra, converted into a mere fissure by the contraction of its walls. 7. Meatus urinarius. 8. Clitoris, with its præputium, divided through the middle. 9. Left nympha. 10. Left labium majus. 11. Meatus of the vagina, narrowed by the contraction of its sphincter. 12, 22. Canal of the vagina, upon which the transverse rugæ are apparent. 13. The thick wall of separation between the vagina and rectum. 15. The perineum. 16. Os uteri. 17. Its cervix. 18. Its fundus; the cavitas uteri is seen along its center. 19. Rectum, showing the disposition of its mucous membrane. 20. Anus. 21. Upper part of the rectum, invested by the peritoneum. 23. Utero-vesical fold of peritoneum; the recto-uterine fold is seen between the rectum and the posterior wall of the vagina. 24. The reflexion of the peritoneum, from the apex of the bladder upon the urachus to the internal surface of the abdominal parieties. 25. Last lumbar vertebra. 26. Sacrum. 27. Coccyx.

The vagina is a membranous canal, with muscular fibers, lined with a delicate mucous membrane, and forming the passage from the vulva, or external opening, to the uterus. It performs three offices : it allows of the periodical flow of the menstrual fluid, and the passage of unfecundated germs ; it admits the penis in sexual union, grasping it closely, and contributing to and partaking of the orgasm ; and, finally, it admits of the passage of the fully formed fœtus at birth. Thus a canal, which will sometimes scarcely admit the finger, expands to receive an organ five or six inches in circumference, and, under a peculiar action of the system, is dilated to allow of the passage of the head of an infant, which is five inches in its largest diameter. The vagina is largely furnished with numerous glands, and, when healthy, is abundantly lubricated with a fluid like saliva, both in the sexual congress, and in the process of parturition.

The external organs consist of the inner or lesser lips, which are folds of the mucous membrane, called nymphæ, which seem to shelter and guard the entrance to the vagina ; the greater or external lips, which are thicker, and filled with fat, and which close over the inner. In some cases there is, in virgins, or those who have never performed the sexual function, a thin fold of membrane, partially closing the mouth of the vagina, called the hymen. When this exists, it may be torn, and bleed, in the first union ; but it is wanting in so many cases, and may be distended or ruptured in so many ways, that it is scarcely reckoned a safe indication of virginity, even if that were a matter of importance to ascertain.

Fig. 25.



EXTERNAL FEMALE ORGANS OF GENERATION.

11. Labia majora, or large lips. 2. Fourchette, or fork. 3. Mons veneris. 4. Prepuce of the clitoris, around the glans clitoris. 5. The vestibule. 6. The nymphæ, or lesser lips. 7, 8. The hymen. 9. The perineum. 10. The anus.

The clitoris, placed above the opening of the urethra, is a miniature, imperfect penis, capable of erection, and, in the sexual congress, receiving, from the friction of the parts where it is situated, the most vivid excitement of pleasure. This excitement may also be produced artificially, as in the male organ, but with great loss of nervous power, and, if habitual, it destroys the sensibility of the part, while it wrecks the health of the whole system.

The bosom, or mammary glands of the female, are closely connected with the generative organs in function and sympathy, partaking of the same excitements. The nipple, indeed, closely resembles the penis and clitoris. I shall describe it more particularly in connection with the glandular system, and the function of lactation.

GENERAL OBSERVATIONS ON ANATOMY.

There is a multitude of facts in anatomy, which I have not thought necessary to the purpose of this work. The curious student will find them in many treatises. I give what I deem most important for the objects I have in view.

The average stature of men at birth is 1.64 feet, (one foot and 64 hundredths); at 2 years, 2.60; at 4, 3.04; at 6, 3.44; at 9, 4.00; at 15, 5.07; at 20, 5.49; at 40, 5.52; after which age it slightly diminishes, from the curving of the spine and solidification of cartilages. Women at birth are 1 foot 61 hundredths; at 2 years, 2.56; at 4, 3.00; at 6, 3.38; at 9, 3.92; at 15, 4.92; at 20, 5.16; at 40, 5.18.

The average weight is, of men at birth, 7.06 pounds; at 15, 96.40; at 20, 132.46; at 40, 140.42. That of women is, at birth, 6.42; at 15, 89.04; at 20, 115.30; at 40, 121.81.

Men and women at mature age weigh twenty times as much as at birth, and their stature is three and a quarter times greater.

A calcined human body weighs only 8 ounces; mere drying reduces it to one-tenth of its weight. Thus nine-tenths of the whole body are water.

The nerves of sensation arise from the posterior column of the spinal cord, those of motion from the anterior. The fibers from the brain cross each other in the medulla oblongata, so that paralysis of the right side of the body corresponds with a diseased condition of the left side of the brain. What is called a nerve, consists of a great number of fibers, coming from different

parts of the brain, spinal cord, or sympathetic ganglia, and going to various organs. Nervous fibers of motion, sensation, and organic life thus travel together in the same sheath.

The tongue has three kinds of nerves, those of motion, common sensation, and the special sense of taste; besides the nerves which preside over its own nutrition and secretions.

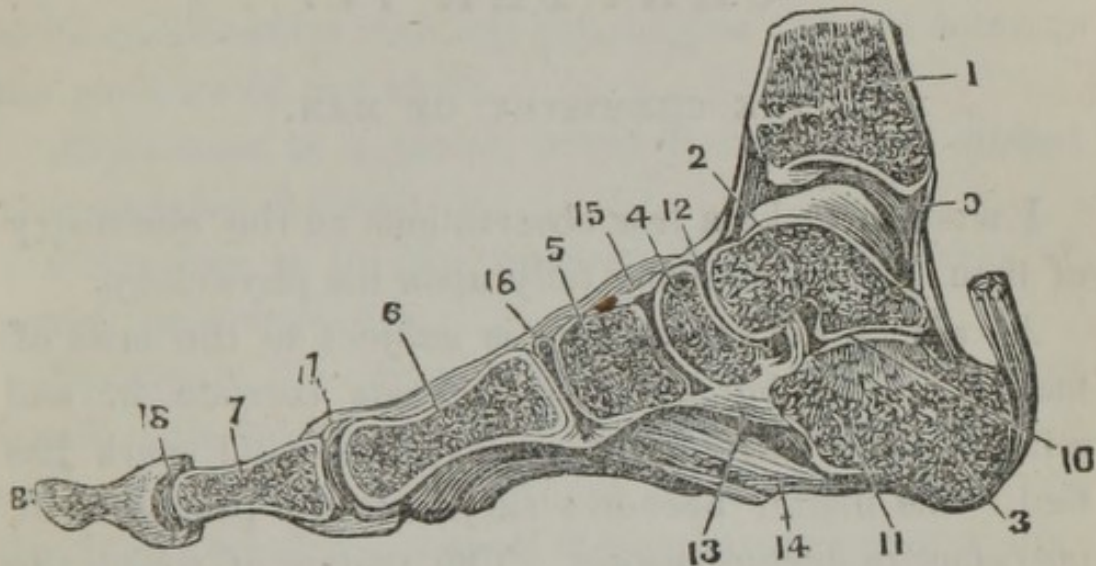
The skin, or external covering of the human body, is a vast net-work of areolar tissue, arteries, veins, lymphatics, nerves, and glands. By means of it we have the sense of feeling, sense of temperature, sympathetic impressions, the influence of light, of air, probably both oxygen and nitrogen, of aromas and miasms; and the skin constantly throws off the matter of perspiration, and absorbs water, when needed, from the atmosphere.

The true skin is covered by a horny, insensible covering, the cuticle, which wears off continually, and is as constantly renewed. The hair and nails resemble the cuticle, and are formed by a peculiar arrangement of flattened cells growing from the roots, and having no sensibility in themselves, but being surrounded at their roots by nerves of extreme sensibility.

The external skin is kept damp by perspiration, and of an oily softness, by a secretion from the sebaceous glands. The mucous membrane, lining all passages and cavities which open outwardly, secretes mucus; and the serous membranes, which surround the brain, heart, lungs, and other viscera, are kept moist and slippery by a constant secretion of serum. When this secretion is in excess we have dropsy.

The joints are also provided with a membrane called the synovial membrane; and its secretion, serum, with an unusual amount of albumen, like the white of an egg, lubricates every joint.

Fig. 26.



VERTICAL SECTION OF THE ANKLE JOINT AND FOOT OF THE RIGHT SIDE, Showing the formation of joints, the synovial capsules, and ligaments. The references are not given, as difficult and needless to remember.

The eye is also constantly moistened with the secretion of the lachrymal gland, placed in the upper outer corner of the eye for that purpose.

All through the body, moreover, the arteries pour out a perspiration to keep the whole areolar tissue moist, and this is as constantly taken up by the veins. When the equilibrium of this process is disturbed, we have dryness and hardening of the tissues in one case, or œdema, or general dropsy, in the other.

CHAPTER IV.

THE CHEMISTRY OF MAN.

I wish to make a few observations on the chemistry of man, before entering fully upon his physiology.

As a material being, man is subject to the laws of matter. Fire burns his body, acids corrode it, and when, in the language of poetry, "the vital spark has fled," this matter becomes subject to the processes of putrefactive decomposition. The matter of which the body is composed returns to its primitive elements, or enters into new forms of organic life.

Chemistry treats of the elements of matter, and their relations, combinations, and changes. An elementary body is one which the chemists have not been able to separate into simpler elements. There are now reckoned over fifty of these elements. Many are of trifling importance, and it is much suspected that a large portion of them are only combinations of some of the best known and most important.

These are iron, copper, gold, silver, zinc, tin, mercury, etc., among the metals; aluminum, potassium, sodium, calcium, silicon, etc., among the metallic basis of the earths and alkalies; oxygen, hydrogen, nitrogen, chlorine, etc., among the gases; and carbon, sulphur, phosphorus, etc., among the peculiar bodies, not otherwise classified.

Let us give a brief account of the nature and relations of some of these substances.

The metals above named, are sufficiently familiar. Iron is the only one that is found uniformly, and in considerable quantities in the human body. It is supposed, in its combination with oxygen, to give the red color to the globules of the blood.

Alluminum is a metal, never found native; united with oxygen, it forms clay.

Potassium is, in like manner, the metallic basis of potash, saleratus, etc.

Sodium is the metallic basis of soda, and this, combined with hydrochloric or muriatic acid, is common salt. Thus bread is sometimes raised by mixing with the flour a small quantity of the carbonate or super-carbonate of soda. If, now, the flour is wet with water containing just enough hydrochloric acid to neutralize the soda, the carbonic acid is driven off, which raises the bread, while the soda and acid unite, forming pure common salt, and merely salting the bread.

Calcium is the metallic basis of lime, chalk, marble, plaster of Paris, etc. United with phosphoric acid, it is the mineral basis of our bones.

Silicon, united with oxygen, is common sand, rock crystal, etc.

These substances, with a few others, in union with oxygen, form the entire crust of the earth; its interior being supposed to be a melted mass of intense heat, the composition of which is unknown.

Oxygen, as already apparent, is one of the most important and universally diffused of all the elements. It composes one-fifth of the atmosphere; one-third by

measure, and seventh-eighths by weight, of water, and combines with metals and other elements, to form a vast variety of substances. Some of these combinations are called oxydes, some acids, some alkalies. Oxygen is the chief supporter of combustion, which is but another name for oxydation. This process is accompanied by the evolution of heat, and, under some circumstances, of light. It is the grand element of all organic life, and is believed to be the chief agent in all vital operations.

Hydrogen is the lightest of the gases, and combines with oxygen to form water. As water is a large component of all organized bodies, and pervades earth and the atmosphere, we have in nature an abundant supply of hydrogen. Uniting with oxygen, it produces flame, and the result of such union is water.

Nitrogen forms four-fifths of the atmosphere, and is an important constituent of vegetable and animal tissues, helping to form albumen and fibrin, both vegetable and animal. United with hydrogen, it forms ammonia; combined with oxygen, chemically, it forms nitric acid and other less powerful combinations.

Carbon exists in nature, as charcoal, mineral coal, and is crystallized in the diamond. It is the chief constituent of woody fiber, oil, starch, sugar, alcohol, and enters largely into all vegetable and animal substances. Combining with oxygen, it forms the carbonic acid gas, a heavy, irrespirable fluid, in which men drown, as if under water. Carbon is constantly separated from the blood by the lungs, liver, and skin. Combining with oxygen, it furnishes animal heat, and the result is carbonic acid. Hence the necessity for constant ventila-

tion. Carbonic acid is also produced by fires, the burning of lamps or candles, and in most cases in which carbon combines with oxygen. The result of their rapid union is the disengagement of intense light and heat.

Sulphur is a peculiar and familiar substance, which unites readily with oxygen, burns, and forms sulphuric acid. It is found in vegetables, and is thence found in the blood and muscular tissues of animals. From the combination of sulphur and oxygen with various bases, we have the sulphates of soda, magnesia, iron, zinc, etc.

Phosphorus is something like sulphur, but much more inflammable; that is, it unites more readily with oxygen at low temperatures. In this union it forms phosphoric acid. This combines with calcium, and forms phosphate of lime; and this existing in wheat and other vegetables, makes part of the blood of animals, and is found especially in the bones.

I have no space here for a treatise on chemistry. The reader will find it a beautiful and entertaining study, as it refers to every thing in the world about him. I can only give here a few facts respecting the chemistry of man, premising a few pretty well established principles.

1. All matter, whether solid, liquid, or gaseous, is composed of ultimate atoms, inconceivably minute, as the microscope everywhere reveals to us; as the smallest animalcule is composed of parts formed from a combination of a vast multitude of such atoms.

2. These atoms have their own determinate form, size, weight, motions, attractions, repulsions, and peculiar powers of whatever kind.

3. Two or more atoms of simple elements uniting according to laws of definite proportion, form the atom of the composed body. Thus, one atom of oxygen, uniting with one atom of hydrogen, forms one atom of water, and they can only so unite in these fixed proportions. One atom of nitrogen, uniting with five atoms of oxygen, forms nitric acid, and so on.

4. No two atoms of matter can ever, by any possibility, come in contact with each other. This is a fact which I have not space here to prove, but which is perfectly demonstrable. No two atoms of diamond, or gold, or water, or air, ever can touch each other. They are held in a certain nearness by their attractions, but forever kept asunder by their repulsions. Each one is an independent individual atom, but holding social relations with the atoms around him.

5. The distances of these atoms from each other, and their relative positions, change continually with variations of temperature. Thus, a hard body expands and contracts with every variation of heat and cold—that is, each of its atoms goes farther from or approaches nearer to its neighbor. With the increase of heat, their repulsion increases, until they break apart, and the solid becomes a liquid; with a still further increase of temperature, the liquid becomes a vapor.

6. The same kinds of elementary atoms may combine in the same proportions, producing various results, depending, not upon their nature or proportions, but some form of combination. Thus, the fœtid gas from the gas-works, and the beautiful perfume, otto of roses, are composed of exactly the same elements, combined in exactly the same proportions. The ingenious reader

will soon be surprised to find how nearly alike are the chemical ingredients of all animal substances.

All forms of matter exist in virtue of certain laws, under which they maintain their conditions and identities. As long as certain attractions and repulsions exist, in a certain relation of intensity, there is no change; but change conditions, and the atoms instantly assume new relations and new forms. With the simple addition of caloric, ice becomes water, and water steam; with the abstraction of caloric, steam is condensed to water, and water solidifies. Under a similar rise of temperature, the solid substance gunpowder, or gun-cotton, assumes instantly a gaseous form, and the added repulsion of its atoms acts with tremendous and destructive force and rapidity.

So, if we bring the element of electricity, in the form of galvanism, to act upon water, we disturb the attractions of the atoms of oxygen and hydrogen for each other. The oxygen obeys a stronger attraction, and goes to one pole of the battery, while hydrogen rises from the other. And such, in some way, is the condition of all compositions and decompositions; and similar laws, founded on a system of universal analogy, run through the whole universe of matter and of mind. Every atom of matter, and every human soul, left in freedom, follows its strongest attraction. It is God's law.

Of the great number of substances reckoned elementary, many enter into the complex combinations of the organic world; but there are only a few which seem necessary. The rest are occasional or accidental. Thus, in the vegetable kingdom, we have carbon, oxygen,

hydrogen, and, in some cases, nitrogen. The three first are the essential constituents; the fourth is often present; and a variety of others, as soda, potash, lime, iron, sulphur, phosphorus, etc., may be present in varying proportions.

Animals are made up of the elements existing in vegetables. There is no other source, except the two compound elements, air and water. Man can only have what these can give him, for no matter is ever created, or ever destroyed. In all the phenomena around us, we have only changes of form and relation. Men consume the flesh of animals, but this is only taking vegetable elements at second hand.

The proximate constituents of the animal body are divided into two classes, the *mineral* and *organic*.

We may divide the mineral into the physically useful, the chemically useful, and the merely incidental.

The constituents useful by their physical properties are :

1. Water, composed of hydrogen and oxygen, and which is, therefore, an oxyd of hydrogen; this gas being considered a metal, water is, therefore, truly a mineral. Water constitutes about nine-tenths of the body, by weight. It pervades every tissue. A beef-steak, as it comes from the market, contains about 70 per cent. of water. The blood and nervous matter is nearly all water. Man begins his existence as a microscopic vesicle of almost pure and transparent water.

2. Phosphate of lime comes next to water among the mineral constituents of our bodies, in quantity and use. It forms most of the solid matter of bone, and is found also in blood, from which the bone is made; in

milk, and also in the urine and fœces, by which its waste and surplus is expelled.

3. Carbonate of lime, which forms the shells of fish, snails, etc., is also found in small proportions in the bones of the higher animals and man.

4. Phosphate of magnesia also unites with the phosphate of lime, though in minute proportions.

Of chemically useful constituents, we have :

1. Hydrochloric acid, one of the constituents of common salt, and from which it is obtained, in the digestive fluid.

2. Chloride of sodium, or common salt, in the blood, gastric juice, bone, urine, tears.

3. Carbonate of soda, found in animal ashes.

4. Phosphate of soda, in blood, lymph, bile, etc.

5. Iron in the coloring matter of blood, hair, black pigment of the eye, etc.

The incidental constituents are chloride of potassium, alkaline sulphates, carbonate of magnesia, manganese, silica, alumina, arsenic, copper, mercury, lead, etc.

The organic constituents are divided into two groups; those which contain nitrogen, and those which are destitute of that element.

Protein is a name given to the nitrogenized substance which, under various forms, enters into the composition of the most important animal tissues. It is albumen in the white of an egg, in the serum of the blood, and many of the secretions: fibrin in the fibrous portion of the blood, in membrane, muscle, and areolar tissue; and casein in milk. All these are composed of the same ultimate elements, viz., carbon, oxygen, hydrogen, and nitrogen, united in the same proportions.

Fibrin, casein, and albumen, all exist in vegetables, and are identically the same in them as in the animal tissues. So far as nutrition is concerned, it makes no difference whether we eat vegetable food or animal, only that it is purest at first hand; while the flesh of animals is always more or less filled with disease and impurities, as I shall abundantly show hereafter.

The same ultimate elements enter into the composition of gelatin, the basis of bones, cartilages, sinew, ligament, skin, etc., and the chemical bases of saliva, the gastric juice, bile, and are found in pus, urine, and other excretions.

The animal sugars, fats, and acids are composed of carbon, oxygen and hydrogen, but contain no nitrogen. They differ but slightly from similar vegetable productions.

As the blood contains all the proximate principles that enter into the human body, its analysis will show of what that body is composed.

Healthy human blood contains, in 1,000 parts :

Water.....	790.0	Cruorin†.....	1.0
Fibrin.....	0.9	Carbonate of soda.....	1.0
Albumen.....	54.0	Chloride of sodium (salt)....	4.0
Hæmatin*.....	133.4	Chloride of potassium.....	2.0
Oxyd of iron.....	0.7	Phosphates of lime and mag-	
Phosphorized fat.....	8.2	nesia	0.5
		Carbonate of lime.....	1.3

The blood also contains sulphur, phosphorus, and occasionally several other substances not given in this analysis.

Human milk, being secreted from the blood, and

* Coloring matter of the blood globules.

† A protein compound resulting from albumen and fibrin.

again converted into it, gives a similar result. In 1,000 parts :

Water.....	883·6	Casein (cheese).....	34·3
Butter ..	25·3	Sugar of milk, etc.....	48·2
Salts.....			2·3

Cow's milk, the most commonly used for food, may be compared with the above by the following analysis. In 1,000 parts :

Water.....	821·8	Casein.....	67·0
Butter.....	55·0	Sugar, etc.....	51·0
Salts, etc.....			13·0

The atomic composition of the proteian compounds, albumen, fibrin, and casein, is carbon, 40; hydrogen, 31; nitrogen, 5; oxygen, 12; or by Liebig's formulary, C 48, H 36, N 6, O 14.

Crystals of the sugar of milk contain carbon, 12; hydrogen, 12; oxygen, 12.

The animal fats and acids are composed of these three elements, as are the vegetable oils, starch, sugar, and acids.

By certain changes in the arrangement of the atoms, and sometimes in their proportions, we have starch converted into sugar, fat, alcohol, acid. Sugar is converted readily into fat by the digestive process, and into alcohol and acid by fermentation.

Thus we have the three elements, carbon, hydrogen, and oxygen, composing the heat-giving principles, in our food, and nitrogen added to form the animal tissues.

Much of what is stated here will seem more clear and important, when it is applied to physiology, in what is to follow.

CHAPTER V.

THE ACTIVE FORCES OF NATURE.

WHEN we contemplate any phenomenon, we wish to understand the cause. "What does it?" is a spontaneous question. This inquiry of causation leads directly to the cognition of the Great Cause of causes.

The forces that act upon the matter of our planet, especially in the development of organic life, appear to come from the sun; though similar influences may reach us from the stars and other planets. The sun gives us light, heat, probably electricity, and other athermal agencies of a corresponding but higher character. These are the conditions of elemental movement and all vital operations. The planet, without them, would be a dead, solid mass of matter. The sun is the visible creator, the image of God, and the agent of His power. It is not strange that it should be an object of worship.

We know but little of the nature of these forces. Heat expands all bodies, exists latent in all, radiates everywhere, is created or brought out by electric action, by chemical changes, by vital processes, and yet who can say what is its absolute nature? The philosophers have just decided that heat and light do not come to us from sun and stars, but are the results of the vibration of a subtle medium which pervades all space; but we know nothing of the nature of that medium,

nor the mode of action of those vibrations. Light is shown to be a compound of seven, or of three colored rays or vibrations, each having a special agency in determining vital actions. There are also chemical rays distinct from those of light, and the rays of light can be separated from those of heat. I use the term ray as synonymous with a set of vibrations. All vegetables grow under the influence of heat; and light is necessary to the elaboration of the most important vegetable products. We know little of electricity, or of its forms and modes of action. It may be another modification of the element of light and heat, or a force by itself, or only one of many aërial agencies of which we have now but obscure glimpses.

I can not doubt that every atom in nature and every aggregate of atoms, has forces of its own, which act upon other bodies. I can not doubt that the suns and planets of the universe are mutually affected by their qualities and forces. Every planet, every tree, has its power and influence, and peculiar character. Every animal has its own sphere of life, and its invisible aërial. Every human being is surrounded by such a sphere, or rather by two spheres, perhaps more. a physical, a psychical, or soul sphere; and those influences may be as varied as those of the sun.

I do not wish to dwell upon a subject in respect to which our present knowledge is so vague but shall have occasion in many places to speak of effects which must be attributed to such causes as I have only alluded to.

Dr. Buchanan has developed a faculty, or the result of an aërial power, which he calls psychometry, or

soul measuring. The phenomenon is, that with many persons, a letter, written by a person at any distance of time and place, conveys to an impressible person, though not read, but simply held in the hand or bound upon the forehead, a tolerably clear and accurate idea of the person and character of the writer. I have seen this often tested.

Mesmerism, or the power of controlling the body and mind of an impressible person, is so common, and so often exercised, that there are few who have not been convinced of its reality. This power has many modifications and modes of action, from the simple paralysis of the nerves of sensation, and the production of sleep, to the control of the imagination, and the development of the high spirit-power of clairvoyance and prevision.

Those who are curious enough to investigate this subject, may find food for reflection in the researches of Baron Von Reichenbach, on the odic forces; Gregory, or any recent author, on mesmerism, and some of the recent writers on spiritual manifestations. See the writings of Baron Swedenborg, also, and for many remarkable speculations on aërial forces, the works of Charles Fourier.

Our remarkable doctors, who boast of the "accumulated wisdom of two thousand years," have found but one word for this whole class of influences and relations, and that word, "sympathy," they do not at all understand; but they know as much on this subject as on any other.

CHAPTER VI.

PRINCIPLES OF PHYSIOLOGY.

I WISH now to enter more fully upon the great pivotal science of Human Physiology, or of Human Development and Life.

To do this subject such justice as I desire, I must first give a general outline of the principles of physiology, and afterward speak separately of each function, and the laws which govern it. I must do this to show what man was meant to be, and is, in a condition of healthy development; and we shall then the better understand his diseased conditions, and what is necessary to their cure.

I beg, therefore, for what I am now about to write, the most earnest attention, and I invoke a spirit of calm, candid inquiry, that seeks simply for the truth. I pray you to clear your mind of cant. "Put off thy shoes from off thy feet, for the place where thou standest is holy ground."

The simple primitive form of organic life is a cell, or vesicle. As commonly seen by the microscope, there is a cell, within the cell a nucleus, and within that a point called a nucleolus: cell within cell. The cell is a growth, a formation, a vegetation. It is the manner

in which matter, under the influence of what we may call a vital force, takes on an organic form. It has parts, an exterior pellicle, or skin, and an interior, filled with fluid at first, but capable of solidification.

This cell is the beginning of every organized being, from the simplest vegetable to the highest animal; in each case we have but a microscopic point, and this is its character. It may be developed into a toad-stool, or an oak—a worm, or a philosopher; but at its beginning, and in a certain stage of its progress, I doubt the possibility of *distinguishing* one from the other. They have the same appearance under the microscope, and are composed of the same elements. But in the microscopic germ, buried in this simple watery cell, is the vital principle that guides its future life.

A cell may divide itself into two, and these into four, and so on; and by this kind of multiplication, there may be a rapid growth; or a cell, containing within itself several smaller cells, may burst, and each of these may, in turn, develop, generate, and dissolve. In one way or other, the organic being increases.

Under the molding power of the spirit, which presides over the growth of each plant and animal, by which I mean the proper soul and guiding power of the organism, these cells take on all necessary forms. Flattening, the cells become membrane; elongating, they are fibers; joining together, by an absorption of their joining parts, they form tubes; and so of all the organized tissues. In this way we have woody fiber, sap tubes, and all the parts of the vegetable, from its first leaf to its flower and perfect fruit. In the same way, we have cells forming blood-vessels, muscle, nerves, and

all the most complicated and beautiful organs of the human body.

But before a cell can be formed, there must be matter suitable to its formation. We have here again the principles necessary to form a universe. There must be matter and the intelligent forming spirit. This matter, out of which cells are formed, is called blastema. It is essentially albuminous, and the egg of the common fowl, out of which is formed all the parts of the chicken, is the type of all blastema.

It is not to be understood that all forms of organic matter originate in the kind of cell growth above described. These investigations are surrounded with difficulties; but there is reason to believe that the blastema may take on the forms of simple fibrous tissue and basement membrane, without passing through the cellular transformation. These parts are less vital than others, and less subject to decay; while the whole cellular substance of the system, and by this I mean all parts generated by cell growth, is in a constant process of change—of dissolution and reproduction. Each of the myriad cells that goes to make up the human body, seems to have its own birth, life, and death; it dissolves, is carried away, and another cell takes its place. All vital processes, even those of thought, have to be accompanied by the destruction and reproduction of cells; and hence the necessity for constant nutrition and constant excretion—the perpetual supply of new materials, and the conveying away of the waste matter.

Thus it is in the human body, as in the human race. The individual cell dies, and another takes its place, but the body lives on. The individual man dies, the life of

the race continues. Nature, from her vast storehouse, furnishes the *materiel* for the race—the spiritual and material *substances* of which it is composed. In the human body, we have an elaboration of alimentary matter into blood, and from this blood is formed the cells of all the vital tissues. All analogy points to the birth, growth, maturity, decline, and death of the human race; the same as in the individual man. And it is not beyond the bounds of a reasonable probability to suppose that planets and systems are subject to the same law. We appear to be in the infancy or early youth of our planet and our race. We look forward with the deepest conviction of an enlightened faith to the maturity and happiness of both man and earth—this man, of which each individual forms a part—this earth, our home.

Let us love and beautify this home; let us try to educate and benefit this humanity. No organ of the body, no cell which adds its almost infinitesimal life to the structure of an organ, can be isolated from all the other organs and cells. Complete in its individuality, it is yet held in the bonds of closest sympathy. One life pervades all—one spirit governs all. If one is happy, all rejoice; if one is diseased, all suffer. So it is with the individual man and the race. Each man has his own individual life, his rights, his happiness; but a bond of social sympathy, and a great soul of humanity, pervades the race. All humanity suffers for the disease or wickedness of any individual; all humanity is ennobled by every great deed. These are mysteries; but life, and death, and immortality are mysteries. The universe is a mystery. The fact of our existence, and of

the existence of our system, and planet, and race, are profound mysteries.

But they are mysteries that we shall solve. God has not mocked His human children with wants never to be satisfied, curiosity never to be gratified, and aspirations never to be made realities. Nature is our book; and we hold in our own organization and consciousness, the key of all mysteries.

I believe that God is the soul of the universe, as a whole, and in all its parts. I believe that there is no portion of the universe, however minute, that has not some portion of the Divine Spirit. I believe that every organized being, whether vegetable, animal, or man, is pervaded by a spiritual principle, which acts upon matter, molds it to its own form, and controls the whole phenomena of organic life, consciousness, passion, and intelligence. I see everywhere in nature the proofs of intelligent design, not merely working outwardly, but inwardly, as the Apostle says, "God working *in* us, both to will and to do."

I am prepared for opposition and ridicule, when I teach, as I do, that the operations of organic life are controlled by a pervading intelligence; but I see no way of escaping this conclusion. When the tendril of a climbing plant reaches out to its supporter; when the roots of a rose-tree travel directly toward water, surmounting all obstacles, and changing their course as the position of the water is changed; when I see plants, growing in partial darkness, reaching toward a ray of light, upward, sideways, and even downward, as the ray is changed; when I see the flowers of two plants of opposite sexes inclining to each other, and coming

together, to consummate their nuptials, or the male organ of a flower, which is the love-shrine of both sexes, bending downward, or reaching upward, to embrace its feminine partner; when I see the pistil, or female organ of a flower surrounded by several loving stamens, bend first to one and then the other, to receive the vivifying influence from each, I see signs of intelligence. "But that intelligence," you will say, "is external to the plant or flower; it does not reside in it." How do you prove that? Why not say, as well, that the intelligence of the ant, or bee, or canary bird, or dog, or elephant, are external, and do not belong to them?

And in the operations of the animal organization, the merely vegetative functions, I see evidence of the same intelligent action. When we tie the large artery that supplies the leg with blood, the limb is first cold and numb; it calls for its accustomed supply of nutriment, but the old channel is closed. What is done? Pretty soon a warmth is diffused through the limb. The small arteries below, that interlace with those above the ligature, enlarge themselves so as to supply the limb with blood. Here seems to be the consciousness of a want, and that want supplied by the most intelligent operations. Where does that intelligence reside? If you cut a hydra into twenty pieces, where is the intelligence that forms for each part, all the other parts that belong to it, so as to make twenty perfect animals?

So, if a bone is broken, the nerves and vessels about the fracture set to work as intelligently as so many bees, to mend their comb. They demand and receive a large supply of blood; they separate from it the materials of bone; first the gelatine, and then the earthy matter.

They form a plug of bone in the hollow of the shaft, and then a ring of bone around it. Having made it temporarily secure, they then set to work, make the bone where it should be, and finally remove the temporary plug and ring of bone, leaving the part with scarcely any mark of fracture. Where is the intelligence that presides over this complicated and beautiful operation? In the brain? There is not the least evidence of it. I believe that it would go on just as well without a brain—and I believe so, because the whole body of an infant has been perfectly formed without brain.

These intelligent operations take place continually, in every part of the body, from the beginning of its development to the end. A thousand facts prove to me that each organ, each cell, and each atom has its own spiritual life, all in harmony with, and contributing to the general life, the spirit which pervades the whole. And when this material organization shall have performed its uses, and is laid aside at death, the spirit of the whole will continue to exist, joined to the spirit of every part, a higher, purer, freer, and more harmonic life.

I look upon the spiritual principle to be a real thing, a substance, having form, dimensions, and laws. There seems to me reason to believe that the lower forms of spirit life contribute to the existence of higher. The soul of a plant subsists, I imagine, upon the soul-substance of minerals or earths; and the souls of animals are nurtured by the souls of plants. It may be, also, that the souls of our organic life, set free each moment by the decay of the material forms which they made animate, may surround us with a sphere of vitality,

which nourishes our own individual or pervading soul, and which may also enter into the spirit-life of those around us. Thus, two persons living together grow to think alike, feel alike, and even look alike, by partaking of the same spirit-life, which everywhere molds the material.

It will be seen that I am a spiritualist, a vitalist ; but I am no less a materialist, and a chemist. I draw a distinction between matter and spirit ; but it is not the difference between something and nothing. With me, matter is a temporary accident ; spirit a more permanent and higher reality. Life is the phenomena of a certain stage of development, in which spirit makes use of matter, until it can do better without it.

This state of things, then, is a necessary condition of our spiritual progress. To have the full advantage of it, we must accept it honestly, fully, and for what it is worth. Our earthly life is a real necessity, and a real blessing, and we should endeavor to enjoy it in all its integrity and force. We should give ourselves all the advantages of a full, healthy, integral life ; a life of energy, activity, beauty, and enjoyment. The standard of a true life is its amount of happiness ; and happiness, as I have said before, comes from the fullest and highest exercise of all the passions of the human soul—from a life full of the highest harmonies. There is no deeper falsehood than the pretence of despising this life, its uses, and its enjoyments. God has given it to us for a noble purpose, and it is truly noble in us to enjoy what He has given us.

Our bodies, then, are worth understanding, and worth taking care of. Let us now proceed to a consideration of the functions of man.

CHAPTER VII.

OF THE FUNCTIONS OF MAN.

I HAVE no superstition about numbers ; but the harmonies of the universe are based on mathematical laws. I use, what seems to me, a natural division, in classing the functions of man into three groups, which may be called, the ORGANIC, the ANIMAL, and the GENERATIVE, which is the result of the union of both the others.

By ORGANIC, I mean those connected with nutrition, or, as they are sometimes called, the vegetative functions. This system centers in the ganglionic nerves, the organs to which they are distributed, the blood, and the organs for its preparation, purification, and distribution.

By ANIMAL, I mean the organs and faculties of sensation, locomotion, thought, feeling, passion, and spirituality.

The GENERATIVE FUNCTION, connected with both systems of organs, requires for its perfection the exercise of all the powers of both. This is the human trinity, sacred and sublime.

These three great functions are named here also in the order of their development and action. The body is built up cell by cell, and organ by organ, from its primitive form, by the nerves of organic life acting upon the nutritive processes. The brain remains a pulp—

the senses are inactive in the foetus ; but the heart pulsates, the capillaries are at work, and the body is prepared for independent life. Under the intelligent agency of the nerves of organic life, all the structures of the body are perfected. We have that beautiful optical instrument, the eye, which our best artists can only bunglingly imitate. We have the complicated apparatus of hearing, still less understood ; and the still more astounding organ of thought. They are all formed ready for action ; but they are all at rest, until, at the end of the nine months of gestation, independent life begins, and the animal powers are added to the organic. The child breathes, then it exercises the propensity of alimentiveness ; and, day by day, it gradually acquires the power and use of its intellectual and moral faculties.

This striking difference is to be noticed between the organic and animal organs. The first require no education. They act perfectly from the beginning. The heart beats as well when it is a pulsating point beneath the microscope, as at any subsequent period. The capillaries and glands need no training to perform their offices. But the animal organs require exercise and education. It is true that those most intimately connected with organic life, act with an instinctive spontaneity ; such as sucking, swallowing, etc. ; but locomotion, language, and the exercise of the mechanical and intellectual powers, comes to the human being by slow degrees, and the higher faculties come one after another into their development and action.

Another difference is in relation to consciousness. If a man were not told, he would never know that he had heart, stomach, liver, kidneys, and any of the in-

ternal organs of nutrition. Even with all the aids of scientific observation, what ages elapsed before the circulation of the blood was discovered? From the time food is swallowed, until it enters into the structure of our organs, lives its brief organic life, dies, and is conveyed out of the system, we have no particular consciousness of any of the changes through which it passes. In health there is a general feeling of satisfaction and pleasure in the performance of every function; but this feeling is vague. In disease, these acts may be accompanied by pain.

But it is the law of the organic system, that its functions are unconscious and vaguely pleasurable in health—and that these nerves only acquire sensation in disease, when they produce pain by their connection with the nerves of sensation belonging to the nervous system of animal life.

A good digestion, a brisk circulation, a vigorous action of the capillaries and corresponding secretions, give a general feeling of health, and a degree of pleasure of which we are hardly conscious, until, by being deprived of it, we have data for comparison. To have made us conscious of these incessant actions of our vegetative life, might have been a discomfort. While they all go on rightly, it is enough for us to have the general and pleasant feeling that all is right; but when there is food in the stomach that can not be digested, poisons in the system that can not be eliminated, nature cries out against the outrage, and her warning cry is *Pain*.

The grand center of the superadded functions of animal life is the brain. Here is the center of consciousness, of sensation, of voluntary motion, of thought,

of passion. The brain, with its appendages, the spinal cord, and the nerves of sensation and motion, are built up and constantly nourished by the vegetative functions. The perfection of human organization is the proper proportion between the development and activity of these two classes of functions, and of the third to these.

The brain is an organ of slow growth, and requiring practice for the due exercise of its organs. This is true of thought, as well as of voluntary motion. We learn to reason as we learn to walk; we require practice in thinking as we do in dancing. Uprightness of both body and mind may be inherited and natural, or they may both be the result of careful training. We may learn to love or hate, as we learn drawing or algebra. There is no power of the soul that may not be developed and strengthened by exercise, or crushed by repression, or weakened by inaction. But you can not train the beatings of the heart, nor educate the peristaltic motions of the bowels. All you can do for the vegetative organs is to give them good conditions. For the animal powers you may do much more. The former may be perverted, weakened, and destroyed, so also may the latter, but they may also be educated to an unknown degree of power and perfection.

Supposing each to be in a fair state of health, the stomach, heart, and other organs of the vegetative system will act nearly alike in the most ignorant boor and the greatest genius.

These systems are everywhere closely connected. Everywhere the organic nerves mingle with those of animal life. The vigor of brain and muscle depend upon the perfection of nutrition, and the processes of nutrition

are greatly influenced by our thoughts, feelings, and movements ; still each system has its own special laws, while health requires that they should be in harmony.

The third function, or system of functions, is still later in development and action. Neither the cerebellum, believed to be the seat of amateness in the brain, nor the sexual organs, attain their full size and power of healthy action until the age of ten to eighteen, varying with climate and constitution. There are rare cases of early development, but these are to be looked upon as monstrosities.

Though the sexual organs begin to be formed at an early period of foetal life, they are unfit to perform their function until the age of puberty. When the generative function is added to those already mentioned, great and striking changes take place in the domains of both animal and organic life.

This function, it may be seen, is related to both the others, and depends directly upon both sets of nerves. We have the seat of love in the brain, spreading its influence over the whole domain of thought and feeling. We have the secretion or evolution of germs and spermatozoa taking place under the influence of the nerves of organic life. We have the sexual congress employing voluntary and involuntary muscles and nerves of motion and sensation. The whole powers of body and soul are engaged in this function, which confers the greatest happiness upon the individual—which is the basis of social harmonies, or the source of social discords, and which is of absolute necessity to the life of the race.

We have now to treat separately of these three great functions.

CHAPTER VIII.

OF THE ORGANIC SYSTEM.

IN the organic or vegetative system, we have several things to consider ; as,

1. The acting force, or ganglionic nervous system, in which resides the first principles of vitality. Of the nature of this force we know nothing—of its action we have much to observe, and we have much to learn of the laws which govern that action.

2. The matter acted upon ; and this is the blood, or nutritive fluid, from its formation by the assimilation and vitalization of aliment, to the last and highest products of secretion and elimination.

3. The apparatus of various kinds by which these processes are performed. These are the organs of digestion, absorption, assimilation, circulation, respiration, nutrition, secretion, excretion.

The central thing here, it will be seen, is the blood, and we shall have further to consider the relations of this fluid, and here, also, under three aspects :

1. The relation of the blood to the food, from which it is formed.

2. To the atmosphere by which it is purified and vitalized ; and,

3. To the organs and functions of animal life.

This order, rendered as simple as possible, may still seem complicated, but in a system in which all the parts are so interwoven, and mutually dependent, no plan can wholly free us from complexity.

For example, if, in explaining the process by which blood is formed from food, I begin with the chewing of this food, and its being mixed with saliva, I have stumbled at the very outset upon a process of secretion. The blood makes saliva, and the saliva helps to make blood. So it is everywhere. The blood makes gastric juice, and the gastric juice helps to convert food into blood. This is the fact, also, even with regard to the active force which presides over these processes. The vital force, or ganglionic nervous power, assimilates nutritive matter, and vitalizes it into the living fluid blood—but it is the blood that nourishes these nerves, and gives them vital force. The blood makes the nerves, and the nerves make the blood. So the blood builds up and nourishes the heart, arteries, and veins that carry it over the system. And we shall find that to a greater or less degree this reciprocity of influences extends to all the processes of life.

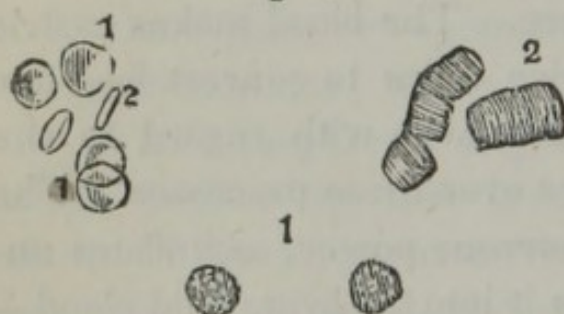
Considering the acting force, or nervous power, as only to be understood by its effects, let us now consider this reservoir of life, the blood, in its various functions and relations. And first, as to what it is.

To the eye, blood is a thin red liquid. It is of a bright scarlet color, when drawn from an artery; but of a deep crimson, or purple, when it comes from a vein. It differs as much in its properties and constituents. The quantity of blood in a healthy, middle sized man is

estimated at 25 or 28 pounds, or about one-fifth the weight of the body.

When allowed to stand for some hours after being drawn, the blood separates itself into two portions, a central, solid portion, called the clot, and a yellow watery serum. The clot is composed of a mass of fibrin, which has drawn together, in its meshes, a quantity of blood discs, or cells, about one-five-thousandth of an inch in diameter, which contain the red coloring matter.

Fig. 27.



CORPUSCLES OF THE BLOOD.

Fig. 27 represents the blood-corpuscles, as seen on their flat surface and edge. Congeries of blood-corpuscles in columns. In coagulating, the corpuscles apply themselves to each other, so as to resemble piles of money. Below are blood globules, or cells, containing smaller cells, which are set

free by the dissolution of the containing cell.

I have already given the chemical analysis of blood. It consists of water, fibrin, albumen, and some mineral constituents. Its most important ultimate elements are carbon, hydrogen, oxygen, and nitrogen. The blood contains in itself the materials necessary for the nutrition of every tissue of the body. It contains, moreover, the matter of all secretions. The milk, bile, urine, fæcal matter, perspiration, saliva, tears, are all in the blood, actually existing, or with their elements ready to be combined. Body-matter, brain-matter, soul-matter, it is all in the blood.

This blood is constantly circulating through the system. It passes through the heart at the rate of about five hundred pounds an hour. All that passes through

the heart, meantime passes through the lungs, where, through a million tubes, it rushes in a full stream, like an ever-rushing river. Then it all pours through the great aorta, and, branching out, like a vast tree, it goes on until every atom of the body is supplied with the fresh, bright, arterial blood.

It is sent where it is wanted, and it is wanted where it is sent. Without it is no motion, no sensation, no life. Check for an instant the current of blood to the brain, and you have syncope; prevent its becoming arterialized by contact with oxygen, and you have the insensibility of asphyxia. It is not blood only, then, that is necessary to sensation and life, but oxygenated, arterial blood—blood of a certain chemical organization.

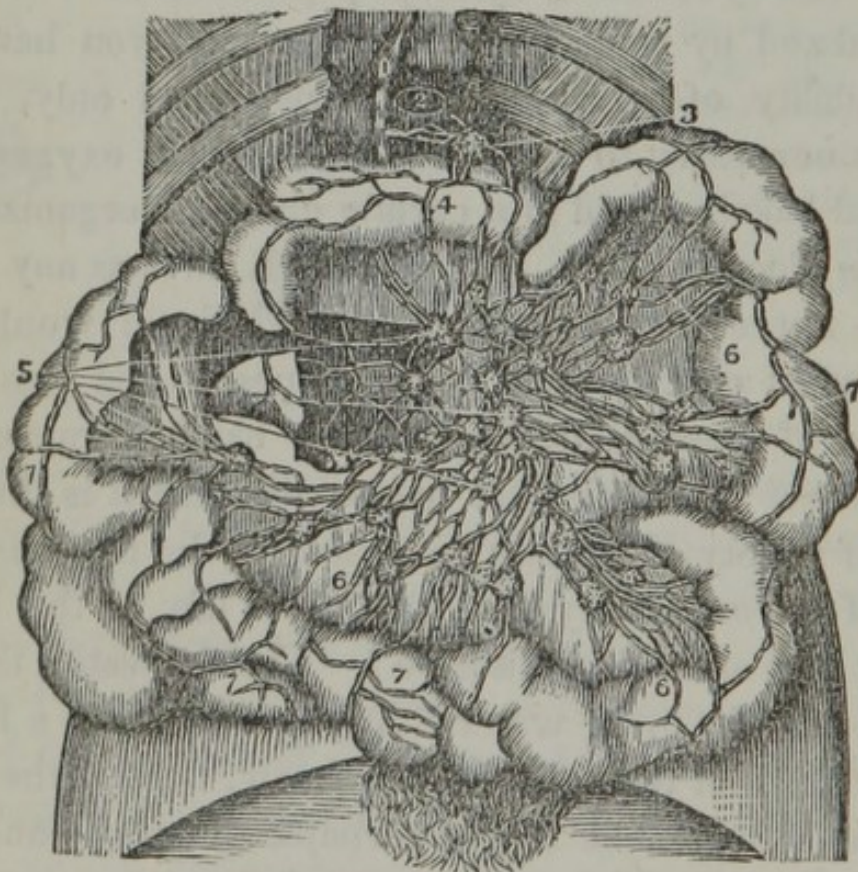
This blood is alive. It is as much alive as any muscle or nerve in the body. A dead liquid would not answer, in contact with living tissues. And this conversion of dead matter into living blood is one of the mysteries. It is life that begets life, and it is the surplus of vitality constantly generated in the nervous centers of the organic system, that give life to the blood. What part of the blood is alive? Not the water, though we speak of "living water;" and this fluid has a life of its own. Not the minerals; scarcely, I think, the albuminous serum; but more, perhaps, the fibrin, and still more, or entirely rather, those little disks, or cells, which swim about in the fluid, filling it with a pervading life.

And this blood does not die all at once. Its clotting is a vital operation. If the blood is killed at once by a stroke of lightning, it never clots, but turns putrid at once. Some blood clots, and turns putrid more slowly

than others. Strong, healthy blood is longer in going through these processes than weak, sickly blood. The human blood that is made from pure vegetable food, will keep whole days longer than the foul blood made by living on the flesh of other animals.

The assimilation of nutritious matter, the formation of the primitive blood globules, and their vitalization, appear to take place in the lacteal and lymphatic glands,

Fig. 28.



LYMPHATICS OF THE SMALL INTESTINES.

The glands are enlarged by disease. 1. The thoracic duct through which the lymph passes up to the fork of the left vena innominata.

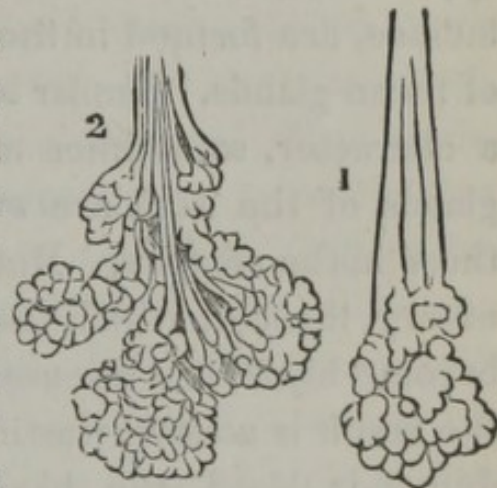
under the influence of the nerves of organic life. In this system we have matter brought from all parts of the body, passing through great numbers of these glands; we have also the matter absorbed from the intestines,

by the process of cellular formation and dissolution ; and all this matter goes to mingle with the general current of the blood. In it may be seen, by the microscope, the lymph globules, white, clear, but destined to imbibe coloring matter, and become red globules.

But before we go further, let us glance a moment at the structure and action of glands. All vital actions seem to be carried on by means of surfaces. The more important the operation, the greater the surface concerned. A simple membrane gives a certain extent of surface ; we have still more in cells, and still more when these cells line tubes, and those tubes increase their length by multiplied convolutions. In the human body we have all sorts of glandular apparatus, from a single follicle, or depression, up to the immense convolutions of the seminal tubes in the testicle, or the still more complicated nervous tubuli in the nervous centers.

Wherever any vital action is to be performed, we have, by some means, an extent of surface proportional to its importance. In the lungs, the air-cell surface is estimated at 1,500 square feet. In the same organ the convolutions of capillary vessels, in which the blood is brought to imbibe oxygen from the air and give off carbonic acid, must make a surface many times greater. The vessels and secreting cells of the liver contain a

Fig. 29.



GLANDS IN THE COAT OF THE
STOMACH, MAGNIFIED 45
DIAMETERS.

vast amount of surface. The kidneys are a compact mass of tubes, while the tubes which compose the structure of a human testicle are hundreds of feet in length. Through a vast net-work of mesenteric glands, the chyle passes, on its way to be converted into blood, and it is doubtless in these glands that the process of vitalization is effected.

The lacteal and lymphatic glands, which are of a similar character, and which probably perform a similar office, are liable to be diseased by poisonous matter passing through them. Thus in the absorption of syphilitic matter from the penis, large swellings, called buboes, are formed in the groin, where there is a mass of these glands. Similar buboes, but not of so malignant a character, sometimes arise from gonorrhœa. The glands of the neck are swollen in scrofula, as may be those in the armpits. But when the glands of the mesentery, through which the aliment passes, on its way to become blood, are diseased to any considerable extent, the result is a slow, wasting consumption. The system demands blood, the blood demands its aliment, the stomach feels the demand in a craving appetite, but the channels of communication are cut off. The lacteals can not perform their function. The system wastes, its matter is used over and over to make new blood, as long as it will answer for this purpose ; but this can not go on. The patient sinks into a hopeless marasmus, and literally starves to death. This disease is called consumption of the bowels, to distinguish it from the consumption of the lungs.

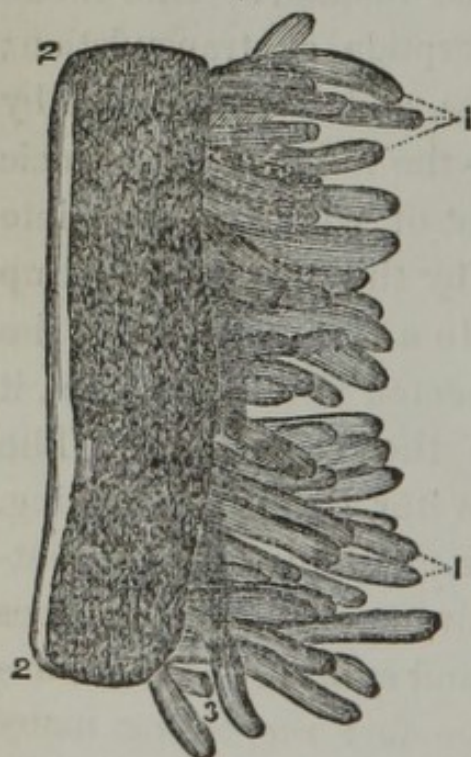
There are going on in every part of the system the most constant and rapid processes of secretion, or the

separation of various matters from the blood, and the additions to the blood must exactly correspond with these, to keep up the equilibrium of life. After arriving at his full growth, a man may live on for many years, scarcely ever varying in his weight. Yet he consumes tons of food, and gives off tons of excretions. There may be a gradual deposition of fatty matter in the cells of the areolar tissue, a stock of food laid up for the wants of age, when the partial failure of digestion may render such a supply convenient; but this variation is but slight in ordinary cases. Day by day consumption and waste very nearly balance each other.

The reader may have already perceived that there are two modes by which matters get into the blood, and they get out of it in a similar manner. One mode is by simple mechanical absorption or transudation; the other is a more vital process, and is performed by means of glands, or cells, under the influence of organic nerves. For example, if a pint of water is taken into the stomach, when demanded by thirst, it is sucked up by the veins as by a sponge. In a feverish state of the system, if a pint of water is injected into the rectum, it is also quickly absorbed into the circulation. The veins of the skin also absorb water rapidly in bathing, and even from the atmosphere. Water is not digested, but is itself the great digestive agent. It undergoes no change, unless by analysis and synthesis, but is simply absorbed. This is also the fact respecting many substances dissolved in water, or themselves liquid; and this is the reason why water for drinking should be soft and pure. Alcohol passes from the stomach directly into the circulation, as alcohol by venous absorp-

tion. It passes through the liver, exciting and disordering that organ. It is carried by the blood to the brain, producing exhilaration, intoxication, and finally stupefaction. It passes off by the lungs, tainting the breath, by the skin, by the kidneys, and doing mischief everywhere. If the finger be dipped in spirits of turpentine, in a few minutes it can be smelled in the urine. Many things get into the blood through the lungs. If we breathe the vapor of chloroform or ether for a few moments, it taints the breath for many hours, having been absorbed into the blood and gradually expelled again. Thus we may be poisoned in our food, our drink, in the air we breathe, and by the substances we come in contact with. And in each case it is the

Fig. 30.



A LONGITUDINAL SECTION OF A
PORTION OF THE SMALL
INTESTINES.

blood that suffers, and through the blood the nerves of both animal and organic life. And as the blood has its own life, the blood may be fatally poisoned, and this is unquestionably the fact in certain epidemic and contagious diseases.

Showing the villi, with their orifices. 1, 1. As they appear under the microscope.

But the most important and vital portions of the blood are received by means of another and a more elaborate kind of absorption, or assimilation. The small intestines are covered with villi, or minute excrescences, millions

in number, and presenting a vast surface, having no openings, but containing an apparatus of blood-vessels and nerves, and where, by a process of cell formations and dissolutions, the matter of nutrition is received into the circulation.

In the mucous coat of the alimentary canal is to be found a cribriform texture of veins, almost without an artery. The fine venous trunks of a deeper layer have their originating extremities directed vertically toward the cavity of the gut, and the meshes of the venous intertexture are exceedingly minute, producing in the colon an appearance resembling a plate of metal pierced with round holes closely bordering on each other. These holes are the follicles of Lieberkuhn, are gaping orifices, the edges of

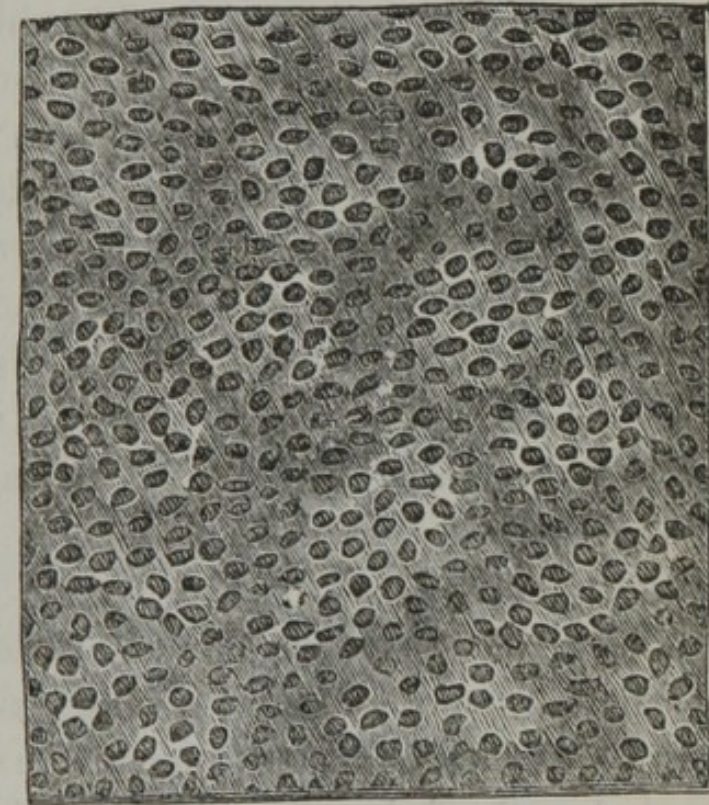


Fig. 31.

A VIEW OF THE FOLLICLES OF THE COLON, MAGNIFIED ABOUT 115 TIMES.

which are rounded off, and their depth is that of the thickness of the venous anastomosis. The aggregate number of these follicles in the colon, is estimated at nine millions six hundred and twenty thousand.

Before food can become chyle, and from chyle be vitalized into blood, it must be comminuted and dissolved—dissolved so thoroughly, as to pass through animal membrane, like water or oxygen. And it does become so by the process of digestion. It is mashed, or should be, by the teeth; it is moistened and partly dissolved by the saliva, which flows into the mouth just

when it is wanted, from three pairs of glands. It is lubricated by mucous glands around the roots of the tongue, in the pharynx and esophagus.

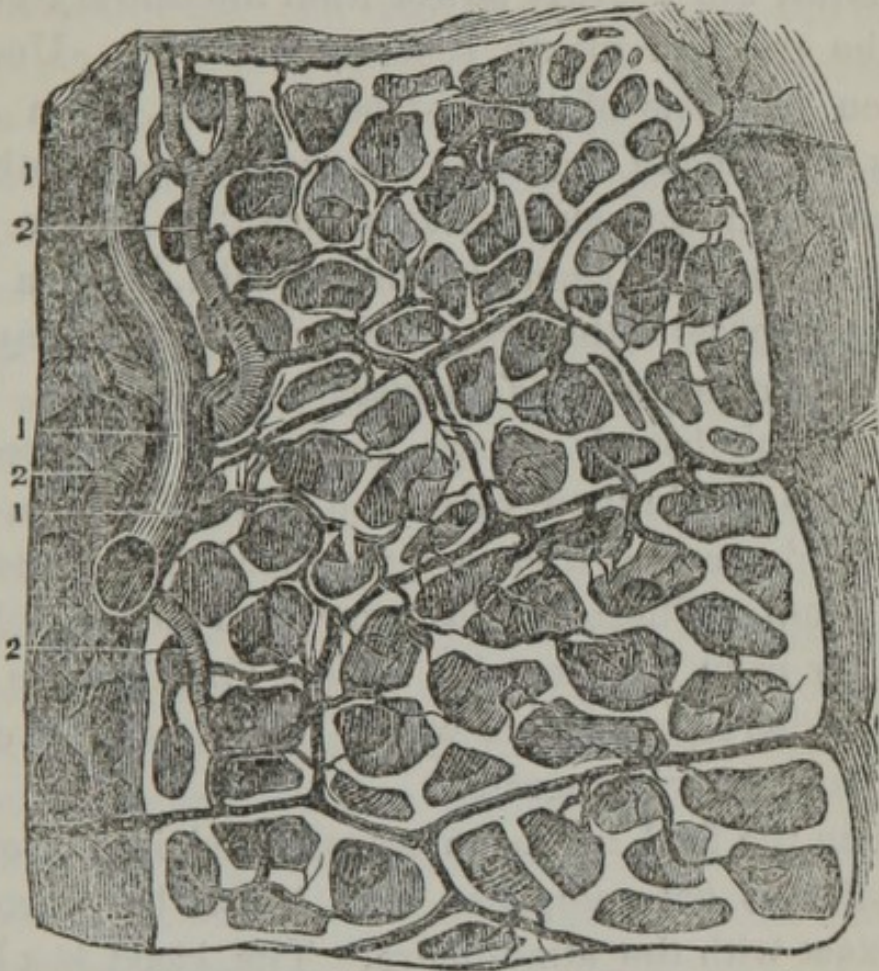
Arrived in the stomach, with digestion well begun, the blood gathers around this organ, and distends its coats. From this blood the gastric glands secrete the gastric juice, with its basis of hydrochloric acid, and its wonderful dissolving power. It is poured from the orifices of minute follicles, opening in the folds of the mucous membrane. Of these follicles there are two hundred and twenty-five in the square of the eighth of an inch; fourteen thousand four hundred in a square inch, or one million two hundred and ninety-six thousand follicles to the entire stomach, and each of these follicles the outlet of a complex glandular apparatus, surrounded by a dense network of blood-vessels and nervous fibers.

These follicles, pouring out the secretions necessary to the digestive process, or giving exit to matter which is to be excreted from the bowels, extend through the whole length of the alimentary canal. In the five feet length of the colon, the large and last intestine, these follicles are very close and minute, and their number is estimated at nine millions six hundred and twenty thousand.

But even this vast amount of surface—and all the length, convolutions, and folds of the intestines are to give surface—all these glands, follicles, and villi, are surface; all this is not enough. To pour a kind of salivary fluid into the duodenum, or small intestine near the stomach, we have a glandular mass called the pancreas, weighing several ounces; while the liver is a

mass of glands separating bile from the blood, weighing four or five pounds.

Fig. 32.



A MAGNIFIED VIEW OF A SECTION OF THE LUNG.

Showing the arrangement of some of the lobules, the communication of the air-cells in one lobule, and their separation from those of the adjoining lobule. The ramifications of the blood-vessels in the texture of the lung, and their course through the air-cells are also seen. 1, 1. Branches of the pulmonary veins. 2, 2. Branches of the pulmonary artery.

We get a much clearer idea of the organs of the body, when we consider each individual portion—each villosity, or each follicle, as a distinct organ, performing its appropriate function. But however minute these may be, we must go further, and consider each cell as the final individual, in whom resides the functional

power. And each cell is formed by the nervous power, and performs its function under nervous influence. Withdraw the nervous power from the salivary glands, and the parched mouth receives no saliva. Under a sudden paralysis of the nervous system, from some shock, the tongue cleaves to the roof of the mouth, the food sticks in the unlubricated throat; no gastric juice is poured into the stomach, and the food, lying a dead weight, oppresses the organ, or irritating like any foreign substance, produces nausea and vomiting. The action of the bowels ceases, and we are affected by constipation, or in their relaxation, have diarrhœa. All this disorder comes from a disturbance of the nervous equilibrium. These are facts never to be lost sight of, and they point to principles which I shall more fully illustrate hereafter, and to which I must refer at every step of our future progress.

When the food has been transformed into blood, its vitalization is not completed until it has been brought in contact with the atmosphere. The blood is a living fluid, and, like all living beings, *it must breathe*. And it demands pure air. No sooner has it passed into the right side of the heart, than it is thrown into the lungs, where every drop gathers around a vesicle of air. And this blood asks for air, with an importunity that will not be denied. We can not withhold the supply. The blood must breathe. It must have oxygen. Each blood disk rushes to the net-work of fibers, which we call membrane, sends off its atom of carbonic acid, and receives its atom of oxygen; reddening like a bride who holds her husband in her arms. Off rushes the blood globule, with her bright prize, but not to keep it

long. In the capillaries she finds tissues which want oxygen more than she; she gives it up, loads herself with carbonic acid, and returns, slowly, dark, and mournful to the heart, again to be rid of her burden, and again to brighten under the vitalizing oxygen.

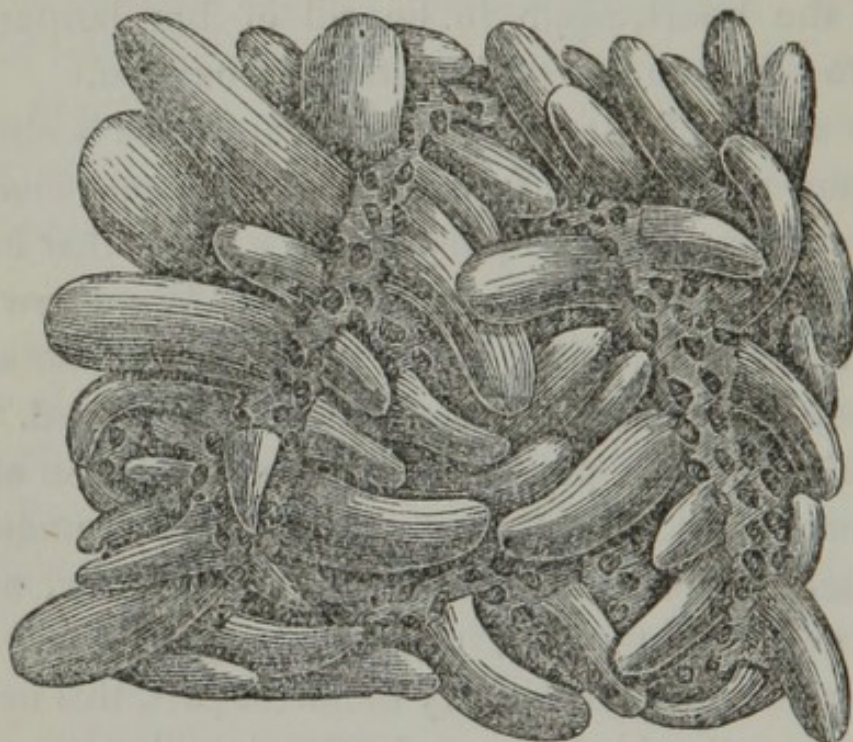
The action of the blood in the capillaries is obscure. We know that it turns from arterial to venous, changing its color from scarlet to purple. We know that it loses oxygen, and receives carbonic acid. We know that new matter is deposited in the tissues by cellular appropriation, and that the waste matter is removed. We know that in this process there is an evolution of animal heat. We know that all this takes place under the influence of the nervous system; and directly, we believe, under that of the nerves of organic life. I believe, moreover, that in every minutest part, this nervous power is endued with an adaptive intelligence, which provides, to a great extent, and as far as possible, against all accidents and exigencies. Of this more especially hereafter.

And now the blood, having eaten its food, and breathed its air, and performed its work in the capillaries, where it builds up with new, and whence it conveys whatever rubbish of the old, must be relieved of its burden, and kept sweet, pure, and vigorous, that it may give sweetness, purity, and vigor to all parts of the system, and especially to the brain and especial organs of the soul, to which it first and chiefly ministers.

For this purpose, we have a set of depurating or cleansing organs. Some of these have been already noticed. The fœcal matter is poured from the blood-vessels in the mucous membrane of the intestines,

through millions of openings; and this action of the bowels is one of the conditions of health. The liver

Fig. 83.



▲ A VIEW OF THE VILLI AND FOLLICLES OF THE ILEUM, HIGHLY MAGNIFIED.

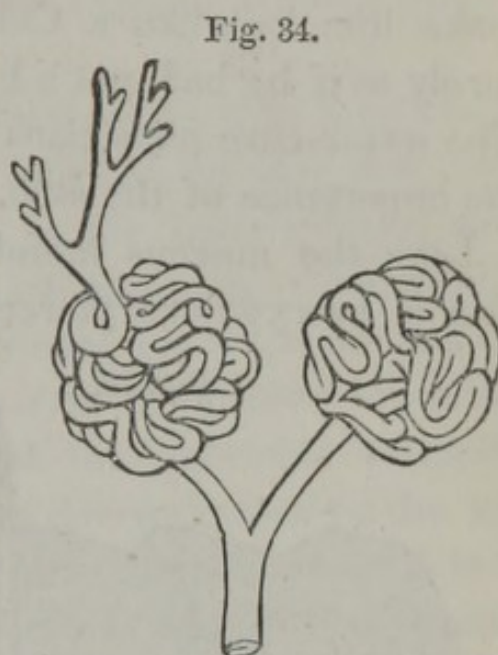
These villi are curved, with their edges bent in, or concave; but there is, in the whole canal, every variety of shape, from oblong, curved, and serpentine ridges, to the laterally flattened cone standing on its base.

separates from the blood a great mass of carbonaceous matter, which, while assisting in digestion, is not the less excrementitious; and if the action of the liver ceases but for a day, the skin is tinged with the yellow hue of the retained bilious matter.

Two large branches of the abdominal aorta convey a powerful current of arterial blood to the kidneys, which, by a complicated and beautiful apparatus, separate from it the urine, full of the waste matter of the nitrogenized tissues. Here is muscular matter with its sulphur, and nerve matter with its phosphorus. Here is the ammonia, formed by the combination of nitrogen and hy

drogen. Here are salts and minerals, the latter, when in excess, sometimes forming gravelly and stony accretions. The kidneys are vital organs; for, if the matters they separate from the blood, and send off to the bladder, through the ureters, were retained, they would poison the blood to putrefaction, and paralyze the brain to coma.

Or malpighian bodies, from the kidney of an owl, injected and very largely magnified. These bodies, as well as the testes, offer fine examples of the extension of secreting surface, by the convolution of tubes.



RENAL GLANDS,

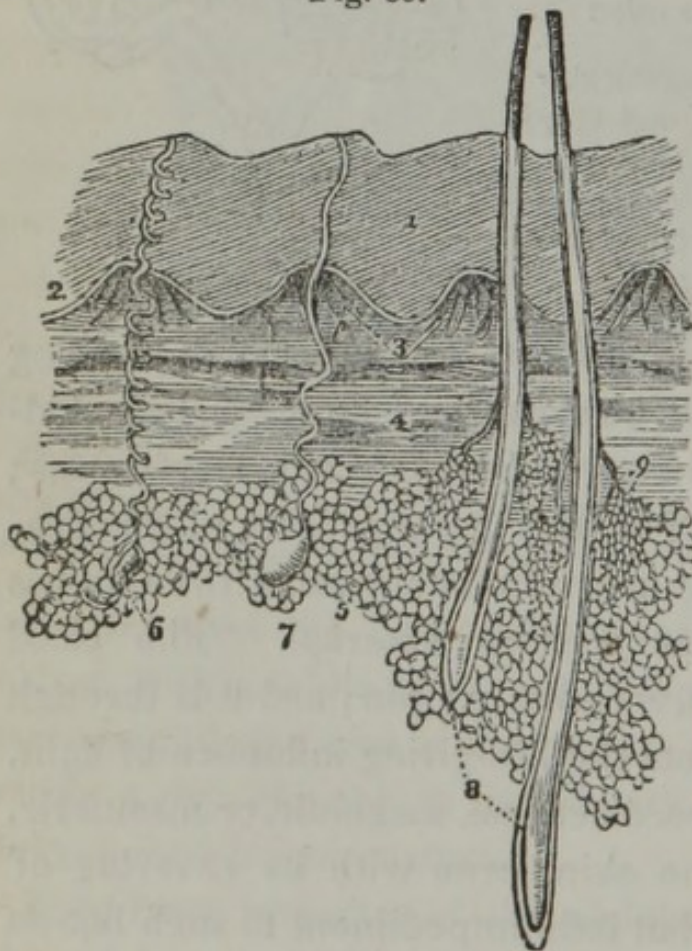
The skin is not less important as a great depurating organ. I call the skin an organ, as I do lungs, liver, kidney. Like them, it is a vast collection of individual organs; each at work by itself in this great process of purification. Like the lungs and alimentary canal, the skin has internal functions, as well as external. The blood breathes by the skin, receives oxygen; and it is through this avenue that it gets the life-giving influence of light, and aroal influences, electrical, magnetic, or mesmeric, and miasmatic. The skin, even with its covering of horny cuticle, offers but little impediment to such liquids as water, alcohol, spirits of turpentine, etc., and the gases travel through it without hindrance.

Franklin's air-bath was a very common-sense discovery of a *very* common-sense philosopher. We may be invigorated or poisoned through the skin. It is a truly vital organ. Let a certain portion of its surface be de-

stroyed by any means, and death is inevitable. The Frenchman who covered a little boy with gold-leaf, to make him look like a California cupid, killed him as surely as if he had put a ligature around his windpipe. The water-cure physicians have by no means overrated the importance of the skin.

Like the mucous membrane of the intestines, the skin is everywhere pierced with follicles, here called

Fig. 35.



ANATOMY OF THE SKIN.

Vertical section. 1. The epidermis. 2. Its deep layer, the rete mucosum. 3. Two of the quadrangular papillary clumps, composed of minute conical papillae, such as are seen in the palm of the hand or sole of the foot. 4. Deep layer of the derma, the corium. 5. Adipose cells. 6. A sudoriporous gland with its spiral duct, as are seen in the palm of the hand and sole of the foot. 7. Another sudoriporous gland with a straighter duct, such as is seen in the scalp. 8. Two hairs from the scalp, inclosed in their follicles; their relative depth in the skin is preserved. 9. A pair of

sebiparous glands, opening by short ducts into the follicle of the hair.

pores, each of which is the outlet of a gland, formed by the convolutions of the tube, and around which is a rush of blood-vessels and nerves. These glands perpetually separate from the blood, and these excretory

ducts pour out the matter of perspiration. This passes off in vapor, unless it is in such quantity that the atmosphere can not take it up fast enough, when it gathers in liquid drops of sweat.

The matter of this secretion varies with the state of the constitution, and the condition of this and other organs, which are engaged in the same general work of purification. When the circulation is active, and the skin healthy, every sudoriferous gland pours out the matter of perspiration. In violent exercise the whole skin is covered with it, and the garments saturated. Wherever there is an active determination to the surface we have this result. But, in this case, as in so many others, one act has several uses. The elimination of perspiration is a cooling process as well as a purifying. When we increase the warmth of the body by any means, nature calls for the cooling process, and this call of nature is answered by a rush of blood to the glands of the skin, and the pouring out of this vapor, and the system is cooled by this process. In the blanket pack we determine to the skin by the accumulation of vital heat.

When the pores of the skin are closed by the constriction of cold, or the action of its glands is diminished by a weakened or diseased constitution, the work of the skin is thrown upon other organs. The kidneys pour out more urine, the liver secretes more bile, the lungs are filled with exudations; sometimes the action of the bowels is heightened to a diarrhœa. Colds and catarrhs are the ordinary result of checking the perspiration, or "taking cold."

On the other hand the skin is often compelled to

perform the function of some internal organ. In torpid states of the liver the skin is filled with bile. In disease of the kidneys, the perspiration has sometimes the distinct odor of urine; in obstinate constipation of the bowels, it has the smell of fœcal matter. In the same way, each of the secreting organs may act vicariously for some other.

Thus much here of the relations of the blood to its means of purification. We shall need all this when we pass from physiology to its applications in hygiene, pathology, and therapeutics.

I humbly avow my inability to explain all the vital phenomena exhibited in the functions of the organic system. In the simplest plant there are mysteries of organism and of function which I can not solve. Let my guesses at truth be taken for no more than they are worth. You have, or may have, all the facts upon which my opinions are founded.

The evolution of animal heat seems, at the first glance, to be as simply a matter of chemistry as the warming of my house by the combustion of coal in a furnace. But is it really so? True, our food contains carbon and hydrogen. We take in at every breath a portion of oxygen. The oxygen combines with the carbon to produce carbonic acid, and with the hydrogen to produce water. This is a real combustion, going on all over the body, and heat is the necessary product of combustion. The chemists have weighed all these elements, and their products, and there can be no mistake about the facts; but there is still an element to be taken into the account—the element of nervous power or vitality. That controls the circula-

tion of the blood, congesting it in the viscera of the chest and abdomen, or throwing it to the surface. That fills the capillaries, or empties them. That causes a limb to become pale and cold, or gives it the swelling, redness, and heat of a violent inflammation.

And though the organic bases the animal, the animal presides over the organic. The passions and emotions of the mind influence the most purely organic functions. The ardor of hope, or desire, may give warmth to the whole system, while disappointment or fear may chill the frame, and set the teeth to chattering. The emotion of jealousy may make the hands, in a few moments, turn deathly cold; or a happy love may make them glow with the fires of passion. A thought sends the hot blood to the face in blushes. Disappointed love gives the sensation of a hard, dull, aching oppression round the heart. The lungs are constricted, and relieve themselves by frequent sighs. The heart may even break from the excess of this passion, in its painful and discordant action. Many such facts will suggest themselves to the observing reader.

The manner in which demand governs supply in the organic system is a proof that this law of supply and demand is fundamental, and therefore universal. In the water-cure, we practice constantly upon this principle. If we want blood and action in a part grown weak and diseased, we apply cold. The increased and urgent demand brings the supply; and, as power increases by exercise, there soon comes the habit of action, and a cure. Heat, in the whole system, as in its parts, is generated as it is required. Supply is in proportion to demand. Send a man to discover the North Pole, and

he comes to not only endure, but to be quite comfortable, with the thermometer at 30 or 40 degrees below zero. Send him to the tropics, and he keeps cool by a copious perspiration at 100 degrees above. He can even sit in an oven heated to 300 degrees, while a potato is baking beside him. This power of adaptiveness belongs to the nervous system.

There is a set of organs belonging to the organic system, which I have not yet mentioned, so mysterious are their actions. They are what have been termed the ciliary bodies, from their resemblance to the eyelashes. Of microscopic minuteness, they grow upon the

Fig. 36.



CILATED EPITHELIUM.

epithelial cells, which pave the mucous mem-

a. Nucleated cells, resting on their smaller extremities.

b. Cilia.

brane. They are found through the whole ali-

mentary canal, in the air passages of the lungs and nostrils, in the fallopian tubes, vagina, and urethra, and the ducts of the glands. They are also found in animals, down to the lowest species.

Standing upon these minute cells, these ciliary bodies, by millions, move continually, and with a rapidity that makes them invisible, until they become gradually slower with the death of the part. They have no perceptible connection with muscle, blood-vessel, or nerve. In animalcule, they are the source of rapid motions. In zoophytes, they surround the mouth, and force currents of water through the passages, for purposes of nutrition or respiration. Constant and powerful currents may be

seen whenever these animals are examined under the microscope. In the higher animals, they line the internal passages, and the effect of their action is to carry the fluids in their proper direction. They free the bronchial tubes, keep up the motion of the intestinal secretions, and propel the ovum through the fallopian tubes to the uterus. What is very wonderful is, that if a very small piece of mucous membrane is cut off, removed entirely from the body, and placed under the microscope, this action will go on for hours. This, however, is no more remarkable, perhaps, than the powerful, independent action of the heart in some of the lower animals. If the heart of a frog is removed from its body, and laid upon a table, it will continue to beat for some time; and it is said that the heart of a sturgeon (a large fish), hung up in the sun, has continued to beat until it creaked with dryness.

CHAPTER IX.

THE ANIMAL SYSTEM.

THE functions of animal life are—

1. Perception, intelligence, memory, passion, will; all those varied powers of mind or soul whose special organ is the brain.
2. Sensation, through the means of sight, hearing, smell, taste, and touch, or feeling; with a deeper sense transcending these, but seldom or partially developed,

and vaguely known as impressibility ; nerves of sensation.

3. Voluntary motion, including all language, natural and acquired, and all modes of expression ; nerves of motion and muscular system, with its relations.

The organism of this series is symmetrical, or made up of two halves. This is true of the bones, muscles, etc., of the motive system ; it is true of the senses and of the brain. In this respect, these organs differ notably from the heart, stomach, liver, and the whole digestive apparatus.

The correspondence of the two sides of the animal system is not perfect. One side is often larger than the other, and the cerebral convolutions of the two sides do not precisely match ; still there is no more doubt of the pairing of organs in the brain than of the senses and limbs.

The animal system is one of central life, and of relation. The brain exists and acts in itself ; it receives through the senses ; it gives in action and expression. Sensation in the animal system, corresponds to the swallowing of food in the organic. Perception is the digestion and assimilation ; thought, passion, and will are the nutritive and secretive processes ; and both functions join in all action, which is at once the evolution of force from the consumption of matter, and by this means the expression of the soul.

The real man has his analogue in the verb, "a word which signifies to be, to do, or to suffer." Man is active, passive, and neuter ; the neuter is the central state of being ; passivity is the condition of influx or sensation ; and the result is the condition of action or

expression. The capacity of receiving should exactly balance the activity and power of doing; and both must be governed by the central faculty of being.

We have no name to express the aggregate of the cerebral powers, or functions. Mind is applied especially to the intellectual powers. Soul and spirit have been used so much in theological senses, and with reference to particular religious ideas, that they have lost their definite meanings. We want a word which shall express the central, spiritual power, made up of perception, thought, passion, and will, which presides over the animal functions of man. The best word we have is soul, and, in its true and deepest sense, it is sufficient for our purpose.

According to Fourier, who, as a profound analyzer of human nature, is always to be quoted with respect, the soul has twelve passions, divided into three groups.

1. The five sensuous attractions or passions: sight, hearing, taste, smell, touch.

2. The four affections: friendship, love, familism, ambition.

3. The three distributive passions: emulation, alternation, cumulation.

Pivot, UNITYISM.

In this classification, we have no arrangement of intellectual faculties, and we have passions which seem to me to be the results of the combination of several sentiments, while others are not taken into account.

The classification of the powers of the soul, by the phrenologists, though it was at first superficial and incomplete, seems to me to be the result of the most

simple analysis. The grand division of the faculties into propensities, sentiments, and intellectual faculties, seems a reasonable one, though it is not always easy to decide whether a particular faculty is a high propensity or a low sentiment, and there are also powers which are on the dividing line between the sentiments and intellectual faculties.

I have examined with care and candor the classification of the faculties or passions of the soul adopted by Dr. Buchanan, of Cincinnati, for whose character I have a cordial estimation; but I am not able to admit that Gbd has given to man any such faculties as Hatred, Turbulence, Arrogance, Skepticism, Desperation, Suicide, Baseness, Felony, Profligacy, Disease, Childishness, Idiocy, Insanity; all of which he has marked upon his chart, and for which he finds corresponding organs in that part of the brain which he marks as the "Region of Crime."

These all seem to me to be the results of diseased and discordant passions, to arise out of conditions of development and action, in which there is a lack of individual and social harmony. In a certain sense, God is accountable for what we call evil; but not for having created organs expressly adapted to its production. I can not doubt that the normal action of every human faculty tends to happiness, any more than I can doubt that the normal action of every physical organ tends to health. I may not do justice to the statements of Dr. Buchanan, possibly I have not comprehended them fully; but with my present views of the structure and harmonies of nature, I can not accept them without the most absolute proof. It is but justice that I refer

the inquirer to the published expositions of his doctrines.

The phrenologists have been careful observers of nature. The result of their observations is a system of organs and faculties so harmonious, with our observation and consciousness, that we can not withhold our admiration. It is the only system of mental philosophy that is at all satisfactory. There are faculties for which no organs have yet been found; powers of the soul not enumerated in charts, or marked on skulls. So far phrenology seems imperfect; but there are also tracts of cerebral convolutions which, from their situation, have not been explored.

I have a few observations to make on the powers of the mind; and, aside from all the evidence of the truth of this system of classification, we shall do well to adopt it, until we can find one as convenient and satisfactory.

The perceptive faculties, Individuality, Form, Size, Height, Coloring, Locality, Number, Order, Eventuality, Time, Tune, Language, when largely developed, become desires, passions, or loves. We have persons with a passion for drawing, music, language, stories, as real and absorbing as the passion for wealth or fame. Who has not seen a passion for order, or for some form of mathematical science?

Now, if to a perception is joined a love, why should we assume that a love can not have a perception? If the so-called perceptive faculties of Tune or Order can have the controlling force of passions, why may not Benevolence or Veneration be accompanied with some power of perception or intuition? We are told that

the feelings are blind—that the propensities must be guided by the intellect. And all perceptions of qualities and fitness are referred to these intellectual faculties.

My consciousness assures me that here has been a great error, a double error, in making the so-called intellectual faculties all passionless, and the so-called sentiments and propensities devoid of all intelligence. I believe in the intuitions of the heart, as they are called, which seem to me only to be the rapid and powerful action of the intelligence that resides in every passion of the soul. Each faculty seems to me to be a combination of desire and intelligence, with powers of foresight and memory.

I know that the reflective powers, comparison and causality, by which we discover the harmonies of relation and sequence, and the general “fitness of things,” are the calm judges that must give final decision; but what is called the instinctive knowledge of right seems to me to be the intelligence of conscientiousness. So constructiveness, or what is called the propensity to build or construct, seems to carry with it in insects, birds, and higher animals, as well as in man, certain powers of intelligence and action.

In a word, I can conceive of no passion which is not accompanied by a kind of intelligence suited to its nature and objects, and giving us the knowledge called instinctive or intuitive, and which, though liable to many perversions, is, in a true life, perhaps even more reliable than the action of the so-called intellectual powers.

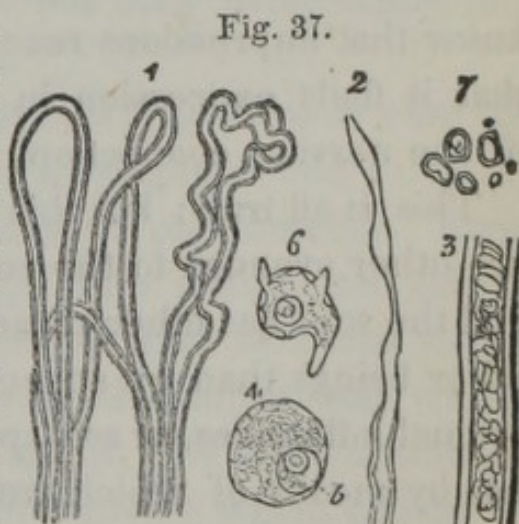
It is to be noted that the phrenologists have given to the function of amativeness a brain by itself, the cere-

bellum, which is quite distinct from the cerebrum, though closely connected by masses of nervous fiber. I accept this division, and shall treat of this organ and function in a separate chapter. Amativeness, or the central power of the great function of generation, is not to be mixed up in the ordinary way with the cerebral organs. We shall see how it is related to all the powers of life, animal and organic.

Brain, or nervous matter, is to the animal system what the blood is to the organic. Or, as there is in the organic system a vital fluid, the blood, and a nervous power, the nerves of organic life or ganglionic system, presiding over its circulation and operations; so we have in what is called the nervous system of animal life, consisting of brain, spinal cord, and the two sets of nerves, a corresponding system. The white, hollow, nervous fibers correspond to the blood-vessels, filled by

Fig. 37 represents the microscopic elements of the nervous structure. 1. Mode of termination of white nerve-fibers in loops; three of these loops are simple, the fourth is convoluted. The latter is found in situations where a high degree of sensation exists. 2. A white nerve-fiber from the brain, showing the varicose or knotty appearance produced by traction or pressure. 3. A white nerve-fiber enlarged to show its structure, a tubular envelope and a contained substance—neurilemma and neurine.

4. A nerve-cell, showing its composition of a granular-looking capsule and granular contents. 5. Its nucleus containing a nucleolus. 6. A nerve-cell, from which several processes are given off; it contains also a nucleated nucleus. 7. Nerve-granules.



MINUTE NERVOUS STRUCTURE.

the nervous fluid, which corresponds to the blood; while the cortical substance of the brain, and central substance of the spinal cord, the grey, or cineritious, or vesicular matter, as it is variously termed, seems to be the part in which the nervous fluid is elaborated, and in which resides also the force which presides over its action.

Swedenborg says the connecting link between spirit and matter is a nervous fluid, which partakes of the qualities of both, and is by that means the medium of communication. Those who are curious, will do well to read his physiological writings.

We are here on the confines of a vast kingdom of nature, which has as yet been but little explored, and of which we have but vague and general ideas. We know that the brain is the organ of the soul. We know that the nerves are the ordinary and obvious means of communication between the soul and the universe. We know that impressions reach the soul by sensation, and that it finds expression in voluntary motion, by means of the nervous connection.

This is all true; but this is not all the truth. There are other avenues to the soul than through the senses, and the soul has other means of impressing herself on other beings than by speech and gesture. There are aërial influences, or soul spheres and mediums, around us, by means of which we receive and give impressions. Even in this life, the soul is not wholly dependent on the senses, nor fettered to the common modes of expression. Independent spiritual powers, of a very remarkable character, are often exhibited under particular conditions.

The power of mesmerizing is one of these ; the faculty of mesmeric, or of independent clairvoyance, is another ; a branch of this is the psychometric power, before alluded to ; and that sensibility to influences which do not affect ordinary sensation, termed "impressibility." Many phenomena, which have vaguely been attributed to the imagination or to sympathy, belong to this super-sensuous sphere of life, to the higher powers of the soul, to the realms of what Fourier calls the aërial kingdom, and what Swedenborg saw as the spiritual or angelic life.

That what we call spirit can act on what we call matter, we have proof in every organized being. There is no greater miracle in this way than ourselves ; but we have now a vast accumulation of facts, which seem to prove that the spirits which have become entirely independent of material organization, can, under certain aërial conditions, act upon not only living souls, but upon dead matter.

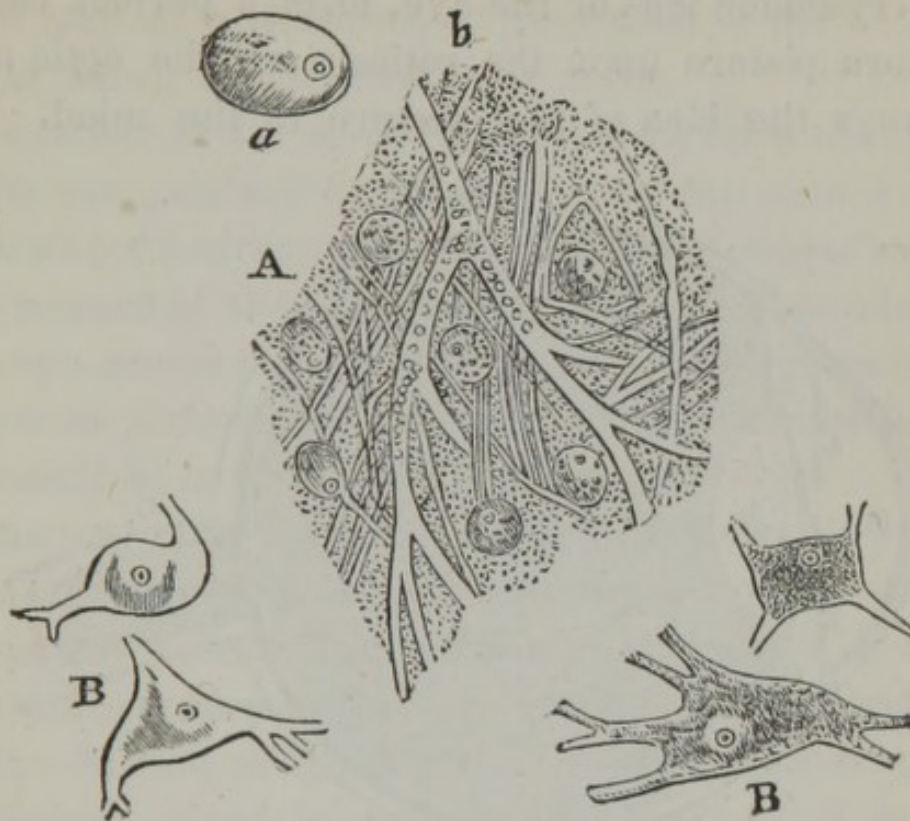
There are now many thousands of persons of entirely unimpeachable character for intelligence and veracity, who are witnesses of this class of phenomena. Raps are made of various intensity, from a slight and almost imperceptible crackling sound, to loud sonorous vibrations, which can be heard over the house, and which produce a sensible jar around them. When questioned, these raps answer with an intelligence which convinces most inquirers that they are produced by invisible spiritual beings. Sometimes the physical demonstrations are of a more decided character. Heavy tables are raised from the floor, or tilted from side to side, without disturbing the objects upon them. Musical instru-

ments are played upon without visible hands. Persons are raised bodily from the floor, and carried through the air, contrary to all received notions of the laws of gravitation. Often, the messages which are received from friends in the spiritual state, are affectingly impressive.

There seems to be no reason for denying these facts. I have not stated one to which I could not summon hundreds of witnesses, the oaths of any two of whom would send a man to the gallows. There is no lack of intelligence, honesty, or numbers in the witnesses. There may be some difference of opinion as to the causes of the phenomena. But it seems to me that the simplest way is to accept the explanation of those who avow that they are the real agents in producing these effects. All the other explanations yet attempted are absurd. I can readily believe that there is much delusion connected with pretended spiritual agencies; and I see no reason to believe that spirits are more infallible out of the body than in it. Admitting these facts, we have proof of two things—of spiritual existence, independent of our present material organization; and of the power of spirit to act upon even the gross forms of matter, through certain media, or with the presence of certain aroinal conditions.

In our present organization, the soul appears to act both independently and through the finer matter of the brain, the nervous fluid, or animal spirits, upon the bodily organs. Each faculty and passion of the soul has its own special organ, over which it presides as a soul; and as in the organs of the body, the individuality of these organs is consistent with perfect harmony, and their harmony with entire individuality.

Fig. 33.



BRAIN AND NERVE.

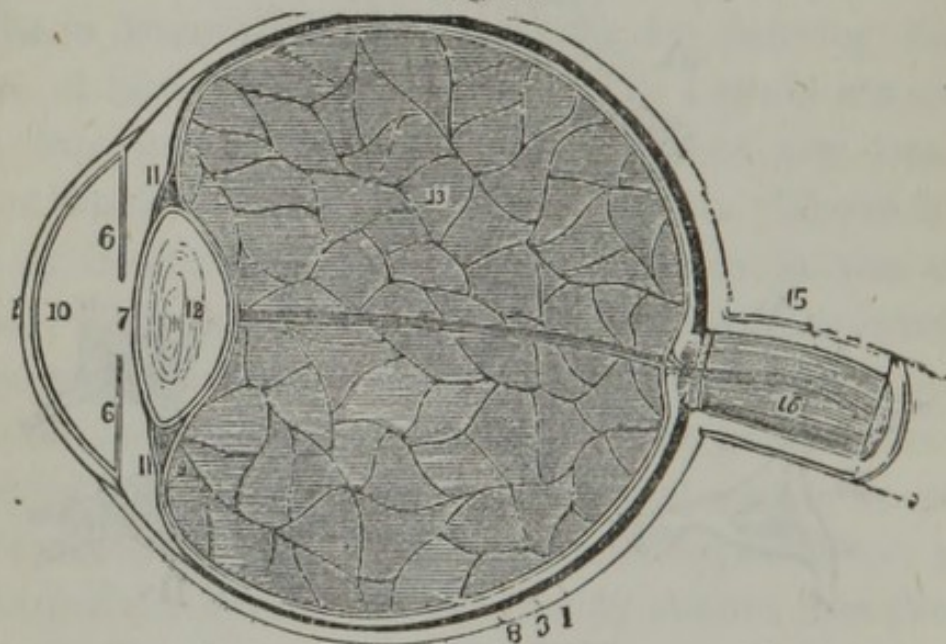
Primitive fibers and ganglionic globules of human brain, after Purkinje. A, ganglionic globules lying among varicose nerve-tubes and blood-vessels, in substance of optic thalamus; *a*, globule more enlarged; *b*, small vascular trunk. B, B, globules with variously-formed prolongations, from dark portion of crus cerebri.

While the surface of the brain seems to be the seat of the soul, its internal portion seems made up of connecting fibers. In the base of the brain appears to be the seat of sensation, where all external impressions are received. Here center the nerves of sight, hearing, taste, smell, and the wide and varied sense of feeling. These sensations, it is supposed, are conveyed to their appropriate cerebral organs, where they become perceptions, and the food of thought, sentiment, and passion.

I shall not need to enlarge upon the phenomena of

common sensation. The rays of light, passing through the crystalline lens of the eye, form a perfect camera obscura picture upon the retina; and the optic nerve conveys the idea of that picture to the mind. The

Fig. 39.



SECTION OF THE EYE.

Fig. 39 is a longitudinal section of the globe of the eye. 1. The sclerotic, thicker behind than in front. 2. The cornea, received within the anterior margin of the sclerotic, and connected with it by means of a beveled edge. 3. The choroid, connected anteriorly with (4) the ciliary ligament, and (5) the ciliary processes. 6. The iris. 7. The pupil. 8. The third layer of the eye, the retina, terminating anteriorly by an abrupt border at the commencement of the ciliary processes. 9. The canal of Petit, which encircles the lens (12); the thin layer in front of this canal is the zonula ciliaris, a prolongation of the vascular layer of the retina to the lens. — 10. The anterior chamber of the eye, containing the aqueous humor; the lining membrane, by which the humor is secreted is represented in the diagram. 11. The posterior chamber. 12. The lens, more convex behind than before, and inclosed in its proper capsule. 13. The vitreous humor inclosed in the hyaloid membrane, and in cells formed in its interior by that membrane. 14. A tubular sheath of the hyaloid membrane, which serves for the passage of the artery of the capsule of the lens. 15. The neurilemma of the optic nerve. 16. The arteria centralis retinae, imbedded in the center of the optic nerve.

perception may take place in the retina itself; for the nerve may as well convey a perception as the impression of which that perception is made.

Vibrations of the atmosphere, striking upon the drum of the ear, produce impressions upon the complicated apparatus of hearing, of all appreciable varieties of sound. The powers of these instruments are truly wonderful. The eye seems more simple than the ear, and we come nearer to understanding its beautiful mechanism; but the result is, in both cases, a mystery.

The senses of smell and taste seem to be very simple modifications of the great sense of touch. Atoms of matter, delicate and infinitesimal, come in contact with the olfactory nerve, and we have the delights of smell. Savors, mingling with the moistening saliva of the mouth, come in contact with the nerves in the papillæ of the tongue, and we experience the pleasures of taste. These are two delightful sentinels set to guard the avenue to the stomach; and to see that no impure thing finds entrance to the sanctuaries of organic life, for as the organic nature supplies strength to the animal, it is the duty of the animal to watch over and protect the organic.

The sense of feeling pervades the whole body, and even the organs of the other senses. We can not only taste with the tongue, but we receive sensations of form, size, roughness or smoothness, heat or cold, pleasure or pain. So the nose can itch, or smart, or tingle, as well as distinguish odors. The external eye is the seat of the most acute sensibility. We feel everywhere upon the surface, but especially with the ends of our fingers. This sense has relation to many

faculties and passions. Things feel hot and cold, dry and moist, smooth and rough, slippery or the reverse, sharp or dull, hard or soft, rigid or pliable, regular or irregular, circular or angular. It has other and peculiar relations to the passion of amateness, and the generative organs, which belong to a future section.

These are the common avenues through which we receive our impressions of the universe—the images of all objects, from stars to infusoria; all sounds, from the chirp of the insect to the thunder; all sensations of smell and taste; all the pleasures and pains of feeling. In treating of the conditions of health, and the causes of disease, or, in other words, of the harmonies and discords of man and his relations, I shall need to illustrate this subject further.

St. Paul and Swedenborg, with many other philosophers, have said that man has a natural body and a spiritual body. This is vaguely accepted by those who believe in Paul, and, more definitely, by the followers of the Swedish sage. There is much reason to believe that the statement is literally and absolutely true; and that for every part and organ of this material body, there is a corresponding part and organ of the soul; that the true substance is spiritual, which presides over, underlies, molds, forms, and informs the material. If this be true of the being, as a whole, it must be true in all its parts. If we have a spiritual head, we must also have spiritual hands and feet. We must have spiritual eyes, ears, noses, mouths, tongues, teeth. And, if these, we must have spiritual brains and nerves; spiritual blood, heart, arteries, lymphatics; spiritual lungs, liver, kidneys, bladder; spiritual food, secretions, and excretions.

There is no use in vague blunderings about the constitution of man. I consider his future and immortal condition a proven fact; and if he exist, it must be in some form, and with some organization. He exists as a living, thinking, acting, enjoying being. And our only possible conception of him is as the same identical spiritual being that we now see him, only that the material organization, or the natural body, as St. Paul calls it, seems to be the necessary condition of a certain stage of spiritual life, and when that stage is passed, it is no longer necessary. An early death is, therefore, a great misfortune; and so, I should think, is an earthly existence protracted beyond a certain period, in which the soul is imprisoned in an organization no longer fit to perform its functions. How affecting, and yet how natural, are sometimes the longings of the aged to be set free from what they feel to be clogs of mortality! The dread of death in the young, and the longing for death in the very aged, are equally natural, and both are voices of nature, teaching us sublime lessons. (*See further the chapter on Death.*)

The soul finds its normal expression, in this stage of life, by means of the nerves of motion and their organs, the muscles. By their means the soul walks about, runs, climbs, gathers food, builds dwellings, gathers and creates objects of use and beauty, which constitute material riches. By their means the soul laughs in her hilarity, exults in her joy, glories in her triumphs, or weeps over her misfortunes. And every passion and faculty of the soul finds expression in this outward action, the force of which is conveyed by nerves, and acts upon the muscles of animal life. They also, as we shall

show, have a powerful influence over the organic system.

Thus the faculty of tune finds expression, through nerves and muscles, in the production of vibrations of air, as it passes through the larynx—the most simple, and, at the same time, the most perfect of all musical instruments. Guided by the sense of hearing, and aided by other intellectual faculties, this passion for music finds its expression by means of various instruments; and the art of music produced by so complicated an organism, becomes itself an expression of many other passions.

So all faculties, all feelings, all passions of the soul, find their natural expression, or natural language, in movements, gestures, signs, and voluntary motions, including the various expressions of language, all of which are accomplished by the nerves of motion, originating in the nervous centers, and imparting their stimulus, or motive force, to the muscular system.

If I read to myself, there is sensation, perception, and thought—perhaps emotion or passion. But if I read aloud, there is added to these a complicated process of nervous action and muscular motion. Some of the best examples of these combinations of mental and physical action, may be found in the earnest orator; the impassioned actor, whose whole being is controlled by the direct influence of the passions he has the power of calling into temporary action; the great singer, who overcomes the most astounding difficulties of vocalization, and impresses us with all the emotions the composer intended to convey; the accomplished violinist or pianist, who effects the same with his fingers, upon an

artificial instrument; the artist, who flings the expression of beauty and passion upon the canvas, and fastens it there for centuries.

The apparatus by which these effects are produced is, of necessity, complicated, and it is also obscure, both in its structure and its action. The nerves of motion which govern the movements of the muscles of the face, eyes, tongue, etc., pass through several openings in the base of the cranium; but they probably have their origin in the upper part of the spinal cord, or medulla oblongata; and are connected with all parts of the cerebrum and cerebellum. The nerves of motion, that supply the trunk and extremities, are given off in pairs from the spinal cord, and seem to have in that continuation of the brain nervous centers which supply them with the power of action, though their movements are usually under the control of the will. This, however, is not always the case. There are involuntary actions, both constant and occasional, which seem to center in the grey matter of the spinal cord. Respiration, performed both by the muscles of the chest, and the diaphragm and abdominal muscles, goes on from the beginning to the end of life. It may be controlled by the will, but does not depend upon it. The sphincters of the bladder and rectum are also in constant action. The muscles of the pharynx, employed in swallowing, act the moment any substance passes the fauces. The muscles which aid in the erection of the penis, and which produce the forcible ejaculation of the semen, act in a similar manner. So of the acts of coughing, sneezing, and, to some extent, that of laughing. Many of these acts are performed when the brain is quiet in sleep, or in a state of

coma, or apoplectic insensibility. The spinal cord is the brain of the body; and it is questionable whether all voluntary actions are not of a secondary character, prompted by the brain, and then executed by the spinal cord.

Many physiologists believe that one of the functions of the cerebellum, is to combine and harmonize muscular motion. There is little doubt that the organs of the brain form a perfect society, arranged in series and groups, acting together in a normal state, in perfect harmony, and carrying out their impulses by the best possible adaptations of organism. A central, combining, regulating, and harmonizing power may well reside in the cerebellum, which is an organ of the most beautiful and complex character, and a source and reservoir of power and energy, such as exists in no other part of the system.

I wish to close my remarks on this branch of my subject, by some observations in comparative psychology, and the relation of other animals to man. According to our use of the word soul, it may be applied to every being that is gifted with sensation, thought, passion, and volition. It is the spiritual principle of animal or sensitive life; and there is also a lower soul or animating principle of organic life, which belongs both to vegetables and animals. The brains of animals, far down the scale of being, are like those of man. There is the same kind of grey, cellular matter, and white fibrous; nerves of sensation and motion; organs of sense, and organs of motion; an animal system superimposed upon the organic. The brain of man differs from the brains of animals below him in the scale of

being, not in kind, but in extent and degree of development.

The higher animals have the same senses as man, some in greater, some in a lesser degree of perfection. The sensations, of which these are the instruments, lead to intellectual perceptions, moral feelings, passions, and propensities, which seem to differ very little from our own. Animals have also their own varied modes of expressive action, which, in many cases, are also similar to ours. Like causes produce like effects, and like effects point to like causes.

To take a familiar example: the dog has most of the intellectual faculties of man; his sensations are acute, and he does not lack in expression. He has a wonderful memory, and often shows a good judgment or power of adapting himself to peculiar circumstances. He is proud, vain, very honest sometimes, in other cases very cautious; he is benevolent to men, and to his own species, faithful to trusts, firm in his friendships, very affectionate, cheerful, playful, courageous. He even appears, at times, to possess a remarkable degree of impressibility and foresight. He has a perception of invisible agencies, and of approaching dangers. He cogitates, and dreams; dwells upon the past, and forms hopes and plans for the future. He very evidently understands our words, and seems often to divine our thoughts.

These are psychical powers. In man, we call them spiritual—what shall we call them in the brute? If these are the results of a certain combination of material organs in one case, why not in the other? Insects, birds, and others of the mammalia exhibit similar facul-

ties of mind or soul. The elephant is, in his moral and intellectual character, superior even to the dog; and he owes less to the companionship of man. In clearness of apprehension, calm judgment, tenacity of memory, benevolence, and many valuable qualities of mind and heart, he compares favorably with the average human development.

What can we infer respecting the soul, or spiritual principle that presides over the material organism of the dog or elephant? If we admit, as has been so sometimes urged, that soul is indestructible, and therefore immortal, we must give these animals immortality. If an existing individuality can never be destroyed, what becomes of these striking individualities? I have no desire to press this point, nor any inferences that may arise from it. It is important that we understand our true relations to the animals, who are, many of them, more nearly related to us than we imagine. It is a grave question, how far we have a right to enslave, mutilate, torture, murder, and devour them. I know of no argument in favor of eating a hog, sheep, or cow, that would not apply with great force to any mild species of cannibalism. There are harmonious relations to be discovered between men and animals, and they may be mutually useful to each other in more ways than we now imagine.

CHAPTER X.

FUNCTION OF GENERATION.

THE generative function has for its special use the continuation of the species ; and it is intimately connected with the highest processes of both the systems of organic and animal life. There is no action of the body, and no power of the soul, which does not enter into the complicated and beautiful process by which humanity exists, and new beings are created. For the performance of this great function, we have a peculiar power or passion of the soul ; a separate organ in the brain ; nerves of exquisite sensation, voluntary and involuntary nerves of motion, with their muscular apparatus ; and the most complex organs of innervation, circulation, nutrition, and secretion, connected with the system of organic life. Through all her works, nature has taken peculiar care of this function, often raised it above all others, and sacrificed all individual interests to the general welfare.

To do justice to a subject of so much scientific interest, and having such important relations to the health and happiness of man, I must treat it with entire freedom. I write for those, and those only, who are ready to accept the truth, and who desire to live it. I must also give more space to its consideration, than to

topics which may be found elsewhere satisfactorily elucidated.

Let us turn back the pages of the Great Book of Nature, which lies open before us, and earnestly peruse her earlier lessons.

In the inorganic world, there is deposition, accretion, aggregation, but no such thing as generation. Minerals do not produce after their kind. But the moment we pass the line which divides the inorganic from organic nature—the moment we come upon the domain of life, we have powers of reproduction.

The simplest vegetable cell, at a certain period of its growth, divides itself into two similar cells. Other cells produce smaller cells within their walls, and then, at maturity, dissolve, and set the young cells free. A little further on, and in more complex organisms, we have what is called the gemmiparous reproduction. A bud, separated from the parent stock, becomes an independent plant. This last process goes pretty high in the scale of vegetable life, and is often coincident with higher forms of generation. In many plants we may either plant a slip, or a tuber, or the seed. The lower orders of animals propagate their species in the same way as the lower forms of vegetables. In animalculæ, we have divisions and gemmations, or the throwing off of buds, as in vegetables.

But we now come, in both the vegetable and animal world, to the results of more complex organization, and higher methods of propagation. We find the necessity of two principles uniting to form a living embryo. In the vegetable world, nature has surrounded the generative function and the sexual apparatus with the most at-

tractive qualities. In many animals, and in most plants, the double process is performed by the male and female organs, in the same individual; but in the higher animals we have the two sets of organs necessary to the result in two animals, male and female.

In all cases, in this mode of generation, we have this simple fact. There must be formed an ovum, or egg, a cell of microscopic minuteness; and at a certain stage of its evolution, this egg must be fecundated, by the addition of the male principle. Each is imperfect by itself, and both are necessary to the generative process.

It is remarkable, that the parts of plants devoted to the sexual function, are those we most prize for their beauty and fragrance. It is the flower of the plant which contains the generative organs. The center of the flower—the home of beauty, and fragrance, and sweetness—is the nuptial couch, the bower of love, sacred to the passionate mysteries of vegetable procreation. In the center of this bridal chamber is the pistil, or female organ; its tube corresponds to the vagina, and below it is the ovary, where the egg is formed and fecundated. This is done by one or more stamens which surround the pistil, and which have the power of secreting the spermatic fluid, which, in the form of pollen, falls upon the anther of the pistil. The stamen corresponds to the testicles and penis of the higher male animals. In some plants, as the Indian corn, the sexual organs are further apart. The male, or sperm-preparing organs, are at the top of the stalk, while the female are connected with the ear. The pollen from the “tassel” must fall upon the “silk,” or

there will be no corn. In other cases, the male and female organs are on different plants of the same species. This is the case with some palms and olives.

In like manner, there are animals which contain in themselves both male and female organs. In some, the ovaries and testicles are near each other, and they have the power of self-fecundation. In others, each individual performs the part of both male and female to some other of its species.

But in the higher animals, and in man, there is no such hermaphrodism. The sexes are distinct, and the possession of one or the other set of organs, and the capacity of performing one or the other of these processes of the generative function, make the striking differences between the male and female.

In my brief sketch of anatomy, I have described, with some minuteness, the more obvious and external features of the two sets of generative organs. I have now to give a more thorough and physiological account of this function and its relations. It divides itself naturally into three parts:

1. The passional, or that connected with the soul, and having its nervous center in the cerebellum—the Amativeness of the phrenologists ;
2. The sensational or active, connected with manifestation and the sexual congress ;
3. The organic, or the evolution of germs and spermatozoa, in the ovaries and testicles, and the progressive evolution and final expulsion of the fœtus.

We have, then, to consider the personal and social relations connected with this function. I trust that the

reader sees that here is matter worthy of his or her attentive and most serious consideration.

The order in which we treat of the three divisions of this subject may not be very important; but, after what I have said of the nature of the organic process in plants and the lower animals, I prefer now to begin with the higher passional sphere, and descend through manifestations and results; though, as will be seen, in this, as in all the other functions of man, these are intermingled and reciprocally act on each other.

The passion of love in our earlier years has what may be called a rudimentary development. In very young children we perceive signs of the sexual instinct. It is naturally shown in a gallant fondness which little boys have for their mothers, their older sisters, and generally for the female sex. At the same time, little girls have a peculiar tenderness for their fathers and male friends.

The cerebellum, which Dr. Gall has proved, by many observations, to be the seat of this passion, is usually small and immature in childhood, corresponding to the state of the feeling, and of its special organs; and it is not until the age of puberty that all the organs are developed together.

But as there is a rudimental activity in the passional sphere, there is also, in many cases, some excitement in the organic. The boy, before he reaches his teens, has his imagination excited with ideas of sexual pleasure; and his immature organs partake of this excitement. If, at this time, he is so unfortunate as to find the means of gratifying his propensity, he runs the risk of forever disordering, or even destroying his virile powers, and, in the act, of wrecking his whole mental and bodily

constitution. With the young girl, the danger is equally imminent. Her passions are as strong, and her power of gratification even greater. If, in maturity, women seem to have the capacity for greater and more frequent enjoyment than men, in childhood a far greater number destroy all desire, and all power of enjoyment.

There are some children, born of parents with disordered Amativeness, who inherit passional activities, and organic excitabilities, which hurry them to swift destruction. Mere infants, both male and female, fall spontaneously into habits of self-pollution. This is not simply a vice; it is a disease. I do not say that all vices are not of the nature of disease; but this early propensity to the use, and consequent destruction of the sexual organs, is a special disease which demands earnest sympathy and prompt attention for its cure. I shall speak of this matter fully in treating of disease and its causes.

In a normal condition, there is considerable excitement of the passion of love, on the approach of puberty. This period comes, in boys, at the age of fifteen to seventeen; in girls, from thirteen to fifteen; and later or earlier in exceptional cases. Boys and girls, as they approach this age, are full of romantic sentiment, which expresses itself in profound sighs, in a sweet melancholy, a love of solitude, and in idealizations of the adored, rather than beloved object.

I am satisfied, from many observations, that the most natural love of a youth of fifteen, is a mature woman of thirty or forty; and that the affections of a girl of a corresponding age, are most likely to be bestowed upon some mature man. At a later period, men love women

of their own ages, and still later, they respond to the affections of those who are much younger than themselves. These are the wise harmonies of nature ; and we gain nothing by ignoring them, or opposing their influence. Such loves, at this period, are the most suitable that can be formed, and the least dangerous. Youthful ardor and impetuosity are tempered and guided by the wisdom of experience ; but where two very young persons are thrown together, their passions burn out themselves, and leave but cinders of their possessors.

The first love of either man or woman, eternal as it may seem to them, is not usually lasting ; and if any effort is made to compel it to constancy by the bonds of a legal marriage, it generally proves a disastrous experiment. Left to itself, the illusion vanishes, or the love settles into a calm and beautiful friendship.

But when the period of puberty has fully arrived, there comes a wonderful change over the whole being. No after change, till death itself comes, is so rapid and important. Soul and body expand with new powers and new feelings. The boy finds a beard sprouting on his chin, and hair also springing on the pubes. His neck increases in size by the expansion of the cerebellum behind, and the larynx in front. With the expansion of the larynx, his voice sinks a full octave in depth. He finds his penis growing to what seems to him an extraordinary size. The testicles also increase. He has frequent erections ; and his mind is filled with ideas of voluptuousness. His ideas of women are not so entirely romantic as before ; still it is left for his dreams to give him to the full power of his senses.

Fortunate is the youth whose love for some adorable woman chastens the ardor of these fancies, and prevents the waste of this new-found life !

Puberty, in the girl, brings no less remarkable changes. There is no beard upon the face, but a luxuriant growth of hair begins to cover the mons veneris. The larynx does not expand, nor the voice deepen, but the cerebellum, though always smaller than in the male, increases in size, and the form expands into the full mold of womanly beauty. The whole pelvis enlarges, giving breadth to the hips, and a graceful swing to the carriage. The mammary glands enlarge, producing in all healthily developed girls, the bosom of ravishing voluptuousness—the bosom which sculptors and painters are never tired of showing us, but which women commonly conceal, unless fashion compels the exposure. But the most striking change that takes place when the girl becomes a woman, is the commencement of a monthly discharge from the uterus, through the vagina, coincident with and dependent upon the ripening of the germs in the ovaries.

Both sexes are now apparently fitted for the performance of the sexual function. In the male, the testicles have secreted the spermatic fluid, and elaborated its vital part, the living spermatozoa ; the seminal vesicles are filled with this fluid, ready to be discharged. In the female, the ovaries have begun to bring forth the ova, which contains the germs, which only require the presence of the spermatic fluid, to be developed into perfect human beings.

What now is the order of nature at this period ? Her work, in the reproductive function, is begun, and

goes on, month after month, in the female, and continually in the male. Every month an egg is thrown off from the ovary, passes down the fallopian tube, lodges in the uterus, and if not fecundated, perishes, and is expelled as an abortion. At the same time nature is forming, in the testicles of the male, millions of spermatic animalcules, any one of which would probably be sufficient to effect the fecundation of the extruded ovum.

Before we mourn over this sad seeming waste of the elements of life, let us send through nature a glance of inquiry. How large a proportion of the early blossoms on our fruit-trees never ripen into fruit! How many millions of the seeds of plants become the food of animals, and never carry out their design of reproduction! Of the millions of eggs which come from a single fish, how few ever produce young, and if nature were stingy in her productions, why should there be millions of spermatozoa in a single discharge of the spermatic fluid, when it is probable that only one can ever act upon the same ovum?

Nature is bountiful. Nature is prolific. Especially in relation to this function, nature has everywhere dealt with a liberal hand. Puberty in woman begins at fifteen, and the monthly evolution of ovæ continues till fifty, when the function ceases. If she has but a single egg each month, she produces four hundred and twenty. But many women throw off two, and even three, four, or five at a monthly period. Twins are often fecundated. Thus, a woman who should pass through this period without fecundation, would produce and waste five hundred germs of human beings.

It is my opinion that the early effects of the activity

of the generative organs are intended for the perfection of the individual, and not for the continuation of the species. Love ripens and expands the soul, and its organic elements give breadth, firmness, and vigor to the bodily organs. Love diffuses through the mind warmth, enthusiasm, energy, the elements of genius, and gives an inexpressible charm to the feelings of the heart. All that is brave, noble, generous, heroic, and all that is sweet, voluptuous, tender, and endearing, spring from the influence of the sentiment of love.

When this sentiment is undeveloped, when the cerebellum is small and inactive, and when the generative organs are lacking in energy, the whole character suffers. It is cold, heartless, selfish, unfeeling, and wanting in noble and generous impulses and enthusiasm. And whatever be the cause of this lack of development or activity, the effects are nearly the same, and afford the most convincing proofs of what we have stated to be the proper influence of this wonderful faculty. If the development of the cerebellum is checked by the removal of the testicles in the male, or the ovaries in the female, at an early age, we have the most striking results. In the male, the beard does not grow, nor the hair upon the pubes. The larynx does not expand, and the voice retains the high treble or contralto pitch of boyhood. The operation was formerly much employed in Italy, for this purpose. The muscles remain soft, and there is a tendency to fatness and effeminacy in the whole aspect. The mental and moral character is of a corresponding emasculation. There is feebleness, coldness, selfishness, cowardice, and a general lack of all we convey by the word manhood.

Now, similar effects are produced by early habits of masturbation, or self-abuse, and also by early excesses in sexual indulgence.

The effects of a similar check of development upon the female are equally remarkable; but, in some respects, the reverse of the above. Love, that makes men manly, makes women womanly. Where there is destruction of the ovaries, or arrest of development, either of the ovaries, or the cerebellum, in girls, they grow large and coarse. The pelvis does not expand. The hair upon the pubes is thin and straggling; the bosom remains flat; a thin beard covers the chin; not the rich down that sometimes gives a more voluptuous softness to the female lip, but a scraggy, straggling, half masculine beard; the voice becomes rough and masculine, and the whole appearance is that of an ambiguous being, neither male nor female, but partaking of the nature of each. The character, also, is cold, repulsive, rude, selfish, and cruel; the reverse of the truly feminine nature.

And in woman, as in man, similar effects are produced by any arrest of the development, or any exhaustion of the sentiment and organism of love; but excess, which exhausts the other powers, and disturbs the harmony of the system, may only produce great and diseased activity of Amativeness; when we have different effects from those which attend upon its destruction.

There can be no more powerful illustration of the proper influence of the generative function over the animal and organic systems than those we have just given, and we have such illustrations, in a greater or

less degree, all around us. No nature can be blessed with any quality so noble and ennobling as a healthy development of the principle of love. No nature can be so cursed as by its destruction or deprivation. All that is great, and noble, and beautiful in human character or capacity, or destiny, rests upon this basis. All that is base, and mean, and miserable, may find its source in the want, or disease, or perversion of this principle.

And the first effects, as I have said, of this influence are, as I believe, intended to be shown in the development of the individual, and not in the continuation of the species. The nervous power that is generated in the cerebellum, in man, and which is expended in the production of zoospermes in the testes, if not exhausted in their expulsion, and by their loss, seems to be thrown back into the system, and to strengthen every part. It is a fountain of life and energy ; a vital force, which acts in every direction ; a motive power, which infuses manhood into every organ of the brain and every fiber of the body. It is like the vital heat that first warms the whole body, and then warms bodies around us, but which must not be exhausted.

Nature, under favorable conditions, has provided for this mode of action. Youth is the season of enterprise and action. The constitution is developed by hardy exercises, and the mind by studies. There is a restless and eager desire for knowledge and variety of occupations. And love is yet more romantic than passionate, more ideal than actual. It dwells in the imagination, and happily descends not into the senses. So the nervous power, generated in the cerebellum ; the divine energy that reigns in the soul, perfects the whole na-

ture, and thus fits it for the mature accomplishment of its final object.

And in woman, while the organic action of the ovaries goes on, in the production, ripening, and throwing off of germs; if there is no expenditure of nervous force in sexual pleasure, no fecundation of the ovum, and consequently no evolution of the fœtus, her vital force is also expended in mental and physical development, and in fitting her for the functions of love and maternity, for which she is not well prepared until the accumulation and action of this force has brought to her a certain degree of maturity. The early germs in woman seem less fitted for fecundation than those which appear later; as if nature did not quite succeed in her first efforts, but did better when she had gained strength by exercise, and skill by practice. In the same way, the zoosperms, which are produced by the male in the first years of puberty, appear to have less power in the production of a healthy offspring. And the worst result may be anticipated, where the two are joined together. If the young girl is to have children at all, it should be by a strong, mature man; and if a youth is to engender, it ought to be with a vigorous woman; so that the strength of one may make up for the weakness of the other.

I give this as my opinion, based upon such observations as I have been able to make. It is what seems to me to be true of our race in its present condition of civilized discordance and disease. It may be that in a truer condition of existence, a fuller development may exist at puberty, so that the procreative function may properly begin as soon as the organs are capable of consummat-

ing the sexual relation. This is possible; but it is my impression that in the most perfect condition, the law will be as I have given it; and that the first activity of the generative function will be expended in energizing the individual, rather than in the propagation of the species.

The passion of love, or the propensity of Amativeness, varies in the sexes, and in individuals of each sex. Everywhere in nature, we find an infinite variety, constituting individualities; while we have everywhere similarities, never amounting to absolute identities. No two persons look alike; no two feel alike; nor, unless under compulsion, can they act alike. They may act in harmony; but harmony is not unison. Where we can find two persons in the world with the same form, features, and expression, the same development of faculties, in the same proportions and relations, we may expect them to feel and act alike, and be governed by the same rules.

In certain respects all men are alike; but their likeness is consistent with an infinite individuality. In certain respects the faculties and passions of different individuals are alike; but in others they very notably differ. How varied are the tastes and capacities connected with the organ of Tune! One person can only understand the simplest melody; others revel in complicated harmonies. Alimentiveness in one man tends to the desire of a single delicacy; another seems omnivorous. In Art one is fond of figures, another of landscapes; one delights in the simple and severe, another loves the ornate and luxurious. Observe the various tastes in dress, when fashion does not compel every

body to follow a particular standard. In religion, in ambition, in pride, in friendship, in all faculties, sentiments, and passions, we have these varieties of individuality, necessary to the perfection of social harmony. Shall we deny to the great passion of love, and the great function of generation, the same individuality and the same variety?

Deny it as we may, repress it as we will, it still exists. We insanely war upon nature, but we subdue her at our cost. Every triumph over her is destruction to the victor. God is still supreme, and we had much better study His laws, than attempt to supplant them with stupid regulations of our own.

The passion of love, as it reigns in the soul of man, harmonizing and energizing his animal and organic systems, has three general modes of expression.

1. It gives a feeling of regard for the whole opposite sex. It inspires in man a gallant respect for woman; in woman, a tender regard for man.

2. In a circumscribed sphere, it is social in its character and action. A man has for the women of his acquaintance, whom he meets in society, and with whom he is on terms of kindly familiarity, a very different feeling from any he entertains toward the other sex. Women and men, with no bond of personal love, still have a more cordial feeling toward each other, than they commonly have toward persons of their own sex. This is seen in families, in society, and in schools where both sexes mix freely together. But under the customary repressions of fashion, and opinion, and blue-law puritanism, we find men and women driven into false and unnatural connections with those of their own

sex—yet even here we see masculine natures attaching themselves to feminine, and everywhere the action of the great physical and moral law—unlike natures attract each other—like natures repel.

3. Personal love, beginning with a spiritual attraction, becoming voluptuous desire, and seeking its ultimate expression in sexual union. This is the last, fullest, and most perfect action of the amative passion; that which consummates the life and happiness of the individual, and governs the destiny of the race.

Let us honestly investigate the laws of this function in its full expression; let us try to understand its relations and harmonies, that we may also know its perversions and discordancies.

To aid us in this investigation, let us see what is the actual expression of this passion in nature, and in man; and endeavor to distinguish what is spontaneous, natural, or healthy, from the results of repression, subversion, and disease, of which, alas! the world is so full, as to make our task one of almost insuperable difficulty.

Reproduction in the vegetable world is, in the higher organizations, as distinctly a sexual process as among animals, and in the flowers, or sexual organs of plants, we have a great variety of relations, from the union of a single stamen and pistil, of a pistil with two, three, four, or almost any number of stamens or several pistils, receiving their pollen indiscriminately from a number of stamens. Vegetables are monogamic, polygamic, and polyandrous. See any work on botany, or read Darwin's *Loves of the Plants*.

In animals, again, we have all varieties of sexual rela-

tions. Some are entirely promiscuous, any male fecundating any female who requires that process. Then we have the polygamic relations which exist among fowls, seals, and other gregarious animals, in which one male has a harem of several females, who are made his by his own attraction, or the right of the strongest. On the other hand, we see female animals, especially those who produce several young at a litter, receiving successively the embraces of several males. The queen bee, the only perfect female in the hive, has for her service two or three hundred gentlemanly drones, whose sole office is the fecundation of the eggs, which are to produce her numerous offspring. On the other hand, one ram is sufficient for a large flock of sheep, one bull for a herd of cows, and one stallion for quite a number of mares.

Many animals, however, are monogamic in their love relations. Most of our birds copulate in pairs, and are capable of ardent and exclusive affections. Elephants are found both in pairs and in herds; monkeys pair, but are not exclusive in their amours. The wolves seek each other only once a year, and cohabit promiscuously. The only one of all the species of deer that is constant, is the roebuck. An abundance of facts, to be found in any good work on natural history, illustrate the varieties of this action of love in the animal races.

In the human species, the love relation exists in such variety as would seem to indicate, what many believe, that man includes in himself the nature of all the lower animals. In the early ages, and what are called the patriarchal times, polygamy seems to have been the unquestioned practice. It is now tolerated by law or

custom over three fourths of the world, and practiced to a great extent over the other fourth.

Polyandrous relations, or the union of one woman to several men, under the sanction of law or custom, is more rare ; but there are not wanting examples of this. In Thibet, in Malabar, in the South Sea islands, it is allowed to a woman to have two or more husbands ; and, in point of fact, this is practiced more or less over the civilized world. In some of the most polite countries in Europe, custom has sanctioned women of the higher classes in having a lover as well as a husband ; and such relations exist, and are more or less tolerated everywhere, while men are still more free in their ideas, and promiscuous in their indulgences. For the fullest information as to the facts on this subject, consult my historical work, entitled, "Woman in all Ages and Nations." [New York : FOWLERS AND WELLS.]

If we examine the society around us—and to do this we must be able to look through the specious and pretentious outside moralities, into real interior lives—we shall find persons of varied creeds and practices.

1. Strict monogamists, who believe in a single love, which endures through all time and all eternity. This belief does not admit of one love succeeding another, much less two at the same time. A second love is profanity, a second marriage adultery. Yet persons zealously avowing this belief, are found engaging in a succession of amours. Their excuse is, that in each case they have been mistaken. The person supposed to be the true conjugal partner, the heaven-appointed mate, proved not to be the right one. They have noth-

ing to do but to go on trying, atoning for each successive adultery, by their efforts to find a true relation.

2. Moderate monogamists, who allow of a succession of love relations, but do not admit of but one at a time. This is the ordinary view of legal marriage, in which the bond can only be dissolved by the death of one of the parties; or by such an outrage against the relation as is equivalent to death, such as adultery. Others are more liberal in their construction of this creed, and believe themselves to be true, if only true to the existing love, no matter how rapidly one may succeed to another.

3. There are those who believe in a central or pivotal love, transcending, and perhaps outlasting all others; but around which may revolve other loves, affections, or fancies, not inconsistent, but entirely harmonious with, the prime and pivotal relation.

I suspect that this closes the list of natural opinions and practices, and it will be seen that the last variety includes, in a certain way, and combines the other two. But I have no disposition to place a limit on the boundless infinitudes, and ever varied individualities of nature.

What the human soul demands for every passion and every function, is freedom; liberty of thought, liberty of desire, liberty of expression and action. When this is attained; when every man and woman feels free to express the real wants of his nature, to adapt himself to his true social and passional relations, we shall see whether God has really made a blunder; whether the varieties, and alternations, and individualities of passional development will result in discord or in harmony. It is

certainly my impression that God has made no mistake ; and that no real good has resulted from all the efforts of men to set Him right.

Observation shows us, then, men capable of a single love, whose intensity absorbs and exhausts their whole passional nature, and the same, and probably oftener, of women. This is the love we read about in poems and novels, but see rather less of in real life.

Men who have romantic fancies in boyhood and early youth ; violent love-fits in early manhood, which give place to calmer, stronger, and more enduring loves, in their maturity ; these may be exclusive, or monogamic, or, in more varied and expansive natures, may be consistent with subordinate affections, desires, and gratifications. These differences in exclusive intensity, or expansive variety, extend to the whole character, and a man or woman of a wide range of capacity or genius, who is capable of wide alternations, and even of doing many things at the same time, may be expected to have a like capacity in love.

Men who combine weakness with versatility ; who go equally in every direction, but strongly in none, are likely to be unsettled and promiscuous, either to change continually, or to have a disorderly variety. These are not pivotal characters, nor are they capable of a pivotal attachment. In this latter class, we have a vast number of men, and not a few women. Some truly and naturally belong to it ; but the class is now unnaturally enlarged, from repression, lack of development, and disease. And if such a character naturally exist, instead of being, as many think, the result of disease, it may not be a high or desirable variety.

Theoretically, in Christian states, the monogamic principle of the union of a single pair for life is adopted; but this principle is widely violated in practice. This monogamic union is the legal marriage, from which, in some countries, there is no divorce; in others, divorce is allowed on the ground of adultery, and, in more liberal states, for desertion, ill-treatment, drunkenness, and various causes.

Marriage, according to the common acceptation, is the legal union of a man and woman, who, from any motive, have agreed to live together in exclusive cohabitation. Adultery is the violation of this compact by either party.

Marriage, in a higher and purer sense, is the real union of two persons in mutual love; and adultery is, perhaps, best defined as any gratification of mere lust, or the sensual nature, without the sanctification of a true love. According to these definitions, a true marriage may be what the laws call adultery, while the real adultery is an unloving marriage.

The question of living in a false and adulterous marriage, or of enjoying, in any particular case, a true love relation, must be decided by the circumstances and conscience of the individual.

I have already alluded to many expressions and sensational activities of the generative faculty. I wish to describe its operations precisely as I would those of any portion of the animal or organic system, as a simple matter of scientific observation.

In plants there is but one act of impregnation, by a single organ, which occurs at what may be called its season of puberty. Its office performed, the useless

organ withers. The whole flower drops off, when its function has been performed. Some plants produce but one set of generative organs, and then the whole plant perishes. These are the annuals. Others go on producing year after year. These are the perennials.

There are many of the lower varieties of animals which perform but a single act of generation, and then die. The higher animals continue the process through many years. As a general rule, the lower the animal in the scale, the more prolific. A fish produces millions of eggs; the higher mammalia seldom have more than one at a birth. Some animals breed in litters every month; others require two or three years to produce and suckle a single offspring.

In the females of most animals, there occurs a period of love, in which they are ready to receive and solicit the embraces of the male. This is called the period of heat, or the rutting season. It is that in which the ova are ripened, and cast off from the ovaries, and when the sexual congress is demanded for their impregnation. This period, which in animals is more or less frequent, according to their periods of gestation, corresponds to the periodic menstrual evacuation in the human female.

The males of animals differ with respect to their readiness for the performance of their part in the sexual function. In some, the feeling seems not to exist in the intervals, and the testicles are shrunk and inactive; but when the rutting season of the female arrives, as it usually does in the spring, these organs enlarge, secrete with vigor, and the animals seem filled with a fury of desire. The stag, usually gentle, is at this time fierce

and dangerous ; but in animals where the periods are frequent, or where one male encounters many females, the organs are always in an active condition, and the male always ready to perform the duties which nature has imposed upon him, and to enjoy the pleasures which she gives as a reward. But it must not be supposed that pleasure is the only attraction. The instinct of reproduction is above all mere sensual gratification. It is by no means certain that this act is always one of pleasure to animals, while, in our own species, the sexual congress is often to the woman either entirely indifferent, or painful. Gestation is to many a long disease, and parturition a death agony. Still, the desire for offspring triumphs over all these terrible perversions.

In animals where there is but one gestation in a year, there is usually but one period of heat ; but while the periods of gestation and lactation extend over nearly two years in the human female, when these are at an end, she regularly, every month, throws off an ovum, marked by the menstrual discharge ; and, of course, is every month prepared to receive the sexual embrace. It seems to be fairly inferable, that once a month is the natural period in which a woman requires sexual union ; and it may be doubted whether any greater frequency is not a violation of natural law. At this period, however, when in a healthy condition, she is full of ardor and has a great capacity for enjoyment, and is seldom satisfied with a single sexual act. The period of excitement, moreover, may last for several days, or all the time the ovum is passing from the ovary to the uterus. Once there, it should not be disturbed by any passionate orgasms, whose tendency, from that time

forward, is to produce abortion. It is the law of all nature; a law that is said never to be violated even among savages, out of Christendom, that there should be no sexual union during gestation. It is not permitted among animals, and over three quarters of the world is looked upon as infamous in our own species. It is also inconsistent with the performance of the function of lactation, for reasons which will be given hereafter. I do not wish to speak authoritatively in so delicate a matter. Let every man and woman look at the facts, and decide. I see no physiological reason why a woman should desire sexual union, after pregnancy, until her next menstrual period, which will not normally take place until she has finished nursing.

Man differs very materially from woman in the exercise of the procreative function. From the age of puberty, the action of the testis is uninterrupted. I can find no hint of periodicity, unless it has been created by habit. Whatever restraints he may have, must be moral; for they are not physical, like woman's. And while, in woman, the production of ova ceases at from forty-five to fifty, the activity of the organs in man continues, and he is capable of generating until a late period of life, and in some cases when more than a century old. Man has no function corresponding in periodicity to menstruation; no diversions of the vital forces engaged in this function, like those of pregnancy and lactation.

These differences may involve grave questions of morals and social polity, but these it is not my province to discuss or decide. In regard to woman, I give what I believe to be the fact and the law, because it is very

important, and a violation of this law is attended with great evils. I give, also, what seem to be the facts in the nature of man; but I can not undertake to reconcile the teachings of nature with the laws of society. They are everywhere at variance, and all our miseries come out of these discords.

The influence of the organ of Amativeness stimulates the action of the secreting or sperm-preparing organs, the testicles. The presence of the seminal fluid in the seminal vesicles, reacts upon the brain, and the mind glows with voluptuous ideas. Under their influence men are ever gallant, kind, attentive, and loving to women; ever seeking their favors; ever pressing their suit. It is the part of woman to accept or repulse; to grant or refuse. It is her right to reign a passional queen; to say, "thus far shalt thou come, and no farther." It is for her nature to decide both whom she will admit to her embraces, and when; and there is no despotism upon this earth so infernal as that which compels a woman to submit to the embraces of a man she does not love; or to receive even these, when her nature does not require them, and when she can not partake in the sexual embrace without injury to herself, and danger to her offspring.

On this point I *will speak*. If a woman has any right in this world, it is the right to herself; and if there is any thing in this world she has a right to decide, it is who shall be the father of her children. She has an equal right to decide whether she will have children, and to choose the time for having them.

This is a law of nature, respected throughout the animal kingdom. The female everywhere refuses

sexual union with the male, except at the appointed season; and compulsion at any time, and especially during pregnancy, can not be called beastly, for it would be a libel on the brutes.

But what are men to do? I really can not answer. They must do the best they can. If I have correctly interpreted nature so far, we have nothing to do but to search still further for the truth. Nature has not provided for one sex at the expense of the other. We shall find no flaw in her laws, whatever we may do in our own. And it will be easier and safer to change our laws, than the laws of nature, which are the laws of God. When I speak of the irregularities of the sexual function as a cause of disease, I may probe this subject deeper.

The expressions of love antecedent to, and connected with its ultimation, are varied and beautiful, involving the whole being. Love gives light, and a trembling suffusion to the eye, a soft, tremulous tenderness to the voice, a sweet sadness to the demeanor, or a deep joyousness; a certain warmth and voluptuousness presides over the movements of the body; blushes come often to the cheeks, and the eyes are cast down with consciousness; the heart swells, and beats tumultuously; there is a radiant idealization of the beloved object, who seems clothed with every perfection; a new delight pervades the sense of feeling, which is more than any other the organ of this passion; every touch, even of the hem of the garment, is a deep pleasure; the hands clasp each other with a thrill of delight; the lips cling together in dewy kisses of inexpressible rapture; the bolder hands of man wander over the ravishing

beauties of woman ; he clasps her waist, he presses her soft bosom, and in a tumult of delirious ecstasy, each finds the central point of attraction and of pleasure, which increases until it is completed in the sexual orgasm—the most exquisite enjoyment of which the human senses are capable.

It has been asked whether the male or female enjoyed most the ultimation of love. I have no doubt, that in a healthy condition, the pleasure of the female is longer continued, more frequently repeated, and more exquisite than that of the male ; and that it is in this way that she is compensated for her long periods of deprivation ; as she also is by the pleasures of maternity, of which man has little conception.

There are a few practical observations, which may be properly made here, connected with the physiology of the sexual congress as given above. The organs of generation, in both sexes, are excited and stimulated by idleness, luxury, and every form of voluptuous beauty. Where it is desirable to avoid such excitement, all these must be guarded against. Passionate poetry and romances, warm pictures, dancing, especially the dancing of the stage, the fashionable display of female arms and bosoms, all fond toyings, and personal freedoms between the sexes, must be avoided by those with whom chastity is a necessity of age or circumstance. The lips are supplied with nerves of sensation from the cerebellum ; and the kisses of the lips are sacred to love. The bosom is also supplied with nerves from the same source, and it is in the most direct and intimate sympathy with the female generative organs. A woman of sensibility, who would preserve her chastity, must guard her bosom well.

But the best safeguard against one passion, is to arouse another, and, if possible, many others. Friendship is often a safeguard against love ; even the friendship of young persons of opposite sexes. In the family, in schools, and in society, the more friendly familiarity exists, the less likelihood is there of amative excitement and indulgence. Friendship comes so near to love, in its character, that it often takes its place, and is sometimes mistaken for it. Business, study, active exercises, amusement, ambition, reverence, a constant occupation of mind and body, divert the vital forces into so many channels, that the system feels no pressing wants in this direction, and men live in the bustle of active life, for months and even years, without amative wants.

Women govern themselves much more easily than men. With great numbers, continence is no virtue, for they have not the least attraction for sexual connection, nor are they capable of sexual enjoyment. This is, indeed, a diseased condition, hereditary or acquired ; but it is common to an incredible degree. But even with women of passionate natures, who are capable of the most ardent love, and the fullest enjoyment, certain conditions are necessary to the awakening of sexual desire. They must love, and be beloved. Love must begin in the soul as a sentiment, come down into the heart as a passion, before it can descend into the body as a desire. Such a woman will be continent without the least difficulty, so long as she does not love ; but when she loves a man, she gives herself to him, soul and body. Happy the man who can inspire and respond to such a love ! Happy the child born of such a union ! Happy the human race, when there shall be no others !

CHAPTER XI.

IMPREGNATION.

THE formation of the zoosperm, or seminal animalcule, in man, and the ovum in woman, belongs to the domain of organic life, yet all the highest powers of the soul, and the soul's organs, are engaged in the work. For there is to be more than a mere bodily organization formed—a mass of bone, muscle, and various tissues. First of all, there is to be generated an immortal soul. God, doubtless, made the first human souls; but He made them with the power of generating all other souls, just as the first bodies have generated all other bodies. God created no souls but the first, and the parent of any child is the parent of his soul as much as of his body. In fact, it is the soul, so generated, which forms the body which, for some years, is to be its habitation, the medium of its perceptions, and the instrument of its expression.

This generation of souls must be understood and accepted, before we can proceed one step in a true philosophy of generation, or development, or progress. It is at the basis of all true science of the laws of hereditary descent. If God had now a special manufactory of human souls, and they were furnished to order, and one was always ready whenever, over the whole earth, a human ovum chanced to be impregnated, how does it

happen that the souls of children are like those of their parents? Why do we never find the soul of a European in the body of a Hottentot, or the soul of a North American Indian in the body of a native of China?

If we look at the matter attentively, we shall see that as the European is born white, the African black, the Indian red, by the laws of hereditary descent; so, by the same laws, acting upon the soul, one man is a born despot, and another a born serf; one is a born democrat, another an aristocrat; one a Christian monogamist, another a Mohammedan polygamist; one a narrow bigot, another a liberal philosopher.

All varieties of human character, are expressed in differences of organization. The physiologist reads them in temperament and general conformation; the physiognomist sees them written in the lines of the face; the phrenologist in the developments of the brain; but all these are effects, not causes. It is not the body that shapes the soul, but the soul that forms the body. It is the brain that gives shape to the skull, and not the skull that circumscribes the brain's development. It is the faculty that shapes the organ, and not the organ that hampers the faculty.

The soul forms the cortical substance of the brain, and from this the whole nervous system, and it is the nervous system, acting upon the blood, that builds up the whole body, and not, by any means, the reverse of this. And we begin, therefore, with this prime fact, that two human beings have the power of generating a third, soul and body. They form it according to their own capacities. They make a great soul, or a little soul; a beautiful soul, or an ugly soul; a noble, sym-

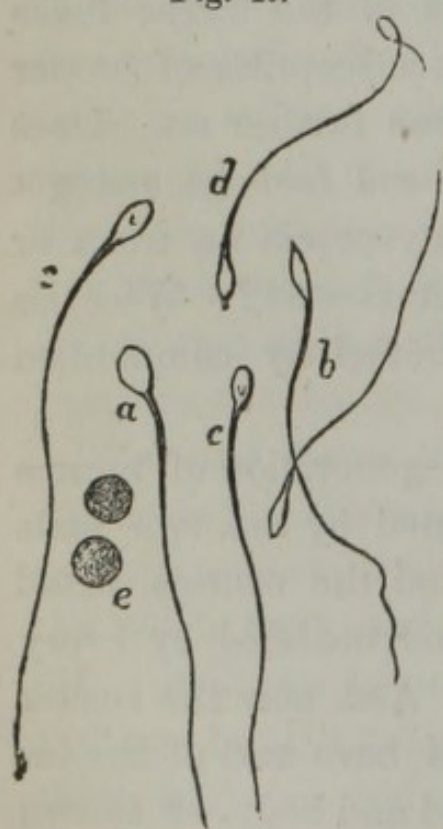
metrical soul, or a mean, deformed soul; a strong, healthy soul, or a weak and sickly soul. There are souls generated too weak to form their bodies. And as the soul has all faculties in itself; as the intellectual, and animal, and organic parts of the soul, each generate their own portion, we find men born with strong organic souls, and weak intellectual, or the reverse. It is possible also to have an ugly soul in a beautiful body, or the reverse; but these are exceptional, and grow out of discordant conjunctions.

And the soul grows like as the body grows, and changes as the body changes, and grows strong by exercise, and great by the reception of soul nutriment; and is prepared to generate still higher souls: and this is the law of education, development, progress. So we have diseases of the soul as of the body; these reacting on each other; and each susceptible of proper curative treatment, as we shall see further on. Does not the mind feed on thoughts and feelings, and get starved or surfeited, and grow dyspeptic on trash or sweetmeats, or exhilarated and intoxicated? Who has not felt his whole soul strengthened by communion with some strong spirit?

This sublime function of the generation of human beings, soul and body, is performed by the two male and female organs, the testes and the ovaries, acted upon by every human faculty, and modified by every human circumstance and action. And now the reader will better see the force of what I have said of the influence of these organs upon mind and body, as shown when they are lost, diseased, or perverted from their natural uses.

It is not in my power to solve the questions respecting the portions of the mental and physical organization, contributed by either parent. I see no reason to believe in any such partition. I think each has a share in the formation of every part, though in any part the influence of one or the other may preponderate. A child may resemble either of its parents, or both. It may have the mind of one, and the physical constitution of the other, or both may be mingled. If a man have a powerfully-developed and active, but not exhausted mind, and a woman a vigorous organic system, it is likely that their child will resemble each in their strongest points. Germ cell and sperm cell, I fully believe, are both engaged in the formation of every faculty and organ.

Fig. 40.



These are magnified from nine hundred to one thousand diameters. *a.* Spermatozoon presenting the flat surface. *b.* One viewed in profile. *c.* Showing a circular spot on the surface, which some suppose to be a sucker. *d.* Shows an elongation from the head, like a proboscis. *e.* Granules, or cells, in which other zoosperms are preparing.

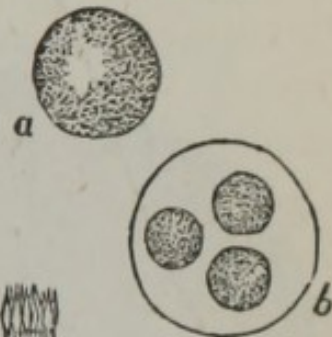
HUMAN SPERMATOZOA.

The sperm cell is the result of the action of that complex organ, the testicle—an organ composed of a vast surface of tubular structure, and amply supplied with nerve and blood, by which, and out of which, these animate cells are formed. Then, within the primitive sperm cell, appear a number of smaller cells, and within these are found,

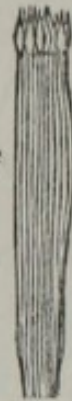
first in a circular mass, a great number of exceedingly minute living beings, consisting of an oval-shaped body,

Objects in human semen, magnified one thousand times. *a*. A large, rounded corpuscle. *b*. A globule of evolution, which incloses three roundish granular bodies. *c*. A bundle of seminal animalcules, as they grouped together in the testicle.

Fig. 41.



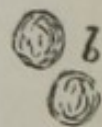
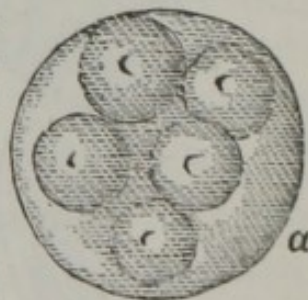
and a long tail. This animalcule swims in a fluid substance, like the white of an egg, but more opaque, formed partly in the testes, and partly secreted by the prostate gland. In full health and vigor, these zoosperms are very numerous and active; in sickness or exhaustion they are few and weak, and in certain states of the system they entirely disappear, and the power of fecundation no longer exists.



EVOLUTION OF ZOOSPERMS.

This figure is a remarkable view of a seminal cyst, or cell. *a*. Containing five smaller cells, in each of which may be perceived a nucleus. *b*. Two seminal granules; all highly magnified.

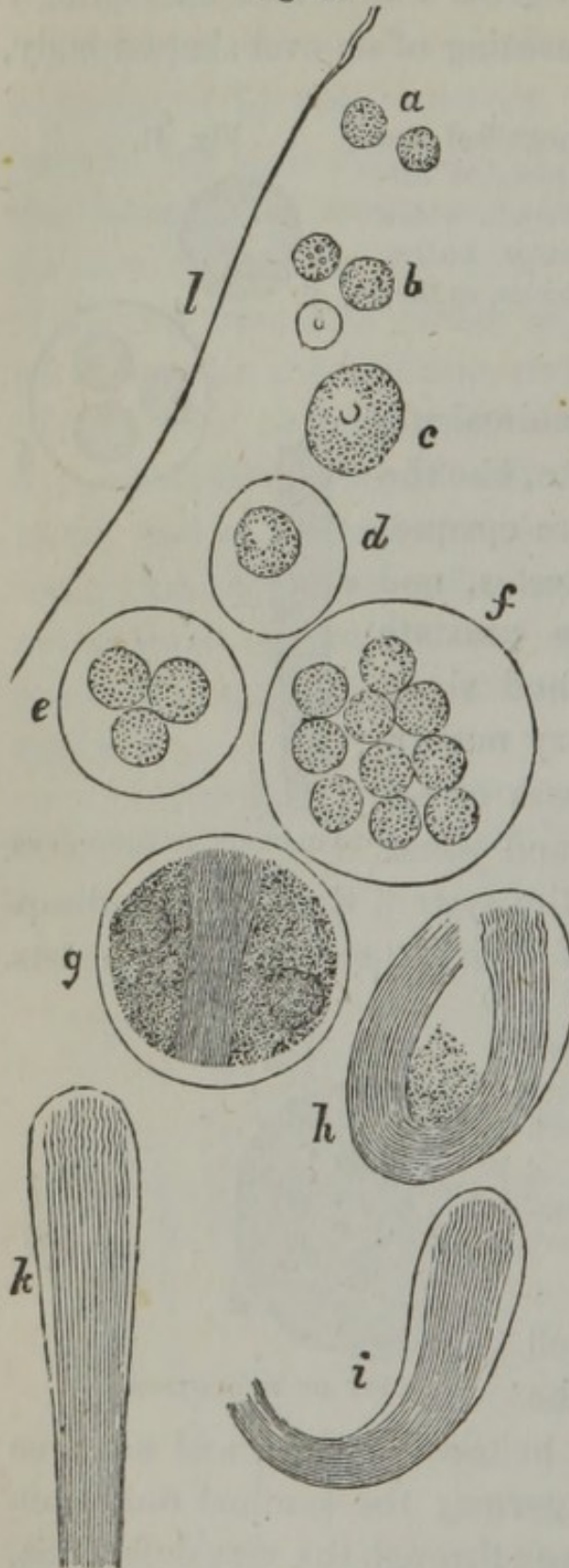
Fig. 42.



CYST OF EVOLUTION.

The primitive germ cell first bursts, setting free the smaller cells, and these, in turn, liquefy, and set free the now perfected zoosperms; the seminal fluid containing them then passes on through the vasa deferentia, up the spermatic cord, passes through the walls of the abdomen, and is received, with the prostatic fluid,

Fig. 43.



SPERMATIC EVOLUTION IN THE COMMON CREEPER.

nitities lie. *k*. A cyst arrived at maturity, still covered by the involucre.

This figure represents the several stages of evolution of the spermatic animalcules of *certhia familiaris* (common creeper). As a greater degree of force has been given to the outline than is to be met with in nature, the figure rather resembles a plan than an exact copy of what may be observed. The objects are delineated as magnified from nine hundred to one thousand times. *l*. An adult spermatozoon taken from the orifice of the vas deferens. *a*. Seminal granules, taken from a very collapsed testicle in the winter season. *b, k*. Several seminal granules, taken from a testicle in summer, during turgescence. *b, c*. Seminal granules, which are probably nothing more than altered epithelial cells. *d, e, f*. Cysts or vesicles, inclosing one or more round granular globules. *g*. A similar cyst, containing, besides the two globules, a finely granular mass, in which the spermatozoa may be seen to form. *h*. The cyst, still containing some finely granular matter, has assumed an oval form, and the bundle of spermatic animalcules, increased in size, lies bent up within it. *i*. A cyst still more developed, the involucre, pear-shaped, covers the bundle of animalcules where their spiral extremities lie. *k*. A cyst arrived at maturity, still covered by the involucre.

according to the common belief, into the seminal vesicles, which are a reservoir in which it is retained, until expelled by the action of the proper muscular apparatus in the sexual orgasm.

1. The urinary bladder.
 3. The prostate gland. 4.
 Membranous portion of the
 urethra. 5. The ureters. 7.
 The right vas deferens,
 which conveys the sperm-
 atic fluid from the testicle.
 8. Left do. 9. The right
 seminal vesicle in its natu-
 ral position. 11. Left sem-
 inal vesicle injected with
 wax, and dissected out. It
 will be seen that the sem-
 inal fluid, passing down the
 vasa deferentia, passes
 back into these vesicular
 pouches, as the bile does
 into the gall bladder, to be
 retained for use.

Fig 44.

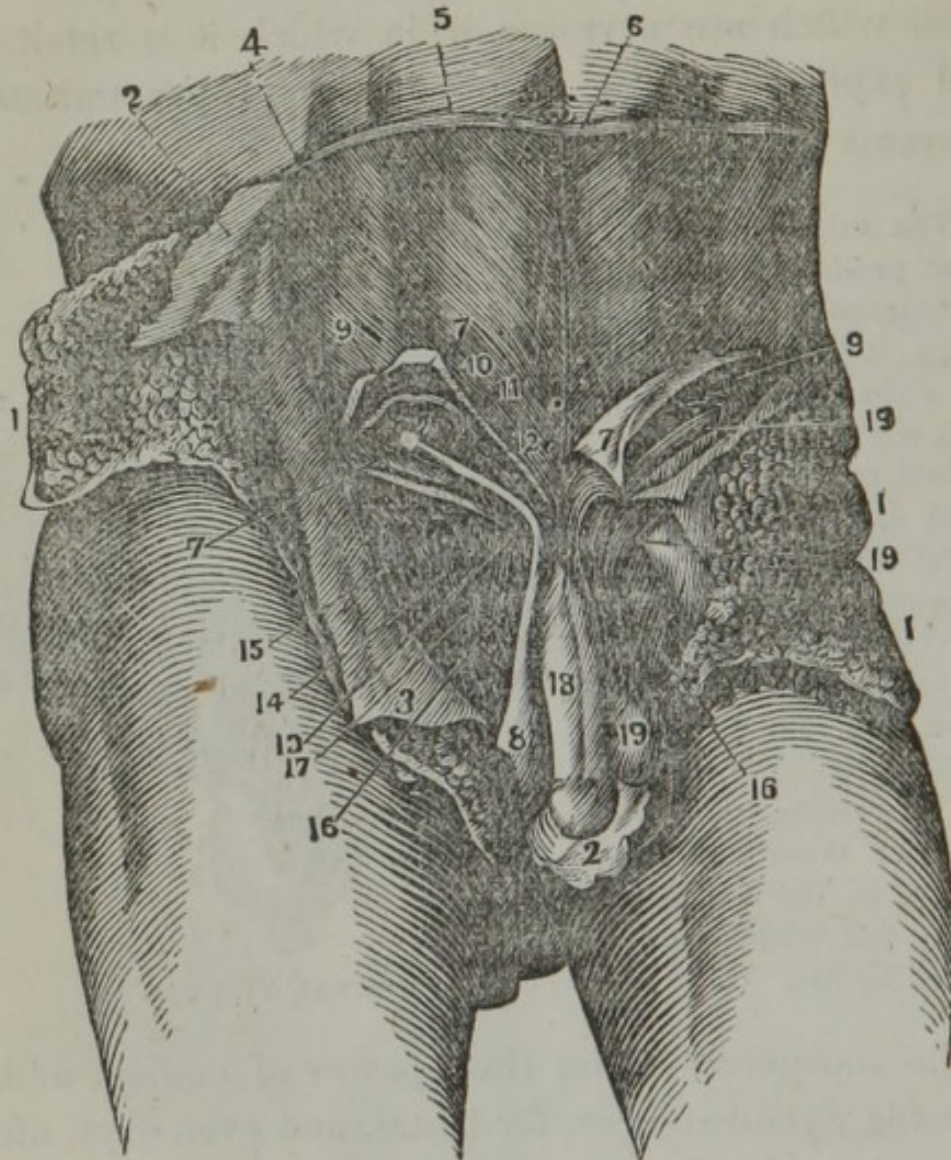


SEMINAL VESICLES.

The zoosperms retain their power of motion, under favorable circumstances, for hours, and even days, after being ejected. In fish, which do not copulate, they swim about in the water, until they come in contact with the eggs spawned by the female. The ripe eggs may even be taken from the body of a female fish, and the melt, or testicle, from the male, and fecundation produced by mingling them together, and ponds and rivers may be stocked with fish, by this mode of artificial impregnation.

Carried up the vagina, in human generation, by the entrance of the penis, it is intended that the spermatic fluid should be thrown full into the mouth of the uterus,

Fig. 45.



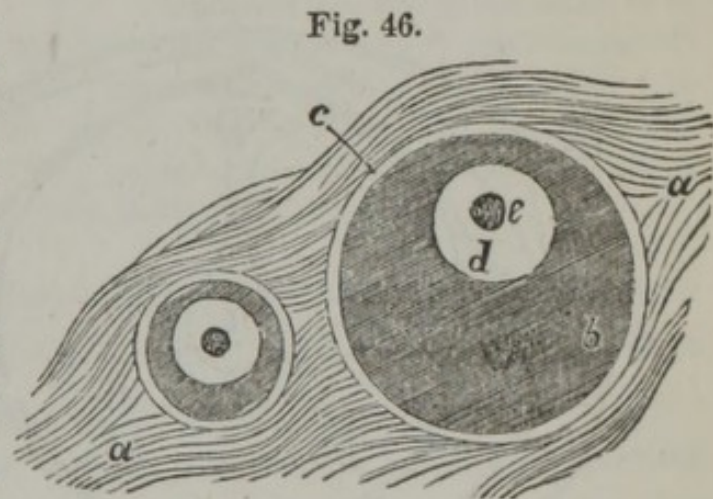
MALE ORGANS.

18. Penis, hanging by its ligament. 8, 19. The testicles; from each is seen passing upward the spermatic cord and vessels into the abdomen. The parts are dissected away, so as to show the course of inguinal hernia. 14, 15, point out the sheaths of the great blood-vessels, as they pass over the rim of the pelvis. This is the situation of femoral hernia.

and then, by the contractions of that organ, forced up the fallopian tubes, toward the ovaries. But several circumstances may prevent this being accomplished. The male organ may be too short to reach the uterus

it may not, from some malformation, be even able to effect an entrance into the vagina, and still impregnation may take place; for the active zoosperms, swarming by millions, move every way with a rapid motion, and are able often to find their way through the entire length of vagina, uterus, and fallopian tubes. On the other hand, when the womb is too low, in the almost universal disease of prolapsus uteri, the head of the penis may pass by its neck, and the semen be ejected and lodged in a deep fold of the vagina. This appears to often prevent impregnation.

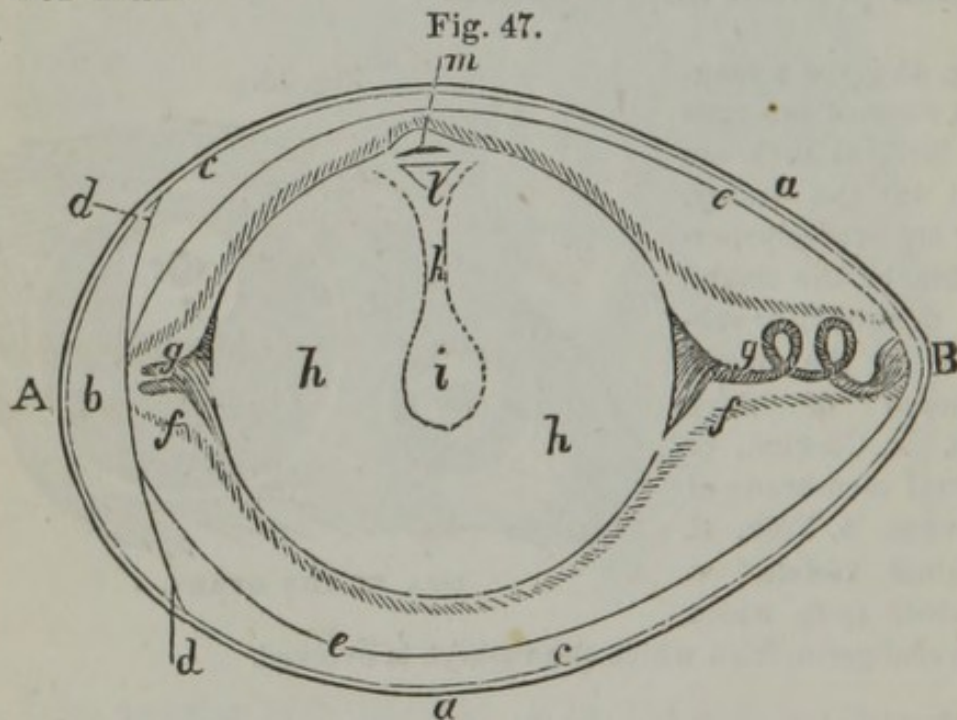
Fig. 45 gives a magnified view of two eggs of a bird, as they are found in the ovary. They are scarcely perceptible to the naked eye. *a.* stroma, or substance of the ovary, composed of thick fibers. *c.* Chorion, or external membrane of the ovum. *b.* Yolk. *d.* Germinal vesicle. *e.* Germinal spot, which is the real germ, from which the embryo is evolved.



OVA IN THE OVARY.

While the male testicles are engaged in the evolution of zoosperms, the ovaries of the female are no less active in forming and ripening the ova, which they may impregnate; but with this striking difference, that, while zoosperms are formed by millions, and may be ejected day after day, we have but one or two, or in rare cases, from three to five, ova perfected, once a month, excepting during gestation, and, normally, during lactation. The ovum, or egg, which, in all its essen-

tial parts, is precisely alike in all animals, and which consists of a cell, a nucleus, and a nucleolus, is found in the stroma or mass of the ovary. The egg of the common fowl may be taken as the type of all eggs. Its yolk and white are of immense bulk, compared with its germinal spot, because there must be contained within the shell the entire matter of which the perfect chicken is formed. In the human ovum this matter is small in quantity, as the fœtus, from an early period, is nourished by the blood of the mother in the uterus, and afterward by her milk.

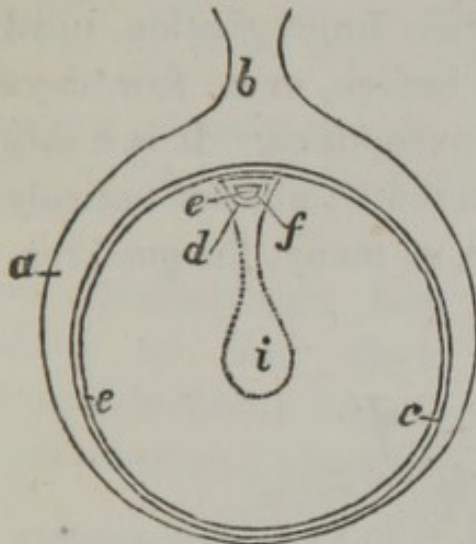


IDEAL SECTION OF A HEN'S EGG.

The egg of the fowl is the type of all ova, and from its large size, is easy to study. A. Blunt pole. B. Sharp pole. *a, a.* Shell. *b.* Space filled with air, to supply oxygen. *c.* Membrane of the shell, which, at *d, d,* splits into two layers. *e, e.* Limits of the second and thicker albumen. *f.* Limits of the third and thickest albumen, the white being in three layers. *g, g.* Chalaze, or ropes of twisted fibers from the yolk, which hold it in its place. *h.* Yolk. *i.* Central cavity in the yolk, from which a duct, *k,* leads to the cicatricula, or tread. *l.* Cumulus proligerous, or germinal cumulus. *m.* Germ or blastos. The egg is so formed that the yolk floats high in the white, and the germ is always uppermost.

When this egg is fully formed, ripened, or matured, the cell which envelopes it swells, bursts, and sets it free. It is then grasped by the fimbriated extremities of the fallopian tube, and begins its journey down that

Fig. 48.



TRANSVERSE SECTION OF AN EGG. is the central cavity.

passage to the uterus. It may be impregnated at any time after it is set free by the bursting of the graafian vesicle, until its arrival in the uterus, and possibly until its expulsion from that receptacle.

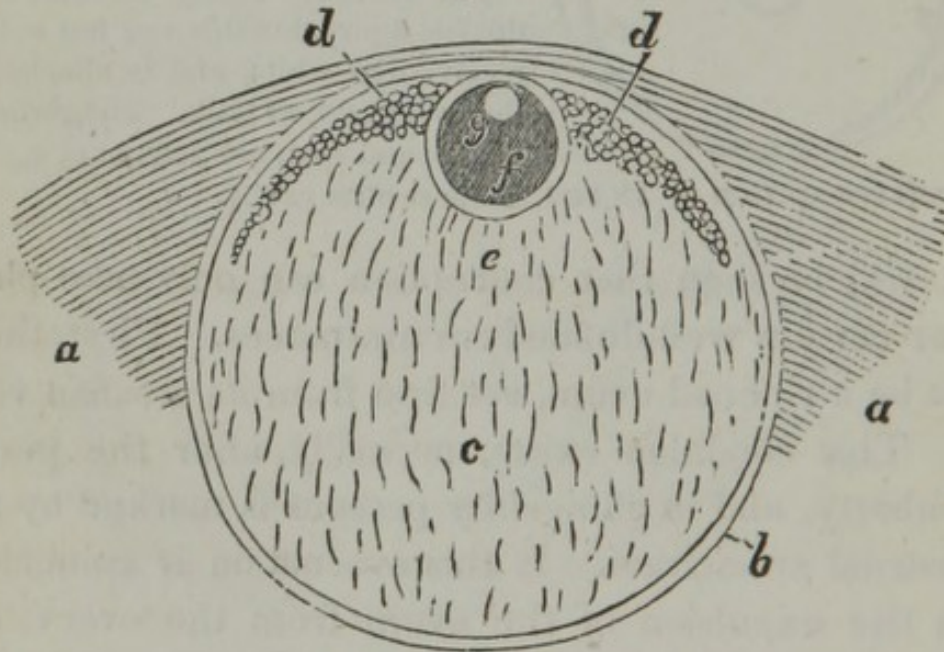
The parts are nearly the same as in the last figure, but this egg has not yet received its white, and is attached to the ovary by *b*, its stalk. The germinal vesicle and spot, are seen at *d*, *e*, *f*; *i*,

It will be seen that conception can only take place under certain well-defined circumstances. First, there must be a ripened ovum, set free from its graafian vesicle. This condition exists, normally, after the period of puberty, and in all healthy persons is marked by the menstrual evacuation. If this evacuation is coincident with the expulsion of the ovum from the ovary, impregnation must take place, if at all, within eight, or, at most, twelve days of that period. The zoosperms may meet the ovum on its passage, or, possibly, the ovum may find the zoosperm awaiting its arrival.

But in the diseases and irregularities of our lives, with the excitements of stimulating food and general false habits, with the continual over-excitement and exercise of the generative organs, these processes become irregular, and their normal signs not to be de-

pended on. Ova may be prematurely ripened by excitement of the ovaries, caused by sexual indulgence. The menstrual evacuation, which degenerates into a real hemorrhage, becomes irregular and uncertain, as well as depraved in its character. Consequently, the rule that sexual union, to produce impregnation, must take place either immediately before, or a few days after, menstruation, admits of exceptions. It is a safe rule for those who desire to procreate ; but not entirely safe for those who would avoid it, as many, for good reasons, may

Fig. 49.



RIPE OVUM OF THE RABBIT.

Fig. 49 shows an ideal section of an immensely magnified ripe ovum of a mammal, the rabbit, still contained in the ovary. *a, a*, is the substance of the ovary. *b*. The double tunic of the graafian vesicle that contains it. *c*. Contents of the vesicle, joining at *d, d*, a granular disk, in which *e*, the ovulum, is imbedded. *f*, is the yolk. *g*. The germinal vesicle, with its spot just perceptible.

Menstruation appears to be a throwing off of the fluids concerned in the ripening and expulsion of the ova. In a perfectly healthy state, the menstrual fluid is very

small in quantity, and scarcely tinged with the red coloring matter of the blood. In disease, it becomes a genu-

Fig. 50 exhibits a portion of the ovary of the *ornithorhynchus* magnified, with the bursting of a graafian vesicle, and the escaped ovum. *c*, is the ovum escaped from *b*, the vesicle. *d, d, d*, are sections of entire vesicles, containing ova, in different stages of ripening.

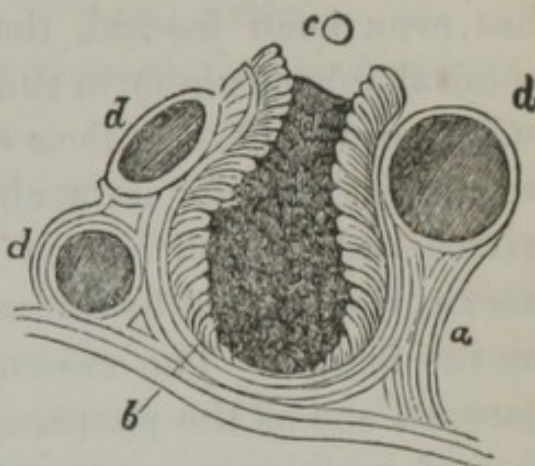
ine hemorrhage, lasts for three or four days, or longer, with the loss of several ounces of blood, mingled with the proper menstrual

Corpus luteum is the name given to the remains of the graafian vesicle, after the escape of the ovum. This is from the ovary of a woman who committed suicide eight days after pregnancy.

fluid. There is no better test of the health of a woman than the one I have just given.

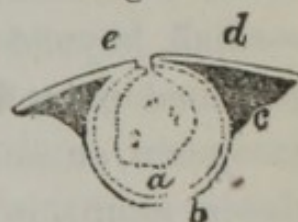
In what manner the actual impregnation of the ovum

Fig. 50.



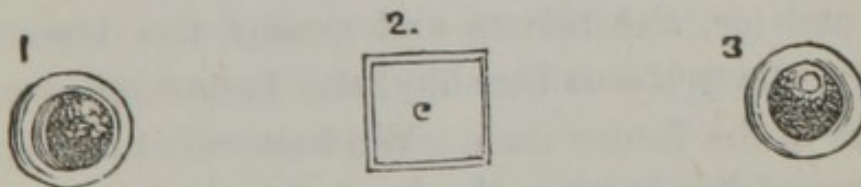
ESCAPE OF AN OVUM.

Fig. 51.



HUMAN CORPUS LUTEUM.

Fig. 52.



HUMAN OVA.

1, is a human ovum, magnified forty-five diameters, showing, near the center, the cicatricle. 2, is the germinal vesicle, placed within a square area, and magnified forty-five diameters. On one side is seen a small elevation. This is the germinal spot, the microscopic point, which is the real germ of the future man. 3. An ovum, so transparent, that the germinal vesicle and spot may be seen shining through its envelopes.

takes place, we have no positive knowledge. Microscopic observers assert that they have seen the zoosperm enter the ovum by an opening left for that purpose. It has even been fancied, that the body and tail of the seminal animalcule form the rudiments of the brain and spinal cord! Observations of the progress of fœtal development warrant no such conclusion. If it could be established, it would prove that the animal system of nerves was formed by the male parent, and the organic by the female. The resemblances of children to their parents, and all the phenomena of hereditary transmission of qualities, prove that both parents are concerned in the production of every part.

We have, then, two objects here of microscopic minuteness—small, almost to an infinitesimal degree—small, beyond our possible conceptions. One is the germinal point in the female ovum; the other is the zoosperm, or some portion of it. In each of these invisible atoms is comprised the elements of a glorious and, as we believe, immortal being. Each contains, moreover, the rudiments of the very form and qualities of that being, physical, moral, and intellectual. There, in that point of matter, that pellucid cell, we have the shape and air, the talents and genius, the honesty or roguery, the pride or humility, the benevolence or selfishness of the future man. We have what determines the form of his head or hands, the contour of his nose and chin, the color of his eyes and hair. Moreover, this spermatic animalcule, or this cell-germ, has all hereditary idiosyncrasies and diseases, gout, scrofula, venereal taint, or insanity.

We can scarcely conceive of this, yet we must ad-

mit it. All the grand and energetic qualities that made a Cæsar or a Napoleon—all that can be fairly attributed to blood and birth, to hereditary influences, must have been contained in one or both these atoms.

I do not underrate the influences that may act upon the foetus during gestation. I give full credit to the power of education in forming the human character; and I shall speak of both these influences; but I assert that all which makes the basis of the character, mental and physical, must reside in the germ and the spermatazoon, and must combine at the moment of impregnation, or the union of these principles.

For, observe, all the qualities of soul and body, which make the specific differences between a mouse, a dog, a horse, an elephant, must be in their germinal principles. The appearance of the zoosperms in different animals varies slightly under the microscope—that of the ova scarcely at all. Moreover, when two nearly allied species of animals engender; when, for example, the zoosperm of the ass unites with the ovum of the mare, each parent is found to contribute to the mental and physical qualities of the offspring. In all crossings of different breeds of animals, we find the same effects produced, the more powerful impressing themselves most strongly, and the two sexes giving each certain peculiar characteristics.

Nor is this by any means less notably the fact in the human species. When sexual commerce takes place between a negro and a white woman, the offspring child partakes of the mental and physical qualities of both; which he has the most of, seems to depend upon the relative power and energy of his two procreators.

The reader, thus directed, will find for himself abundant illustrations of the principles above stated, and which must not be lost sight of by any true philosopher.

If we do not understand the absolute process by which the union of the male and female elements is accomplished, in the generation of the new being, the conditions under which this must take place are more clear to us. From a multitude of observations, it appears,

1. That the ovum, in a state of healthy maturity, must have been set free from the ovary. This is not the case with some of the lower animals. There are insects, in whom a single act of the male will fecundate successive generations. In birds, the male principle seems to be added before the egg is mature.

2. The sperma must be recent, and must contain living, active zoosperms.

3. The smallest quantity, and probably a single zoosperm, is sufficient, if it comes in contact with the ovum.

4. It is not necessary that there should be any enjoyment of coition, on the part of the female. Women who have none, seem even more prolific than others. It may take place in sleep, or other insensibility. In men, also, the orgasm may be accompanied with no pleasure, and even with pain.

5. Even the sexual union is not indispensable. There is no doubt that a female ovum may be impregnated by semen conveyed to it artificially; and a woman, if she chose, might have a child without ever coming into personal contact with a man. This has been shown in animals by abundant experiments, and is said to have oc

cured in human subjects ; but here the proof is not so easy. There is, however, not the slightest reason to doubt the result, if the experiment were fairly tried.

There are a few other points of interest, which may as well be discussed here, as elsewhere. Few questions are of more practical importance to the human race than under what circumstances the generative act should be performed. I will give my opinion briefly, stating the reasons where they are not self-evident or apparent.

1. The generative act should be performed by two persons, arrived at a full development of their powers, physical and intellectual. At all events, this should be the condition of one of the parties—better of both. The children of young and immature parents are apt to be weak and scrofulous. Age can not be given as an absolute index of maturity, and there are some who are never mature.

2. It should be performed with all the attraction and charm of a mutual love ; and the existence of this is the best evidence that the parties are suitably related to each other ; for those similarities of constitution, which forbid the marriage of near relations, and which often exist without consanguinity, and are sometimes wanting with it, also prevent a true love. Hence, marriages of family interest, convenience, similarity of tastes, and friendship, may be very unfortunate with respect to children. Love, and its functions, require a mingling of opposite qualities. No man ought ever to beget a child for a woman he does not love ; and, especially, no woman ought ever to submit to the sexual embrace of a man, unless assured that the union is sanctioned by a mutual

passion. Every child should be a love-child, and this is the only legitimacy that nature knows; and this would be the case, if the legal marriage was what it always should be, the outward expression of an inward reality.

3. It should not be performed, by either man or woman, so as to entail hereditary disease upon their offspring. Insanity, scrofula, consumption, syphilis, diseased amateness, deformities of body, or distressing singularities of mind, should not be entailed upon posterity.

4. A woman should avoid conception, if her pelvis is so small, or so deformed, as to hazard her own life in delivery, or destroy that of the child, or compel an abortion.

5. In the present social state, men and women should refrain from having children, unless they see a reasonable prospect of giving them suitable nurture and education. Every man may, and every woman should, have the right to decide whether he will have children. We have no right to inflict a curse upon an individual or society.

But how is pregnancy to be prevented? There is one way, that is natural, simple, and effectual. It is to refrain from the sexual act. It is easily done by most women, and by many men. I know that it is unnatural, and unhealthy. We can not violate any law of nature with impunity. But it is done by thousands. The whole priesthood and religious orders of monks and nuns in the Roman Catholic church, are under a religious vow of perpetual chastity. Physiologically, it is unnatural. But I am not speaking of what is right, only of a choice between two evils.

But there are men who can not refrain, and women

who are not allowed to. A cursed despotism under the name of legal marriage, compels a woman to receive the embraces of a man she loathes, or, if she loves him, at the peril of her life. Can nothing be done to palliate cases like these? It is a serious question, and must receive an honest answer.

I have shown that in ordinary cases, and it is so in probably ninety-nine in a hundred, conception can only take place when connection is had a day or two before, or ten, or, for safety's sake, say sixteen days after menstruation. There is, then, a fortnight each month, when the female is not liable to impregnation; but it must be remembered, that if she is amatively excited in this interval, the ripening of the ova may be hastened, and the very result precipitated that it is intended to avoid.

Any mode by which the living zoosperms are prevented from coming in contact with the ovum, is an effectual prevention. If, in the generative act, the penis is withdrawn completely before the ejaculation of the semen, and no atom finds its way into the vagina, the prevention is sure. But in this case there must be no premature emission, no return of the penis into the vagina, with the urethra still full of semen, and no accidental introduction of the smallest particle.

In many cases, the immediate injection of cold water by the vagina-syringe will kill and wash away the zoosperms. But such injection must be immediate; it must be very deep and thorough, and no semen must have passed into the cavity of the uterus. I see no reason for mixing with the water any of the powders sold for that purpose; for cold is perfectly effectual, as far as any injection can reach.

A piece of soft sponge, large enough to fill the vagina in its upper part, and cover the mouth of the womb, which may be attached to a piece of ribbon, moistened and placed beforehand, has been found an effectual preventive ; but it is not perfect unless its withdrawal is preceded and followed by cold injections into the vagina.

A condom, or delicate covering of the whole penis, if strong and perfect in itself, is, of course, an absolute preventive.

Pressing upon the urethra, so as to prevent the emission of semen, if thoroughly performed, must also be effectual ; but it is said to produce very injurious consequences, by deranging the seminal ducts.

It is impossible to give advice, except in particular cases. We must, in all mixed cases, choose the least of evils, and seize upon the greatest goods. I suppose no one who wants children will try to prevent having them, and I see no reason why any one should be compelled to bear children who wishes to avoid it. A healthy, happy child is the dearest treasure and the greatest blessing that can come to two loving hearts. It must be a terrible necessity that would make any person, fit to have a child, take any means to avoid it.

CHAPTER XII.

EVOLUTION OF THE FŒTUS.

THE ovum once impregnated, Nature, by which I mean the informing soul that presides over the whole organic system, and gives intelligent guidance to every part, carries forward its development, as nearly as can be observed, in the following order :

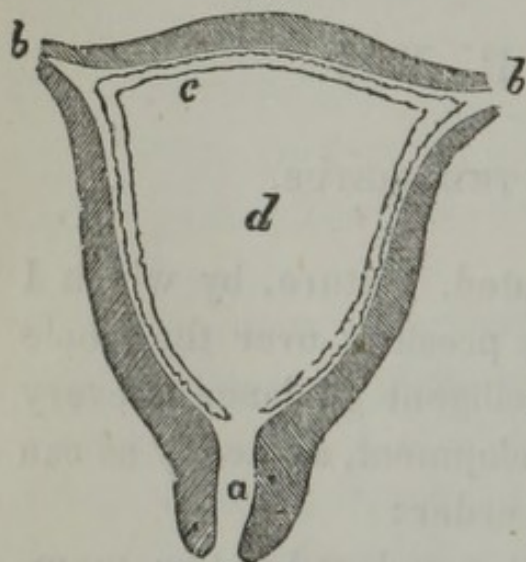
The ovum is, from the first, enveloped in two membranes, the outer of which is called the chorion, the inner the amnion. Within lies the principle of life, the germ of the complex being. The ova of all the higher animals are alike at this period, and one can not be distinguished from another. The amnion, or inner membrane, secretes upon its inner surface the liquid in which the fœtus is suspended during the whole period of gestation. The chorion, or outer covering, on the other hand, acts outwardly, throwing out villi, which, gathered at one point, at a certain period, unite with vessels on the inner surface of the uterus, and form the placenta, or afterbirth, by which the fœtus is nourished from the blood of the mother.

This central germinal point, with its two coverings, form the three parts of a regular cell formation—cell, nucleus, and nucleolus.

While the ovum is gradually passing down the fallopian tube, propelled by the action of its ciliary bodies, a

journey which lasts from eight to fourteen days, and in the course of which it is liable to impregnation, the

Fig. 53.

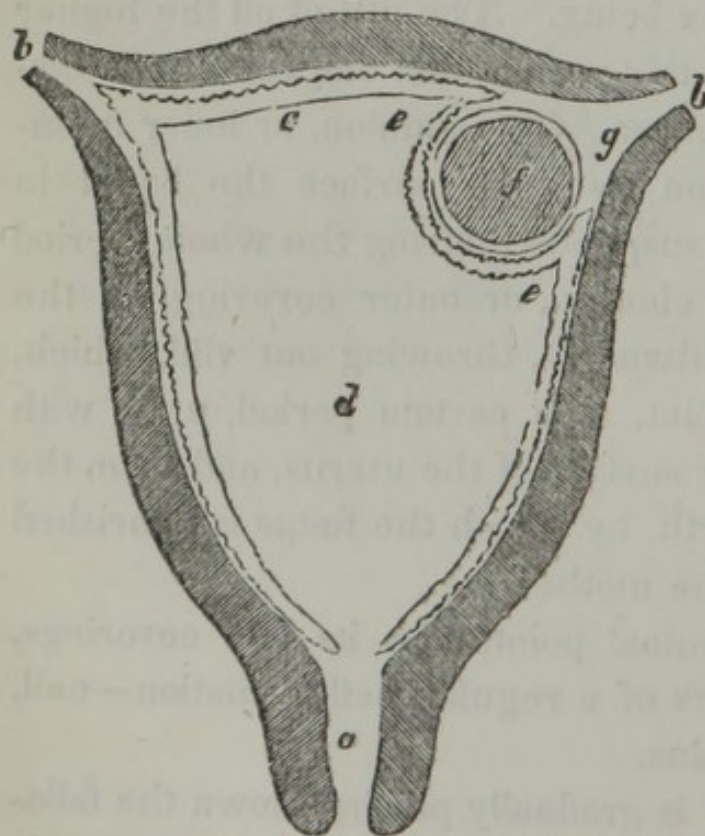


SECTION OF THE UTERUS.

Fig. 53 is a sectional plan of the uterus, about eight days after impregnation, showing:—*a*. The neck of the uterus. *b, b*. Entrances to the fallopian tubes. *c*. The decidua vera covering the walls of the uterus at every point. *d*. Cavity of the uterus.

uterus is preparing for its reception. A delicate secretion is poured out over its whole internal surface, which is organized into a membrane called the de-

Fig. 54.



OVUM ENTERING THE UTERUS.

Plan of the uterus at the moment when the ovum, *f*, surrounded by its chorion, *g*, is entering its cavity, and pushing the decidua vera before it to form the decidua reflexa. *a*. Neck of the uterus. *b, b*. Entrance to the fallopian tubes. *c*. Decidua vera, covering the walls of the uterus at every point. *d*. Cavity of the uterus.

cidua, so that when the ovum arrives at the lower end of its fallopian tube, or one

of the horns of the uterus, this decidua bars its entrance. But as the ovum is pushed forward, the membrane gives way, and is folded around the ovum, so as to make a double membrane. The outer portion is called the decidua vera, or true membrane; the inner, the decidua reflexa, or folded membrane.

We have the ovum now protected by no less than four membranes: two proper to itself, the amnion and chorion, and the two formed by the folded decidua of the uterus.

During its passage down the fallopian tube, the entire ovum is so small that it is with great difficulty it can be found by the closest inspection and the aid of a powerful microscope. When found, however, and subjected to a high magnifying power, it exhibits the same phenomena as is displayed in the incubation of any other egg. There is the yolk, the germinal spot, which

Fig. 55 shows a perfectly normal human ovum, twenty-one days after impregnation, inclosed in its decidua. Size of nature.

Fig. 55.



HUMAN OVUM.

gradually expands, and the formation, first of blood, and an external circulation, and then of the rudimental organs; but these latter changes take place in the uterus. In the tube the ovum gradually

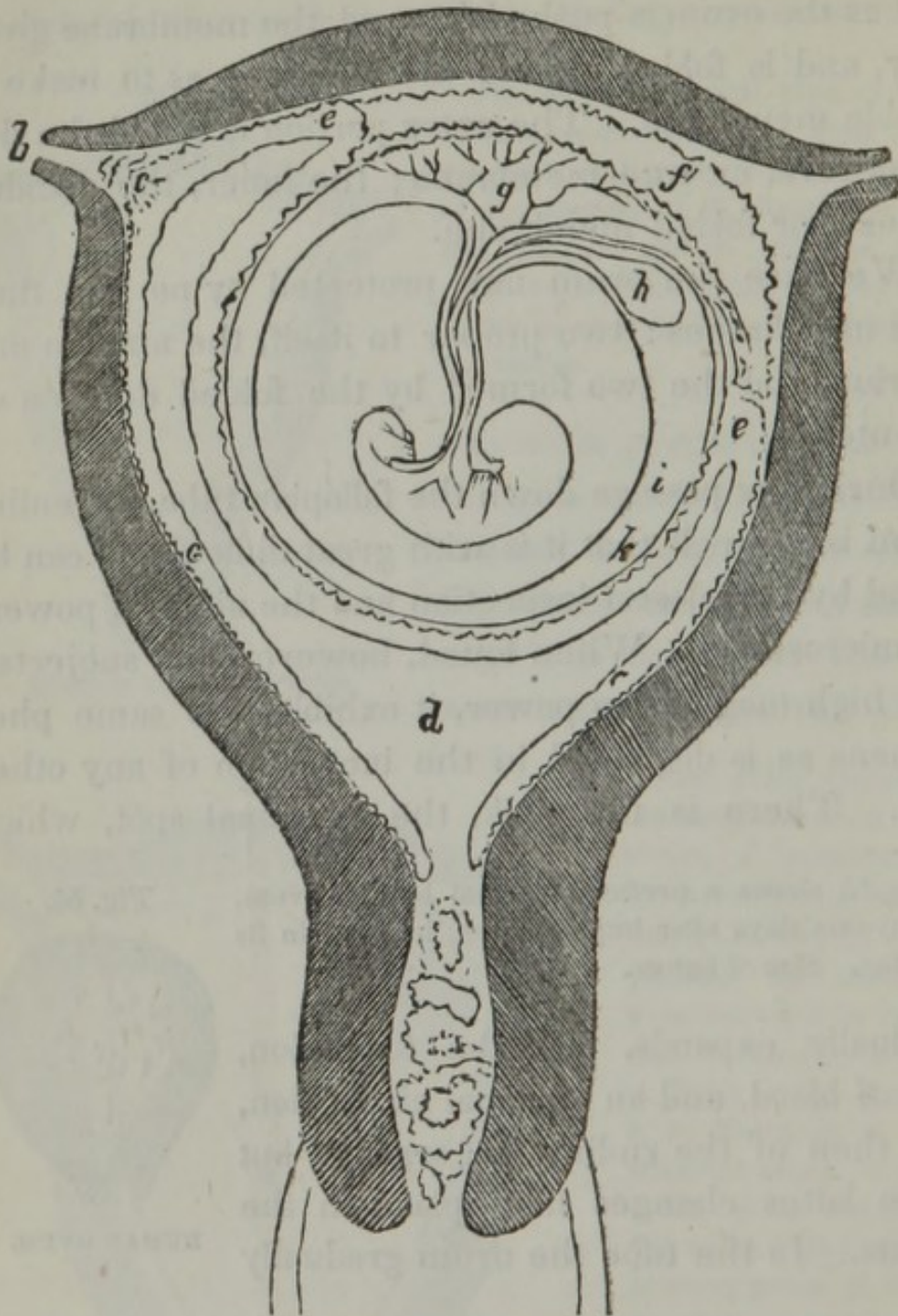
Fig. 56 shows the same ovum, with the decidua laid open; the embryo, about two lines long, closely surrounded by the amnion, is seen through the division of the chorion.

Fig. 56.

HUMAN OVUM
LAID OPEN.

increases in size, and on arriving in the horn of the uterus, the ova of the rabbit are half to three-quarters of a line in dia-

Fig. 57.



FŒTUS IN UTERUS.

Sectional plan of the uterus with the ovum further advanced; the cervix uteri is now plugged up with a gelatinous mass, *a*. The decidua vera, *c*, sends a process, *c*², into the right fallopian tube; the cavity of the uterus is almost completely occupied by the ovum. *e, e*. Points of reflexion of the decidua reflexa. *f*. Decidua serotina. *g*. Allantois. *h*. Umbilical vesicle; with its pedicle in the umbilical cord. *i*. Amnion. *k*. Chorion; between the two the space for the albumen.

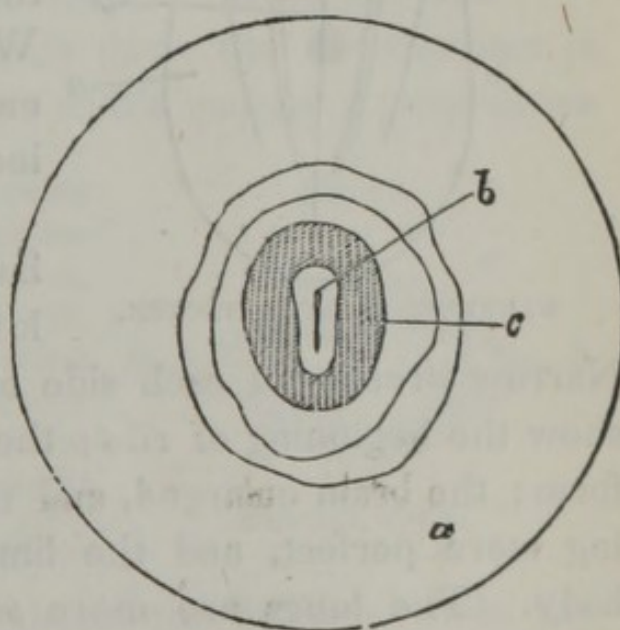
meter, including, of course, its membranous envelopments.

In the uterus, the growth of the new being is rapid. Still, in the human subject, up to the seventh day, nothing is visible to the naked eye. On the tenth day, there may be perceived a semi-transparent, grayish flake. On the twelfth there is a vesicle, nearly of the size of a pea, filled with fluid, in the middle of which swims an opaque spot, presenting the first appearance of an embryo, which may be clearly seen as an oblong or curved body, according as it is viewed, and plainly visible to the naked eye on the fourteenth day. The entire weight of the embryo and its two investing membranes, waters, etc., is now about one grain.

Fig. 58 represents the germinal process of the hen's egg, after twenty-four hours' incubation. *a*. Vitellus, or yolk. *b*. Area pelucida, or germinal spot. *c*. Vascular space. This is the natural size, the yoke being flattened.

The increase from the first is astonishingly rapid, when we consider its original minuteness. On the twenty-first day the embryo resembles an ant, or a lettuce-seed; its length is four or five lines, and it weighs three or four grains. Many of its parts now begin to show themselves, especially the cartilagi-

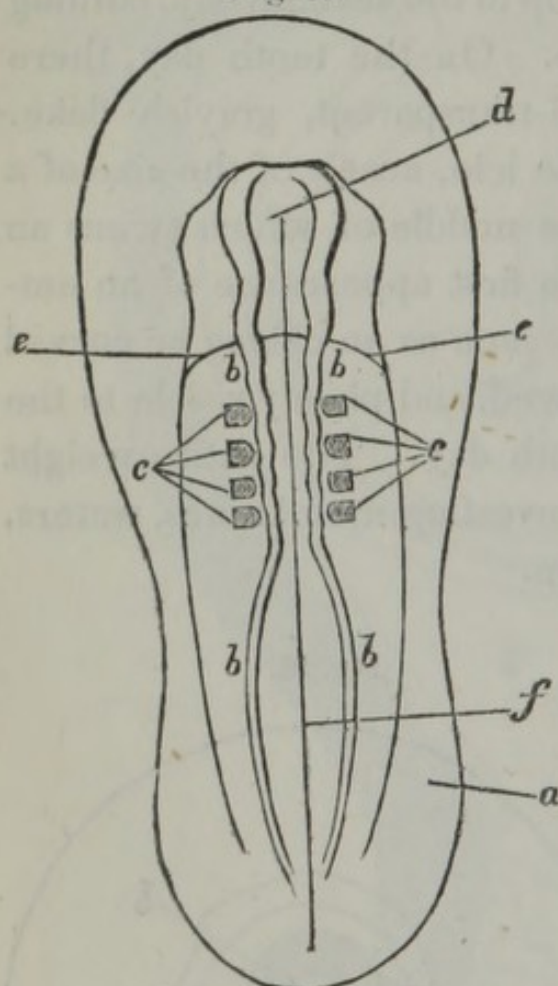
Fig. 58.



INCUBATION.

nous beginnings of the bones of the spinal column, the heart, brain, etc.

Fig. 59.



MAGNIFIED EMBRYO CHICKEN.

Fig. 59 gives a magnified view of the germinal spot, or streak, in Fig. 58. *c*. The dark squares are rudiments of the vertebral column. *d*. Is the anterior cerebral cell. *f*. Dorsal cord. All this, nature has accomplished in twenty-four hours.

On the thirteenth day the embryo is as large as a horse-fly, and resembles a worm bent together. There are as yet no limbs, and the head is larger than the rest of the body. When stretched out, the embryo is nearly half an inch long.

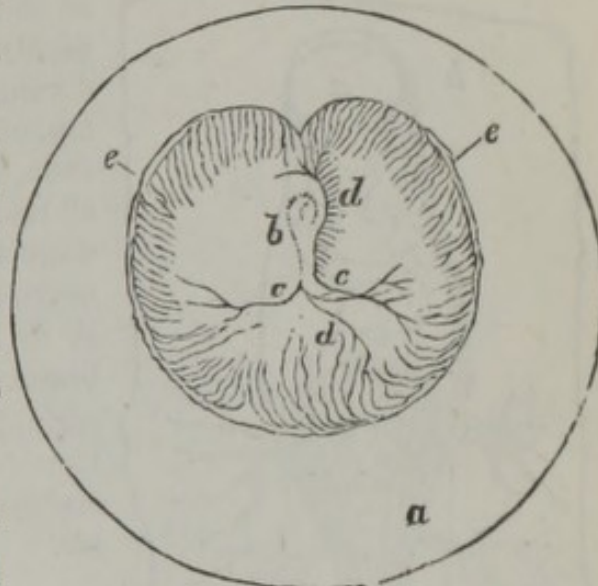
In the seventh week bone begins to form in the lower jaw and clavicle.

Narrow streaks on each side of the vertebral column show the beginning of ribs; the heart is perfecting its form; the brain enlarged, and the eye and ear growing more perfect, and the limbs sprouting from the body. The lungs are mere sacs, about one line in length, and the trachea is a delicate thread, but the liver is very large. The arms are still imperforate. In the seventh week are formed the renal capsules and kidneys, and the sexual organs are speedily evolved, but the sex of the foetus is not determined until some time

after. The embryo is now nine lines, or three-fourths of an inch, in length.

Yolk of the hen's egg at the beginning of the third day of incubation, exhibiting the earliest traces of circulation. *a*. Yolk. *b*. Embryo. *c, c*. Arteries of the blastoderma. *d, d*. Veins of the blastoderma. *e, e*. Terminal sinus. It is by means of this curious arrangement of vessels, that the embryo draws its nourishment from the yolk.

Fig. 60.



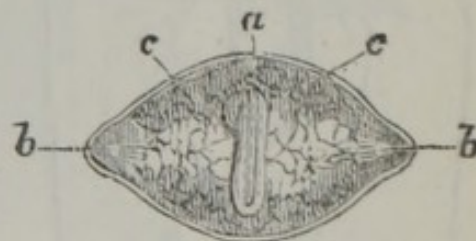
EMBRYONIC CIRCULATION.

In the eighth week the embryo is an inch long, weighs a dram, and begins to show the division of fingers and toes.

At from sixty to seventy days, the development is rapid, and all the parts are in the course of progressive

Fig. 61 gives a view of the ovum of a bitch, twenty-three days from the last access of the male. The chorion, *c, c*, has already shot forth little villi, which, however, are wanting at either end, *b, b*, of the ovum, and also over the place where the embryo is situated. This engraving represents its object of the natural size.

Fig. 61.



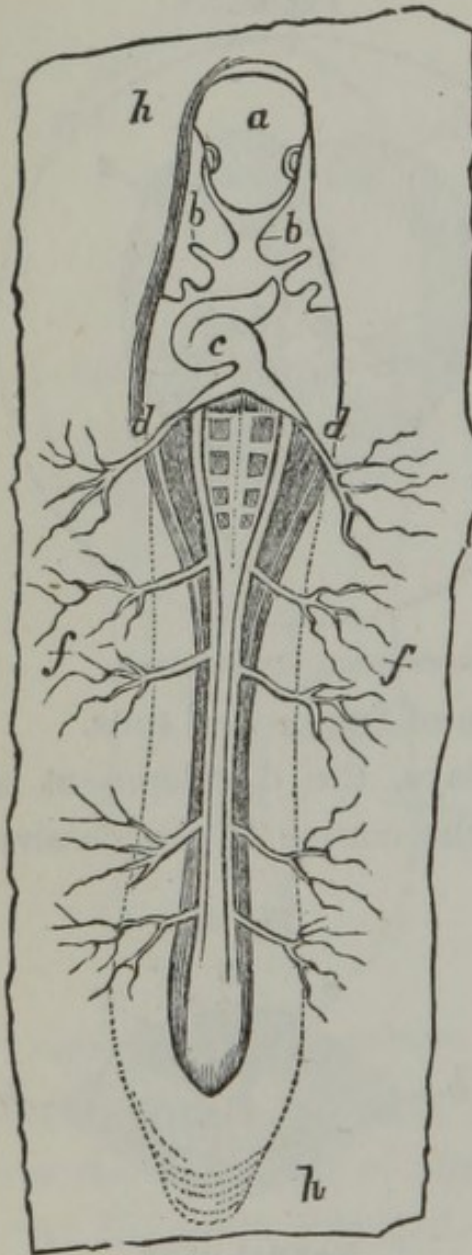
MAMMAL OVUM.

formation. The eyes enlarge, the lids are visible, the nose grows prominent, the mouth enlarges, the external ear is formed, the brain is soft and pulpy, the neck well defined, and the heart fully developed.

At three months, the eyelids are distinct, but shut, the lips are drawn together, the organs of generation

very prominent in both sexes, both penis and clitoris being remarkably elongated. The heart beats with force,

Fig. 62.



EMBRYO OF THE DOG.

Fig. 62 represents the same embryo as shown in the ovum of Fig. 61, highly magnified, seen from the abdominal aspect. *a*, is the vertex, or top, of the head. *b, b*, are the branchiæ, like the gills of fishes, which all mammals, man included, at one stage resemble. *c*, is the rudimentary heart, appearing as a contorted tube. *d, d*. Veins of the germinal membrane. *f, f*. Arteries of the same, springing from the two aortas. *h, h*. Germinal membrane. The human embryo, at this stage, is precisely similar.

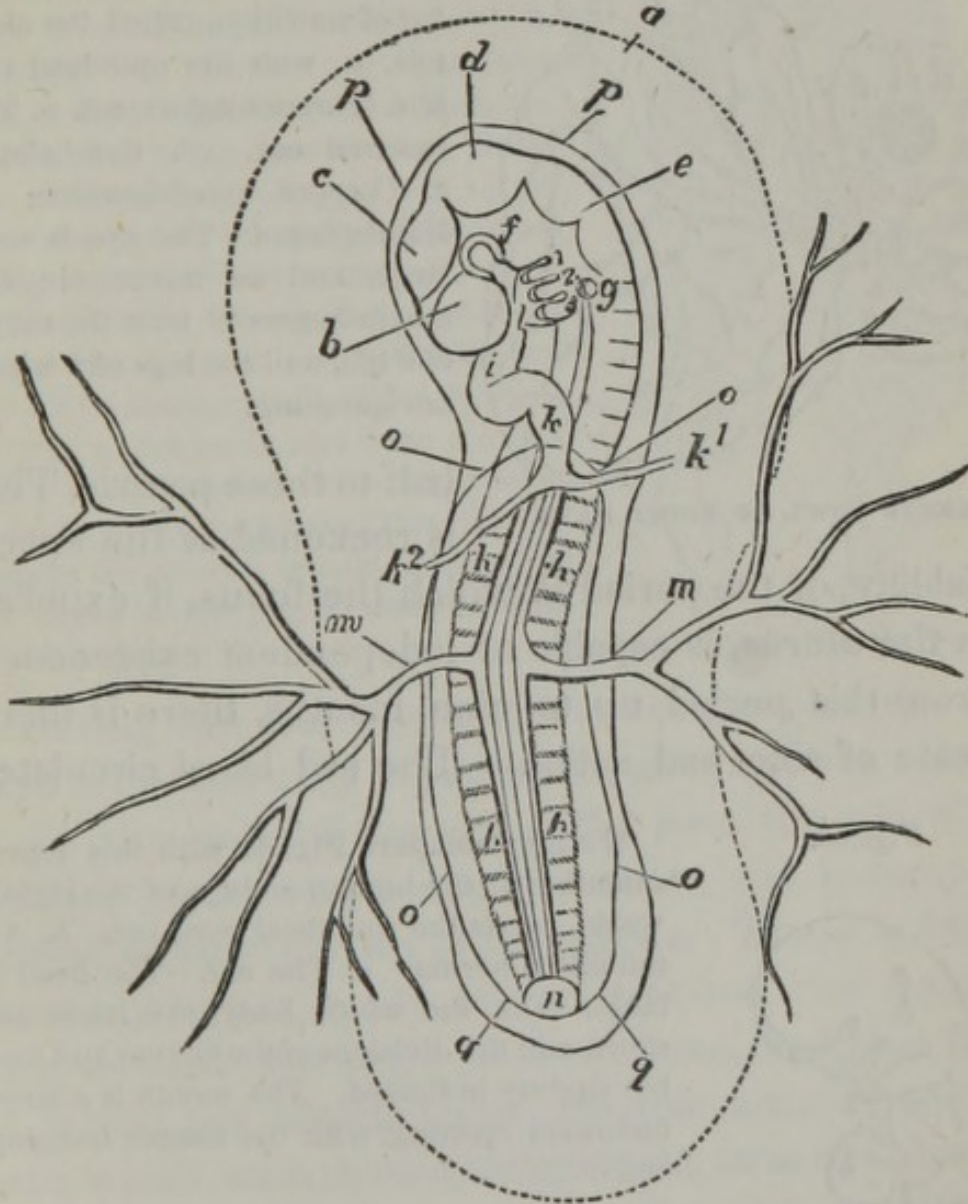
the larger vessels carry red blood, the fingers and toes are well defined, muscles begin to be developed, and the fœtus is four or five inches in length, and weighs about two and a half ounces.

At four months, it has greatly expanded in all its parts. The abdominal muscles are formed, and the intestines are no longer visible.

At five months, the lungs have increased, and are even susceptible of a slight dilatation. The skin is now in process of formation, the place of the nails is marked, and meconium gathers in the intestines, showing the action of excretory glands. Length, eight or ten inches; weight, fourteen or sixteen ounces

At six months, a little down appears upon the head, the areolar tissue is abundant, and fat begins to be deposited. Length, nine to twelve inches; weight, one and a half to two pounds.

Fig. 63.

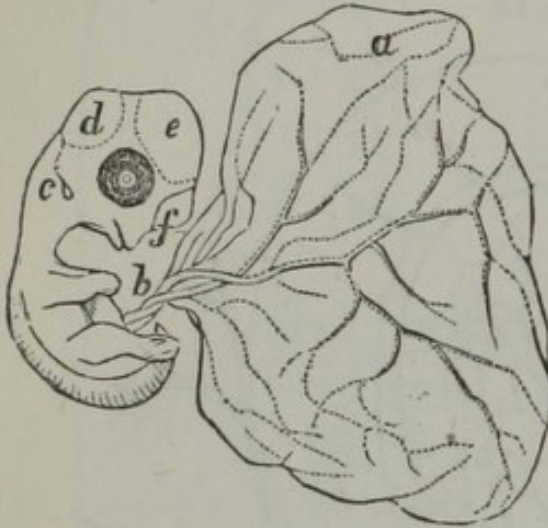


EMBRYO CHICKEN.

A magnified embryo of the chick, four lines long; time, middle of the third day. *b, c, d*, represent the hemispheres of the brain; *e*, the cerebellum and medulla oblongata; *h, h*, vertebral lamina; *i*, ventricle of the heart; *m, m*, arteries of the blastodermis; *o, o*, boundaries of the abdomen; *g*, opening of the ear; *f*, the eye, formed first with a wide cleft. This also resembles, in all respects, the human embryo, at the same stage of development, but at a much later period.

At seven months, every part has increased in volume and perfection; the bony system is nearly complete. Length, twelve to fourteen inches; weight, two and a

Fig. 64.



EMBRYO FOWL OF EIGHT DAYS.

Fig. 64 shows a further advanced embryo, with an apparatus of nutrition, called the allantois, *a*, with the umbilical vessels, *b*, branching over it. *c*. The external ear. *d*. Cerebellum. *e*. Corpora quadrigemina. *f*. Hemispheres. The eye is very large, and far advanced; the mouth begins to take the shape of a bill, and the legs and wings are sprouting.

half to three pounds. This is reckoned as the epoch of viability, or the period in which the foetus, if expelled from the uterus, is capable of independent existence.

From this period up to nine months, there is mere increase of size and action. The red blood circulates

Fig. 65.



HUMAN EMBRYO.

We may compare Fig. 64 with this representation of the human embryo of the eighth week. *a*. Is the umbilical cord cut. *b*. An umbilical hernia. *c*. The ear. The head is larger than the whole body, the limbs are short, and the divisions of the fingers and toes but slightly indicated. The mouth is a large unformed opening, with the tongue hanging out.

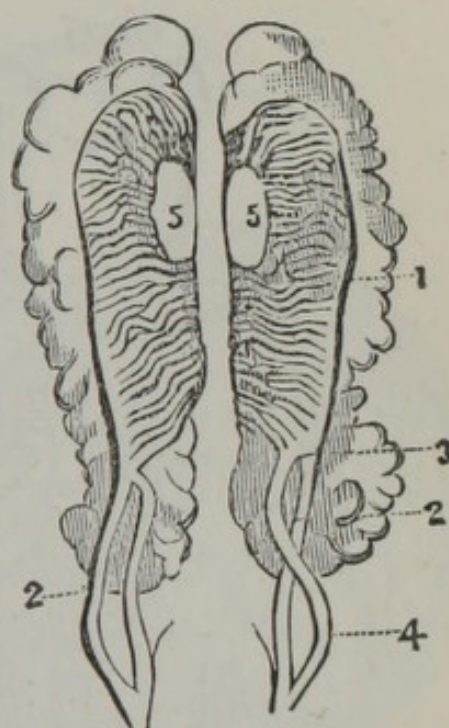
in the capillaries, and the skin performs the function of perspiration. Length, eighteen to twenty-two inches; weight, from five to eight pounds.

There are cases in which an ill-nurtured foetus, at its full period, does not weigh more than two or three

pounds ; on the other hand, cases are not rare in which the weight is twelve or fifteen.

The wolffian bodies are foetal organs, which are engaged in the important process of forming the kidneys and testicles. When this work is accomplished, these forming organs disappear. 1. Kidneys. 2. Ureters. 4. Excretory duct of the wolffian body. 5, 5. Testicles, which, after being formed here, beside the kidneys, descend, pass out by the same channels as are afterward occupied by the spermatic cords, and are lodged in the scrotum. The ovaries are formed in the same manner, and at first the sex can not be distinguished. The clitoris is as large as the penis, and there is a cleft below in both sexes. In males, a seam or raphe shows the place of this cleft. In females the ovaries remain attached to the uterus in the pelvis, and the cleft remains open.

Fig. 66.

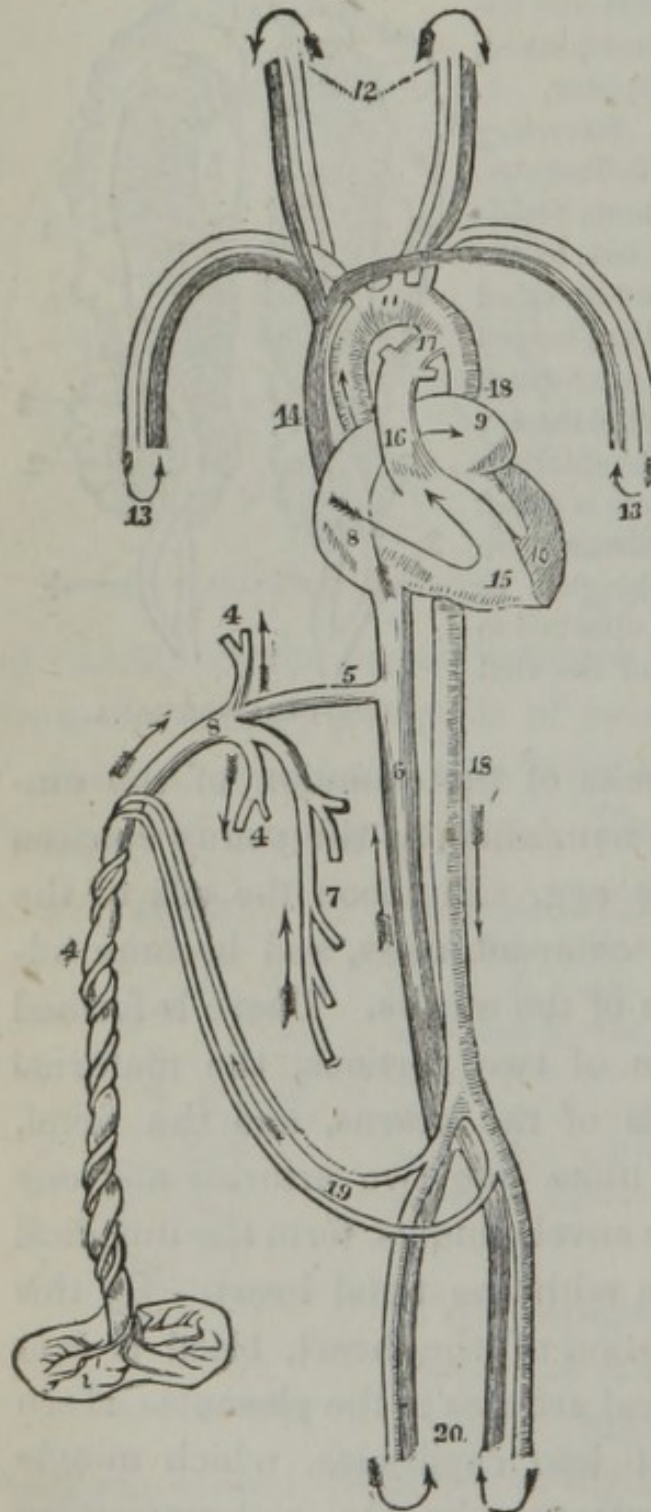


CORPORA WOLFFIANA.

During the first weeks of the evolution of the embryo in the uterus, it is nourished, as the young chicken is, by the yolk of the egg. But soon the villi of the chorion gather into a compact mass, and become adherent to some portion of the uterus. There is formed thus a placenta, made of two portions, the maternal side, toward the walls of the uterus, and the foetal, in which the vessels unite into two arteries and one vein, which, with these envelopments, form the umbilical cord, and communicate with the foetal heart. By this means, at every pulsation of the heart, blood is sent through the two umbilical arteries to the placenta. Here the vessels branch out into capillaries, which mingle with those of the maternal placenta, communicating with the uterus. Through the membranous coats of

these vessels, the blood of the fœtus is nourished and purified. It receives nutritious matter and oxygen ; it gives out carbonic acid. The placenta answers for the

Fig. 67.



FŒTAL CIRCULATION.

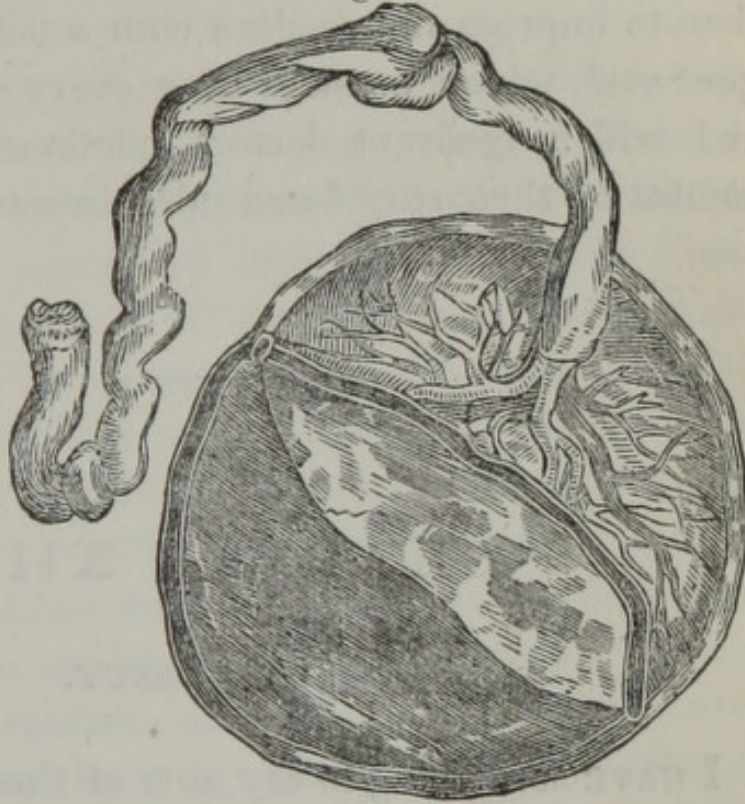
which is Nature's plan for taking care of the brain.

In this plan of the fœtal circulation, the arrows show the course of the blood, which is sent to the placenta by two arteries, 19, and is returned by the umbilical vein, 8. These form the navel-string. A part of this blood is sent to the liver and intestines, 4, 4, but the main current passes through 5 to the ascending vena cava, 6, where it enters the right auricle, and passes through an opening, which is closed at birth, into the left auricle. In the meantime, the blood from the superior extremities and head, takes the usual course to the right ventricle, 15. Both ventricles contract. The blood in the left is sent, as in the adult, through the aorta ; but that thrown into the pulmonary artery from the right can not go to the lungs, which are not yet acting, but is sent through a temporary duct, 17, also into the aorta. It will be seen that the head and superior extremities get the purified blood which comes from the placenta,

fœtus there, the double purpose of stomach and lungs. The fœtus has its own individual circulation and life ; but

Showing the distribution of vessels on the foetal side of the placenta.

Fig. 68.



THE PLACENTA AND UMBILICAL CORD.

all its nutriment, from the time this connection is formed, until it is severed at birth, comes from the mother.

The regular period of pregnancy in the human female ends

with the tenth lunar month, or fortieth week. Physiologists have asked why the process necessary to expulsion should be set up at this period. When they have given an intelligible explanation of any vital periodicity whatever, they may of this. Time is one of the elements of the universe, whether marked by the beatings of the heart, and the movements of respiration, or the cycles of the stars, which require millions of millions of years for their completion. Regularities of action, and consequent accuracy of periods, are inherent qualities of the intelligent soul, animal or organic. It is the organic soul that presides over the development of the fœtus, and fixes the time for its expulsion. But this intelligent soul is not a machine. It has the power, for good rea-

sons, to bring on the process of labor earlier, or postpone it to a later period.

I feel that at every point I can have no higher duty than to impress my readers with a faith in this intelligent soul, which presides over every organic function, and which ignorant doctors continually outrage and combat by their stupid and mischievous interferences.

CHAPTER XIII.

OF PREGNANCY.

I HAVE something to say now of the condition of the mother, and of her relations to her offspring during this interesting period of gestation. And first, how she may know when conception has taken place. A woman has reason to believe herself pregnant when several circumstances combine to render it probable,

1. If she has had sexual connection at the proper period.
2. If there occurs from that time a cessation of the menstrual function.
3. If she have nausea in the morning, with unaccustomed antipathies or likings for persons and things.
4. If she have sharp pains in her breasts; a dark areola around the nipple, with pustular enlargements.
5. If she have a difficulty in restraining her urine.
6. If, after a suitable period, there is a gradual en-

largement of the abdomen, becoming rapid and evident at the third or fourth month.

7. If she feel the motions of the child at and after this period.

Not one of these signs is certain; yet, where they all exist, there is a pretty strong probability. Thus, a woman may have sexual intercourse for years without conception; the menstrual function may cease from numerous derangements of the system; hysteria, or any ovarian irritation, may occasion strange mental peculiarities, antipathies, or longings; pains in the breast and areola may arise from similar causes; there may be irritation of the neck of the bladder, from mere prolapsus, or other displacements of the uterus; the abdomen may enlarge from any cause of tumor, dropsy, or even obstructed menstruation; and the motions of a child are often strongly simulated by wind in the bowels and spasmodic affections.

There are signs, however, which are more certain, with a careful professional examination. After the third month it is possible to hear the beating of the foetal heart, by placing the ear, or a stethoscope, upon the mother's abdomen; to hear the *soufle* of the blood in the placenta; and to feel the weight of the foetus upon the point of the finger, properly applied at its most depending portion, within the vagina. The first is a certain sound; the second may be confounded with other vascular action; and in the third a tumor in the uterus may not be distinguishable from a foetus. An old writer, in speaking of the caution to be used in doubtful cases, says you must never give a decided opinion, until you have the child's head in your hand.

At a certain period of fœtal growth, there occurs a rapid increase, a rising of the uterus in the abdomen, and a development of automatic or involuntary muscular motion in the fœtus ; and this period is called the quickening. There is a prevailing superstition that the fœtus acquires a vitality or personality at this period, and that it is a greater crime to procure an abortion after than before it. There is not the slightest physiological ground for such an idea. From the moment of impregnation, there is a constant regular increase of soul and body. The principle of life is there from the first. The act is essentially the same, at whatever period it is performed ; or, if there is any difference in criminality, it is a gradual increase, according to the period, from the first day to the last.

The ovum belongs to the mother—she alone has a right to decide whether it shall be impregnated. That decision must be based upon her mental and physical condition, her desire for offspring, her ability to take proper care of it, and her social relations. It is the same after pregnancy. It still rests with the mother. The child is dependent upon her. It is as yet only an organic structure, taking its sustenance from her. It is an unnatural thing for her to refuse this sustenance—it may be very wicked. But it is exclusively her own affair. The mother, and she alone, has the right to decide whether she will continue the being of the child she has begun. The wishes of the father should weigh with her—all obligations, moral, social, religious, should control her ; but she alone has the supreme right to decide. When a child is born, it is a member of society, and society may protect it, and punish any

crime committed against it; but the *fœtus in utero* is not yet a member of society, and the mother must answer for its safety to her own conscience and to God.

There are circumstances which justify the procurement of abortion, or the untimely expulsion of the embryo, or fœtus, such as a degree of deformity that prevents delivery. In such a case no medical man would hesitate to sacrifice the fœtus, to protect the life of the mother. This is as far, perhaps, as his responsibility extends. If a woman destroys her unborn offspring, to save what is more than life to her, and to avoid what is worse than death, I may believe her in error, I may be sorry for her decision, I may look with horror upon her act, but it is no affair of mine. God alone has the power to judge, and the right to punish.

There are various modes of procuring abortion; and as this is, in all cases, a violent and unnatural process, it is always attended with a degree of danger, chiefly from a liability to uterine hemorrhage, or flooding.

The most common mode of procuring abortion is by sexual intercourse during pregnancy. Every woman who permits it, does it with this risk. When a woman is weak in constitution, or strongly amative; when a man is violent in his manifestations, or his penis is long, or the womb is low, there is always the liability to procure the expulsion of the fœtus. All amative excitement on the part of the female perils the existence, as it injures the proper growth, and injuriously affects the character of the child. The excited uterus expels the embryo, and in thousands of cases this goes on, year after year, and people wonder they have no chil-

dren. Women who have neither passion nor pleasure are less liable to abortion from this cause than others; and if procuring abortion be a crime, is it less so when done in this mode, and without any proper motive?

Violent exercise of the body, or violent passions of the mind, tend to abortion and miscarriage. Women of weak constitutions should carefully avoid both.

Errors of diet, exhausting labors, and cares, bring on abortions and miscarriages. They use up the stock of vitality, or the organic force which should go to the fœtus. It dies, and is expelled. So perish thousands of unborn infants; and as care and poverty increase in our great cities, so increase the number of still-born children.

The use of drugs and the lancet is a prolific cause. Whatever depresses or deranges the vital functions may be a cause of abortion. Blood-letting and drug poisoning do both. There is no doubt that thousands of infant germs are poisoned in the uterus by allopathic medication, while still more are born diseased from the same cause. The doctor poisons the blood of the mother, and from this the blood of the child draws its nourishment.

When abortion is willfully procured, it is by one of two methods—drug poisoning or a surgical operation. In the former the mother is poisoned, sometimes fatally, in the effort to expel the child. The surgical method, that of rupturing the membranes, is the simplest method, and one accompanied with the minimum amount of danger.

In a proper social, mental, and physical condition, I see no reason why any woman should ever desire to

procure an abortion. In the prevalent unnatural condition of society, and the diseased state of women, morally and physically, it has become a custom of shocking frequency.

The only sin or crime a physiologist knows, is a violation of nature. Celibacy, or refraining from sexual union, is unnatural; prevention of impregnation is unnatural; abortion is unnatural; they have each the same social result, with respect to population; I can not decide as to their relative badness. It is enough for me that they are all violations of nature; and each individual must be left to judge for herself of the circumstances which may justify her in doing either.

I have the same opinion respecting all crimes against nature. I see no use or necessity for any legal interference. They may be left to the individual and social conscience; and, so left, they carry with them their own sufficient punishment.

The direct physical influence of the father upon the child ceases with the act of impregnation. All after influence must be through the mother, or of an asexual, or what is termed a magnetic character. If the woman, in this interesting period of her life, is folded day and night in the arms of love, and lives in an atmosphere of tender care, she receives strength every hour, and the child may be directly a partaker of the loving father's life. But there is no question of the influence of the mother. If her blood is pure, the child is built up in purity. If she has an abundant vitality, her child drinks from a full fountain. Every thing that disorders the mother affects the child. If ever all the laws of health are strictly obeyed, it should be during gestation.

An impression upon the mother, of any kind, acts upon the child. Children are born happy or miserable, according to the state of their mothers during pregnancy, just as they are born healthy or diseased. Particular talents, tendencies, tastes, idiosyncracies, and affections of every kind, are impressed upon them, and govern their future lives. The mother of Napoleon, while carrying him, accompanied her husband in a military campaign. The perils and achievements of the French and Indian wars, acting upon fathers and mothers, gave this country its crop of heroes for the Revolution of glorious memory. The heroines of the Revolution were the mothers of those who fought in the war of 1812; and these again of those who vindicated American valor in the recent war with Mexico. The most extraordinary peculiarities are inflicted upon children by some temporary condition of the mother; and there is abundant proof that this may extend to the body as well as the mind. The facts of this character have been denied by mere theorists, because they can not account for them. Alas! for what can they account?

O. S. Fowler, in his works on Love and Parentage, and in a special work on "Hereditary Descent," has presented an abundance of facts to prove that moral, mental, and physical qualities of health and disease are transmitted by both parents, are impressed upon the ovum in the act of impregnation, and upon the child during the period of pregnancy. The practical value of these facts can not be too highly estimated.

All observation shows that not only are the striking characteristics of races transmitted, for thousands of

years, as with the negroes, the Chinese, the Jews, etc., but that the qualities and peculiarities of every individual are in like manner transmissible. It is proven also that any faculty exercised during pregnancy by the mother, is strengthened in the child. Thus any mental or moral faculty of the mother may be made striking and active in the child, by being used during pregnancy; and in this way every mother has in her charge, in a great measure, not only the physical, but the mental and moral character of her offspring.

And it is for these reasons that every child should be a child of love, a child of health, and all generous activities; a child of competence, and freedom from care and the miseries of poverty; a child of beauty, begotten and developed amid beautiful things and beautiful thoughts; a child of frank, honest sincerity. If we would improve our race, we must give to the mothers of our race all the conditions of improvement and happiness. For my thoughts on this subject, see the last chapter of "Woman in All Ages and Nations."

The whole process of gestation, it should be remembered, is a natural process, and every part of it should be naturally performed, from the beautiful act of impregnation, sanctified by the holy passion of love, and accompanied with the most exquisite of all sensual delights, to the grand act of the expulsion of the fœtus, and its entrance upon independent life. And this whole process, when accomplished naturally, is one of delight, and not by any means one of disease and pain. Even the process of childbirth, with such a degree of health and strength as may be gained by the water-cure, and

a physiological regimen, is rendered speedy, and almost entirely painless.

The pain of any organic action is caused by disease. Where there is no disease, there can be no pain. There is no reason why the contractions of the uterus may not be as painless as those of the bladder; and where this organ is in perfect health, they are so. All that a woman wants to secure a painless labor is perfect health, and her labors will be free from pain, and free from danger, just in proportion as she becomes a healthy being.

Of the conditions of health, the causes of disease, mode of cure, and the special treatment of women in childbirth, see under their appropriate sections.

CHAPTER XIV.

MISCELLANEOUS.

As I wish to make this book full and explicit on all the subjects to which it relates, that it may serve its purpose, and save me, as far as possible, from all further trouble of answering the questions of correspondents, I make this brief appendix to what I have already written on the Function of Generation. I wish also to be understood in regard to the measure of responsibility that belongs to me. When I state the opinions of another, I am not to be understood as endorsing them, unless I do so in express terms. Further, when I give facts or

opinions upon any subject, I must not be held responsible for any inferences, or deductions, or practical operations, which may be made by others. The saying of the Apostle applies to natural law and its social applications, "Many things are lawful, but many things are not expedient." I have written in great frankness, as I would to a confiding friend. I pray that I may not be misapprehended. I am a profound believer in the uses of knowledge. I do not believe there can be a fact that is not worth knowing, nor an opinion that is not worth examining. I accept St. Paul literally, where he says, "Prove (try or examine) ALL things; hold fast to that which is good." And this learned and philosophical Apostle would be the last to complain, if this maxim were applied to his own writings. I will consider, in brief sections, such matters connected with the foregoing chapters as may be of interest or possible utility.

IS SEXUAL ENJOYMENT VOLUNTARY?

The Perfectionists, a religious sect in this and the adjoining States, affirm that they have the power to control the sexual orgasm, so as to enjoy a certain degree of amative pleasure, without emission or a full orgasm. It is possible that men with strong wills and moderate amativeness may obtain this control. I know, certainly, that women have this power. Courtesans submit, mechanically, to mercenary pollutions, taking no part in them, while they enjoy, with the keenest zest, the embraces of their lovers. So wives, who do not love their husbands, save all their amative feelings for their paramours. In the same way, women in pregnancy,

and during the period of nursing, carefully permit the intercourse of their husbands, whom they love, but do not allow themselves to be excited, using the restraint of a strong will. There are thousands of women, however, who never experience the ecstasy of a sexual orgasm. There are others in whom it can only be excited with great difficulty, and by various artifices. The more spontaneous the feeling, the less exhausting; the more difficult to excite, the more it tasks the vital energies. Men are naturally desirous that their partners should experience pleasure, as it adds to their own. To effect this, they resort to manipulations of the clitoris, with their fingers, etc., and to various novel, and, to a certain extent, unnatural methods and positions. Out of these grow terrible mischiefs, especially to women. Many of the worst cases of ovarian and uterine disease are caused by the forced pleasures of artificial excitement.

EFFECTS OF FOOD AND STIMULANTS.

“Oysters and eggs,” says Byron, “are amatory food.” This is true, also, of fish, flesh, and fowl. It is also true of many vegetable substances. Salt and phosphorus in food are excitants. Pepper, spices, and all stimulating condiments, provoke to venery. Coffee stimulates the nervous system, and the stimulation is apt to take this direction. Wine and ardent spirits, in small quantities, do the same; but taken to excess, they produce the opposite effect. Carbonate of soda, administered for several successive days, in small doses, is *said* to be used successfully in English prisons, to subdue the desire for masturbation. A full diet provokes

to lust, so does idleness of mind or body. The vital force must act in some direction ; and if we would not have it expended on alimentiveness and amateness, we must direct it to other and nobler uses.

CAUSES DETERMINING SEX OF CHILDREN.

Such observation as I have been able to make, induces me to think that the sex of a child is determined by the relative vigor of the parents. The father, from maturity, force of will, or superior strength of the procreative function, may give the masculine development; or the mother, from similar causes, may give the feminine. Where men of mature age cohabit with women much younger, there is an excess of males; but in countries where the customs of polygamy prevail, and a man's vital force is expended on several women, there will be more daughters than sons born to him; so that polygamy perpetuates itself. Where monogamic relations prevail, the sexes are born in nearly equal numbers.

OF FREQUENCY OF SEXUAL INDULGENCE.

I have given what I believe to be the natural law of the generative function ; but we are so far from a natural condition, that I scarcely expect any one to follow it. Thousands of men so "run to seed," as to insist upon having sexual intercourse daily, and in some cases several times a day. I have known men who indulged morning, noon, and night. But I have also known men to murder, in this way, three or four wives, in rapid succession ; and the world is full of victims of this inordinate lust. It is, however, but fair to say, that the

victims are not all of one sex. Many a pale, thin, weak-backed man is suffering from gratifying the morbid desires of a strong, passionate, diseased woman. When women are diseased in this way, they go further than is possible with men. A man is usually limited by the amount of semen his testicles can secrete. In some the emission does not seem to be full, and is often repeated. With a full emission, a man, unless greatly excited, can not be prepared for another under an hour, and two or three are the extent of his powers. There are exceptions to this. I have known a man to have nine orgasms of a night; but a woman, who loses no semen, and simply expends a certain amount of nervous force, will have six or seven orgasms in rapid succession, each seeming to be more violent and ecstatic than the last. These may be accompanied with screams, bitings, spasms, and end in a faint languor, that will last for many hours. See further on diseases, *Furor Uterinus*.

It is my opinion that no one, male or female, ought to average more than once a week. If within a few days after the menstrual period, this amount of indulgence was had, and for the rest of the month refrained from, it would be nearer to a natural condition.

OF CERTAIN UNNATURAL MANIFESTATIONS.

Among the crimes punished with death under the Mosaic law, were bestiality, sodomy, and incest. All are more or less unnatural, but I see no good reason for continuing the penalty, or for making them in any way the subjects of human retribution. Under the Mosaic dispensation there were, I believe, fourteen

offenses punished with death. Many of these are not now reckoned offenses, and for most of the others the punishment is modified. I see no reason for punishing a man for an act which begins and ends with himself, or with a consenting party. Moreover, such laws are useless, as not one case in a thousand, from its very nature, can ever be brought to justice.

Amativeness, excited by false modes of living, and made rampant by social repressions, runs into many morbid expressions. Of these, masturbation, or self-pollution, is the most common and the most destructive. It prevails to about an equal extent in both sexes, and probably not more than one person in ten, of either sex, entirely escapes it. Many of the noblest, loveliest, and purest are wrecked by this habit, the result of parental sensuality and unnatural modes of life.

Sodomy, or the intercourse of one male with another, has been practiced from the remotest ages, and is still so common in Eastern and tropical countries, as not to excite remark. It is also practiced among prisoners, soldiers, and sailors, all of whom are subject to false conditions. It also occurs from the mere choice of a morbid lust, with men who have every opportunity for gratification with the other sex. This was so common in classic times, that Voltaire has thought it necessary to defend Solon, Plutarch, and even Socrates, from the charge of having recommended or defended it. It is even called Socratic love, as a similar passion of females for each other, and their mutual gratification of each other's desires is called Sapphic love, from Sappho, who has celebrated this not unfrequent perversion in some pretty and passionate verses.

Filthy as this practice is in one case, and false as it is in both, it is probably less hurtful than the far more common practice of solitary vice.

The same may be said of Bestiality, or sexual intercourse with the lower animals, which is also practiced, from the same causes, by both sexes. This is also a crime in law, but I should think the act was punishment enough. If not, exposure and the attending disgrace would be. The world is full of stories of the production of monsters, part men and part animals, by this means; but when we remember how few animals of different species engender with each other, we shall not be surprised that we have no well-authenticated cases. The *lusus naturæ* found in our museums may be accounted for by other causes. There is no reason to suppose the spermatic animalcule of a man can fecundate a bitch, or sheep, or swine; nor *vice versa*; but it is extremely probable that a man might engender with some of the larger species of the orang-outang.

Incest, or sexual intercourse between near relations, is a very different matter. Nature, in making it repulsive, provides for the healthy procreation of the race, which demands, to a certain extent, the commingling of opposite qualities. Physiological incest is the sexual union of persons who are too nearly alike. In this way two strangers may be nearer related, in fact, than some brothers and sisters. Incestuous unions, from being false in themselves, produce weak, scrofulous, insane, or idiotic offspring. No incest can ever occur from a healthy attraction; it is like the other unnatural practices of which we have spoken.

Marriages of convenience, or friendship, often occur

between cousins, but they are usually unfortunate. This depends, however, on their similarity. Where two cousins evidently partake strongly of different stocks, they may have a genuine love and a true marriage.

If we accept the account of the human race having sprung from a single pair, there was a necessity for incest between brothers and sisters of the second, and and cousins, uncles and nieces, or nephew and aunts, in the succeeding. Even Abraham, the chosen of God, from whom the Hebrew nation was descended, had his half-sister for his wife; and Lot was the father of the progenitors of two nations, by his own daughters. The sexual commerce of near relations is a crime against society with respect to offspring, and is so far subject to law. I can see no physiological reason, however, why a man may not marry his wife's sister, or a woman her husband's brother. The real bar to love and union is a similarity, accidentally existing, or the result of hereditary transmission.

HERMAPHRODISM.

There is no such thing as a full double sexual development—no person with both testicles and ovaries, penis, vagina, and uterus, all capable of performing their proper functions. But there is sometimes a wonderful mixture of the elements of both sexes, accompanied with more or less organic correspondence.

I knew, once, such a specimen of imperfect hermaphrodisism. It was a woman, with an approach to masculine development, in an enormous clitoris, much like a penis. She was narrow at the hips, flat-chested,

had a thin beard, and a voice like a delicate youth. She dressed like a woman at times, but often like a man. As a woman, there was something masculine in her gait and manners; as a man, she was effeminate, and had a womanish love for ribbons and ornaments. Her soul seemed even more bi-sexual than her bodily organs. If, as is supposed, the masculine gender is the fullest development, nature, in her case, went too far for a woman, and not far enough for a man.

SEX IN MIND.

The last case proves, what is apparent to every observer, that the influence of sex runs through the whole mental and moral character. Men differ from women as much in brain as in body. They have certain organs relatively larger, and others relatively smaller, than women. The moral organs correspond intimately with all physical differences. There is a vast number of traits of character connected with the testes and its secretion in the male, as well as in the ovaries, uterus, clitoris, and mammary glands of the female. No man can know what a world of delicate tenderness finds its seat in a woman's swelling bosom; so no woman can know all the nobility of manhood that centers in the virile organs of the man.

If we could compare the most masculine woman with the most feminine man, there would still be a wide difference. But this wide difference does not prove that woman was intended to be the slave, the tool, and the victim of man, as she is and has been. In making her such, man wrongs his own nature as much as he wrongs hers, and he wrongs the whole hu-

man race. If man would follow his own pure instincts, woman would have nothing to complain of, and nothing to desire. By the rights of her love, by the power of her beauty, by the strength and tenderness of her passionate nature, she would be acknowledged as the queen of the social universe; while man would reign in the sphere of intellect and material achievement.

I do not exaggerate the perfections of woman. I think I know her character, and I demand her rights, not so much for her own sake as for the sake of all. We can have no true social condition until woman finds her much-talked-of "sphere."

LENGTH OF PREGNANCY.

The normal period of pregnancy is forty weeks, or nine months, reckoning from the last menstrual period. But as some persons have a quicker pulse than others, so, in some, the vital processes may be more rapid. There are also diseased irregularities which vary the time. Even domestic animals vary weeks in their periods. A gestation, even in a tolerably healthy woman, may be prolonged two or three weeks, and, in disease, still further. On the other hand, it may come on prematurely.

There have been cases where a fœtus of six months has been born, and lived; but seven months is generally considered the period of viability. At this time, even where miscarriages are artificially produced, it is said that two children out of three live. A reasonable man may be satisfied of the legitimacy of his child, if he has not been absent from its mother more than ten months at the period of its birth; and if he can count eight

months from his first connection to the birth of a full-grown infant, he has no reason to be dissatisfied. Seven months children are said to occur oftenest in a first pregnancy.

MENSTRUATION IN PREGNANCY AND LACTATION.

The cessation of the menses is the usual sign of pregnancy, though by no means a certain one; on the other hand, there are women who menstruate, or, at least, have periodical hemorrhages, through pregnancy and lactation. I am persuaded that the cause of this unnatural and very exhausting condition is to be found in sexual intercourse at that period.

WHAT CAN A WOMAN DO?

Yes, a loving, kind, jealous woman, who would not for the world have her husband satisfy his wants elsewhere, what is she to do? I have given what I believe to be the law; but sometimes all we have left us is a choice of evils. If a man can be very moderate, tender, and careful of his wife, and she can restrain herself so as not to join in the sexual orgasm, there can be, I think, no great amount of mischief, and less than might come from the sense of neglect or jealousy. Now,

WHAT IS JEALOUSY?

Let us ask Noah Webster, and see if we can accept his definition. It is "That passion, or peculiar uneasiness, which arises from the fear that a rival may rob us of the affection of one whom we love, or the suspicion that he has already done it; or it is the uneasiness that

arises from the fear that another does or will enjoy some advantage which we desire for ourselves. A man's *jealousy* is excited by the attentions of a rival to his favorite lady; a woman's *jealousy* is roused by her husband's attention to another woman; the candidate for office manifests a *jealousy* of others who seek the same office; the *jealousy* of a student is awakened by the apprehension that his fellow will bear away the palm of praise. In short, *jealousy* is awakened by whatever may exalt others, or give them pleasures and advantages which we may desire for ourselves. *Jealousy* is nearly allied to envy; for *jealousy*, before a good is lost by ourselves, is converted into envy, after it is obtained by others." So far, Webster.

I believe it to be a morbid, mean, bad feeling, caused by poverty, lack of self-esteem, distrust, suspicion, and a craving for more than we fear we have an honest right to. It is a feeling every one is ashamed of and disclaims, which is proof enough of its badness. It is everywhere a subject of ridicule, because men are conscious that it is a shabby feeling. It grows, in most cases, out of the idea of property in each other. As long as a man thinks he owns a woman, he will guard her like any other piece of property, and consider any intercourse with her a trespass, only so far as he permits: and the same of women. As some persons are born with morbid acquisitiveness, so others are born jealous. But when the doctrine of the sovereignty of the individual is recognized, and the man abandons the idea that he owns some woman, or the woman some man, there will be no more jealousy. Nor can it exist, in any case, with a full and generous confidence. "Per-

fect love casteth out fear." The highest love, trusting in itself, and trusting with an entire faith in its object, does not admit of jealousy. The world will be rich enough sometime, so that none will need to steal, and none fear theft. In the full riches of love, there can be no cause for jealousy. Men will make their lives much happier, when they can free themselves from all such meannesses.

This jealousy, always a disease, is often a thorough insanity, making men and women do the most stupid, ridiculous, and outrageous things to each other. Such persons are always sick, usually with diseased amative-ness, and need treatment, moral and physical.

SUPERFETATION.

There is no probability, I might say, possibility, that when the uterus is occupied by one fœtus, and all avenues to the ovaries are blocked up, another later conception can take place. But there is no reason why a woman may not have twins by two fathers, who have connection with her at nearly the same time; and there are several cases in which twins have been born, one white and the other mulatto, or mulatto and black, in which the mother avowed that such a state of facts existed. In the same way, a litter of pups may be sired by five or six males, each pup bearing a resemblance to its particular father.

CAN ONE LOVE TWO OR MORE PERSONS AT ONCE?

This is simply a question of capacity. One man is stronger than another; one has far greater versatility. A man finds himself capable of loving five or six chil-

dren, and several friends. But how is it, in point of fact? I have seen women who assured me that they had no power to love but one man at a time, though capable of a succession of amours. Others believe that one love is enough for a lifetime. There are others who seem to love two, three, or even more, with various degrees of passion, but all amatively. I knew one woman who slept with two men on alternate nights, and she declared that she loved them both, and could not endure the thought of parting with either. They were two respectable business men in New York, satisfied with her, and not jealous of each other. She had a child, and each believed it his, and loved it accordingly. But, then, a man generally loves the child of a woman he loves, whether he believes it his or not. I think men are, at least, equal to women in this respect. I doubt not that Abraham loved Sarah, his half-sister, as well as his mistress Hagar, and the twelve wives he married afterward. Over three quarters of the world polygamy is tolerated, and more or less practiced. It is absurd to suppose that no man ever loves more than one wife; as absurd as to suppose that European and American women, as long as they love their husbands, can love nobody else. A belief in this doctrine is the basis of much jealousy and domestic tyranny. If a man believes that his wife, by loving another, must cease to love him—if he values her love, he will guard her carefully from all such risk. The fact is so far from this, that I believe liberty to be the truest bond, and best security for love. A man who believes that a woman can love but one, will be very careful to prevent his wife from being interested in any other man, and

consequently alienated from him. So of a woman. The monogamic idea is therefore the parent of jealousy and all its tyrannies.

THE PROPER PERIOD FOR COPULATION.

I have said that the natural season of copulation in every animal must be that in which the ovum is set free, and is ready for fecundation. In the human female, this is marked normally by the sign of menstruation. This is the case also with monkeys; I have seen it in bitches, and it is probable that there is some kind of discharge in the vagina of most animals. But there may be some doubt as to the most suitable period of the day or night. Coition should be exercised by itself, not interrupting or being interrupted by any other function. It must be performed when body, mind, and system are otherwise at rest, and in full vigor. It should not immediately precede nor follow eating, active exercise, a cold bath, or any absorbing passion. There should be a full energy of the vital force, which must not be in demand in any other direction. If the labors of the day have been fatiguing, it is better to get repose. In order to most enjoy the sexual relation, and to procreate the best children, the body should be at its highest vigor, the mind serene and happy, and the heart full of affection. Just in the degree that sexual commerce is not accompanied by love, it approaches the character and produces the consequences of masturbation.

I do not mean that a simple sexual attraction may not be natural, and well as far as it goes, and in the absence of any other. What I mean is, that the scale ranges, like that of the thermometer, from hatred and

disgust, through indifference, toleration, simple sensual attraction, up to the highest accords of mutual and passionate integral love; and that this last is the condition of the highest happiness, as its opposite extreme is of wretchedness and misery unspeakable.

LONGINGS IN PREGNANCY.

Pregnant women are sometimes affected with the most extraordinary longings, and there is a prevailing impression that they must have what they long for, however absurd or hurtful. A woman has longed for a quart of brandy a day, and drank it. Women eat the most nauseous and indigestible substances. These are states of disease, and should be treated as such. If the article longed for is harmless, as some particular fruit, it should be procured, if possible; but no woman should be allowed to take arsenic because she longs for it, nor any thing else that is positively and necessarily hurtful. The pregnant woman should live on the most simple diet, refraining at this time, above all others, from every thing of a mischievous or doubtful nature; bathing regularly, taking exercise, and living in the most exact obedience to the laws of life. Doing this, she will escape hysterical and insane longings, or be able to overcome them, with great benefit to herself, and without mischief to her child.

WHAT IS VIRTUE?

The meaning of the word is manhood, but its present application is almost entirely feminine. A virtuous woman is one who strictly conforms to the customs of society. If unmarried, she is virtuous if she refrain

from gratifying her sexual desires with a man, though she may destroy herself by masturbation. In fact, the most rigid prudes, those who repulse all the approaches of men the most indignantly, and who condemn all freedom in others most violently, are commonly those who have destroyed all desire or capacity for pleasure in themselves by early and continued self-pollution. This is civilized virtue !

Virtue, in a married woman, is to submit to the embraces of a husband she never loved, or has ceased to love, and to deny herself to any other. A true chastity and a true fidelity are worthy of all praise ; but there are few things in the world more false than what is often considered virtue. My definition of virtue, in man or woman, is a life in harmony with nature, which means, in its fullest sense, a life of obedience to the laws of God. Some of these laws I have endeavored to explain. No *natural* passion, no *healthy* attraction of any being is wrong ; for that Being, God, who distributes attractions, governs the harmonies of the universe. We produce only discord, when we use our freedom to oppose them. Civilization is the aggregation of discordances, produced by men substituting their absurd contrivances and selfish maxims and laws, for the wise and beneficent intentions of the Deity, as displayed in the attractions He has implanted in the nature of man, and the harmonies of universal nature.

Owing to the usurped despotism of man over woman, the civilized standard of virtue differs much in the sexes. A woman is expected to come, a chaste virgin, to the arms of her husband ; but a man would incur ridicule who should make such a pretension. A man who

indulges in gallantries is "rather gay;" "a little wild, you know;" "sowing his wild oats;" but is only the more distinguished and caressed. Unless coarse, low, and excessively profligate, his youthful gallantries are no bar to marriage. The same conduct in a young woman, if known, drives her from society, and plunges her into a pit of infamy and despair. It is the same, though in a less degree, of married men and women. In the upper classes, men have less liberty after marriage, and women more; still, there is far from being an equality.

There seem to me to be certain simple, common-sense rules, which may apply even amid our social discordances and consequent immoralities.

There should be honesty. Men and women should no more deceive each other in love matters than in business. If they do, they are swindlers and cheats. A simple, frank honesty would do much to reform love relations.

In point of fact, men and women are not on equal terms, in the present form of marriage. Women have no pecuniary independence, nor, except in rare cases, the means of acquiring it. For the most part they are dependent parasites; and though the cares of a family and the bearing of children may be equal to any exertions of the husband, still the woman, by custom and law, is made dependent upon man for support. As long as a woman lives in this condition of acknowledged dependence, she must conform to her husband's wishes, and can not exercise the rights of a sovereign individual.

A woman has, naturally, the supreme right of choosing who shall be the father of her child; but she can

have no right to receive the support of one man, while she bears a child to another, except by consent. A woman is bound, therefore, to be true to her marriage relation, while that relation exists. She has no more right to cheat her husband, than a slave has to cheat his master. It is true that if love, the sole condition of marriage, do not exist, it is no marriage in fact, but only in form; a mere sham, a legalized adultery, a sin against nature and its Author. God joins people in love: not in simple friendship, not in indifference, not in hate and discord, repulsion and horror. But if a woman, for any consideration of property, or children, or worldliness, choose to remain in such a relation, she must be true to its falsity.

The duties of a husband to his wife must be reciprocal just so far as their relations are equilibrated. In some respects they strikingly differ. During a large portion of the time, a child-bearing woman is not in a condition to allow sexual intercourse. A woman has usually no such excuse for infidelity. A man, in the sexual act, imparts; a woman receives, and possibly retains. With the man, the physical consequences terminate with the act; with the woman, they may remain for months and years. These are evidently real differences, which must modify our ideas of duty and criminality, in and out of the marriage relation, and the civilized notions in this respect are not entirely destitute of foundation.

It is curious to see the opinions of moralists and legislators upon these points. The common law and the common religion decide that this marriage bond is equally obligatory on both parties. But high authorities, ancient

and modern, dissent. Not to go back to the reign of universal polygamy, which is still everywhere practiced, we quote two or three more modern instances. Luther, the Reformer, says, "For my part, I can not condemn the man who may wish to marry several wives, and I do not think such plurality contrary to the Holy Scriptures." Accordingly, our Christian missionaries no longer attempt to enforce monogamy upon the converted heathen. Dr. Samuel Johnson, who is sometimes quoted as a great Christian moralist, says, "A husband's infidelity is nothing." Napoleon, in discussing the civil code, said, "Marriage is not founded in nature. The oriental family relation is entirely different from the occidental. The laws are made to conform to customs, and everywhere customs vary."

The world is changing its ideas on these subjects. There is an influx of light from the spiritual world, and this light brings us knowledge, freedom, and purity. Thousands of couples live together as friends, who once believed themselves to be married—giving each other freedom and protection; thousands more, caring less for the conservative world, or having more violent repulsions, break the bonds and separate; and divorces are becoming more frequent and easier to procure. There is even growing up a literature, made up of discussions of this subject. The works of Swedenborg on conjugal love, those of Fourier on social relations, the writings of the disciples of St. Simon, of Owen, Mary Wolstoncraft, her husband, Godwin, her son-in-law, Shelley, the novels of George Sand, Eugene Sue, etc., with their various views and presentations of social discords, have awakened inquiry. One such divorce

trial as the Forrest case, reported in all the newspapers, and read by millions, sets millions to thinking and discussing. Those who wish to see the most recent presentation of the question will find it in Dr. LAZARUS's work, entitled "*LOVE versus MARRIAGE*," which contains, in fact, much of the philosophy of the schools of St. Simon and Fourier. My own work on "*Woman*" is an impartial presentation of historical and social facts on which opinion may be based; and Mr. ANDREWS, in his admirable work on the "*SCIENCE OF SOCIETY*," has given an elucidation of principles of individual sovereignty and social equity, which are worthy of a careful examination. Mr. Andrews is now preparing a special work on MARRIAGE, which will present it more fully than has been done by any previous writer. To these works and others on the same subject, I must refer the curious reader.

IS LOVE ENDURING?

This question lies at the basis of the Law of Marriage, and of much that affects the health of the individual and of society.

Every passion asserts its eternity. What a man feels strongly, he thinks he shall always feel. He never expects any change to come in his grief or his joy. It is so of love. Two lovers sincerely vow eternal constancy and eternal fidelity. In a month or a year, each ridicules the absurd fancy, and each is again eternally in love with some other object of their unchanging affections.

This rule is not universal. Doubtless there are persons who are capable of only a single passionate love.

But I believe these to be exceptions. I know the lives of many persons, and there are few who have not been many times in love; and, until they learned better by experience, they have each time believed that it was for the last time and forever. Our bodies change, our opinions change, our feelings change. The love that fills the soul of the youth of twenty, is quite unworthy of the man of thirty. Some persons improve to a certain point, and stop, while others go on improving. No exclusive love can possibly last that does not satisfy.

Can we say, then, of any love that it will last forever, or even for ten years? We believe it will—we always believe this; but in the light of observation and experience, can we *promise it*? The most any one can safely promise is to be true to himself, and true to his love, while it continues. He can do no more. There are loves, interwoven with the thoughts, aspirations, and progress of two harmonious beings, which do last, and of the endurance of which we may form a reasonable hope; but even in the best of such cases, it is as well not to promise. Let the love last as long as it will. If it is a blessing, cherish it, but put it under no bonds. Freedom is the life of love. It pines in bondage. It dies in chains. Any attempt at coercion changes it to scorn, contempt, and hatred.

As love is the basis, the condition, the reality of marriage, it follows that where love ends, marriage ends. Marriage without love is a sham and a mockery. We can promise, then, to be married just as long as we can promise to love. When we love no longer, the marriage is dissolved. I mean the reality, though, for many reasons, we may keep up the sham.

It is the opinion of many that divorce should be as free as marriage. Entire freedom of divorce could never dissolve one real marriage; and if the shams were broken, real ones could take their places. Many of the happiest marriages I know are between those who have been unhappily married and separated. Because a man makes an innocent blunder, it is no reason he should suffer for it a life time. He has promised; but he had no right to make a promise he had no power to keep. In all other cases, the law absolves him, and it should in this. If a man moves into a bad house, he changes it for another; if he gets into a bad neighborhood, he moves out of it; if he falls into a quagmire, he scrabbles out.

That two young persons, who have flirted, and danced, and simpered, and dawdled through a fashionable courtship, and then stood up before a parson, in white gloves, satin, and orange flowers, should be compelled to bore, and torment, and torture each other and everybody about them, till one dies, or is sent to State prison, is a refinement of cruelty that only our absurd civilization could be guilty of. I truly believe, that in a social, moral, and religious point of view, if every marriage not founded on the true basis of mutual love were broken up, the world would be immeasurably the gainer.

MODESTY.

Is there any foundation in nature for the sense of modesty? Those who look at the differences that exist in different countries, in this respect, might doubt it. It is true that the people of all nations, with a few exceptions, conceal the organs of generation; but even

this rule is not universal. In the South Sea Islands, clothing is more ornamental than useful. There is no evidence of the existence of the feeling of shame. In most tropical countries, children are left to run about entirely naked; and adults are often nearly or quite so. In Central America, men and women bathe together without dresses. In some parts of the world the legs are carefully concealed, in others the bosom. Even in our society there is no consistency in this respect. A delicate lady, who would blush to show her leg to the knee, thinks nothing of baring her arm to the shoulder, or, perhaps, of showing half her bosom, when low-necked dresses are the fashion. An Egyptian woman would show her whole body naked rather than her face; while our fastidious ladies cover the entire person, with the exception of some six inches square, which, in many cases, is not the most attractive portion of their bodies; for many a woman with an ugly face has a beautiful figure. Modesty, to these, is a great injustice.

Another curious inconsistency is the distinction made between nature and art. The same lady who goes with gentlemen to see a perfectly nude statue or picture, would be shocked at the idea of seeing a living form, under the same circumstances. Most of these feelings appear to be the result of education. I doubt if any child would ever suspect that the human figure, as God created it in His own image, was a *nasty* object, if it were not carefully taught him. I see no *good* reason why we should not enjoy the beauty of living forms as well as the works of the painter and sculptor. If mischief is to come from the contempla-

tion of beauty, then it must be concealed; but this, I suspect, is the result of diseased conditions. When we are worthy of paradise, we shall enjoy it.

THE LAW OF PROSTITUTION.

No essay on the function of generation can be complete, if it leaves out of view the phenomenon of prostitution. It has existed from the earliest periods of which we have any account, and in all countries which have made any advances in civilization. Why should there be set apart everywhere a class of women for public and promiscuous use? The fact is apparent; and all the efforts of moralists and legislators, for thousands of years, have never altered it. It is as much an institution of society and civilization as marriage, or prisons, or poverty. In all Christian countries, especially, every city, every large town, and almost every village, has its prostitutes. In London and Paris they are reckoned by tens of thousands. There are several thousands in New York. In Paris they are protected and regulated; in London, tolerated and persecuted: and in London they are consequently far worse in character and condition.

Prostitutes among women correspond to a large class of men of roving lives and sensual natures. Their support comes from sailors, soldiers, strangers, amative youths, and ill-matched husbands. A social demand exists, and they supply it; and in numbers, character, and in all respects, the supply is governed by the demand. The supply can never be stopped until the demand has ceased.

The common prostitute is, in some respects, worse

off than the victim of marriage. She earns her living by the prostitution of her body, as the other does, but without legal sanction and respectability. As a compensation for the want of these, she has more freedom; and though she may be compelled to submit to the embraces of some man, she has, to a certain extent, the power to refuse those who are especially repulsive to her. She is liable to venereal diseases, but these are not much worse than falling of the womb, whites, and involuntary pregnancies and childbirths. Besides, wives do not always escape gonorrhea and syphilis. Married women take comfort in their children; and prostitutes have lovers, and often children also, of whom they take the tenderest care.

The prostitutes of New York are of all classes, from the lowest and coarsest, to the most refined and beautiful. They correspond to every rank in society. Besides the public class, there has come to be a very large class of private courtesans. They consist of many young women who make a pretense of following various elegant trades, arts, or professions, and of the fashionable wives of men with small incomes.

I am well satisfied, from long observation, that all efforts to prevent prostitution are utterly unavailing and useless. It belongs to the present constitution of society, and is one of the necessary conditions of our present civilization. It can not be removed until the whole social system is changed. All any philanthropist can hope to do is to improve, as far as possible, the institution and the condition of its victims. Bad as this condition is, many a married woman is worse off than the average of prostitutes.

CONTINUANCE OF SEXUAL DESIRE.

There are some grave questions connected with the continuance of the desire for and pleasure in sexual intercourse, which we may discuss, but, perhaps, shall not be able to determine.

Many persons believe that the sole object and only justifiable motive to sexual indulgence, is the begetting of children, and that the act is sinful under all other circumstances. There are many difficulties attending this theory. The passion of love, and its sentimental enjoyments, the influence it has upon the character, the strength of the attraction for sexual union, and the exquisite and delicious pleasure it brings, in a healthy state, to both sexes, all point to other uses and ends than those of procreation. If this were the only use of sexual connection, why should the passionate desire for, and complete enjoyment of it, continue, when the generative power has ceased? A woman ceases to be capable of bearing children at forty-five to fifty-five. There comes then what is called "the turn of life." The ovaries cease to produce germs—there is no longer any appearance of the menses; but the power to love remains in its full force and ardor, and the desire and capacity for sexual pleasure. Women sometimes continue beautiful, attractive, and exceedingly amorous until they are seventy. They make conquests, and enjoy them; and the strongest and most healthy women have this capacity for enjoyment. "Nothing is made in vain." It is for something that women have this power. It is folly to say that the exercise of such a faculty, and the enjoyment of such a pleasure, is a

sin. Men retain the same desires and the same powers, with the added power of fecundation.

It seems clear that woman has control of the generative function. If women could go on producing offspring till old age, the result would be a puny race. The generative power, all that concerns the race, therefore, disappears as she passes the period of maturity. But love and its delights remain for the individual. The woman who has borne children through the menstruating period, has now a compensation in the full pleasures of love, without its privations or cares; and if her lover be either too old or too young to beget healthy offspring, he may still love without doing an injury to the race. Nature has been very bountiful in the distribution of the sources of happiness; it is man alone that is niggard and perverse.

THE POPULATION QUESTION.

Malthus and other writers on political economy have assumed that the legitimate checks to an overcrowding of population, which would take place if our race went on increasing, are poverty, famine, war, pestilence, and other social scourges. This view of God's wisdom is as false as it is terrible. The fact is, that all these causes make men more prolific. There are never so many children born as immediately after a desolating war or pestilence. The point at which men engender fastest is near the point of starvation, and in a low condition of intellectual development.

On the other hand, wealth, luxury, and refinement diminish population in families and nations. This is according to the law, that nature everywhere sacrifices the

individual to the species ; and the less development of the individual, the more rapid the increase. All observation confirms this law. Cultivation, then, is the only real check to surplus population. The finer the quality of fruit, the more scarce. While a poor and ignorant couple will be surrounded by a dozen children, their rich and refined neighbors will have but one or two. Only sons and only daughters are common in distinguished families, but rare enough among the poor.

But the fears about overcrowding populations are otherwise groundless. When all men live upon a vegetable diet, as they must, when the population becomes dense, the same country that now supports ten millions will support one hundred and fifty millions. Under a thoroughly scientific system of agriculture, Great Britain is capable of feeding a population of five hundred millions, more than half the present population of the globe. The imagination of man can not compass the magnificence of material wealth, beauty, and happiness to which this planet is destined ; or, what is the same thing, of which it is capable. It is not likely that God or man will stop short of working out all its capabilities.

CHAPTER XV.

SYMPTOMS OF HEALTH.

OUR medical books are filled with descriptions, symptoms, and causes of disease. I wish, if possible, to give a clear description, enumerate the symptoms, and guide my reader to a knowledge of the conditions of Health.

This has not been done, because it is no part of a doctor's business. He is not required to do it; he is not paid for doing it, consequently he is not educated to do it. Philanthropy is, doubtless, a fine thing, and physicians are as philanthropic as the members of any other profession, when they can be so in a regular and legitimate way. Doctors give service, and advice, and drugs, more or less poisonous, to thousands freely, with no reward but a good conscience. But teaching people how to keep well is not in their line. Even if they were inclined to do it against all precedent, and in opposition to the interests of the whole medical profession, and to their own peril of starvation, they would be considered by most people as impertinent intermeddlers with what did not concern them. I thank God that my bread, and the bread of my family, does not depend upon people being sick. If it did, I hope I should do my duty; but the fact that it does not, probably makes that duty somewhat easier to perform.

It is a hard thing for society, when its best interests are in direct opposition to those of great classes of its most influential members. It is for the interest of society that "all the world should be at peace;" but it is for the interest of the soldier that there should be wars now and then, and always the danger and apprehension of war. It is for the interest of society that men should live together in the practice of justice; but it is for the interest of lawyers that men should defraud, oppress, and outrage each other. It is for the interest of society that there should be a general knowledge and attention to the Laws of Health; but if this were so, it would be the ruin of all doctors, and the destruction of the medical profession.

This matter is worth considering. No man is safe who places himself in the power of one who has a direct interest in deceiving, defrauding, and injuring him. It can not be for the interest of any physician that health should prevail in communities, that any individual should remain free from sickness, or that he should recover rapidly. Every day the cure is expedited, takes money out of his pocket, and bread out of the mouths of his family. A physician who could and would cure all his patients, must seek other business. Men are good—but it is very hard to withstand such temptations. Men are good—but doctors, and lawyers and ministers must live.

The remedy for this evil, a partial one at least, would be to give every physician a salary, and let its magnitude depend upon his success: first, in keeping people well; and, second, in curing them quickly and thoroughly when sick.

HEALTH is, to every organized being, the condition of perfect development; to every sentient being, the condition of happiness.

HEALTH, in a human being, is the perfection of bodily organization, intellectual energy, and moral power.

HEALTH is the fullest expression of all the faculties and passions of man, acting together in perfect harmony.

HEALTH is entire freedom from pain of body, and discordance of mind.

HEALTH is beauty, energy, purity, holiness, happiness.

HEALTH is that condition in which man is the highest known expression of the power and goodness of his Maker.

When a man is perfect in his own nature, body, and soul, perfect in their harmonious adaptations and action, and living in perfect harmony with nature, with his fellow-man, and with God, he may be said to be in a state of HEALTH.

I am quite aware that I am constantly repeating myself in these expressions. If the organs of the body are all fully developed and in full action, they must necessarily be in harmony; and when a man is in harmony in himself, he is of necessity in harmony with all men, all nature, and with the Source of all things.

It is therefore necessary that every minute organ of the body, every faculty of the mind, every power of the soul should be fully formed and active; that every passion should have full sway—all balancing and harmonizing each other; that man should act out all the

fullness of his nature, and woman all the glorious beauty of her character, in perfect freedom, and in full enjoyment, to make up the integral condition of **HEALTH.**

The signs or symptoms of health may be given in a few sentences.

BEAUTY is the first sign of health. Health gives development, and harmonious development is beauty. Every vegetable and every animal is beautiful, according to its own type of beauty, when it is most perfectly developed. And in man or woman, the exact development of every part, and that which enables it to best perform its function, is the highest possible beauty. The handsomest possible head is the one which has the most perfect phrenological developments. The most beautiful eye, ear, or nose, are those best adapted to seeing, hearing, and smelling. The loveliest mouth is that composed of the best-shaped lips and most perfect teeth. The most delicious bosom is the one best fitted for its natural office. The finest limbs are those with the best muscular development. In a word, there is no part of the human figure where the best condition for use is not, at the same time, the condition of the highest beauty, and both together are synonymous with health. Consequently, every deformity, every ugliness, every departure from the standard of the highest beauty of its kind, is a consequence and symptom of disease.

O ye, who love beauty, and who desire it for yourselves, for your offspring, and for the race, learn that the single way to attain it is by the practice of the laws of health. Be good, and you shall be beautiful as well

as happy. Let no man who has a love for nature, and a reverence for God, undervalue beauty, for there is no quality more divine. I know of no more palpable blasphemy than this unnatural pretense of despising beauty. It is to be sought, admired, loved, and worshiped.

Another symptom of health is **ACTIVITY**. Every healthy nerve has a desire to use its power; every healthy muscle wishes to contract; every healthy faculty wishes to find exercise and consequent enjoyment. This rule extends to the organic as well as the animal system. In health the secretions are active and the excretions; there is sharp appetite, quick digestion, a full circulation, an earnest respiration, and everywhere an active nutrition. Body and mind are active. All the passions spring into spontaneous activities, alternating with each other, and all contributing to that great variety of action and sensation which constitute the complex phenomenon of Life.

Indolence, on the other hand, is a consequence and a sign of disease. A torpid organ is a diseased organ. A lazy man is a sick man. Give him health, and his laziness will vanish. Every well man is a busy man. There is no tendency to indolence in a healthy person. The real tendency is to high activities; and the healthier the world grows, the more varied and active will be its industry. Beauty and activity, then, are two signs of health; and where we see them combined, it is seldom wanting.

STRENGTH, or energy, is a sign of health; though a kind of discordant strength, or spasmodic energy, may be a mark of disease. But steady power comes from

integrity of constitution. There must be good brain, good nervous fluid, and good muscular fiber, before we can have real strength, and true, persistent energy of character and action. These must come from a deep vitality, and a rich elaboration of nutrient materials. Men of strong desires, strong passions, strong wills, have strong lives; and a strong life must be, to a great extent, a healthy one.

Weakness, mental, or passional, or physical, is a sign of disease, as it is a consequence. It is want of development, or exhaustion, or hereditary taint, or acquired morbid condition, or all together, one producing the other. If we blame the weak, the vascillating, the craving, the spiritless, nerveless, hopeless, purposeless, we must blame them only for what has brought them to this condition. It is a condition of disease, which, if possible, we must cure.

HAPPINESS is a sign of health, and a full enjoyment of life can not exist without it. A condition of happiness is said to be "a sound mind in a sound body." This is a simple description of a healthy condition. Happiness is the end or final cause of all sentient life. There is no other conceivable reason for the creation of any being. Happiness is, therefore, the positive and necessary result of every true life, as misery is the inevitable, because equally necessary, result of a false life. As health is the condition of a true life, the result and sign of health is happiness.

Hence all unhappiness of every kind, all pain, grief, regret, jealousy, discontent, anxiety, is the result of disease, bodily or mental, in ourselves or others. Sorrow seems to me just as much the effect of a disease

as pain. One is the outcry of a sick organism, the other of a wounded spirit. We feel sorrow by sympathy with others; and there are many persons of sensitive organizations who feel bodily pain in the same way. The way to be happy is to be healthy; and when health is universal, there is no conceivable reason why there should be any unhappiness. There is no happiness without a corresponding degree of health, and no health without a corresponding degree of happiness.

CHAPTER XVI.

THE CONDITIONS OF HEALTH.

As health is the simple, natural state of man, when his whole development and life are in accordance with the laws of his being, the CONDITIONS OF HEALTH are entirely based on the science of physiology or anthropology.

What I prefer to call the conditions of health include the whole science of hygiene, and these conditions are the basis of the laws of life. Without a full observance of them, no human being can have health, which includes in itself beauty, activity, energy, happiness. Without a full observance of them, humanity is liable to ugliness, deformity, pains, and every complication of misery, all of which are included in the idea of disease.

These conditions of health can not be observed, if they are not known. We have so neglected a knowledge of ourselves, so perverted ourselves, so far gone astray from nature, that a pure, simple, natural life is almost unknown to us. Our souls are perverted by unnatural beliefs, notions, and habits of thought, as our bodies are by absurd customs, fashions, and habits of action. There is a curious correspondence between our mental and bodily perversions. In both ways, we are out of harmony with nature, and at discordance in ourselves. The only real conditions of health are living in harmony with nature. I have endeavored to explain the constitution of man; I shall now try to explain his true relations with nature, with society, and within himself.

OF BIRTH.

The first condition of health to every organized being is to be well begotten. The farmer who wishes good crops, selects his seed with care. He provides a good ram for his sheep, a good bull for his cows, a good stallion for his mares. He does not expect large, clean, sound wheat from small, smutty, shriveled seed; healthy lambs from diseased sheep and rams; good cows and strong oxen from a poor, diminutive breed; nor a beautiful, fleet horse from an inferior stock. Man is also an animal, and subject to all the laws of hereditary descent which govern the propagation of other animals.

Diseased parents beget diseased children; and the reverse. Long-lived parents beget long-lived children; and *vice versa*. There are causes which operate upon

the individual in both cases, to modify the effects of hereditary predisposition, but there remains no doubt of the force of that predisposition. A man, gifted with a good constitution from his ancestry, may destroy the principles of longevity in his offspring, though he may live to a good age himself. So, on the other hand, a man may transmit to his children a vigorous life-principle, which he may afterward undermine in himself, by his own bad habits. He may die early, in spite of a good constitution, while his children, inheriting his healthy organization, may be more fortunate in preserving it. These rules apply to both parents.

To be well begotten, one's parents must not only be of a good stock, and have inherited and developed a good organization, but they must be actually living healthy lives, and observing all the conditions of health. Any unhealthy condition of the father affects the seminal fluid. For this to be pure, and strong, and vital, the blood and the nervous power must be in the same condition, and so of the germs prepared by the mother. No unhappy man, no diseased man, no man whose nervous power is exhausted by labor or care; no man who poisons his blood and disorders his nerves with stimulants and drugs, can possibly beget a healthy child. Every zoosperm prepared in the testes for the fecundation of the ovum is affected by every cause that affects the parent. There is no condition of body or mind, with which the germ of life may not be affected by either of the parents. The seeds of all follies, vices, and crimes are sown in the organism. The Bible truly says of men, that they had certain characters "from the mother's womb." Moral character, intellectual powers

and tendencies, physical organization, health or disease, happiness or misery, are impressed upon the infinitesimal germ and the inconceivably minute zoosperm. The microscopic animalcule, shaped like an elongated tadpole, is, in reality, a blackguard, a liar, a thief, a scoundrel; or it is scrofulous, or syphilitic, or gouty; or it is idiotic, or insane: all these, if formed by a parent of whom these are actual qualities. And so it is of the germ prepared in the ovary of the mother. So the sins of parents are visited on their children to the third and fourth generation, and, where the causes continue, to the thirtieth and fortieth.

Father and mother, therefore, at the time of begetting, must be in all pure, and natural, and healthy conditions. If the parents love each other, the child will love its parents. But if a woman submits to be impregnated by a man whom she loathes and hates, that loathing and hatred will be impressed upon the child. It will show it in infancy, and it often lasts through life. Mr. O. S. Fowler gives an account of a man who had never been able, from his birth, to look at his father, from the impression made upon him by the mother, previous to or during pregnancy. For these reasons, if for no others, sexual commerce should never take place but in a most loving union of congenial souls. Two persons may have sworn eternal love upon a "stack of Bibles;" but if they do not love, they have no right to have children. Sexual union should never take place in sickness, or depression, or fatigue, nor under the influence of stimulants. Mr. Combe has given a case in which an idiot was the product of sexual union during a drunken frolic. The world is

full of miserable wretches, the results of sexual commerce forced upon a loathing wife by a drunken husband. Yet this is marriage! the sacred institution! the basis of society! *Society is worthy of its basis.* There is a marriage, true, sacred, holy—but a vast number of so-called marriages are false and infernal. I believe that “whom God hath joined together, let not man put asunder;” but I have no belief in keeping those together whom God hath put asunder; and wherever a mistake of this kind has been made, the good of the individuals, and of the race demands that it be corrected. If people who marry hastily must be punished, let it be in some way that will not affect their innocent offspring, and remote posterity, as well as the whole social body to which they belong. If one suffers, all suffer. The true marriage is not a trap in which people are caught, nor a Bastille in which they are confined. It is a condition of mutual attraction in absolute freedom.

And from this primary condition of health, with all that belongs to health, comes the law, that every woman, by her supreme right to herself, has the right to choose when she will have a child, and by whom. She is to carry it, to bear it, to nurse it, to educate it; she is responsible to her child for its paternity and its development; and this responsibility carries with it the right of choice in all that affects it. O woman! you must accept this responsibility, and you must demand and have these rights. When men are once enlightened on this subject, none but inhuman wretches and monsters will deny them. You talk of the evils of slavery, and of the submission of female slaves to their

masters' lusts. Look at the slavery of women over the civilized world, and their submission to the lusts of *their* masters. The first case is exceptional and rare—the last is general and almost universal.

Nature is ever kind, and neglects nothing that can benefit her creatures. She exerts her power to preserve the race, even from these evils. What some doctors call the *vis medicatrix naturæ*—the healing power of nature, which tends constantly to growth and healthy development, which heals our wounds, and cures our diseases when we give it a chance, and it is possible to do so; this power operates ever to purify, strengthen, and elevate. It often does much to save the child from the diseases of the parent, and children are many times better than we could expect. With all things in nature working together for good, we must not despair, but try to improve by culture and education. With good conditions, and surrounded by good influences, I have seen the faults and diseases of birth gradually eradicated and cured, until scarcely a sign of them remained; and children, born ugly, diseased, and with unfortunate mental and moral tendencies, have come to be more beautiful, healthy, and good than seemed possible in their infancy.

OF GESTATION.

The second condition of health is, that a child should be well born, or, more properly, well *borne*. The whole state of the mother, during the period of pregnancy, influences the being of the child. Her blood is its nutriment, and that blood must be pure. It is from her nervous system that it derives the elements of its

own vitality. Its mental and moral organization is influenced by hers, and even by her thoughts and feelings. Its muscular structure may be made strong by her taking proper exercise, or weakened by her indolence. I have seen children born with club feet, because mothers would take no exercise during pregnancy. Children are born with dyspepsia, or tendencies to colic, from the mother eating improper food at this period. The food of the mother has so much to do with the condition of the child, and with the power of the uterus to bring it forth at the proper period without pain or danger, that few things are more important. Numerous experiments prove that a fruit diet, or one composed chiefly of fruit, is the best possible. Too much farinaceous food, especially wheat, promotes the premature hardening of the bones, diminishes the flexibility of the fœtus, and increases the difficulty of parturition. No well-informed human mother will live on the flesh of animals during either gestation or lactation. Flesh is not fit to make babies, nor milk to feed them. Indeed, there is no condition of the mother, mental or physical, which may not have its influence upon the child. How careful, then, should every mother be to live in the best possible conditions during this period; and how careful should all around her be to make her life happy! There is no condition of health necessary to the mother, which is not also necessary to the child, for it partakes of all her life.

When we reflect upon the poverty, material and spiritual, that exists everywhere; upon the discord that enters into the lives of those who are most fortunate; upon the evil habits of living that surround us; and all

the vices and miseries by which women are enveloped, and to which they are exposed, can we wonder that half the children born die before they are five years old; that thirty years is the average length of human life, and that this brief space is filled with pain and misery? Pork, tea, coffee, tobacco, beer, whisky, crowded and filthy dwellings, bad air, uncleanly habits, and corresponding pursuits, feelings, and passions, are not the materials of which healthy babies are made. Such babies die, must die, and ought to die. They are not fit to live, and life, when it is prolonged, is a curse, and not a blessing.

The same law applies, during the period of nursing, to the mother or the nurse. Every mother should nurse her own child, unless it would be better off without it. A healthy hired nurse is better than a diseased mother; but the life and habits of the nurse must be under the same control as the mother's. Neither mother nor nurse, during lactation, should ever be exposed to sexual excitement. Amative indulgence diminishes the quantity of milk, and hurts its quality. And where this indulgence excites menstruation, and results in pregnancy, there is a double misfortune. The child at the breast and the child in the womb are both defrauded. There is no doubt that the milk of a healthy, well-behaved cow is better for a child than that of a sickly or vicious mother or nurse. The food, the air, exercise, the feelings, employments, and whole state of body and mind, influence the quality of the milk. The milk of an indolent mother will not give strength to the child. Even cows kept up in stalls, give milk with much butter and little of the flesh-forming principle, or casein.

All narcotics, all stimulants, all drug poisons, all impurities in food, or air, or about the person, affect the milk, and the child who feeds upon it. Many a child is kept drunk on tea, or tobacco, or whisky. The nurse drinks her porter or whisky, and the baby grows stupid on milk-punch, drawn from her bosom. And it is "such a good child!" "Nurses and sleeps all the time." Our papers denounce the milk of distillery-fed cows; but they have found nothing to say yet of distillery-fed nurses. These are some of the ways in which children are poisoned, killed outright, or made stupid drunkards. What has the great, wise, philanthropic Medical Profession done, for two thousand years, to remove these evils, or the ignorance upon which they rest? What has almost two thousand years of Christian preaching done for purity of life, which is the basis of all true religion? Can the world, *ought* the world, to forgive its doctors and its priests? "Father, forgive them, they know not what they do."

OF FOOD.

Natural food is a condition of health to every organized being. A plant finds its appropriate nourishment in the air, or draws it from the earth. We do not expect a vegetable to flourish in an uncongenial soil, because it is the soil that furnishes a portion of the matter necessary to its growth. It is the same with animals. Every one, from the smallest to the largest, is furnished with its appropriate food by bountiful nature; and every animal but man eats in a natural state the food that nature intended. The superiority of man over all other animals, is proved by the extent of his perversions. His

greater capacity and freedom, which enable him to do greater and nobler deeds, enable him at the same time to do meaner and more debasing ones.

Vegetables, by careful effort, may be made to grow in soils not specially adapted to nourish them, and in climates not best adapted to their production. So animals may be educated to live on unnatural diet, but this is never a condition of health. Thus cows upon a barren sea-shore learn to live on fish; a sheep has been taught to eat beefsteak and drink coffee; and a horse has acquired the filthy and disgraceful habit of chewing tobacco. But no sane man will say that these things are natural or healthy.

In the same way man learns to eat and love a great variety of unnatural and hurtful articles of food, such as are not adapted to his digestive organs, or the best nutrition of his system. He also learns to tolerate and love the most nauseous and detestable poisons, of which the wide-spread use of tobacco is a remarkable instance.

Man has, in accordance with the energy of his nature, and the versatility of his powers, a greater range of adaptiveness than any other animal. He can live in all climates, by the aid of artificial protection and heat, and he can live on a wide range of alimentary substances.

But all experience, all observation, and all science, prove that there are certain kinds of food especially adapted to the constitution of man—the same as in the case of other animals; and this food is best adapted to health in its widest and most comprehensive meaning.

The essential nutriment of vegetables consists of four

elements: oxygen, hydrogen, carbon, and nitrogen. These are all found in the atmosphere, in water, and the earth. The same elements are the most essential in animal organization, but in animals they are obtained from the vegetable kingdom. Thus the vegetable kingdom rests upon the inorganic, and the animal upon the vegetable.

Though all animals live upon the products of the vegetable kingdom, and though there is no particle of animal nutriment in the world which has not been elaborated by the vegetable kingdom from the inorganic, yet there are many animals who get this food at second-hand, and in various stages of impurity and disease.

Animals may be divided into three classes: the herbivorous, or vegetable-eating animals: the carnivorous, or flesh-eating; and the omnivorous, or those who feed upon both. Of vegetable-eating animals we have some who live upon the grasses and other coarse vegetation, requiring a long and complicated digestion, such as the horse, cow, sheep, camel, elephant, etc., and others who live upon fruits, seeds, nuts, and roots. Of carnivorous beasts, we have some living on freshly killed animals, as the lion, tiger, panther, etc., while others feed on carrion, as the hyena, wolf, and many birds. The hog is the type of the omnivora. It eats every thing—snakes, toads, carrion, excrements, as well as nuts, seed, fruits. Man, also, is held to belong to this class, and to be even more omnivorous than the hog himself. That he is so by perversion and habit, I shall not deny; but that he ever is so, in a natural and healthy state, all nature and all science denies.

Man has not the claws, nor the teeth, nor the diges-

tive organs, nor the tastes or attractions of a carnivorous animal; neither has he those of a grass-eating animal. The teeth of a carnivorous animal are formed to tear, and rend, and cut in pieces. Man's teeth are made, the front for cutting, the back for mashing and grinding. Those of grass-eating animals are adapted to a peculiar cutting and grinding process, necessary for the comminution of coarse vegetable fiber. The digestive canal of the carnivora is shorter and simpler than that of man; that of the gramminivora, or grass-eating tribes, is longer and more complicated.

The class of animals whose teeth, digestive organs, and general physiology bear most resemblance to man, is the class of frugivorous, or fruit-eating animals, at the head of which, and mostly resembling man, is the orang-outang. This is a strong, active animal, growing to nearly the size of man, and possessing a wonderful intelligence; he lives on fruit, nuts, and roots.

The unperverted tastes of every animal point with unerring certainty to its natural diet. Wherever a decaying carcass taints the air, there will be found the foul creatures that feast on carrion—the hog, the hyena, the wolf, the crow, the buzzard, the vulture. Worms and insects finish the feast. The lion and tiger revel in the warm blood of the animals they have just slain, but turn away from carrion.

Now, what are the natural tastes and attractions of man in respect to food. Reader, you shall be my judge. Let me take you by the hand, and lead you into this garden. It shall be, if you please, the Garden of Eden. Trees loaded with fruit are around you—vines bending with luscious grapes, beds filled with mellons. Here

are apples, pears, peaches, plums, nectarines, grapes, figs, oranges, bananas, strawberries, raspberries, and more than I can count. Here, also, are esculent roots, and nutritious seeds, fields of waving grain or golden maize, potatoes, beets, turnips. The air is filled with delicious odors; every object is full of beauty. Happy children are gathering fruit, or plucking flowers. All around is life and harmony, sweetness and purity, peace and happiness. The farm, the garden, the orchard, the vineyard, are full of beautiful associations, and not one object, if it properly belongs there, is offensive to the most refined taste.

Now, reader, let us look upon another picture. Approach this building. A fœtid, sickening odor fills the air; shrieks and moans of agony salute you; the gutters run full of blood; but you must enter. A mad, raging ox, with his frenzied eye glaring upon his murderers, is dragged up with horrid bellowings; a dull blow falls upon his skull, and the blood gushes from his throat. The strong, honest ox, who has toiled all his life for man, is murdered. The timid sheep, with painful bleatings, now feels the knife at his throat, and gasps away its innocent life. Calves, torn from their mothers, are hung up by their feet, their veins opened, and allowed to slowly bleed to death, that the veal may be white, drained of its blood, and tender, from the long death-agonies. Around you are the opened carcasses of these, your fellow-creatures, and your friends—the floor is covered with their blood and entrails.

What sense is gratified by such a scene as this? Is it beautiful to the sight, pleasant to the ear, grateful to the smell, or does it awaken any calm or happy feeling?

If a man wished to take a walk with one he loved, would he go to a garden, or a slaughter-house? If he wished to send her a present, would it be a basket of fruit, or a string of sausages?

Man loves the vegetable world, and finds it full of beauty, and attraction, and gratification, because it is his. His nature is adapted to it; it is adapted to all his wants, and all his natural desires. It is not so with carnivorous and carrion animals. What care the lion, or tiger, or wolf, or hyena, or buzzard, for orange groves and fig trees, orchards and vines, fields of waving corn, or granaries with their rich winter stores? They gratify none of their senses, because there is no mutual adaptedness.

But the scene of the slaughter-house, so repulsive to every human feeling, would be the very place where these animals would hold high carnival. It would please sight, smell, and taste; and no one would find himself more happily at home than the bloated, filthy, scrofulous porker; and if there were free chance for choice, he would be sure to select the most repulsive place.

Flesh-eating physiologists and physicians, I know, have contended for the necessity, if not the beauty, of eating animal food; but all experience, all science, and all philosophy, are arrayed against them. At this moment, and in all past time, nine-tenths of the whole human race have lived on a vegetable diet, either eating no flesh or making it the rare exception. The great mass of the labor of the world is done on a vegetable diet. In Japan, China, the whole East Indies, Persia, Turkey, all Europe, save the sea-coasts, all Africa, and Central America, flesh is seldom or never eaten by the

poor, and over much of this territory, not even by the rich. The finest forms, the best teeth, the strongest muscles, the most active limbs in the world, are fed on a purely vegetable diet; while, with regard to intellectual and moral development, it is a curious and interesting fact, that there can scarcely be mentioned a great philosopher or poet of ancient or modern times who has not given his testimony, either in his opinions or his practice, in favor of a vegetarian diet. Those who have any doubt on this subject, will do well to examine it fully.

In my remarks on the Chemistry of Man, I have shown that not only all the elements which are needed by the blood, and which enter into the human organism, are found in vegetables; not only do the ultimate elements exist, as carbon, oxygen, hydrogen, nitrogen, but the proximate elements, as albumen, fibrin, and fatty matter. And these elements are there in great abundance, and in great purity; in many cases in just the proportions in which they are needed, and free from all taint of disease. This is never the case with flesh used as food. The nutritive matters it contains are in wrong proportions, and always mixed with the excrementitious matters passing out of the animal system, and often with the matter of disease; for there are few animals fattened for slaughter, that are not diseased in the process, by being deprived of the conditions of health. Thus the flesh of the healthiest animal contains much waste and poisonous matter; while thousands of those eaten every day are one mass of disease. The details on this point are too disgusting to be written.

Fruit and the farinacea are the natural, and, therefore, the most healthy food for man. They are best fitted to sustain him in vigor of body and mind. They preserve him in health, and enable him to recover from disease. They contain all the elements he requires in the best proportions and in the best condition. A vegetarian diet is preëminently the diet of beauty, energy, activity, and enjoyment. It is the best at all ages, in all conditions, in all employments. It is best for the laborer, as for the philosopher, the artist, the professional man, or the man of the world. On a vegetable diet, as I have seen in numerous cases, the skin grows clear, the cheeks rosy, the eyes bright, all senses acute, the wits sharp, the intellect vigorous, the feelings deep and pure, the digestion good, all functions regular, the passions under control, the temper calm, the intuitive perceptions quickened, and the whole being exalted into a new, more vigorous, and more beautiful life.

The diet most consistent with health, is one composed of the best ripe fruits, as strawberries, raspberries, whortleberries, peaches, pears, apples, grapes, melons, wheat, corn, rice, oatmeal, rye, barley, peas, beans, tomatoes, asparagus, potatoes, beets, turnips, squash, cabbage, salsify, egg-plant, etc., etc. There is a vast variety, of which hundreds of the most exquisite dishes may be made. If we add two articles from the animal kingdom, procured without destruction of life, and which may generally be had in a state of tolerable purity, our list, if not complete, is sufficient for every reasonable desire, without including the tropical fruits, which will soon be furnished us. I mean milk and eggs. These furnish us with a concentrated aliment of agree-

able flavor, and they mingle harmoniously with most vegetable substances.

The quantity of food, many persons say, who wish to gratify perverted tastes, is of more importance than quality. Each has its own special importance; but when a man eats food of the proper quality, he is not so apt to err in quantity, and his errors are not so mischievous. It is surely worse to eat too much of a bad thing, than too much of a good thing. A man had better eat too many peaches or melons, than too much arsenic or tobacco. When we go wrong in one respect, we lose our guide in others. A natural taste regulates itself much better than a perverted one. A man is much more apt to kill himself with brandy than with potatoes. Vegetarian gluttons exist, doubtless, especially among those who have become diseased on other modes of diet; but they are not so common, I imagine, as among "riotous eaters of flesh."

The proper quantity of food for a mature healthy person should include about twelve ounces of nutriment per day. This is contained in rather less than one pound of farinaceous food, two pounds of potatoes, and what are called vegetables, and a still larger quantity of fruit.

Food may be taken, in early infancy, every two or three hours; and the frequency should be gradually diminished, until, at a year old, the child takes but three meals a day. For the adult, three meals, at intervals of six hours, seems a natural arrangement, though many persons advocate eating but two meals a day. The last meal, when three are eaten, should be lightest in quantity, and most easy of digestion.

The rules for eating are much like those of other functions. Hunger is nature's call for food, and supply should be governed by demand. We should never, when in health, eat but when we are hungry, nor drink but when we are thirsty. We should masticate thoroughly, which insures a proper insalivation. Even when the food is so soft as not to really require chewing to be swallowed, it ought to be well mixed with saliva. If the food be simple and pure, not too much sweetened or salted, or prepared with exciting condiments, the sense of hunger is soon overcome, appetite is satisfied, and we feel that we have eaten enough.

We should never eat when fatigued, nor in any way exhausted; nor should we commence violent labor, bodily or mental, nor take a bath, immediately after eating. In the first case we prevent, in the second we interrupt, digestion. We want a large portion of our strength for digestion, and a good digestion gives us strength for every other purpose. Moderate exercise and pleasant mental excitement, as conversation or some amusement, rather favor the digestive process.

Salt, if necessary at all, which recent experiments lead us to doubt, should be taken in great moderation. Vinegar, lemon juice, or such mild vegetable acid, though not necessary, may be added to some vegetables without apparent injury. Sugar is a concentrated form of nutriment, difficult to digest in large quantities itself, and having, like salt and vinegar, the power of preserving other substances not only from fermentation out of the stomach, but from digestion in it. Thus, fruit preserves are very hard of digestion, and must be eaten with great caution. Pepper, spices, mustard, and all

heating and stimulating sauces, are injurious. No truly healthy palate can endure them. All greasy food, melted butter, and pastry, are of difficult digestion.

All hot drinks debilitate the stomach, as the hot bath does the skin. Tea and coffee, like tobacco and ardent spirits, are narcotic poisons, which, for a time, stimulate, but finally weaken and destroy the whole nervous system. All these are to be absolutely avoided. The best possible drink is *pure, soft, cold water*.

The nutriment in food should be mixed with a certain proportion of innutritious matter. It is always so in nature; but we spoil much of our food by too artificial preparation. In all fruits there is a proportion of woody fiber; also in roots, and in the bran of wheat and corn, and the skins and shells of other vegetables.

There is no doubt that the most perfect farinaceous food in the world is unbolted wheat, either boiled or made into bread. Men can live very well on ten or twelve ounces of wheat a day, with water for drink. Less wheat, with a portion of fruit, however, is better. Coarse wheat bread, or mush, fruit, a little milk, and water, make a beautiful and excellent diet. Corn is nearly as good as wheat—perhaps, in one particular, it may be even better for some constitutions. With it we can better do without milk or its products.

I will add to this important section some tables, taken from standard authorities, which embody many important facts on diet. It is to be borne in mind that this system of living, besides being the most natural, the purest, the most beautiful, the healthiest, and the best, is also far the cheapest. No article of food costs so much, in soil, and labor, and care, as flesh. The corn

given to a hog to fatten him, would feed a man more than ten times as long as the pork into which it is converted. There is no comparison for health and purity. I shall have occasion to speak further of diet as one of the causes of disease. [See Appendix.]

OF AIR.

Another condition of health is a pure air to breathe. There were some reasons for making this the first condition, as it is the most vital. We can go for days without food, but not an hour without air. Respiration is the first act of independent life. We eat and digest at intervals, but we breathe continually. The stomach rests, but never the lungs. We need food every day, though not absolutely ; but we must have air every minute. Air, then, of some kind, is a very vital necessity. I wish to show that pure air, and plenty of it, is necessary to health.

The atmosphere, as has been beautifully demonstrated by M. Dumas, is the great reservoir and laboratory, from which is obtained the most important materials of the organic world. It is a mixture of about four-fifths of nitrogen, one-fifth oxygen, from three to five ten-thousandths of carbonic acid, a trace of the nitrate of ammonia, and traces of phosphureted and sulphureted hydrogen. It also holds in solution a large quantity of water in vapor, which we see condensed into clouds, fog, dew, rain, etc. The atmosphere also contains and bears about odors of vegetables, and other aromal qualities, healthy and noxious. Of the latter are the miasms of intermittent, and other forms of fever, and certain contagious diseases. These our chemists have failed to detect.

The relations of the atmosphere to man are various and most important. Through the vegetable world it gives him food ; it is the vehicle of sound ; its weight or pressure is adapted to his movements, and he uses it in many mechanical appliances. But its great vital relation is to the blood, upon which it acts in the lungs, and by the skin. We have seen that the whole mass of the blood is constantly passing through the lungs, and so air is constantly brought into contact with the blood, in which it effects changes so important that life can not go on without them. The blood must have oxygen, or there is no action and no vitality. The blood must be freed from its carbonic acid, or it soon clogs and poisons the system.

At every inspiration we take in many cubic inches of air. I have inhaled three hundred and twenty-five cubic inches at a single inspiration. Ordinarily it is said we inhale about seventeen cubic inches. When this air is expired, it is changed in its quality. It contains less oxygen and much more carbonic acid. It also contains various impure matters from the body. Some person's breaths are terribly diseased, and this is often the case with flesh-eaters, and those who do not bathe, while the breaths of vegetarians and water-cure people are often as sweet as the breath of cows, and so are those of all perfectly healthy persons.

Now, if a man is shut in a close room, every breath he breathes changes the quality of the atmosphere. Minute by minute it grows impure. It loses oxygen, becomes loaded with carbonic acid, and filled with excretory emanations, both from the lungs and the skin. Put many persons in the room, and this process is in-

creased in rapidity. In a close stage coach, a railroad car, a steamboat, a church, a theater, or a concert room, unless the greatest care is taken to ventilate them, by carrying off the foul air and admitting the pure, the atmosphere becomes totally unfit for respiration. It is debilitating from its want of oxygen, deadly from its carbonic acid, and poisonous from the filthy emanations of people filled with all sorts of diseases.

A pure air, then, is of absolute necessity to the blood, and of consequence to the whole vital organism. It is also necessary that having a pure air, we breathe it. We must have quantity as well as quality. If respiration is impeded in any way, it is a cause of disease. The chest should be dilated to its utmost compass. It must never be cramped by a stooping attitude. Every muscle of respiration must act with freedom. Neither the ribs, nor the muscles of the chest, nor the diaphragm, nor the muscles of the abdomen, which are the chief agents in expiration, should be in the least impeded by any dress or ligature.

By day and by night, at all times and in all places, sleeping and waking, we should have pure air, and breathe it plentifully. Of miasms, and other deleterious qualities to be avoided, I shall speak further on when treating of the causes of disease.

OF EXERCISE.

Next to food and air, as Conditions of Health, comes exercise. I use this word here, as the reader will soon find, in a wide sense. By it I mean the activity of every organ and function in man, but especially all voluntary functions. These are all placed under the

law of exercise, and depend upon it for the integrity of their life.

I hold that, in and out of man, nothing is made in vain. There is not a muscle of man's body, nor an organ of his mind, not a faculty nor a passion, that was not made for use—frequent and harmonious, if not continual. We are not merely to use our eyes and ears, and our legs and arms, but all our organs. Not merely to use them in certain ways, but in all the ways for which we have any natural aptitude or attraction.

I wish to be understood. Health is not the result of partial, but of integral development. It is not the development of a few powers and faculties of mind and body, but of all powers and faculties. And there can be no development without exercise or use. Without these, the faculty remains dormant, the organ is in atony, the full harmony of the system is destroyed. As development of every organ is necessary to the harmony of the system—that is, to health—and as exercise is necessary to development, it follows that exercise is one of the most important conditions of health.

Let us see, now, what is necessary to this condition. Nature provides us air and food. These a man may have in isolation. Robinson Crusoe, on his desert island, could breathe the purest air, and live upon the most delicious fruits; he could take all needful bodily exercises, and could find use for some of his mental powers in the study of nature. But he had no exercise for the highest passions of the soul. These demand society. On the exercise of these, all high accords of his being, all the most exquisite enjoyments of his life, depend. A man must have the exercise of

benevolence, of friendship, of ambition, of familism, of love. To have these, he must have society, extensive and varied enough to gratify all these passions in all their various developments. The soul pines, and withers, and dies in isolation. And as the soul suffers, the body also becomes weak and diseased. Our muscles become wearied with inaction; we long to use them, but by long disuse, they at last lose their power. So of the passions. We long to love and to be loved; we long for the sweet accords of friendship, and the inspiring stimulus of ambition; these longings are the weariness and *ennui* of the soul. Those who do not know their own natures, feel vague yearnings; those who have studied them more carefully, have more definite desires. These passionate longings of the soul must be satisfied, or we can have no spiritual health, and the body reflects the soul.

In the world, as it is, all exercise, and, consequently, all development, is fragmentary. The blacksmith and the boatman have large arms, the dancer has fine legs, the musician is all tune, the painter all form and color, an artist is nothing but an artist, a politician is but a politician, the man of fashion is a mere dandy. There is no complete human being any where. There is sharpness, and even force, in particular directions, but no integral development and universality of power. Where is the man who is all he should be in himself and in his relations to God, and nature, and society? Where is the woman, strong, beautiful, self-centered, brave, religious, honest, kind, friendly, loving, wise, accomplished, with a true pride, and a noble ambition; strengthening the weak, guiding the erring, animating

the despairing, the life and soul of her sphere ; great, and generous, and free ? How much this forlorn world needs such women ! And such must be, and shall be. The promise is in humanity, and the power of realization. We have every faculty that is needed ; all that is wanted is a healthy, harmonious development.

In this word exercise lies the whole idea of education. A perfect analogy or harmony of action belongs to the whole system of animal organs, soul and body. Exercise gives both strength and facility of action. When we first sit down to the pianoforte how weak and bungling are our efforts to play. Day after day we accustom our fingers to obey the will and to express the musical thought. Day by day it becomes easier to do so, and we soon learn to play rapidly, and with ease, force, and expression, and without the least effort. The habit is formed. It is the same with every faculty and every passion. Every portion of the brain is susceptible of education, of gaining strength and facility by exercise, of forming good habits. Goodness is as habitual to the good as wickedness is to the wicked. It is as easy for men to be habitually brave, generous, noble, and just, as to be craven, stingy, mean, and dishonest. I know that men are born with either of these characters. I know also that men's hereditary character comes from the education of their ancestry ; and that in time it may all be changed by the same agencies.

And what is this education ? It is the influence of every thing around us. It is in our labors and our amusements, our week-days and our Sundays, our conversation and our reading, our friendships and our

loves. Every event in life, every emotion, every hope and fear, every new thought and new desire, is a part of our education. It is exercise. It is some kind of development, or some repression; too often the latter.

The world makes many blunders; but there is one greater than all others, and more deplorable in its consequences. God has made man free, as the condition of all good and all evil. This liability to evil, from the fact of being free, was one of those terrible necessities from which not even the power of the Almighty could save us. But instead of accepting this freedom as the condition of all progress, and as the means of working out our destiny, men have used their freedom to destroy the freedom of each other. Human passions, instead of being left free, as God left them, to act by His attractions, and to be governed by the laws He impressed upon them, have been placed under a system of restraints and repressions. Instead of exercising, educating, and wisely directing the passions, we have loaded them with chains, and shut them up in prisons and in darkness. We have bound and starved them; and their condition and their conduct, where they are allowed to act, is just what we might expect from such treatment. Every passion and every faculty of the soul, we must remember, is an individual, all combining to make our individuality. They must be treated with the respect due to their individualities. They must have freedom for development, freedom of action, freedom of enjoyment. God has made no mistake; but men are full of blunders; and they can not go against freedom and nature without going wrong.

It is not necessary to enlarge on the necessities and

benefits of exercise in its narrower sense, and with reference to the organic functions and the locomotive system. What men and women need for health is varied employments, varied amusements, attractive industry, pleasant society, the gratification of their talents, tastes, and desires. They demand full and free exercise for their whole natures. Nothing short of this is worthy of humanity. Now we are all slaves—slaves of perverted habits; slaves of custom and fashion, which are to society what habit is to the individual; slaves of a public opinion, which is ready to crush the smallest exercise of the sovereignty of the individual; slaves of creeds and laws which the world has long outgrown—which may have been necessary garments once for our protection, but which are now fetters to hinder our progress; slaves of “time-honored institutions,” well enough, perhaps, in their day, but dead now, and demanding to be buried. Compared with these slaveries of the soul, all external bonds and outward forms of slavery, such as Russian Czarism, or Austrian Imperialism, or Spanish Fanaticism, or negro slavery, are of less account. As long as a man wishes to enslave, repress, or control any other human being with his beliefs, moralities, tastes, customs, or affections, he has no right to complain of any slavery in the world, I renounce and I denounce them all. There can be no true health for the individual, or for society, until we have the substance of freedom, as we have the shadow; until every individual is as independent of every other, as this nation is, “and of right ought to be,” independent of other nations—bound to them only by the bonds of mutual interest and attraction.

Many conditions of health are included in those of exercise and freedom, which I may not have room to specify so much at length. All that can give happiness to man, promotes his health; all that can give health, promotes his happiness. Everywhere there is this reciprocal action, based upon the simplest laws. "Evils to man, and evils to man only, are sins against God." God can ask nothing of man but what is for his happiness; whatever promotes the happiness of man is, therefore, pleasing to God. "Therefore, whether ye eat, or drink, or whatever ye do, do all to the glory of God."

Health demands, as its necessary conditions, then, such parentage, birth, and blood, as shall secure a good, sound, well-developed constitution—"a sound mind in a sound body." It demands a pure and natural nutrition, or the observance of the laws of diet. It demands a pure air, or an observance of the laws of respiration. It demands the regular performance of all the organic and animal functions, secretions, excretions, and all muscular, nervous, intellectual, moral, and passional activities, which I have included in the law of exercise. It demands for the whole skin the cleanliness of daily ablution, without which its functions are not well performed. It demands a temperature neither so warm as to debilitate, nor so cold as to chill and stupefy; and for this purpose the clothing must be such as comfort requires, without impeding motion, aeration, or perspiration.

OF CLOTHING.

Dress, with many persons, and with all who are truly developed, is an art and a passion. Aside from comfort

in regard to temperature ; aside from its protection of our personality from those we have no sympathy with, and whose sight of our naked forms would be a profanation, dress is a mode of the expression of our sense of the becoming, the harmonious, and the beautiful, in texture, form, and color. It is a language, a mode of life, a genuine outgrowth of our natures, and is, therefore, a true necessity and a great enjoyment. Dress is, with many persons, a condition of health or a cause of disease. I do not speak of the vulgarities of tight lacing, nor the fettering absurdities of long skirts, sweeping the streets and crushing the spine ; but of dress as beautiful or ugly, becoming or incongruous, harmonious or discordant. Be sure that an ugly, ill-fitting dress is a real cause of disease, and that a beautiful dress is both a cause and an indication of health.

The first quality of clothing is its cleanliness, the second is its comfort, the third is its fitness to our form, age, employment, and condition ; the fourth is its beauty and spiritual harmony. The dress becomes a part of our being. A healthy person dresses healthily ; a sick person's dress is sick. Fashion, public opinion, and what "Mrs. Grundy" will say, rules here, as in all expression of taste and character ; and here, as everywhere, we must demand freedom, and learn to exercise the Sovereignty of the Individual.

OF REST AND SLEEP.

Rest, and especially the rest of sleep, is a condition of health. The animal organs demand rest and restoration. Recreation from a change of employments and enjoyments is not enough. There must be absolute

repose. The whole brain must rest, probably from a necessity connected with its nutrition. Nothing exhausts and prostrates us quicker than the want of sleep. Sound sleep is the sign as well as condition of health. The infant, when its mental powers are just beginning to act and get quickly wearied, sleeps nearly all the time. In childhood and youth we sleep ten or twelve hours of the twenty-four. In maturity we find eight hours sufficient, and in old age we do with less.

Sleep is full or partial, and in partial sleep we have strange combinations of memory and fancy, and sometimes of our higher powers of thought and intuition. In these dreams also, and visions of the night, when the senses are locked up in a semblance of death, our souls seem to be opened to the influences of higher states of being.

Sleep is made unhealthy by indigestion, bodily weariness, mental excitement, or inquietude, by disordered passions and unsatisfied desires ; by bad air, too much or too little clothing, by that which shuts in perspiration, by a bed too hard or soft, and by all unnatural conditions. As we spend, at least, one-third of our lives in sleep, we may as well take a little care how we sleep, and who we sleep with ; for it is a condition of health, that we sleep with a healthy and congenial person, if with any. We must sleep with those we love, and not with those we hate, or who are in any degree repulsive to us. We must not sleep with those who are diseased, unless we are willing to give them our strength. The young must not sleep with the aged ; it is too great a draft on their vitality. Children may sleep with the strong and mature, for there is a reciprocation of benefits. We radiate our lives, and partake

of the radiations of others ; but if we give much, and get little, we must be the losers. Men have a natural and proper repugnance to sleeping with each other, and so have many women, but not so much. In natural philosophy, like electricities repel, unlike attract. It is so in man. Men and women who are attractive to each other, are both the gainers by being together, by every contact, and by the prolonged contact of sleeping together ; and this is the case aside from any sexual union, which in persons healthily constituted does not, by any means, necessarily follow. Personal familiarity may exist in any degree, from the pressure of hands, caresses, kisses, to contact of the whole person, without the last, fullest, highest, and holiest expression of passionate love ; and every degree may have its own pleasures and its own uses. A woman who permits of one degree of familiarity, may not feel attracted to a further one. She may allow of different degrees to different persons. It was once, and, perhaps, is still, a common custom, in many parts of this country, for two young persons, of different sexes, who felt attracted to each other, to sleep together, as a mode of courtship, and it is well known that the practice very rarely led to sexual intercourse between the parties before marriage.

I can not further prolong this section. Physiology, or the science of nature, teaches us the conditions of health for every organized being. "Follow nature," was the true maxim of the old philosophers. We despise it for its simple brevity ; but it contains all, and all that I have written, or could write in a thousand ages, on health or disease, would be but an amplification and illustration of this apothegm.

CHAPTER XVII.

OF DISEASE.

DISEASE, in the sense in which I shall use it, as including also disorder, is, in every respect, the opposite, or the lack of health. It is, to borrow again a definition from our great lexicographer, "Any deviation from health, in function or structure, the cause of pain or uneasiness, distemper, malady, sickness, disorder, any state of a living body in which the natural functions of the organs are interrupted or disturbed, either by defective or preternatural action, without a disrapture of parts by violence, which is called a *wound*. The first effect of a disease is uneasiness or pain, and the ultimate effect is death. A disease may affect the whole body, or a particular limb or part of the body. We say a diseased limb, a disease of the head or stomach, and such partial affection of the body is called a local or topical disease."

Webster's definition is true as to the uses of the word, but I shall not quite agree with the pathology of some of the last sentences of the definition. The system is so bound up in common relations of sympathy, that no disease can be local. The prick of the finest needle affects the whole system; and a very slight wound may bring on death by lockjaw.

Disease is "*any deviation from health.*" If the body, as a whole, or in any of its parts, is wanting in proper development, that is disease. If there be lacking any faculty of the mind, any sentiment or passion that belongs to man, or any degree of energy and activity suitable to such faculty, it is disease. If there is any want of harmony in body or mind, it is disease. If there is any lack of any function, any irregularity, or excess, or any kind of discordance, it is disease.

And as the great sign and result of health is pleasure or happiness, so the great symptom and effect of disease is pain or misery.

And as we have pleasure in all degrees, from the simplest feeling of satisfaction to the keenest ecstasy, so we have all degrees of pain, from uneasiness to agony, and every degree of misery is produced by a corresponding degree of disease.

Diseases are divided by pathologists into general and local ; but, as I have said, there is no local disease which does not affect the whole system. So it is believed by many, that there is no so-called general disease which has not some special locality, throwing the force of its morbid action upon some particular organ, either on account of its weakness, its excited condition, or some peculiar aptitude to receive it. Thus we have fevers, which are considered general diseases of the nervous system or the circulation, becoming brain fevers, lung fevers, bilious fevers, etc., according to the organ most affected.

Diseases are also divided into functional and organic. They are called organic, when some injury to, or alteration of the organ is perceptible • and functional, when

it is not. Where there is organic disease, there must always be functional; where there is functional, there must be organic disease somewhere, though not necessarily in the part which appears to be affected. It may be in the nervous centers connected with it. Thus asthma may be an affection of the spinal cord; and irregular action of the heart, in most cases, comes from some nervous connection with the stomach or generative organs.

Diseases are called sporadic, endemic, and epidemic. Sporadic, when they appear in single cases at irregular intervals; endemic, when of constant occurrence from local causes; epidemic, when numbers of cases arise in the same district from some cause of temporary occurrence.

Diseases are acute, when recent and violent; chronic, when of long continuance, and slower progress.

Diseases are mild, when most cases recover; and malignant, when a large proportion are fatal.

Diseases are contagious, when they spread in any manner by the influence of the sick upon the well; otherwise, non-contagious. Highly contagious diseases are called virulent.

Diseases, in any part, may be characterized by increase, or diminution, or irregularity of function, or some morbid change in its results. Thus, in the bowels there may be diarrhea, or constipation, or each in alternation, or unnatural excretions; and the same of other organs. The heart may act with excessive force and rapidity; or it may be weak and rapid, or weak and slow, or irregular.

In inflammation there is preternatural heat, swelling,

redness, pain. These symptoms, if diffused over the system, mark the state we call fever. Inflammation is a local fever; fever, a general inflammation.

Medical books are filled with the names of vast numbers of diseases, as a precisely similar affection of each organ of the body receives a corresponding name. Thus we have Encephalitis, Meningitis, Arachnitis, Parotitis, Otitis, Iritis, Glossitis, Pharyngitis, Laryngitis, Tracheitis, Bronchitis, Pleuritis, Pericarditis, Carditis, Gastritis, Enteritis, Peritonitis, Hæpatitis, Nephritis, Cystitis, etc., etc., and all these hard words ending in *itis*, mean simply an inflammation of the brain, its membranes, the parotid gland, ear, tongue, throat, etc. The laws of one of these affections govern all. Everywhere we have nearly the same phenomena, the same causes, and similar modes of treatment.

I shall not encumber these pages with all the rubbish of medical technology invented by doctors to disguise their ignorance, to conceal it from the people, from each other, and even from themselves; for, with all men, words are too apt to pass for things.

CHAPTER XVIII.

THE CAUSES OF DISEASE.

ALL disease consists in a lack of nervous energy, or the presence of morbid matter in the system, or both combined. In either case it may be hereditary or acquired, general or local, acute or chronic, mild or ma-

lignant. The causes of disease will best explain its nature; and by these we are pointed with unerring certainty to the means of cure.

I can not avoid here some ambiguity of language. The cause of a disease is, in many cases, scarcely to be separated in idea from the disease itself. Perhaps the word disease is applied more strictly to the phenomena which this cause produces, or to the efforts of the system to work against, overcome, or cast out the cause. If the system sank quietly and unresistingly under every cause of disease, we should scarcely know what sickness is. The pain and action of disease are the outcries and efforts of nature for relief. If the goodness of God is more specially manifested in one thing than another, it is in making us susceptible of pain. Pain is a friend in need. We seldom have it but when it is deserved, and it never comes without its uses. "Suffer, and be strong," the poet says. Ache, and get well; and take care not to need to ache again. Pain protects, and warns, and saves us. I do not know that pain is, of itself, remedial, as many suppose; but it is preventive, and urges us to curative measures. As God could not create man without the liberty to do wrong, He did the best He could for him, in affixing pleasure to good, and making pain the consequence of evil.

The primary cause of disease is a hereditary lack of vitality, either in the germ, the sperm, or in the combination of both. In such cases there may be early abortion, miscarriage, still-birth, death in infancy, marasmus, or lack of nutrition, rickets, convulsions, hydrocephalus, difficult dentition, and all the effects of general debility.

Next to this, often coincident with it, and proceeding from the same causes, we have the hereditary taint of scrofula, producing imperfect development, diseases of the skin, tubercular disease of the glandular system, tubercle of the brain, consumption of the lungs or bowels, tabes mesenterica, white swelling, hip disease, and the whole train of scrofulous disorders.

Other, and many diseases, are also hereditary, caused by the transmission of morbid matters, as gout, psora, salt rheum, secondary syphilis, insanity, and various affections of the brain.

The diseases of children, whether caused by hereditary virus, or by atmospheric influences, or contagions, are aggravated by all unhealthy conditions.

A bad atmosphere, the crowd-poison of large towns and cities, is the single determining cause of cholera infantum, which every summer carries off thousands of infants. Wherever people are crowded together, without cleanliness, and with disease, and all diseasing habits, the air becomes poisoned and pestiferous. Infants die, all are debilitated; and when some other cause of disease is added, some miasm or contagion, these people are the victims. They die of typhus, or cholera, or dysentery; they are continually dying prematurely of consumption, or some of the many modes of death.

Diseased food—as the flesh of sick animals; the milk of distillery cows; fish in the process of putrefaction; dried and smoked or salted fish and meats, with the poisons of animal putrefaction added to those of their own diseases; sausages, made of offensive materials; all pork; narcotic and stimulating drinks; beer and por-

ter, made worse by drugs ; tobacco—these are all prolific causes of disease.

Uncleanly habits, wearing filthy clothes, the neglect of daily bathing, also tend to clog the pores, prevent the throwing out of effete, waste, and morbid matters, cause the reabsorption of matters already expelled, and are fruitful causes of disease.

As all the functions of life are carried on by the nervous energy, a loss of that is not only a direct cause of functional debility, but by a diminished vigor of excretion, it prevents the waste matter being carried out of the system ; and this matter, thus retained, acts as a poison, and is a cause of almost every kind of disease. This reacts again ; exhaustion causes impurity, and impurity produces exhaustion.

Consequently, any thing which exhausts the power of the organic and animal system—any thing which destroys the nervous energy, is in many ways a cause of disease.

Intense labor, care and anxiety, protracted watchings, domestic unhappiness, any source of grief, may exhaust the nervous energy, and be a cause of disease. Sedentary employments, or monotonous labors, overtasking one set of organs and leaving the others without employment, may have the same effect.

The undue, and, therefore, disordered activity of any passion or appetite, is a cause of disease, by turning aside or exhausting the nervous energy that should be given to the whole system. Inordinate eating, avarice, ambition, all single and excessive passions, destroy the equilibrium of the system. But there is no passion so exhausting as amativeness. Its abuses are in proportion

to its uses. It is the best or worst, the noblest or the vilest, the happiest or the most miserable of human passions, as it is properly or improperly gratified. The nervous exhaustion which it occasions is the direct cause of most cases of dyspepsia, rheumatism, consumption, palsy, epilepsy, apoplexy, the nervous and uterine diseases of women, and, in fact, of two-thirds of all the diseases of mankind. "There is but one sin," said a wise man, in the bitterness of his experience. It was this one sin, he thought, which was the cause of all others.

The abuse of amateness, which begins in childhood, and even infancy, rapidly exhausts the nervous power. The generative function takes strength from the organic and the animal powers. It fails, and all fail. The stomach can not digest, for want of the nervous energy, spent in oft-repeated and fruitless orgasms. Nutrition can not be carried on in the capillary system. The waste matter, which should be carried off by the secreting and excreting organs, is retained to poison the fountains of life. The skin becomes dry and withered; the eye dull; the mind weak and disordered; all noble passions lose their force; the whole system is in discord and disorder, and ready to become a prey to disease. Then comes epilepsy, or spinal disease, or dropsy, or some form of consumption.

The habit of self-pollution in boys leads to that of involuntary seminal emissions, in itself a disease, and a continued cause of nervous exhaustion, and final impotence. In girls the same habit causes leucorrhœa, or mucous discharges from the vagina, falling of the womb, irregular and painful menstruation, a loss of all pleasure

in the sexual relation, difficult and painful childbirth, and a whole train of nervous and hysterical affections, which make the lives of women a curse to themselves and to all around them.

Closely connected with masturbation in woman is another practice, already alluded to. When a man enters upon the sexual relation, he wishes the woman he loves to partake of his enjoyment. If, either from an original lack of nervous power in the organs of generation, or early habits of masturbation, or from bearing children, she has lost, or partially lost, the sensibility to pleasure, men try to provoke it by exciting manipulations, before or during the sexual embrace. This is a common practice, and full of mischief. Where there is already a lack of nervous power, any attempt to force sensation is doubly exhausting. It is even worse in its effects than masturbation. The lives of many women are made wretched by this selfishness or kindness, whichever it may be, of their husbands. No passion is oftener false in its manifestations than benevolence, and killing with kindness is the most frequent of all the methods of human slaughter.

Amative excesses, even at a proper age, and under proper circumstances, produce exhaustion, and so cause disease. Good, pious, loving husbands and wives, isolated from all the world, or all the world to each other, which is a very unhealthy condition, kill each other with kindness, make their own lives wretched, and give birth to short-lived, suffering children. Loving, absorbed in each other, actually eating each other up; with no variety in their lives, nothing but this one passion, to which all their force is turned, this vital force is

soon exhausted. Alas! how many stones can be seen in every church-yard, marking the graves of such husbands, and especially such wives, who add to these continuous excesses of amateness, the exhaustions of gestation and childbirth. Such women marry at fifteen or twenty, and die before thirty-five.

The exhaustion of unnatural, or disordered, or excessive amateness leads to cravings for stimulants. Men resort to tea, coffee, brandy, and, worst of all, tobacco; they also crave the richest and most stimulating food. These, in turn, provoke the action of the generative organs, and so the mischief goes on, until poor nature sinks in utter exhaustion; some disease sets in, and death relieves the sufferer from a body he has so much abused.

The stimulants I have just mentioned, whether taken to relieve this or any other debility, are all exhausting to the nervous system, from the reaction of their stimulating effects, and they are also poisons, which are retained in the system, acting upon the nerves, and a direct cause of disease. The concentrated extracts of tea, coffee, and tobacco, will kill small animals like so much prussic acid. They are poisons in any quantity, and in large quantities they kill. They are modes of suicide, more or less protracted. Tobacco is the most debilitating, the most diseasing, as it is an utter nuisance to those who do not use it, or have not been habituated to its odors. Its smoke poisons the air, and the chewer or smoker is so filled with its effluvia, that he can be detected by it the moment he enters a room. All who come near him suffer in their senses and in their health. Many delicate infants are poisoned even to

death, by the smoke and odors of tobacco used by persons around them. This plant, whose proper use is to poison insects in gardening, etc., is now one of the great scourges and curses of the human race. It kills more every year than all our epidemic diseases; and it stupefies and imbrutes those who are in the process of being killed.

The craving for flesh, on account of its stimulating qualities, is another result of nervous exhaustion. A flesh diet is exciting, feverish, inflammatory, as well as impure, and often highly poisonous. Flesh, after long disuse, intoxicates like brandy. It has been found, by experiment, that chyle made of flesh putrefies in much less time than that made from vegetable substances, and the same is notably the case with the blood. Flesh-eaters are especially subject to inflammatory diseases, particularly fevers and dysentery. A vegetable diet, based on physiological principles, with other healthy conditions, may be considered an absolutely certain safeguard against all fevers, bowel complaints, cholera, and similar diseases. There is no sense in selecting one single evil and unnatural thing, as the sole cause of disease and premature mortality among mankind; but the several causes I have named, individually destructive, are, in the aggregate, sufficient to account for all our evils. Flesh-eating, giving us an unnatural, excited life, leads to sensuality; sensuality brings exhaustion; exhaustion demands stimulation; and so the work of destruction goes on.

Dress, in the weakness of civilization, has become a cause of disease, and an aggravation of other causes. Too much clothing weakens the skin, and keeps back

the insensible perspiration. 'The compression of the female waist, by which the action of the diaphragm is destroyed, all the muscles of respiration weakened, and the lungs, heart, liver, stomach, spleen, and pancreas compressed into one-half the space designed for them, is too evident a source of disease to require a word of comment. The form made by this means is a hideous distortion, offensive to every person of correct taste. The fashion plates of our magazines are causes of disease to all who can be influenced by such distortions.

Ligatures on any part of the body interfere with the freedom of the circulation; and tight boots and shoes are a great evil, from this cause, and from the compression of the nerves.

Any article of dress that excludes air and light from the skin, that prevents the free circulation of the blood, that keeps in, or retains for reabsorption, the matter of perspiration, is a cause of disease. Great mischiefs, therefore, are occasioned by the use of water-proof hats, caps, and boots, and of oil-cloth or india-rubber, worn upon the person.

Changes of dress, from thick to thin, and in females, from the high-necked morning-dress to the bare arms, neck, and bosom of the evening, are causes of disease. Either, worn habitually, might answer. The lighter dress may be really the best; but when the skin has been weakened, and made sensitive, it will not bear these sudden changes.

Chill, from any cause, unless it is succeeded by immediate reaction and warmth, is a cause of disease. The sudden constriction of the skin by cold suspends its action; the matter it was throwing off is thrown

upon the mucous membrane in the throat, lungs, or bowels, and we have the feverish excitement and increased and morbid secretions which we call a cold, catarrh, diarrhea, etc.

Indolence, or lack of exercise of body or mind, is both an effect and a cause of disease. I have treated fully of the effects of exercise, among the Conditions of Health, and these sections mutually relate to each other.

Attitude may be a cause of disease. Stooping distorts the spine, and compresses the lungs, heart, stomach, etc. It interferes, therefore, with innervation, respiration, circulation, digestion, and disturbs, directly or indirectly, all vital processes. This habit is acquired in many monotonous employments; but a little care and resolution will prevent it, or even cure it where the habit is fully formed. Any crooked person may straighten himself, if he resolutely sets about it. Let him stand against the wall, straighten himself, and keep so a dozen times a day, continuing the effort at his work, in walking, and even in bed, and he will soon be as straight as a sapling. Any constrained and unnatural attitude is a cause of disease.

Darkness, or want of light, is a cause of disease in vegetables and animals. Light is the source of life; darkness is the synonym of death. All dark places are full of disease. Fashion, which turns day into night, by darkening parlors and drawing-rooms, and which substitutes the ghostly glare of gas and candles for the vital radiance of the sun, makes us look like blanched celery or potato vines growing in a cellar. Light is so absolute a condition of health, that its deprivation is

always a cause of disease. Miners, men employed below decks on steamers, those who work in ill-lighted factories and cellars, those who work at night, artists who exclude light from their studios, as well as people of fashion, all suffer from the absence of this most direct and positive expression of the Infinite Life.

Occupations are causes of disease, by their exhaustion, their monotony, their deprivation of healthy conditions, their slavery, and the utter hopelessness of improvement. With monotony, desperation, and bad conditions, whole ship's crews get the scurvy. In similar states, manufacturing populations sink under typhus and consumption. Many employments also introduce morbid matters into the system. Millers, stone-cutters, grinders, cotton-ginners and spinners, mattress-makers, etc., are subject to affections of the throat and lungs. Painters, gilders, and all workers in lead, arsenic, mercury, etc., are poisoned. It is certain death to work in a white-lead factory, or a mine of quicksilver. The manufacturers of some drug poisons, given as medicines, are soon destroyed by their inhalation and absorption.

The excessive and subversive actions of the passions are causes of disease. People die of disappointed love and ambition. Anger, grief, and even violent joy, produce apoplexy, delirium, hysteria, hemorrhage; but in such cases, there must be great weakness and predisposition. Fear acts on the circulation, turns the hair white in a few hours, brings on premature old age, and even kills suddenly. Sorrow, care, anxiety, jealousy, produce the same effects less rapidly. All discord of the passions is disease.

Disease of the mind is reflected upon the bodily organs ; and so it is called a cause of disease, when it is only an extension. Love and its subversions act upon the heart and lungs ; other passions upon the stomach, liver, kidneys, and bowels.

Poisons, or morbid substances, taken into the system by the stomach, the lungs, or through the skin, or which act directly upon the nervous system, *magnetically or aromally*, are among the most frequent causes of disease.

All the waste matter of the body, arising from the action and consequent disintegration, combustion, or destruction of all the tissues, which are continually renewed by nutrition, becomes, if retained in the system, a cause of disease, a real virus, a true poison. This is known to be true of urea, or the solid matter of the urine, the bile, the fœcal matter, the excrementitious matter of perspiration, and the carbon excreted by the lungs. Any interruption of the functions of skin, liver, kidneys, intestines, or lungs, is, therefore, a cause of disease by the retention of morbid matter.

Similar matter taken in food, and especially in eating the carcasses of dead animals, which always contain it, is a cause of disease. The introduction of an extra quantity of this matter of putrefaction taints the breath, and overtasks all the purifying organs. These poisons are also inhaled in crowded atmospheres, and absorbed by contact with uncleanly persons. Plagues, camp-fevers, jail-fevers, typhus, dysenteries, cholera, and many other diseases, are either solely caused or greatly aggravated by this animal poison.

Of a similar character is the effluvia from grave-

yards, which poisons all around them. Many parts of London are pestiferous from this cause. Our own cities are not free from it. Every grave-yard poisons the atmosphere around it. All dead bodies should be burned, and their ashes preserved in beautiful urns. In this way, they would not poison the living, nor become loathsome to the senses and imagination. A calcined body weighs only eight or ten ounces.

This poison of animal putrefaction is sometimes so virulent, that the slightest inoculation with it, by the prick of a needle, or the cut of a scalpel, produces death. This not unfrequently happens in the dissection of a human body, which is no worse than any other animal body, only as it is commonly more diseased.

Tea, coffee, alcohol, opium, tobacco, all stimulants, and all narcotic poisons in habitual use, are causes of disease, both by the stimulation and consequent exhaustion of the nervous system, and by their presence, as morbid or diseasing matters in the system. The system of an old tea or coffee drinker becomes saturated with these infusions.

Alcohol fills all the tissues of the inebriate, so as sometimes to render his whole body a subject of spontaneous combustion. In the water-cure, we have patients from whom opium and tobacco are thrown out for weeks together, in such quantities as to stain sheets and bandages and poison the atmosphere around them.

Closely allied to these, as causes of disease, are the poisonous drugs administered as medicines. These are all, vegetable and mineral, poisonous. Every substance taken into the stomach is one of three things. It is food or drink; it is merely inert foreign matter, with no

action except a mechanical one, or it is a poison. Every medicine is one of these—some having a very slight effect, some more violent, but all mischievous. Whether they are stimulants or sedatives, they produce an unnatural and prejudicial effect upon the nervous system. Their legitimate effect, in all cases, is disease-producing. Even in homeopathic dilutions, the theory of their efficacy is that they cure, by first aggravating the disease.

But, in appreciable doses, stimulants weaken the parts they excite; tonics destroy tone; cathartics produce constipation; mercury, quinine, arsenic, antimony, and opium, are all violent insidious poisons, remaining in the system for years, and wrecking the strongest constitutions. The quack medicines which deluge the country are mischievous just in the ratio of their potency. The sassafras and molasses, which costs sixpence, and is sold for a dollar a bottle, as sarsaparilla, can not do much harm, unless it contains, as it commonly does, a minute but effective portion of arsenic or corrosive sublimate. But all active medicines are deadly in their effects; and among the worst are two vegetable remedies, quinine and opium.

Causes of disease exist in the water we drink. Hard water, containing lime in some of its combinations, or other mineral matter, is totally unfit for drinking, and is the cause of gravel, stone, goiter, and other morbid growths, and is also a common cause of dyspepsia and bowel complaints. Hard water, that will not wash the skin, nor penetrate and soften food in cooking, is not fit for drink, and scarcely for bathing. Wherever the water of springs or wells is hard, rain water should be

caught in large, clean cisterns, and carefully preserved for all domestic uses. Filtered through alternate layers of sand and charcoal, it is the purest and sweetest water we can have. It is even better to take the trouble of distilling water, than to use such as is hard.

Water containing vegetable and animal impurities and animalculæ, may introduce morbid matters into the system. Fresh, cold spring water, or clean, well-preserved rain water, however, contains no animal life. Water, to contain animalculæ, must have been exposed to light and warmth, and contain, also, some vegetable or animal matter.

Causes of disease, of more or less potency, are found in the atmosphere, in what is called *malaria*, which simply means bad air, but is used to designate the unknown cause of many endemic and epidemic diseases. There seems much reason to believe that some of these diseases are caused by telluric or aërial causes, so subtle as not to be influenced by atmospheric changes and motions.

Carbonic acid gas, if a poison, is still more a mechanical cause of illness or death. In a well, a mine, or a close room, it displaces the atmosphere, and produces asphyxia, by hindering us from breathing. We drown in this heavy gas, as in water. In each case we die for want of breath. It kills us just as it puts out a candle, by preventing the access of oxygen. A well is freed from it by putting in quick-lime, which absorbs it in being converted into a carbonate. The means of resuscitation are the same as in drowning, only that cold water may be dashed over the body, while after drowning we try to restore warmth.

In a crowded, close room, the oxygen is soon exhausted, and the air filled with carbonic acid, besides much diseased matter. Madame Sontag ordered her concert rooms to be shut close, and ladies were carried out fainting. All suffered from want of breath and poisoning. Every one's health was diminished and their lives shortened. Kossuth was nearly murdered in this country in the same manner. Our clergymen and their congregations are all made sick; the former are sent on tours to Europe—the latter have their doctors at home. In 1756, one hundred and forty-six Englishmen were confined one night in an East Indian dungeon, called the Black Hole of Calcutta: one hundred and twenty-three—all but twenty-three—perished before morning. Nearly a century afterward, seventy-five human beings perished in one night, by being fastened, during a gale, in the close cabin of an English steamer.

The malaria which seems to be the cause of typhus fever, dysentery, camp fever, jail fever, ship fever, yellow fever, appears to be the putrid and poisonous exhalations of either decaying vegetable or animal matter, or of uncleanly and diseased living persons. These diseases are therefore contagious—that is, each sick person helps to poison the atmosphere that produces or determines the disease. Decaying vegetables, or putrid bilge water in the hold of a ship, or in a cellar on shore, will cause fever. The opening of a drain in certain localities, has caused attacks of cholera in a street which was considered quite healthy. The causes of yellow fever are circumscribed to particular localities. A grove of trees, or even a high fence, is a barrier. A

ship with yellow fever at our quarantine has given the disease to persons residing at the leeward.

Typhus is perennial in many parts of London, in low, filthy places, and around crowded graveyards.

But whatever the nature of these causes, there seems to be some specific agency which determines the nature of the disease. With the same kind of persons, suffering from the same causes, we have at one time dysentery; at another, erysipelas; at another, hospital gangrene; at another, typhus, or ship, or jail fever; at another, yellow fever; at another, cholera. We have also special animal poisons determining to measles, scarlatina, small pox, etc.

We have also the malaria, or telluric, or aro-mal causes of intermittent fever, or fever and ague. This disease is attributed to decaying vegetation, but it is found in dry deserts, and is wanting in the most fertile localities. Stagnant water is said to cause it, but we find it on dry prairies, and miss it amid swamps and morasses. Localities which seem to the observer precisely similar, and even but a few miles apart, are entirely different in this respect. I believe that the presence of stagnant water aids in bringing out the poison. So does any disturbance of the soil, as digging a canal, or grading a railroad. The cause seems to me to be in the soil, and not in decaying matter, either animal or vegetable. It is not found on certain geological strata, nor above a certain degree of latitude. As we go South it is more intense, and is combined with other malaria, to produce remittent fevers. The malaria of the Carolina rice swamp, or of the African coast, is almost certain death to a white man from a

single night's exposure. By day the rarefaction of the air, or the direct action of the sun, either disperses or neutralizes the poison.

Liability to disease varies in individuals, according to several circumstances. In every community, exposed to the same general causes of malaria, contagion, etc., some are well, some sick, some die. For all this there must be a reason. "Mysterious Providence" may be a pious one, but it is neither philosophical nor satisfactory. If there is nothing but "mysterious Providence" to account for people being sick and dying, all our studies of Anatomy, and Physiology, and Pathology, and Therapeutics are of little use. All medical books are nonsense of necessity, as they too often are in fact; and the medical profession is an impertinence. There are providences, I believe, and they are mysterious; but I see no special mystery in a man killing himself with rum, or tobacco, or pork, or calomel, nor in his being made sick by any poison, nor in his dying if he have not vitality enough to throw off the disease and recover. The mystery is that men love darkness rather than light, and disease rather than health. The Providence is, that men *are* taught even by their errors, and *do* learn, even from their miseries.

The fact is, that those persons who have the most vitality, the most power of resistance, the least predisposition to disease, who have been born and are living in the most healthy conditions, are proof against outward causes of disease. They pass through plague, yellow fever, cholera, and all ordinary epidemics unharmed. The cholera is a good illustration of this. There can be no doubt that its specific, determining cause was over the

whole city of New York, but its victims were among those who were weakened by other causes, and were living in all unhealthy conditions. Of the 5,000 who died of cholera in New York in 1849, 3,000 were buried in the Roman Catholic cemetery. They were mostly poor Irish and Germans, living crowded together, in the most unhealthy parts of the city, and surrounded by many causes of disease. The other two thousand were exhausted by intemperance, by sensuality, or in some way unable to resist the diseasing influence. There was no danger to any really healthy person. And this is true of all external causes of disease. In proportion to the energy of our vitality and the purity of our lives, is our power to resist and overcome the causes of disease.

There is another preventive to particular forms of disease, in that power of the system to adapt itself to unusual and even unnatural conditions, which may be called the power of habit or acclimation. Persons get accustomed to the malaria of yellow fever, for instance. "Custom is every thing," we hear it said. It is much, not every thing. Habit enables a man to take twenty grains of opium at a dose; when he began, five grains would have killed him. Custom enables a man to smoke or chew tobacco all day long; when he began, a single quid or half a cigar made him deadly sick. Custom enables a man to bear with a smoky house, a scolding wife, or any other annoyance. It is in this way that men bear so much evil, live in filth, eat flesh, breathe foul air, use tobacco and whisky, and become hardened to all the miseries of life. They are acclimated. But the whisky, and malaria, and pork, and

medicine, and domestic broils, and tobacco, are evils none the less, and they kill none the less, because nature has the power of fortifying herself, and making a protracted instead of a violent resistance.

For all acute diseases are the strong and rapid efforts of nature to rid us of disease ; while chronic diseases are the weakened and slow efforts to the same end. The skill of our doctors consists mostly in attacking the powers of nature, and changing her efforts from the strong and rapid to the slow and weak. By bleeding and poisoning they prostrate the powers of nature—her violent efforts cease. She gives up to the disease, or only struggles a little, and at intervals. Chronic diseases take the place of acute.

Blood-letting should have been mentioned before, as a frequent cause of disease. It is always debilitating, always mischievous, and never necessary. I know of no case in which cold water is not a better remedy. The blood is a living fluid, and no part of it can be abstracted without injuring the vitality of all that remains.

The causes of disease, therefore, are of two kinds: weakness, original, or by exhaustion of the nervous power or vital energy ; and the presence of diseasing matter in the system. The latter may be hereditary, an effect, or even a cause of the former. Of aërial or magnetic causes of disease we have at present but a vague knowledge. The presence of a sick person will produce an effect of painful sympathy upon an impressible person. Even a letter coming a thousand miles, will produce on such a person, before it is opened, such pain as the writer may have been suffering. A magnetized ring or a lock of hair gives to some persons a

feeling of the mental states and bodily condition of an absent friend. If I lay my hand upon the region of Firmness, Self-esteem, etc., I give a feeling of strength. By an opposite influence, I produce depression and pain. I have known persons to be thrown into convulsions by the simple feeling of the spheres of those about them. The presence of a person of a more congenial sphere, or in another state of feeling, would restore them.

We may not be able fully to understand these things, but we must accept them as phenomena, and account for them, and make use of them as fast as we can. There is no useless fact in the view of a true philosopher.

Having treated generally of the nature and causes of disease, I shall next treat of preventive and curative agencies in general terms, and then of special forms of disease, their nature, causes, and treatment.

CHAPTER XIX.

CURATIVE AGENCIES.

“PREVENTION is better than cure,” says our proverb. Even the ratio in which it is better is sometimes set forth; and we are told that “an ounce of prevention is worth a pound of cure.” Our doctors either find that prevention is in no demand, or that it is too cheap to afford them any profit; for they do not deal in the article

The quacks advertise their nostrums, sometimes, as preventives of disease, especially when there is some prevailing epidemic. And when there comes a disease that the doctors can not even seem to cure, they will sometimes advise people how to avoid it, giving, at times, very bad advice, as in the case of the cholera, when they at first advised every body to live on flesh, and avoid fruit and vegetables. Experience caused them to change this afterward, but not until this advice had many victims. The only disease that doctors have made steady efforts to prevent, is small-pox, by inoculation.

How can diseases be prevented? Simply in two ways: by living, as far as possible, in accordance with all the conditions of health; and by avoiding, in like manner, every cause of disease. By keeping up the strength and purity of the system; by avoiding all excess, and every means of exhaustion; and by living in such a manner as to keep free from all matter of disease.

Strong as we may feel, and pure in our souls and our bodies, we must not uselessly cope with the pestilence that walketh in darkness. No man should needlessly expose himself to the malaria of intermittent fever, with which much of the region around New York is blasted. Much less should he sleep in a rice swamp, or take up his abode on the Chagres River. The way to prevent disease is to study and obey the laws of life.

The cure of disease is not accomplished by any medical system. Nature does her own work. It is the power of life that molds and builds up the organism;

it is the intelligent soul that first forms the body, and presides over all its processes, which struggles against disease, overcomes it, and casts it out of the system. No device of man can accomplish such a work as this; and man's efforts to assist nature have, in most cases, been full of error and mischief.

In all cases of disease, when the vital force is sufficient, nature effects a cure. When there is more disease than this vital force can overcome, nature sinks under the effort, and the patient dies; sometimes after a violent and brief struggle, sometimes after a weak and protracted one. The well-meaning but very ignorant doctor, in most cases, mistakes the enemy. Instead of attacking the disease, if, indeed, he had any means to do so, he begins a violent assault upon nature; he attacks and weakens the vital energy, using poison and steel against her, bleeding, blistering, and drugging, until he changes the whole aspect of affairs; and nature, who was strong enough to cope with disease, as Hungary may have been with Austria, sinks under the power of the doctor Czar. Or it may be a drawn battle; nature, overpowered by drugs, gives up the struggle, and each party—nature, disease, and drugs—occupy the disputed territory, and patch up a peace. But this does not last long. Nature renews the struggle, the doctor renews his mischievous interference; and life is made a long agony by this intestine war.

When nature is left alone to cope with disease, the struggle is brief in proportion to its violence. The matter of disease is cast out by some sharp crisis—vomiting, diarrhœa, or sweating—and there is a quick recovery. I believe that a much larger proportion of

cases in all diseases would recover in this way than with the ordinary methods of interference. The mortality of some diseases is very notably increased by allopathic medication. The cholera is a striking example.

To understand the mode of cure adopted by nature, and how she may be really aided in her designs by art, we must understand something of her operations. I have shown that there is an intelligent soul which presides over the bodily organism, as a whole, and in every minutest part. I have shown that when a bone is broken, or an artery tied, this intelligent power goes to work systematically to repair damages. We shall find that it is the same in all vital processes, both in health and disease. I trust that no person will read this part of my work who is not prepared for it by reading all the preceding portions.

When poison, as tobacco or opium, is taken into the system, there is at first a violent effort to cast it out by vomiting, accompanied with nausea, or sickness at the stomach. This is one of the simplest instances of morbid action. In case of a failure to vomit, the next process in regard to these substances is sweating. In one way or the other, or both, they are expelled, unless in too large a dose, when they overpower nature, and cast her out of the body. By nature here, I mean this intelligent soul of the organism. They struggle for the possession of the body; and one casts the other out; or, possibly, it is a drawn battle, and both remain. It would be more correct to say, that nature, trying in vain to rid the body of the matter of disease, does the next best thing, in ridding herself of the body.

If poison or diseasing matter is taken into the system in so small quantities as not to call for any violent effort to expel it, it is treated just like a few persons who venture into an enemy's country. They are either allowed to go quietly out, by the usual avenues, or are imprisoned and retained. Francke, a German pathologist and hydropathist, has made some curious observations on this point. He says, that in all cases where poison, or morbid matter, is not at once cast out of the system, it is enveloped in a coating of mucus, to prevent it from doing injury, and then either carried out by the usual processes, or, if this can not well be done, it is retained in the system, each atom being thus "slimed up" and protected from doing more mischief.

But as these matters accumulate in the system, there is a constant tendency to drive them out; and every cold, every fever, every paroxysm of disease is such an effort. The matter is always there, and always liable to be dislodged, and to be the cause of diseased action, or of the effort toward health; but when nature fails, either from the weakness of her own power or the interference of the doctors, and the introduction of more poison, unless she gives up the struggle finally, and retires from the body altogether, she spends her remaining efforts in again sliming up the *materies morbi*.

Sometimes masses of these slimed-up matters, medicines, and other poisons, are collected along the walls of the stomach and intestines, covering and rendering useless large patches of those organs. Sometimes they appear in the form of tubercle. In this case they have got as far as the glands, the lungs, the areolar tissue,

and even to the skin. There are many phenomena in the cure of disease by hydropathy, which give, to say the least, a violent presumption of truth to this hypothesis.

But in whatever particular way nature deals with the matter of disease, whether the product of the system or introduced from without, the general fact is well ascertained, that these matters are sometimes cast out at once, and sometimes after a long course of years, during which they remained in the system, always oppressing it, and liable at any time to be a cause of disorder, like the aforesaid prisoners in an enemy's country.

All this will be denied. We have, in the medical world, five schools of pathology—the nervous, solidist, the humoral, the chemical, and the mechanical. They believe, respectively, that all diseases arise from irregular nervous action, from disease of tissues, from humors in the blood, from chemical changes, and from animalcular or mechanical irritation. My pathology includes all these theories, and all the facts on which they are founded. Those who take any narrow, one-sided view of nature, run into error and bigotry.

Modes of practice are based on these exclusive theories of disease. The nervists deal in sedatives, antispasmodics, and poisons, which directly affect the nervous system; the solidists rely on mercurial and other alteratives; the humorists purge; the chemists give alkalies and acids; and the animalculists strive to poison the enemy, forgetting, as an old doctor said of worm medicines, that man is but a worm, and is liable to be killed by the same poisons.

As diseases consist of exhaustion and impurity; as exhaustion causes impurity, and impurity produces exhaustion, two things are requisite to a cure. These two should be written in letters of gold—INVIGORATION and PURIFICATION.

Let me make this emphatic by two definitions:

Pathology.—Exhaustion and impurity, resulting in disease and death.

Therapeutics.—Invigoration and purification, resulting in health and life.

The reader must have been struck with the constant division of every part of our subject into three terms. I have not sought it—it has come in spite of me. And here a third term is wanting, which I have no language to express. It belongs to the domain of psychology, or the science of the soul. It lies back of exhaustion, and its curative agency must precede invigoration. The pathological term I shall call *inversion*, to express the discordance of the soul, which is the cause of exhausting passion and physical demonstrations. It is a condition of ignorance, unbelief, and desperation. The opposite psychical therapeutic agency is one of insight, hope, faith, and loving confidence in nature and in God. It is a state of concordance or harmonization. We may now more clearly express the whole subject in this triple formula; and I prefer to let it stand, just as I have worked it out, as I have been penning these sentences:

Physiology—Harmony in the soul; energy in the vital or nervous power; purity in the organism. Unity of God, man, and nature.

Pathology—Inversion in the soul; exhaustion of

vital or nervous energy ; impurity of organism. General disintegration.

Therapeutics.—Harmonization of the soul ; invigoration of the vital or nervous energy ; purification. Integral restoration.

The physiological condition is that of health, harmony, and fullness of life.

The pathological is one of disease, discordance, and dissolution.

The therapeutical is one of hope, effort, and restoration.

So united are the three terms of each condition, that each one may produce the two others ; or if we can produce two, the third is almost certain to follow. The best or worst results, however, are derived from the concurrence of all three.

For instance, harmony in the soul gives energy of vitality and bodily purity. Energy of vitality purifies the body and harmonizes the soul. Bodily purity gives energy of life and harmony of feeling.

Or, inversion, or discord of the soul, produces exhaustion and impurity. Exhaustion brings discord and impurity. Impurity brings discord and exhaustion.

On the other hand, harmonization, or faith and hope, give energy and purity. Invigoration inspires hope, and causes purification ; and a simple bodily purification will go far to produce vigor of life and harmony of the spirit.

Here, then, in few words, and simply stated, is my theory of Health, Disease, and Cure. Let us proceed now to its practical application.

What agencies can we make use of safely and profit-

ably, to aid nature in her three-fold work of cure? In the answer to this question lies the basis of all therapeutical science.

The first thing we must learn—the first principle of medicine, and the one oftenest disregarded, is to do no mischief. It is not true that *we must do something*. Unless we know what to do, it is always safer and better to *do nothing*. If we are not sure that we can aid nature, we must not run the risk of hindering her with our blind and stupid interference. All experience shows that, in a great majority of cases, she effects a cure without assistance, and even in spite of ignorant and mischievous interference.

But the moment any one is taken sick—that is, the moment nature begins the operation of expelling some matter of disease—every body wants to be doing something to the patient. Every old woman rushes in with her infallible nostrum, and nature, who has honestly set to work to cure a disease, finds herself hindered on every side. When the stomach is incapable of digestion, it must be deluged with gruels, rice water, and barley water, as if the moment one was taken sick, he was in imminent danger of starvation. Then comes the doctor, and if one of the common sort, the attack begins in earnest. Out comes the lancet, and follows its rude gash a quart of blood. Poor nature, feeling the work she has to do, and needing all her strength, gasps at this murderous sacrifice; but the next attack is to cover fifty square inches of the skin with a torturing blister, and at the same time to pour down the throat a dose of one of the most virulent poisons of the *materia medica*. This process goes on, and when nature finally

sinks, not under the disease, but under the added exhaustion of a vile and torturing medication, every body consoles himself with the idea that, "every thing was done that could be done;" it should be added, "to kill the patient;" and if you add "scientifically," you are not far from the truth.

Napoleon, a man of grand intuitions, once said to the Italian physician, Antonomarchi: "Believe me, we had better leave off all these remedies. Life is a fortress which neither you nor I know any thing about. Why throw obstacles in the way of its defense? Its own means are superior to all the apparatus of your laboratories. Covisart candidly agreed with me that all your filthy mixtures are good for nothing. Medicine is a collection of uncertain prescriptions, the results of which, taken collectively, are more fatal than useful to mankind. Water, air, and cleanliness are the chief articles in my pharmacopœia."

Thus spoke the intelligence of a great soul, and this is what every body ought to learn. Napoleon had a true reverence for nature.

If medicine were only as wise as surgery! When a man has broken a bone, the surgeon is content to put it in its place, prescribe rest, and a moderate diet, and leave nature to mend it. But when it is the liver or lungs that are disordered, the doctor bleeds, and blisters, and doses, gives alterative, cathartic, opiate, and does more mischief in a week than nature can remedy in a year. I confess that I have no patience with the folly of patients, or the ignorance, to call it no worse, of physicians. But when I see how the latter are educated, and the former deceived, I can not wonder at the

result. I have seen hundreds of medical students; I have attended the lectures of two medical colleges of the first class in this country; "I speak what I know, and testify what I have seen." What Napoleon says is true of the highest and most enlightened. What, then, must be the truth respecting the great mass of medical practitioners? Of some of their practices I shall have occasion to speak more particularly, when upon Diseases and Treatment.

But there are things that we may do, wisely, safely, and with good results. To know these, is the true science of medicine. To do nothing, is better than to do mischief; but it is not so well as to do something that should be done. When a man has fallen into a ditch, we had better do nothing than to jump upon him, and bury him deeper; but it is much better to carefully pull him out, cleanse him of the mud, put him in the right path, and send him on his way rejoicing. Some of our means of cure may seem unnatural; but they are only so as they are adapted to an unnatural condition, like the process of pulling the man out of the ditch, and cleansing his garments.

We can do all that is practicable to remove the causes of disease, which must be ascertained by a thorough and searching examination. Patients cheat physicians and even themselves, as to the causes of disease. How seldom will a woman confess to tight lacing, or a man to gluttony. We must not expect confessions of secret licentiousness. But we must do all in our power, and admonish the patient as to the existence of hidden causes of evil.

There are potent causes of disease that are not easy

to remove. When a feeble, nervous woman is crushed, soul and body, by a brutal husband—I beg pardon of all honest brutes, but there is no other word—it is not so easy to take her away from him, or to send him away from her, and such cases are generally hopeless. The husband may be the only real cause of disease; and without a separation, there can be no cure. So of many false and oppressive social conditions. Children are oppressed by unsympathizing parents; parents have their lives cursed by unloving children; vast numbers suffer from relatives on whom they are dependent. Some of the benefits which patients receive at water-cure establishments come from their having left such causes of disease behind them; but when they go back, they are too apt to relapse, and then water-cure is blamed, because its effects are not permanent. There are thousands of victims to matrimony of both sexes, for whom a divorce would be the best possible prescription.

The common causes of exhaustion may generally be removed, unless they belong to the condition of the patient, such as his necessary avocations, care, trouble, etc.; or unless the disease itself is of an exhausting character, as leucorrhœa in women, and involuntary seminal emissions in men. We may change the diet, or interdict food entirely; we may remove the patient from bad air, or secure him ventilation; we may attend to external cleanliness.

In short, we may safely and rightly, as far as possible, give to the sick one the conditions of health; and in this we have done much for his restoration. I mean, of course, such conditions as apply to a sick per-

son ; for in this, as in all other things, there is one grand rule of practice : *that we adapt our measures to the condition of the patient.*

"Cease to do evil, learn to do well," applies to sins bodily as well as sins spiritual. But what is well for the well man is not always well for the sick. It is well for the well man to eat, drink, take exercise, labor, and partake of all enjoyments. But the best thing for the sick man may be to entirely stop eating, and to rest, mind and body. The effort to digest food, to take exercise, and to "keep up," is a cause of exhaustion. Many patients at water-cure establishments are injured by long walks, as well as by too much treatment. They are ambitious to cope with others in exercise ; they want to get their money's worth of water-cure ; exhausted by both, they eat to get strength, and overtask again the digestive powers ; finally they sink under this triple mischief, and go away worse than they came.

The hunger-cure, or absolute rest to the stomach, is one of the simplest means of cure, in both acute and dyspeptic diseases. No food, not one atom of any kind, should ever be taken in any case of acute disease, until it is cured. Starve and drink water is all that is needed for the digestive apparatus. This, with cold water to the skin, for cooling and purification, and cold water injections to the bowels for the same purpose, are the means of cure.

And in all chronic diseases, which are dependent upon or complicated with dyspepsia, the whole digestive system needs rest, absolute rest, more than any thing else. Let such a patient resolutely starve, not

live on slops, but eat *nothing*, and drink water for three weeks ; taking daily ablutions and injections, and it will go farther to secure a cure than months of the most active treatment, when this is neglected. I have seen this tried, and know its efficacy. When the patient begins to eat, it should be the smallest quantity of food, and of the simplest quality ; say one ounce of coarse bread, and two ounces of fruit a day for the first week : then two ounces of bread and three of fruit for another week ; then three ounces of bread and five of fruit for a month. By this time the worst dyspeptic will have digestion for meals progressively larger, until he reaches the standard of health, and his whole system will have undergone the most remarkable changes.

One of the best cures of dyspepsia I ever heard of was that of Mr. Robinson, of Nantucket, who cured himself by eating an ounce of dry, coarse, unbolted wheat bread, at a meal, three times a day, drinking nothing but water. Sometimes at supper he only eat half an ounce. He chewed this thoroughly, and persevered in this course for some months. At first he lost flesh, but afterward gained both flesh and strength, and was soon able to perform the work of a common laborer. He was thoroughly cured. I believe the cure would have been still more rapid had he taken the course I have recommended.

The world has one great agent of purification, and that is water. It is the universal solvent. Entering largely into the composition of all organic beings, it is by its agency that all vital processes are performed. It is the great agent of digestion, nutrition, and excretion. It is at once the vitalizer and purifier of the world.

The matter which is carried out of the system is first dissolved in the watery portion of the blood. Then it passes from the lungs dissolved in vapor, from the skin in perspiration, from the kidneys in urine, from the intestinal canal in fœcal evacuations, which are poured into it through a million sluice-ways, by the agency of water, which is again reabsorbed. When impurities gather upon the surface, we wash them off with water. This single agent, then, in its simplest internal uses, affords us the means of one of the most important conditions of cure, that of purification; and that which is alone sufficient in a vast number of cases. Thirst is the call of the intelligent organism for water. It is a common symptom of disease, and especially of all diseases of impurity, rather than exhaustion. Nature commonly knows what she requires. Water is wanted to dissolve the impure matters in the system, and carry them off. The copious drinking of soft water is alone often sufficient to cure a fever. It is followed by profuse sweating, large evacuations of urine, a full action of the bowels; the system gets a thorough clearing out, and the patient, after recovering from the fatigue of this effort, is well.

The internal applications of water, in the cure of disease, are drinking, and injections by the rectum, and by the vagina. They all, when taken cold, answer the two great purposes of cure. They cleanse and invigorate. Injections into the rectum, penetrating, as they may, the entire length of the colon, soften accumulations of fœcal matter, and wash them away. In all cases of constipation, or where there is not a full daily action, these injections should be taken to the extent of two or

three pints, retaining them for some minutes, and repeating them as often as needed. Every person liable to sickness should have a good syringe for this purpose. The pump syringe, costing from three to five dollars, is the best; but any kind will answer, which will inject water into the bowels. There is scarcely any case of disease, in which injections once or twice a day may not be used to advantage. In diarrhœa they are taken cold after every discharge, to wash away corroding excretions, and to give strength to the part. In dysentery they cleanse, reduce inflammation, stop hemorrhage, and give tone or vigor. Injections of cold water into the vagina, and upon the uterus by that means, produce the same effects, cleansing, checking hemorrhage, and giving energy to the parts.

Water, applied externally, also produces all these effects. It purifies, cools, and invigorates every part to which it is applied. Try it on the hand. Try it when it is dirty, dry, hot, and wearied. Dip and rub it a few moments in cold water. It becomes clean, moist, cool, and invigorated. Try it on the whole body, and you will find the same effect.

This is a matter so important as to require a little more explanation.

Water cleanses by its power of dissolving substances.

Water cools by its coming in contact with so many points of surface, and its power of conducting heat, and often by evaporation. It cools the whole surface, or any part to which it is applied.

Water reduces inflammation by lowering the temperature, equalizing the circulation, and by cooling, contracting the capillaries, and driving the blood out of

them. This contraction or constriction of the capillaries is also connected with an infusion of nervous power and quickened circulation, which contributes to a return of healthy action.

Water invigorates in many ways; by the very process of purification, obstructions are removed, and the nervous energy allowed to act freely; by the equalization of the circulation, the whole system acts in harmony, and its force is augmented by being well distributed; by the direct action of cold in quickening the action of the capillaries; by the reaction of the heat-forming power of the nervous system, quickening the circulation, especially in the capillaries, and developing vital heat, which seems to be only an expression of vital energy.

This last is a very curious matter. It seems to be governed by the general law of exercise. If we give a weak person a cold bath, or a wet sheet pack, he may be long in reacting against it, or in getting warm. We carefully proportion the length of the bath or the quantity of the sheet to this reactive power. But, like other powers, it gains strength by exercise. Every day the patient reacts better; and we find that the whole strength or vital energy increases with this power of reacting against cold, until we have a restoration to health. This is the process of invigoration. It is a kind of vital gymnastics, or education of the organic powers.

We push the purifying process, and join it with the invigorating, by exciting the action of the skin by long packs in the wet sheet, or in dry blankets, followed by a cold bath. We prolong the invigorating process

in the partial application of the sitz-bath ; and both purification and invigoration are combined in the wet jackets, bandages, and compresses.

Thus water is the great agent of vigor and purity ; of the first, by its being so admirable a means of controlling temperature ; of the second, by its solvent power. It seems also to possess magnetic or electric properties of a peculiar kind, which act upon the nervous system ; a kind of vitality, especially when freshly drawn and living. Our own vitality is probably nourished by a great element of vitality in nature, of which water is one of the mediums ; and hence its enlivening and invigorating influence.

Water, according to Swedenborg, is the material correspondent of the Divine Truth, and its effect upon the body corresponds to that of truth upon the soul, purifying and invigorating.

Light can never be neglected as a curative agent, or a condition of health. The sick are often shut up in darkness. On the contrary, they should have an extra share of light, and, if possible, bask in the direct rays of the sun.

Animal magnetism, or the power which one person has of strengthening the vitality of another, and controlling its action, may often be used with singular advantage.

Congeniality, friendship, love, faith or trust, hope, and joy, in all their expressions, should never be lost sight of as remedial agents, giving vigor to the soul, and influencing every bodily function.

This is the *materia medica* of nature. I shall now describe more particularly the processes to be used in

the treatment of disease, with their applications, and the errors to be guarded against. I wish to make these directions so plain, that no reader of this book may ever be obliged to write to me for further explanations.

CHAPTER XX.

PROCESSES OF WATER-CURE.

THE water used in water-cure processes should be soft, clean, fresh, and newly drawn. It should be soft, especially for drinking, and it is better for bathing; but hard and salt-water, if cold and living, does much good. In all that regards changes of temperature, and the exciting of vital reaction, it probably answers every purpose. It has the invigorating property, but less of the cleansing. Whenever water is to be applied continuously to the surface, so as to be absorbed, as in the long tepid or half-bath, the sitz-bath, and for compresses, bandages and wet sheet packs, I should use soft water, if it can possibly be procured—and more especially for drinking. Sea bathing is invigorating, but has little effect in cleansing the surface.

The temperature of water for ordinary bathing should be considerably below that of the body. The temperature of the blood varies but slightly from 98 degrees Fahrenheit. A very feeble person may bathe in water at 70 degrees, but those who are more vigorous, should use it colder; and the lower the temperature, the

quicker and more decided is the reaction. Water at 32 degrees, which is the freezing point, excites a powerful reaction, and we feel warmer after such a bath than if we had taken one at 70.

Water from 70 to blood heat is called tepid ; above blood heat, it is warm and hot.

The immediate effect of cold water is to drive the blood from the part to which it is applied. The part feeling the want of blood, as the element of vitality, and of warmth, which is the sensible expression of vitality, calls it back. This is what is termed reaction. The blood returns, producing redness, a glowing warmth, and a feeling of vigor in the part. You may try this by merely dipping the hand in very cold water a few minutes ; or you may try it on the whole surface of the body. In this way we strengthen the whole skin ; we act upon the periphery of the whole system of the nerves of sensation ; we quicken the action of millions of capillaries ; we strengthen the circulation ; we invigorate the whole body.

The effect of warm water, on the other hand, is to soften sensation, expand the capillaries, lower the tone, and enfeeble the action. Hot water, indeed, is stimulating, but still more derivative. Its subsequent effect is debility. It is little used in water-cure, for this reason ; but we sometimes resort to it in emergencies. For example, in congestion of the brain or lungs, we put the feet and legs into hot water, while we apply cold to the part affected. We also apply warm water to a part when we wish to backen a crisis, or moderate inflammation. The warm bath has also a soothing effect upon the nervous system, calms irritable nerves, and

moderates convulsive action. Warm hip-baths, and hot fomentations are used to allay uterine pains, and give relief in colic. But the very property by which warm water soothes makes it weakening, and it is to be avoided, except in emergencies.

Pain of the most violent kind, and even convulsions, are cured by the application of cold water; but it should be very cold and applied freely. There is no sedative so complete, unless it be animal magnetism, and this can not always be so readily applied. In inflammations, fevers, and in all cases where the heat of the system is kept up, we may apply cold without fear. It is in cases of great exhaustion, internal congestion, and collapse, *without the strength to react*, that cold is dangerous. Even in these conditions, when applied quickly, and in a way to secure reaction, it is of the greatest benefit.

The General Bath.—Every person should be washed all over in water, at least once every day of their lives. In infancy or age, at home or abroad, sick or well, there should be the daily ablution. Every square inch of skin on the whole body needs it, just as much as the face and hands; and it can be done, on a pinch, with a single pint of water, with the hand, a wet towel, or a sponge. It is better to have more—but this is a bath. Don't tell me, then, that you have not conveniences for bathing. If you can get a pint of cold water, you can have a bath, and ought to have one, and are an unclean animal if you do not.

With two or three quarts of water, and a sponge or towel, you can have a glorious bath, beginning by washing the whole head, and then the entire body. End by

a thorough rubbing with hands and towels, the coarser the better, and you have done your skin something like justice.

If you wish to go a little farther, and have a bath that will make you feel magnificent for the rest of the day, take a large wash tub, or Shaker hat bathing tub, a pail of water, if ice-cold the better, and a sponge that will hold two or three quarts. First fill your sponge, stoop over and squeeze it over your head; then with the squeezed sponge rub head and face all over, and extend this part of the process to the arms. Now step into your tub, fill the sponge again, stand up straight, and, holding it over the back of the neck, squeeze it out with both hands, so that the water will run down like a cataract over the whole body. Repeat this operation two or three times, and then with the expressed sponge wash all over. By this time you are in good condition for rubbing dry, and if you dance about a little, you will probably think that this is one of Solomon's times for it. With a glow of warmth, and your skin rosy as Aurora, you will feel as if you could jump over a house.

Every sleeping room in our house is supplied with a *mechanical pouring bath*. It stands in a corner of the room, and is twenty inches square by some seven feet high. Its bottom is a tight box, a foot deep, its top a reservoir that will hold about three pails of water. In the middle of this is a hole three inches square, closed by a valve, which is raised by pulling a string. You turn a cock and fill the reservoir with water; step in, shut the door, pull the string, and down comes a small sample of Niagara. It is less than a douche in force,

more than a shower-bath, and for a general bath far better than either, and the most agreeable, invigorating bath I ever experienced. It is quite simple to make, can be constructed by any carpenter, occupies but little room, and is a real bed-room luxury.

The Dripping Sheet is a capital general bath, especially for invalids who require assistance. It can be had wherever there is a clean sheet and water enough to wet it. Let it just drip, throw it around the person to be bathed, and rub it over with the hands for half a minute or longer.

The Pouring-Bath, with one or two pails of water poured over the patient, who stands or crouches in a tub, is also one of the best in use. There are few persons who can not take one pail of cold water poured quickly over them, and followed by a brisk rubbing. The weakest persons bear such a bath, and feel the stronger for taking it.

The Plunge-Bath is any way of getting into the water all over, wetting the head first, as in all general baths. This bath, especially by all weak persons, should be taken quickly. Plunge in, and jump out again, dance about, and have a good rubbing. If you go into a river, or place large enough to swim, the exercise will enable you to stay in longer; but even here, staying in too long produces exhaustion.

The Shower Bath is often injurious, from the strong chill it produces, without exciting sufficient reaction. It is seldom used in water-cure.

Some kind of a general bath should be taken on rising always, except where the debility and consequent chilliness are too great, when it may be postponed to

mid-forenoon. A bath is also always taken on coming out of either a wet sheet or blanket pack. The warmer a person is, the better he can bear a full bath, and it is never better than when the body is covered with perspiration. The common notions about taking cold from a bath are all unfounded. If a man thoroughly fatigued and over-heated, goes into water, and remains, it may produce a severe and even fatal chill; but a quick bath and good rubbing will make him feel like a bird. In dry and feverish states of the system, a bath may be taken as often as it is agreeable, if every hour. When a fever patient is too feeble to stand up and be bathed, he may be washed, lying down, with a sponge or towel. In whatever manner taken, the full bath is cooling, cleansing, and invigorating, though it may prove warming to a cold person, by exciting reaction, and increasing the vigor of the circulation.

The Half Bath.—This is one of the most powerful means of acting upon the whole system, reducing fever, removing local congestions, equalizing the circulation, and controlling spasmodic action. The patient is set in a tub—a bathing-tub is best—with the water four or six inches deep. He is then wet-rubbed all over with the hands of two or three assistants, and water poured over him with a pail, from time to time, or dashed forcibly against him as the rubbing proceeds, in which the patient, if able, should assist. I have used this bath in severe congestive fever, as warm as 80 degrees, applying colder water to the head and chest, with great advantage. Priesnitz used this bath cold in many cases, and sometimes for four or five hours at a time, and with it he relieved severe congestions, ague, lockjaw, insan-

ity, and cholera, even in the stage of collapse. The rubbing should be thorough, and made by relays of assistants, when it is long continued. When the patient comes out, let him be dry rubbed and wrapped up in blankets—not packed, but well covered in bed.

The Sitz-Bath.—This admirable bath may be taken very well in a medium-sized washing tub. Fill it half full of water. It is well to begin with about 70 degrees in ordinary cases, and make it colder every day, until we come down to the common temperature of well or spring water. What I mean by 70 degrees, if you have no thermometer, is water “with the chill off,” or moderately cool. Remove the clothing sufficiently, so that you can sit down in this water, and have it come up to the navel, or nearly. Sit quietly for ten or fifteen minutes. You may aid the effect by rubbing the submerged surface with the hand. When you come out, dry and rub the parts with a towel; and if the water was cold, you will find the immersed skin nearly the color of a boiled lobster. This tells what is going on in the capillary system.

The cold sitz-bath relieves congestion of the brain, cures piles and constipation, dysentery, and is a sovereign remedy for weakness of the generative organs, falling of the womb, ovarian diseases, etc. It should be taken through pregnancy, and afterward until full recovery. Every such bath gives a strength that no one can conceive of, who has not tried it, or seen its beneficial operation.

The Douche.—This is a stream of water, of an inch or more in diameter, falling from ten to twenty feet. It is a very powerful application, bringing a great

quantity of water rapidly to act upon a surface, and with considerable mechanical force. It must not be taken on the head, which must be first wet, but may fall upon the whole length of the spine, and on the chest and limbs, for from one to five minutes. It is a most powerful invigorator. It excites great capillary action, even to the discussion of indolent tumors. Patients are so excited and toned up by this bath, that they are apt to take more than is prescribed to them.

An Ascending Douche, or fountain-bath, may be constructed with a rising stream of water, so as to act upon the lower part of the pelvis. It is excellent for piles, disease of the prostate, and seminal weaknesses in men, and similar affections in women.

Head-baths, hand-baths, foot-baths, etc., are full or partial immersions of these parts in water. When the feet and hands are habitually cold, they may be heated together, by dipping them in cold water a moment, then taking them out, and rubbing the feet with the hands, and repeating the process until both are warm. This is very well—better than warm bricks, which are debilitating; but when health is restored, and the circulation becomes vigorous, there is no trouble about cold extremities.

The Vapor-Bath.—The steam or vapor-bath is not much used in water-cure, but where a quick and powerful action of the skin is desired, it may be useful. In severe colds, with a dry skin and chilly extremities, a single vapor-bath, followed by a good wash down, sometimes effects a cure. Sit in a common cane bottom chair, have quilts pinned around you, so as to leave your head free; place under the chair a tin vessel of

water, over a spirit lamp. The water, to save time, may be first brought to the boiling point. For want of a proper lamp, the alcohol, or strong spirit of any kind, may be burnt in an open cup. Or, placing boiling water under the chair, the steam may be raised by putting in it hot irons or stones. It does not matter much, so that you get the steam. In a few moments the perspiration begins. It may go on for twenty minutes. Come out, and take a thorough cold bath. This must never be neglected. It is the only way in which the skin can be left in good condition.

The Wet Compress.—This is a napkin or towel, wrung out of cold water, folded into four or eight thicknesses, and laid upon the part affected. If it is an inflamed part we wish to cool, it may be left uncovered and often renewed. If, on the contrary, it is a torpid part, in which we wish to excite action, we cover the compress, and let it remain acting like a poultice. This last application is of great use in cases of indolent swellings, rheumatic joints, torpid livers, indurated spleens, weak stomachs, etc.

The Wet Bandage.—This is an extension of the compress, and one of the most convenient and salutary applications in water-cure. As commonly worn, it is a towel, folded two or more thicknesses, so as to make a girdle ten inches wide. It is wrung out of cold water, and pinned around the loins so as to cover the lower part of the abdomen. It is a wonderful support, and strengthens better than a bushel of body braces, supporters, or any sort of mechanical harness, which weaken the very muscles they are intended to aid. I have seen a person who had sunk down in utter ex-

haustion, unable to speak or rise, get up and walk off as well as ever, by simply having the bandage wrung out of fresh cold water and reapplied. This also should be worn during pregnancy, and in all cases of female weakness. It acts upon the great nervous centers of the abdominal and pelvic viscera. It may be worn night and day, and renewed as often as it gets dry or feels uncomfortable. If it cause chilly sensations, wear more covering or a dry bandage, flannel, or otherwise, over it.

Wet bandages are also worn around the middle, to strengthen the stomach, and excite the action of the liver—around the chest, in bronchial and pulmonary affections, to relieve the mucous membrane, by exciting the action of the skin—and around the throat, in either acute or chronic affections in that region.

The Wet Jacket, made of toweling or coarse linen, or cotton, without sleeves, and so as to cover the whole chest, with a tolerable fit, pinning over in front, may be wrung out of cold water, and worn as a substitute for the bandage. Wear clothing enough, night and day, so as not to chill. This jacket has been a coat of armor against consumption in a vast number of cases.

The Wet-Sheet Pack.—This is the most wonderful of all the inventions of Priesnitz, though he was not the original inventor. It was probably original with him, and he is entitled to all the credit of bringing it into general use as a curative agent of astonishing efficacy.

A pack consists of one or two comfortables, three or four woolen blankets, and a linen or cotton sheet.

First spread the comfortables on a bed, with the pillows under them. On them spread the blankets, all

smooth and nice. If the weather is cold, and they have been brought from a cold room, warm them a little. Now wring the sheet pretty close out of cold water—spread it on the blankets. Now let the patient lie down at full length on the sheet, which must be quickly folded around him. This is rather cool. Then bring over the first blanket, first one side and then the other, drawing it closely around the neck, tucking it about the feet, and making it snug all the way down. The patient feels better. Do the same with each blanket and comfortable, making all comfortably snug. The Germans put a small feather bed over all, and tuck it in well; but the comfortables will answer the same purpose. See that the feet are well wrapped up, and that the head is in a good position. If the patient is feverish, the sheet may cover all but the face. If inclined to be chilly, the sheet may only come down to the ankles. Sometimes we begin by letting the sheet come down only to the knees; sometimes by only putting a wet towel around under the arms. These are partial wet-sheet packs.

In most cases, the sensations of the patient in the pack are delightful after the first shock of the sheet. In five minutes there is a glow all over the body; then comes an indescribably calm, soothing feeling, from the emollient effect of the wet sheet upon the skin, or the nerves of sensation. All pain is relieved better than by any opiate. Generally, in ten or fifteen minutes, the patient is in a calm, beautiful sleep. In an hour or so, he breaks out into a profuse perspiration. Now is the time to take him out, by undoing the coverings quickly, and as quickly giving him some kind of a full bath, a dripping sheet, a sponge-bath, a pouring-bath, or any

kind of a quick thorough wash-down with cold water. A good wiping and rubbing with coarse towels and the bare hands, completes the operation.

Some of our water-cure doctors have got up a fancy for giving wet-sheet packs of only fifteen or twenty minutes long. These may be very good as invigorating baths, but I am sure that they do not act upon the skin so thoroughly as the longer ones; and where patients react slowly, a pack of twenty minutes is hardly a beginning. The rubbing wet-sheet, or what I have called the dripping sheet, must be about as good as these short packs. In fevers, however, they may do very well; and must be of service in any case where there is quick reaction.

There is no absolute time for a wet-sheet pack. One patient may be hot, restless, and even in a perspiration in half an hour; another may warm up slowly, and require to stay in two hours. When the pack is likely to be a long one, let the patient empty the bladder just before going in. In long packs, a urinal may also be put in, so as to be used without coming out.

For children, the blankets may be folded, and the sheets made of a proportional size. Infants a week old take the full wet-sheet packs with great advantage. In all the diseases of infancy, in the inflammation and irritation of teething, in pain of the bowels, in feverishness, it is a specific. In measles, chicken-pox, and scarlet fever, it can not be too soon resorted to, nor scarcely too often repeated, except in delicate children, where packing in the wet sheet, after the fever, is resorted to, may be injurious. It brings out these eruptions in the most wonderful manner. The crossest, sickest

baby generally goes to sleep in five minutes after being put in the pack.

The Sweating Blanket Pack is the same process, but without the wet sheet. Pack the patient in blankets thoroughly, and let him stay in until he sweats. If not too tired, he may sweat half an hour; then take him out, and give him a bath.

The blanket pack may also be given just long enough to accumulate heat, so that the patient may take a cold bath with advantage. The sweating pack is used where we wish to purify the system rapidly by the action of the skin, and where we wish to excite this organ. It may be used alternately with the wet-sheet pack in skin diseases, as salt rheum, in chronic rheumatism, in asthma and bronchitis, and in all torpid and poisoned conditions. Patients full of quinine, calomel, opium, or tobacco, if they can bear this process, find it a rapid means of cure. In affections of the throat, which have resisted Dr. Green's method of cutting and cauterizing, the blanket pack often proves successful, alternating with other methods, especially with the wet-sheet pack.

I have already spoken of injections to the rectum and vagina. The latter should be cold, and taken with a syringe that will hold eight or ten ounces, with a curved tube, the globular end of which is pierced with several small holes. By this means a mass of cold water may be thrown forcibly upon the uterus. These injections, to the amount of two quarts at a time, may be taken four or six times a day, and no woman should be without the means of taking them. They remedy, and if persevered in, with other right habits,

cure every weakness and disease of the female sexual organs.

There are a few practical observations, which may best find a place here, and which the reader may do well to attend to.

Be bold, but not too bold. The heroic treatment is very good, for those who have but little need of it, and in acute diseases. Old persons, delicate women, and feeble children must be treated with care, and it is best to be safe—to make the water a few degrees warmer—than to do mischief.

There is danger in certain persons of producing congestion of the lungs, by giving too cold sitz or other baths. Feel your way.

It is not necessary to suspend treatment during menstruation. Time is needlessly lost, and it is at this time that women most need treatment. Wear the bandage, take sitz-baths, and use the vagina syringe the same as ever. This may seem strange, but it is the result of experience in hundreds of cases. This is especially the case, where a course of treatment has been already commenced.

All sheets, bandages, compresses, etc., used in water-cure must be washed every day, and often boiled, or they are made very filthy by the impurities which come from the skin. If the same cloths are used without washing, these matters are reabsorbed.

Every mother should have a small syringe, holding two or three ounces, to give injections to her infants. Some children have torpid bowels until they are three months old. Much medicine and misery may be saved by the use of injections.

A water emetic should be taken whenever there is any gastric irritation. Drink as much lukewarm water as you can swallow, then tickle the fauces with your finger or the feather end of a quill. Repeat the operation as often as needed.

No cold bath, pack, or any process requiring reaction, should be taken within half an hour before or two hours after a meal. When the blood and vitality are in the skin they can not be secreting gastric juice for the stomach, nor *vice versa*. We can not act powerfully with two organs at the same time, and the blood and vitality go where there is the loudest call. Eat a hearty meal, and then take violent exercise, or exert great mental effort, or take a cold bath, and you produce a chill, or, perhaps, vomiting—perhaps a long fit of indigestion. When one part of the organism has got a hard job to do, let it have the requisite vitality. Don't divide your forces, or you will be conquered in detail.

Bathing is exercise. If any other be taken, let it be vigorous and brief before and after. If tired, when you ought take a pack, and there is any doubt about your reactive power, rest awhile.

At the risk of repeating some things I have said, and anticipating some I may yet say, I copy here a portion of our printed directions to patients for whom we prescribe water-cure treatment:

Dr. T. L. NICHOLS and Mrs. MARY S. GOVE NICHOLS, water-cure physicians, have prepared the following rules of treatment, diet, and regimen, to aid their patients, and facilitate the home practice of the water-cure.

The mind of the patient must be free from all care, trouble, anxiety, sorrow, or irritation. Avoid gloomy conversation and thought. Shun

repulsive occupation and unpleasant society. Be cheerful, and hope for the best.

Labor or exercise so as to produce moderate fatigue, but not exhaustion. No greater fatigue should be incurred than a night's rest will remove. Exercise in the open air, and as many muscles as you can. If walking is too exhausting, ride on horseback or in a carriage. If not able to take exercise, be rubbed freely over the whole body.

Be much in the open air, and have all your rooms well ventilated. Windows should be open at top and bottom, with no impediment from shades and curtains. Breathe pure, fresh air, night and day. Have your rooms light as well as airy.

The dress must be light, loose, clean, and comfortable in regard to temperature. No article must be worn at night, that is worn by day; and all clothing, for person or bed, should be thoroughly aired, daily and nightly. Wear cotton under-clothing, and flannels over, if necessary.

Sleep on a mattress of hair, wool, straw, etc.; not on feathers. Be covered with sheets and blankets; not cotton comforters.

A water-cure diet excludes all fat, greasy, oily substances, except a small quantity of good butter; all smoked, very salt, or preserved meats and fish, pickles and preserves; all pork, lard, sausages, mince pies, geese, ducks, veal, eels, and all oily fish, and all high-seasoned made-dishes, gravies, sauces, rich cake or pastry, spices, or condiments, except a moderate use of salt and sugar, honey or molasses. Tea, coffee, spirits, tobacco, and all medicinal drugs, are strictly prohibited.

A water-cure diet may include the following articles, which we have endeavored to place in the order in which we prefer them, under their several heads:

1. *Farinacea*.—Wheat, unbolted, as bread or mush; oatmeal mush or gruel; Indian corn bread, hominy, etc.; rice, tapioca, sago, arrow-root, etc.

2. *Fruit*.—Apples, peaches, pears, strawberries, grapes, whortleberries, blackberries, plums, bananas, melons, oranges, figs, dates. In winter, stewed apples, peaches, prunes, etc.

3. *Vegetables*.—Potatoes, common and sweet, green peas, green corn, turnips, squashes, beets, broccoli, Savoy cabbage, shell and string beans, oyster plant, spinach, spring greens, etc.

4. *Animalized Substances*.—Milk, cream, butter, mild and tender cheese. Eggs, soft boiled, poached, scrambled, or made in a custard or omelette—and, in all cases, slightly cooked.

5. *Fish*.—Scale fish, fresh and in their season. Oysters, do., raw or cooked rare.

6. *Flesh*.—Lean mutton, beef, venison, and similar wild meat; chicken, turkey, wild fowl of a similar character.

The best cures are made upon a simple vegetable diet. When persons *will* eat animal food, the above varieties are least hurtful.

A *strict diet* consists of a few of the best articles of farinacea and fruit, with a little milk, in all not exceeding six ounces of *nutriment* a day.

A *moderate diet* may include a greater variety of articles, and ten ounces of nutriment.

A *full diet*, suitable to a condition of health, may vary from twelve to sixteen ounces of nutriment a day.

N. B. Ten ounces of nutriment is contained in about twelve ounces of uncooked wheat, rice, corn, or oatmeal; forty ounces of uncooked flesh, and still larger quantities of many fruits and vegetables, the rest of the weight being water, and innutritious substances.

Eat slowly, masticate thoroughly, and be sure that a single ounce more than the stomach can readily digest, without uneasiness, acts as an irritant, and exhausts vitality. Rest mind and body after every meal. Take no bath for half an hour before, or two hours after eating. Eat at regular intervals. When more than two meals a day are taken, let the last meal, at night, be lightest. If in pain, or wearied, or without an appetite, *fast*. Fatigue, before eating, may hinder digestion, as may labor, excitement, or any exhausting process after it.

No food should be put in the mouth hot; and none should be *swallowed* cold; that will be prevented by a good mastication.

Milk being classed as food, the only drink should be pure, soft water. Where the spring water is hard, filtered or clean rain water is better. The quantity drank may be in proportion to thirst and exercise, but even pure, soft water may be taken to excess. If drinking chills, sip it slowly, and in small quantities at a time.

Where the capital stock of *vitality* has been reduced, it must be husbanded with care. Amative excitement and indulgence, of whatever kind, and under whatever circumstances, must be carefully avoided. More vitality may be lost in one moment, than can be gained by weeks of persevering treatment. In the young of both sexes, the debilitated, those laboring under chronic disease, in female weaknesses, and during gestation and lactation, there should be no excitement of the reproductive system. Parents can not too carefully guard their children against the health and life-destroying abuses of this function, from which the period of infancy is not always exempt.

It will be evident that in the water-cure processes

we act chiefly upon the surface of the body. This surface comprises about fifteen square feet. It contains millions of sudoriferous or sweat-making glands, and a vast number of sebaceous or oil secreting. It contains an immense capillary reticulation, and a wonderful expansion of nerves, both organic and sensational. In acting upon the skin, we have the means of influencing the whole system as we can in no other manner. We can weaken or strengthen, enliven or depress, bring the blood to the surface or drive it back upon the viscera. [See Appendix.]

By exciting the action of the skin, we rapidly free the system of its impurities, and relieve, rest, and invigorate the internal organs. An oppression of the lungs is relieved almost instantly by opening the pores, and increasing the action of the skin; a diarrhœa is quickly cured by making the skin throw off the matter which is coming from the mucous membrane. Profuse expectorations from chronic bronchitis are rapidly diminished in this way, and attacks of asthma relieved and cured.

The changes of nutrition, waste, and excretion are so much quickened in water-cure, that Liebig, who examined it carefully at Graefenburg, says in a letter to Sir Charles Scudamore, that as great a change is often effected in six weeks as would be accomplished in three years without it. The system is therefore freed from its old diseased matter, and built up with new materials with wonderful rapidity. It is rather important, then, that the new matter of nutrition should be of the purest quality.

The quantity and quality of morbid matter thrown

from the skin, the lungs, the kidneys, and the bowels, during a course of water-cure, is sometimes astonishing, even to those best acquainted with its efficacy. The bath-room is filled with dense vapor by the active skin; and we can smell opium, tobacco, mercury, and other drugs which may have been taken years before. The blankets used in packing require to be thoroughly aired every day. I have, at times, been badly poisoned by inhaling this diseased matter, when I have worked over patients, and I was once inoculated with it, by handling a sheet in which a patient had been packed. One patient at our house amused himself with collecting little globules of mercury which came out under his wet bandage, though he had taken none for years. Bandages and sheets are often deeply stained by matters which come from the skin, and they are at times so corroded as to fall in pieces. It is not uncommon to have them stiff, as if they had been starched, with glutinous exudations.

But at times, and especially when packing and bandaging is not enough attended to, these outpourings of morbid matter are of a more violent and painful character. This is what is called *crisis*. There is a sudden breaking up of morbid matter, which comes away in a mass, sometimes by a flood of thick or gravelly urine; sometimes by a violent sweating which lasts for days; sometimes by vomiting, but this is rare, often by a diarrhœa which will last for a week and carry off an unaccountable quantity of matter; very commonly by an eruption on the skin, which may come out over the whole surface, but more likely under the compresses and bandages, or over the seat of disease; or, lastly—and

this is the severest form of crisis—the patient may have crops of boils over the whole body. I have known forty at a time. They are unpleasant, but bring a wonderful relief. As they pour out matter, the internal organs are left free from it, and I have seen a troublesome cough, with profuse expectoration, quite cured by the appearance of a crop of boils over the chest, which threw off matter precisely like that which had been expectorated. All these facts go strongly to confirm Francke's theory of the "sliming up" of morbid matter, until some action is set up by nature, or by water-cure processes, in aid of nature, to set it free. When the system is filled with this matter, though we may seem to be in health, it is always oppressing us; a large portion of our strength is expended in guarding it; the least disturbance, as cold or fatigue, sets free a portion of it; it always tends to any exhausted or weakened part; it finds its way into wounds; it keeps up ulcerations; it is liable to oppress the brain by tuberculous gatherings, or cause consumption of the lungs, or disease of the mesenteric glands, or other fatal disorders.

In the scientific and judicious practice of the water-cure, this matter is carried out of the system, generally without any violent crisis. A pure nutrition supplies the place of the bad matter removed, and the whole organism is built up afresh. When crisis occurs, the patient is to fast, rest, and moderate his treatment. Use the water a little less cold; in sweating, wash often; in diarrhœa, fast and take frequent injections; in eruptions and boils, take wet-sheet packs.

I wish to give here, very briefly, two cases illustra-

tive of the foregoing facts and principles. Those who wish for more may find them in abundance in Mrs. Nichols' "Experience in Water-Cure," in the *Water-Cure Journal*, and in various works on Hydro-pathy.

Mrs. —, of New York, about thirty, married, was brought to Mrs. Nichols, covered with salt rheum, blind, deaf, and her hair all gone, her whole head and face being covered by a frightful scabby eruption. She was also suffering from dyspepsia, and uterine disease. *Treatment*—strict diet, wet-sheet packs, bandaging, sitz-bath, vagina syringe. *Result*—within three months, her dyspepsia was gone, her uterine system relieved, her skin smooth and beautiful, her sight and hearing restored, and her head covered with a growth of thick, glossy hair. She was changed from a suffering, hideous, and disgusting object, to a very beautiful and happy woman.

Mrs. —, of New York, forty-three, married, and the mother of five children; the youngest, some fourteen years old. Sick twelve years—dyspepsia, rheumatism; had not menstruated for five years; "best medical advice," and been twice to London to consult distinguished physicians; reduced to the lowest extremity. In four months, this lady could walk a mile; she grew fresh, young looking, and strong; her menses returned, she became pregnant, and at the full time, was delivered of a healthy boy. All well and happy.

The history of water-cure is full of such cases, which have defied every kind of medication, but which yield to its benign applications. In all cases of this kind, two things are needed, purification and invigoration; both

must go on together, and they reciprocally aid each other.

There are diseased conditions which no treatment can cure, or long relieve. When a vital organ has been destroyed, or made permanently useless, the patient must sink. When vitality has been so exhausted by any cause, that the process of purification can not be carried on, the poor body must clog up and perish. When a certain amount of disease has settled upon the brain or its membranes, or the spinal cord; when the lungs are solidified or disorganized, so as to prevent the uses of respiration; when the liver can no longer perform its function; when digestion is destroyed; when the mesenteric glands are solidified or tuberculated, clogged up with diseased matters; when the kidneys fail; when the heart is disorganized; when the organic nervous system can no longer give vigor to the capillary system, and carry on the processes of nutrition and secretion, then comes the inevitable Death. A wise use of the directions given in this book will aid nature in doing all possibilities; but God can not perform impossibilities.

CHAPTER XXI.

DISEASES AND TREATMENT.

Nothing seems more difficult than to make a clear classification of diseases. All the systems that we have are defective, and some are involved and incomprehen-

sible to the last degree. The most natural classification is that which is based on physiology; but in this there is still room for simplification. In medical books we have enumerated—

Diseases of Periods—infancy, manhood, old age.

Diseases of Sex—as those peculiar to men and women.

Diseases of Regions—as of the head, chest, abdomen, pelvis.

Diseases of Condition or Callings—as of the rich, the poor, professional men, literary men, artists, manufacturers, laborers, etc.

Diseases of Function—as of digestion, circulation, respiration, secretion, innervation, generation, gestation, locomotion, etc.

Diseases of Tissues—as of the skin, mucous and serous membranes, vascular, nervous, fibrous, osseous tissues, etc.

Diseases of Organs—as the eye, ear, throat, brain, lungs, stomach, liver, kidneys, uterus, etc., etc.

Then there are febrile diseases, cachectic diseases, diseases caused by poisons, and scores besides. I shall make short work of all this, though I do not feel called upon to construct a new classification, or to make a new nomenclature. The last is no easy matter. It is like making a language. To be understood. I must use the words that others use, however vague and ambiguous they may be. I shall, therefore, in view of all I have written on the nature and causes of disease, first speak of some diseases which affect the whole system, with particular local determinations; then of diseases affecting some of the most extensive tissues; next of diseases of

the general organic functions, then of the animal; specially of the diseases of the generative function; and finally of the management of the processes of gestation and parturition. Before proceeding, however, with diseases and treatment, I must endeavor to give a few hints on diagnosis, or the method of ascertaining the nature and seat of disease. I do this, that the reader may examine his own case, or that of a friend, or, if he believes it necessary, that he may give the requisite information, when he consults a physician. But, if possible, I wish to save him from this necessity, and I mean that it shall not be my fault, if I do not. Let us now proceed to an examination of a case.

The points to be known are, age; sex; condition, bodily, mental, and social; relations, married or single, children, etc.; parentage, and the probabilities of hereditary predispositions; past history of patient, diseases and medication; regularity of certain functions, as menstruation or defæcation; the amative function, strong or weak, exercised or not, solitarily or socially, and, in either case, to what extent; present condition; pain; tenderness; derangement of action, and what kind; pulse; respiration; state of mind and temper; strength; disposition to exercise; state of the skin, tongue, teeth, hair, senses.

There are nervous affections dependent upon exhaustion, that are difficult to locate or find a name for; flying pains which change about from one part to another; the feelings usually termed hysterical, and states of depression and general weakness, which come from bodily, or mental, or spiritual exhaustion. But in most cases, we are able to locate a disease in the head,

the chest, the abdomen, the pelvis, the bones, the joints, the muscles, the nerves, the blood-vessels, the glands, the membranes, or the skin. We pursue the investigation until the complaint is cornered. We find where it is not, and then narrow it down to where it is. In a personal examination, the physician, taking in with one glance twenty other particulars, as they are disclosed by the appearance, complexion, weight, motions, attitudes, and tones of the patient, may ask first of all, "Where is the pain?" Another will sit down more patiently, and say, "What is the story?"

There are certain signs of disease which are worthy of special attention.

A bad smelling breath is a sign of foul or decaying teeth, indigestion, or constipation.

Early decay of the teeth is a sign of hereditary weakness, early exhaustion, or chronic dyspepsia.

A tongue creased, and cut into deep furrows, is a sign of dyspepsia.

Light hair, fair complexion, and a thick upper lip, are signs of scrofula.

A thick, pouting under lip, a thick neck, and a full bosom, are signs of amativeness.

A dry, hard skin, and cold extremities, are signs of nervous exhaustion. Hollow eyes, dark circles around them, flabbiness, and emaciation, are all signs of exhausting causes of disease. A moist, clammy skin is sometimes found in dyspepsia.

A pulse steadily above a hundred a minute in an adult, indicates high general fever, or severe internal inflammation. If in a chronic case, and combined with regularly progressive emaciation, it indicates a

dangerous and probably fatal disease of some vital organ.

An unnaturally slow pulse, a feeble pulse, and an intermitting pulse, are signs of great nervous exhaustion. A small pulse with rigors, is a sign of internal congestion, or what is the same thing, a want of action in the external capillaries.

Paralysis, insensibility, with regular and rather slow pulse, and deep breathing, show compression of the brain from injury or apoplexy.

Delirium, is a sign of cerebral congestion without effusion.

Other signs of disease will be noted as we come to the symptoms which characterize those we are about to describe, for the aggregate of symptoms is the real description of a disease.

In water-cure, as in allopathy, we prescribe not for names, but for conditions; there will seem much uniformity of treatment, but there is no more than the similarity of condition demands. The water-cure practice is more varied than allopathy, in which, out of a thousand medicines, scarcely a dozen are used in a hundred cases.

CHAPTER XXII.

PASSIONAL DISEASES.

I RESPECTFULLY beg leave to be honest enough to say, that I am not sufficiently well acquainted with spiritual diseases, or morbid affections of the faculties and passions of the soul, which are not wholly, or chiefly, or primarily dependent on organization. I know a few, and have a general idea of their causes and treatment, but I do not profess to have a perfect knowledge of this branch of my subject. I wish I could refer the reader to some abler authority.

Home Sickness is a common, and sometimes a fatal disease. Its cause is simply a removal from home. The more striking the change, the severer the malady. A Swiss who leaves his Alps, an Arab taken from his desert, and a Greenlander from his icebergs, all suffer from the pangs of this disease. It is marked by a pining, melancholy, sighing, weeping, depression, and death. The cure is to return home; if this is impracticable, some other passion should be excited, as ambition or love.

Love Sickness is like the last, but more common, and commonly more severe. A disappointment in love sometimes crushes and kills; sometimes slowly, sometimes at once. The patient may die suddenly of a broken heart, or gradually pine away. The diseased

passion, affecting its organ, acts upon the general vital power, and any disease may ensue from this cause.

Its symptoms are like those of home sickness, but more tender and pitiful. Sometimes the intellect is affected with a temporary or permanent derangement.

Union with the object beloved is a cure, if it comes in season; a cure is also often happily effected by transferring the affection to another object. Other passions also are a relief, and any employment of the mind which interests or gives vivid pleasure. Travel, art, reading, occupation, benevolence, and religion, are all useful.

Religion, or the combined passions of faith, hope, reverence, and conscientiousness, is often in a state of disease. We have no mad-house without its maniacs from religion and love. As this is a more complex sentiment, its modes of disease are more varied. Great efforts are made in revivals, camp-meetings, and on many other occasions, to excite this feeling; and we often see its morbid manifestations. These are, at times, reflected upon the body, producing strange convulsions, swoonings, paroxysms, and ecstasies. In its mild form it is enthusiasm; in its severe, fanaticism; in its repulsive, it is bigotry. This disease is often acute, and commonly epidemic. It is also clearly contagious. It spreads like small-pox or measles, through a community; disappears for a long time, and then comes back again. It is probably kept alive by chronic cases. As in other epidemic and contagious diseases, some are easier to take it than others, some are not susceptible, and most have it but once in their lives; there are some, however, who suffer from repeated attacks.

This is as genuine a disease as I shall have occasion to describe, and its effects are of a very deplorable character, moral and physical. It may be treated by awakening other passions; by occupying the faculties of industry and ambition; and especially by the cultivation of science and the reasoning powers. Women are more liable to it than men, and youth more than persons of mature age; the ignorant, also, much more than the educated; and those who have few thoughts, occupations, and enjoyments, more than those who have many.

The state of the bodily health and this faculty have reciprocating influences; and this is also the case, to a great degree, with other passional diseases. A dyspeptic person, or an exhausted one, is more liable to these paroxysms than a strong and healthy one. One of the symptoms is a continual vociferous and senseless praying; another is a disposition to exhort every body, and endeavor to affect them in the same manner, which is, indeed, a characteristic of passional diseases; another consists in terrific ideas of God, and hell, and a future damnation. The sufferer seems to stand on the brink of a fiery gulf, and fancies that the whole human race, with a few exceptions, are plunging into it, and suffering an eternity of tortures. There are milder cases, in which the patient dwells more on the ecstasies of the heavenly state. The chronic cases are full of a dull, bitter, vindictive, persecuting feeling; all entirely contrary to any proper views of our relations to the Deity.

The water-cure, by its purifying and invigorating effects, has a remarkable power over this disease; and, as the bodily health improves, there comes a healthier

state of feeling. I have seen this in many cases, and some of considerable severity.

A few months since, I was called to see a poor preacher in New York, who had been down in New Jersey, attending a protracted meeting. His head was very hot, and he prayed all the time. I had him put in a wet-sheet pack, and his head surrounded with snow. This was kept up for five or six hours; he ceased praying, slept, became rational, and was saved from speedy death or a mad-house.

Acquisitiveness or the passion for wealth, is diseased much like the last-named faculty. Like that, too, it often comes from hereditary tendencies, and is congenital and chronic in many persons. Its moderate symptoms are meanness, grasping, cheating, lying, and small duplicities. In more severe forms, it shows itself in swindling, theft, robbery, and it sometimes excites to murder. It is epidemic and contagious, as is shown in periodical seasons of speculation. It is not unfrequently a cause of hopeless insanity, suicide, or death by other diseases. Gambling of all kinds is one of its manifestations. Its acute access sent thousands of poor fellows to perish in California; its chronic manifestations are a cold selfishness, and a steady determination to get rich by defrauding others by the common methods of profits, and what the French call *exploitation*.

Palliatives for this deeply-rooted disease may be found in education, in the cultivation of science, benevolence, and conscience; and in the general development and harmonization of the faculties and passions. In these diseases of the soul, as in those of the organic system,

we must equalize the spirit circulation and action, energize the mind, and purify it of false ideas. The analogy is precise, and the same means answer reciprocally in both cases. For this, and some relative diseases, I cordially recommend Mr. Andrews' work on the "Science of Society." The writings of Fourier may also be read with advantage.

Benevolence is liable to similar disease, manifested in absurd, misplaced, ill-timed, and inappropriate philanthropies. It is morbid in its objects and manifestations. Distributing tracts at the Five Points, where people are in want of the necessities and common decencies of life, and sending missionaries to be eaten by South Sea cannibals, are among the curious symptoms of this affection. Justice and common sense are proper antidotes.

There are morbid excitements of the faculties which do not deserve the name of diseases, which have a certain degree of permanence and disorder.

Pride, or *haughtiness*, is often a disease. Both *Ambition* and *Vanity* may become such.

Jealousy is a very bad and a very prevalent passional disease. Its symptoms need no description. Few cause more anguish to the sufferer, or more discomfort to others. It is often treated as a wickedness—we may call it so, if we please, but it is a disease. A wickedness, properly speaking, is a voluntary thing. Jealousy is involuntary. It is sudden or gradual, violent or mild, acute or chronic. It has its own internal, predisposing cause; but the external, exciting cause may be either real or imaginary. It is a morbid manifestation of love, combined with distrust, fear, and spiritual poverty.

How shall we cure jealousy? It has been argued against by the philosophers, and ridiculed by the wits of all ages. In some countries it seems to be nearly eradicated; in others it rages with intensity. The same man may have it severely at one period of his life, and be quite free from it at another. It disorders the mind, sours the temper, affects the appetite and digestion, seems to interfere with the bilious secretion, and gives a dull, hard pain around the heart. It leads oftener than any other passional disease to suicide and murder.

The latest prescriptions, by those who have undertaken to cure passional and social diseases, are, "Freedom in love relations;" the "sovereignty of the individual over all laws and institutions;" "monogamy for the exclusive; polygamy for those who are made for multiplied relations," etc., etc. Owen taught us communism; Fourier prescribes composite harmonies, under the law of attraction; the Oneida Perfectionists believe in free love and free criticism; the Mormons have spiritual wives *ad libitum*.

I have little to offer. Jealousy seems to me to depend on certain causes, which must be removed before we can have a cure. A morbid acquisitiveness gives men and women a feeling of property or ownership in each other. Cure this, and we do much to cure jealousy. When it is conceded that every man and woman has a supreme right to himself or herself, these jealous claims will not be set up to each other. With greater affectional riches, or more scope for both friendship and love, we should not be so craving for a particular object. When a man or woman is totally absorbed in

one passion, it must become morbid. This love absorption is as sick as it is sickening. Enlarge the spheres of both sexes, and we should have the soul flowing out into other channels. Men of great minds, great and varied pursuits and ambitions, never die of jealousy. The cure, then, is as in the cases of the others—give rest and equilibrium, by bringing other passions into play.

These examples of passional diseases will be sufficient, perhaps, to illustrate the subject, and to call the attention of pathologists to a branch of medical science which has been almost wholly neglected.

In passional diseases, we must adopt corresponding modes of treatment. How many are cured by friendship, or ambition, or love! How many are benefited by music, by books, by society. I have known a severe and long-continued fit of mental depression to be cured by a single tune. I have known a world of new life to come into the soul from a beautiful picture, or oftener from a beautiful woman.

There are forms of morbid, mental, and moral phenomena, which may be merely glanced at. What is called genius is often a disease. *Stage-struckness* is a violent kind. So is the sublime longing that boys have to go to sea. *Romanticness* is mostly diseased, and commonly connected with excitement of amateness. *Adventurousness*, such as embarking in ill-planned and ill-starred expeditions, is a contagious disease. Political and other similar excitements, are not always free from a morbid element. Intelligence, and the cultivation of calm, deliberate powers of reasoning, will do much to overcome these forms of disease. Like the diseases of

infancy, too, we mostly outgrow them, and we shall altogether in time.

I can not omit here what is to me an evident fact, that there are diseases affecting vitality, higher or deeper than those we have just considered. There are causes affecting the health of the spirit and its hold upon the bodily organization, into which I seek in vain to penetrate. Strength comes to us from sources we know nothing or but vaguely about; and we are overwhelmed with weakness and despair, from similar occult influences. We see the spheres of being around and below us, or external to us, but we have only dim revealings of those which are above or internal. There are, however, multiplied evidences of their existence, in and out of our own interior consciousness. Of the nature of such diseases, or their causes, I am not yet able to speak. I can only say, generally, that as the best way to keep a healthy mind, is to give it a healthy body for its basis, so the best guarantee for spiritual health, is that of the combined animal and organic systems.

CHAPTER XXIII.

DISEASES OF THE GENERAL SYSTEM.

I SHALL now endeavor to give such an account of diseases and treatment as the reader can perfectly understand, and may find practically useful. It is done with brevity, because I have already laid down the broad

ground of principles, which must never be lost sight of; and I must be permitted to again warn you that a careful perusal of all the preceding portion of this book is necessary to an understanding of all that is to follow. I shall begin with some general diseases, and follow with diseases of systems, organs, etc.

OF FEVERS.

Fever is the name given to a general and somewhat violent effort of the system to free itself from the matter of disease. It is, therefore, more a disease of impurity than of exhaustion. Fevers are characterized by pain, heat, excitement of the circulating system, over-action of the organic, and consequent prostration of the locomotive.

The causes of fever are too great quantity or bad quality of food, want of cleanliness, bad air, poisonings of many kinds, with so much exhaustion, that the system can not rid herself of their effects without a special effort. The immediate cause of an attack of fever may be chill, fatigue, worry, or any unusual cause of disturbance or exhaustion.

Fever begins, generally, with a chill or rigor, followed by pain in the head, back, and limbs, weakness, heat of the surface, throbbing of the arteries, loss of appetite, constipation; there is great thirst, quick pulse, hurried breathing; it terminates with more or less violent critical action, generally of the skin, in profuse sweatings, often with copious discharges from the kidneys and bowels.

The action in fever may be concentrated upon some particular portion of the system. If the disease is

chiefly local, it is called inflammation, and the fever is considered sympathetic or symptomatic; but if there is much general disturbance, we speak of brain fever, lung fever, gastric fever, etc.

Intermittent Fever—chills and fever—fever and ague is one of the simplest and best defined forms of this disease. It begins with a chill, or rigor, which may last from half an hour to two or three hours; be mild or severe, with a shivering of the whole body, and a feeling of coldness which no fire can warm. The external capillaries collapse, and the blood is thrown upon the internal organs. The second stage is that of fever, with pain, throbbing, heat, thirst. This lasts an hour or two, and is followed by a crisis of perspiration. The attack is repeated on the next day but one, the third, or even the fourth day.

Cause.—Malaria, acting upon a system too weak to resist, or free itself in any other manner.

Effects.—This disease is not generally considered dangerous, but it is sometimes fatal to a weak and exhausted person. I have known the chill produce general collapse and coma, from which there was no reaction. As usually treated by quinine, arsenic, piperine, and other violent or insidious poisons, the cause of disease and the remedies both remain in the system, producing various chronic diseases.

Treatment.—As in all cases, we must aid nature in her efforts, keep them within safe limits, and as far as possible invigorate and purify. If practicable, the patient should remove from a malarious region. This alone is often sufficient for a cure. But if we must labor under the disadvantage of curing the disease,

while subject to its cause, we must do the best we can.

The chill may be broken by a very cold pouring bath and rubbing, or by the half-bath. This produces a more rapid reaction. After the cold bath and rubbing, the patient may be enveloped in blankets. He may drink water freely, but not too cold. When the fever comes on, either give a succession of dripping sheets, or a wet-sheet pack. I prefer the latter. When the patient has sweat half an hour, give him a pouring-bath or dripping sheet; place him in a clean, cool bed, and let him rest.

But in whatever way he passes through the attack, the treatment must be kept up in the intervals. In these, as often as the patient can bear them, give a succession of wet-sheet packs. Every thorough pack is an artificial fit of chills and fever. When you go into the sheet, you have the cold stage; you react, heat accumulates, and you have the hot, or fever stage, and then comes the final stage of perspiration. This is nature's mode of cure. Every pack expels so much disease. By giving a rapid succession of packs, you may cure any ordinary case in from one to three weeks.

When the stomach is disordered, give tepid water emetics, and do not fail to move the bowels with daily injections.

Diet.—The less the patient eats the better, and the less he exercises or works, if he takes full treatment. The whole force of the system should be used to expel the disease.

Bilious Remittent Fever is, I believe, caused by the

malaria of intermittent, combined with other malaria and personal causes of disease. It is a fever of remissions and exacerbations; but there is no entire freedom from its symptoms, as in fever and ague.

It commences with or without a chill; followed by languor, weariness, uneasiness of stomach, pains in head, back, and limbs; then a hot, dry skin; full, bounding pulse, abrupt and frequent; restlessness, vomiting, thirst; tongue turns from white to yellow or brown; bowels constipated; stools green and acrid; severe stage lasts twelve to eighteen hours. This period usually comes on a little before noon. As the disease goes on, the vomiting becomes more frequent; there is heat and tenderness at the epigastrium, intolerable headache, and intolerance of light. The tongue becomes black, dries, and cracks; respiration difficult; pulse sinks; prostration; twitchings of the muscles; death from seven to thirteen days. Often it sinks into a low stage, and lasts twenty or thirty days.

In Malignant Remittent, a severe form, or occurring in more poisoned and exhausted constitutions, the skin is cold and clammy; countenance pale, livid, and shrunk; pulse frequent and fluttering; stupor, or low delirium; syncope. Sometimes fatal in two or three days.

Effects.—As usually treated by bleeding and enormous doses of calomel and quinine, this disease is followed by jaundice, dyspepsia, enlargements of liver, spleen, etc., dropsy, consumption.

Treatment.—Cold water is the only reliable remedy. Even Professor Dickson, an allopath, says, "its remedial value can not be exaggerated." Called to a severe case, I should try to give the patient a *cool* half-bath of

twenty minutes' duration, with *cold* water to the head. If the stomach were disturbed, a water emetic. Then a thorough injection. As the fever came on again, a wet-sheet pack, as thorough as needed, and repeated as often. Cool water to drink, cool injections to the bowels, cold compresses upon the head, the wet-sheet pack, frequent, according to the violence of the fever; these are our means of cure, and carefully adapted to the necessities of each case, and the strength of each patient, they are sufficient to cure every curable case.

Diet.—Water, until the disease is conquered, then toast-water for a few days, and, very carefully, and in the smallest quantities, ripe fruit and farinaceous food. An indulgence in the cravings of the appetite, during recovery, is very dangerous. The stomach and bowels are so weak and irritable, that a single improper meal may be followed by fatal consequences.

Simple Continued Fever.—This name is given to a fever arising from the ordinary causes, and having no peculiar local determination. It often begins with chill, then pain, langour, and feverishness. It may be slight and brief, or severe and long continued, according to the amount of impurity, and the power of the system to expel it. If there is little matter of disease, and much vital energy, the fever will neither be long nor violent. If much disease and much energy, it will be violent, but short. It may also be a mild, slow fever, or a low and protracted one. In this case we call it typhus, and it may become malignant and contagious.

The Treatment.—Most fevers terminate in health. The diseasing matter is burned up and expelled, and the freed organism goes on with its functions. But we can

guide and hasten this process. In all fevers, as in all diseases, we must surround the patient with the conditions of health. He must have pure air, cleanliness, and quiet; soft water to drink, *ad libitum*; the stomach should be thoroughly cleansed at the beginning, and the bowels washed clean at least once a day by a full injection. If the matter is acrid, twice a day is better. Let the whole skin be thoroughly washed at first with soap and tepid water. Use the wet-sheet pack as often and as long as the patient requires. If the fever is high, the packs may be short and more frequent. Sponging the whole surface, at intervals between the packs, is pleasant and useful. Fever is a fire, it is said, which we must put out. Not so; it is only an increase of a fire which is always burning. We must regulate this fire, and aid it in doing its work; and the more we wash away, the less there will be to burn.

Diet.—No fever patient has any business with food. Gruels and toast-water, rice-water, barley-water, broths, and all the slops of the sick room must be left out of it. A little lemonade is all that is allowable; and pure water is better than this. There is not the least danger in any sick person going three or four weeks without food; and we have seldom a fever in water-cure treatment that lasts half that time. When the fever is gone, begin to eat with caution, and eat and live, in all respects, so as not to have another fever.

Typhus Fever of the mild kind, commonly called nervous fever, appears to me to be only simple fever with great nervous exhaustion. It is a fever of low type and slow progress; the determination to the skin is manifested in eruptions—minute, rose-colored,

chiefly about the chest. Later, eruptions like flea-bites are seen. In bad cases, toward the end of the second week, the patient sinks into great weakness, with tremors, picking of the bed-clothes, rapid pulse, red, dry tongue, dark mucous matter around the teeth, gloom and anxiety, low delirium, coma, brief convulsions, death.

The severer form of typhus, called *Putrid Fever*, *Jail Fever*, *Ship Fever*, is epidemic and contagious. It is marked by alternations of heat and cold; hot, dry, harsh skin; distress; face turgid and dark, red flush; eyes heavy and red; severe headache; pulse small, hard, tense, frequent, irregular; tongue coated with brown or yellowish fur; nausea and retching; bowels torpid. In three or four days the tongue becomes clean, dark, red, smooth, dry, cracked; sordes around teeth; pulse small and rapid; hurried respiration, or slow and labored; foetid breath; eruption on the skin; hemorrhages, and death, from the fifth to the thirtieth day.

Treatment.—If any thing can save a patient in this form of the disease, it is the wet-sheet pack, combining invigoration and purification. Its effects seem more like miracles than the natural results of so simple a cause. But it does nearly all we wish to do. Water drinking, water injections, and the wet-sheet pack, followed by the full-bath, will cure ninety-nine cases in a hundred, even of the worst forms of this pestilential disorder.

In all cases of fever, or other disease, accompanied with great muscular debility, the patient must be handled, and not made to exert himself. It may be neces-

sary to give him all baths lying down. A large sponge is very convenient for this purpose.

Yellow Fever is classed as a continued fever; malarious and contagious. It requires prompt, thorough treatment, much the same as the bilious remittent.

Catarrhal Fever is the name given to the influenza or common cold. Rest, warmth, and the wet-sheet pack are the best treatment. Even a cold bath, followed by a good rubbing, may be sufficient to cure. A full action of the skin by the vapor-bath, warm bath, or blanket-pack, followed in either case by a cold bath, may be sufficient. The more morbid matter there is laid up in the system, the more severe are these disturbances. When this matter falls upon the nerves and the muscular system, we have painful rheumatisms. Abstinence is also a specific. Stuffing a cold, is a bad way to cure it. It may cure, as quinine cures ague, but only by making a morbid diversion, or inducing a different diseased action. Starve a cold, because a cold is a mild fever; so that even the old saw is authority for this practice. Getting drunk will sometimes relieve a local inflammation, but the practice is not to be commended.

Symptomatic or Hectic Fever, takes place in wounds and local inflammations. We are familiar with it in consumptive diseases. The whole system becomes disturbed from the local disturbance, or the action set up for the relief of one organ necessarily pervades the whole body. In this fever, which is intermittent, recurring once or twice a day, there is a quick pulse, a flush of the face, a bright, suffused eye, heat of the

skin, and thirst. It is followed by profuse sweatings. Too much food excites this feverish action.

A sponge-bath, or the dripping sheet, used at the access of the fever, and again after the sweating has commenced, does much to control it.

Night sweats soon disappear when the skin is invigorated with daily bathing.

The fevers commonly called eruptive, differ but little from other fevers.

Scarlatina.—This contagious disease commences with symptoms like those of simple fever, but with determinations to the mucous membranes, and especially the throat. These are relieved the second, third, or fourth day by an eruption on the skin, consisting of small, isolated pimples, first pale red, then scarlet; they enlarge, run together, and form large patches; last seven to nine days, and disappear with a peeling off of the cuticle. The danger in this disease is, of its whole force being thrown upon the throat or the membranes of the brain. In weakly children, in the scrofulous, and in those exposed to unhealthy conditions, especially a bad air and flesh diet, it is very fatal. With healthy children, living in healthy conditions, it is a trifling disease.

Its treatment is to promote the full action of the skin by wet-sheet packing, and other treatment as in simple fever.

Measles—contagious, and usually occurs but once. It is characterized by an eruption of semi-lunar spots of vermillion red, separated by angular, colorless intervals. They begin at the roots of the hair, and travel gradually down over the body. The eyes are apt to be affected, and later, the lungs; sometimes the bowels.

Where the skin is inactive, these internal affections are apt to be severe, as if the diseased matter, when not thrown out by the skin, found an exit by the mucous membrane.

This disease is liable to be confounded with scarlatina; but this is of no consequence, as the treatment is the same. In both, the patient must fast, drink water, have water injections, and be packed twice a day, or oftener, with spongings or pouring-baths. Mrs. Nichols gives a case of measles, in which an infant had been seven days sleepless, with no eruption. It was wrapped in a wet-sheet pack. In ten minutes it was asleep; in half an hour, when taken out and bathed, the eruption covered the whole skin, and in two days it was out of danger. I have seen other cases saved by water, which were considered past all remedy.

These diseases require prompt, bold treatment. The water must be cold, so as to insure a sufficient shock and a vigorous reaction.

The Small-Pox begins like a common fever, with chill, pains, gastric irritation, etc. In two or three days small red pimples appear on the neck, face, chest, and over the body. As they enlarge, they become white in the center. In confluent small-pox, the pustules flatten and run together. The pustules dry up to scabs on the ninth to the eleventh day, and fall off from the fifteenth to the twentieth. Contagious, epidemic, and preventable in a great degree by the artificial production of a similar but slighter disease of the cow, by inoculation. This remedy is thought, by some, as dangerous as the disease.

Small-pox owes its virulence to filthy habits and the

eating of flesh. Vegetarians of pure lives and healthy constitutions are in no danger from it, and some will not take it by inoculation.

The treatment is the same as for any fever of the same intensity ; protecting the skin by frequent packing, laying wet cloths upon it, and keeping out the light, as an additional safeguard against the pitting. It is seldom that a perceptible mark is left in judicious water-cure treatment.

Hooping Cough, I am satisfied, is of the same nature as the eruptive diseases of the skin. The dreadful cough is caused by the disease being determined to the mucous membrane. We have often cured it in a week, by abstinence, thorough wet-sheet packing, and the wet bandage around the chest.

The slighter infantile and eruptive fevers are to be treated on the same principles. Whenever a child is feverish, from any cause, there are certain things to be done. It must not eat nor nurse but very little ; it may drink cold water, as much as it likes ; its bowels must be moved, if they require it, by injections ; and it must either be well bathed in cold water, or have a wet bandage around it, or be packed in a wet-sheet pack, or all three, if the symptoms require it.

Scrofula is said to be derived from *scrofa*, a sow, because it is a disease of swine, and one occasioned by feeding like hogs, or upon hogs. It is a hereditary disease, or may be developed by diseasing causes. It causes arrest of development, accumulations of morbid matter, inflammation, softening, and destruction of all the tissues of the body. Scrofulous infants have small limbs, large abdomens, protruding chests, large heads,

weak spines, and are liable to ulcerations and hernia. Its ravages begin before birth, and end only with death. Lugol estimates that one quarter of all scrofulous children are destroyed by spontaneous abortion. Scrofulous infants die of convulsions, and dropsy of the brain, cholera infantum, consumption of the lungs, bowels, and spine, and scrofula makes all diseases dangerous. In the mucous membranes it causes sore eyes, running from the nose and ears, worms, whites, diarrhœa, etc. In the skin it produces chilblains, eruptions of the eye-lids and around the ears; pustules on the face and chest; tubercles and abscesses in the cellular tissue; rickets and rotting of the bones; tubercular consumption of the lungs, liver, and every soft organ of the body. In fact, according to Lugol, the accumulation of morbid matter, in the form of tubercle, is the great characteristic of this disease.

We can not always tell what determines the disease to any particular organ. Of several scrofulous children, one may have ophthalmia, one rickets, a third enlargement of the glands of the neck, or king's evil; others cutaneous affections, deep ulcers, white swelling, hip-disease, convulsions, hydrocephalus, pulmonary consumption, etc., etc., but it is all one disease—all scrofula. This disease accompanies, and is, doubtless, caused by activity and excess in the generative function. The too great amateness of parents produces scrofulous children, who, inheriting the disease of the passion, as well as the organism, develop the latter by the former. So goes on this work of death.

Scrofula destroys its victims at every stage. There are abortions in gestation; deaths from all the diseases

of infancy, and in youth the various forms of consumption. Whatever part is weakest, or becomes in any way diseased, becomes the focus of scrofula. If such a child takes cold, it dies of chronic bronchitis, or pneumonia; some irritation or over-action causes determination to the brain, and we have brain fever, tubercles, convulsions, effusion, and death; the bowels are disordered, and there sets in an incurable diarrhœa or dysentery, or some trifling injury develops disease of the elbow joint, white swelling of the knee, or hip disease.

Causes.—Lugol believes scrofula to be always hereditary. I believe the disease may be developed first, and then transmitted. Children are born scrofulous when their parents have had syphilis, or have been licentious; are too young or too old, or of disproportionate ages or strength; are nearly related; or suffer from any of the causes of disease. Scrofula, I believe, also arises in men, as in animals, from darkness, bad air, bad food, such as the milk of scrofulous nurses and distillery cows, eating pork and the flesh of other diseased animals, drugs and common stimulants.

To prevent scrofula, we must abolish all its causes, abolish poverty, abolish filth, abolish vice, abolish drugs, abolish all that poisons, weakens, and degrades humanity. We must teach mankind the laws, and surround them with the conditions of health.

Treatment.—Light, air, exercise, cleanliness, a pure, moderate diet, and all healthy conditions, with an avoidance of all causes of disease, especially in the exercise, natural or otherwise, of the generative system. With water, all the most powerful means of invigoration and purification.

Take a full morning bath, with much friction; mid forenoon, a dripping sheet; mid afternoon, a wet-sheet pack one day, and the next a dry blanket pack, or two wet-sheet packs and one blanket pack on the third day; all packs long and thorough; at night wear a bandage from the hips to the armpits.

Such a course as this, or its equivalent, will wash the disease out of the system, if it has not already produced fatal disorganization.

When there is local scrofulous disease, the treatment must still be general. Cold applications excite the diseased action. We must pay especial attention to secure a healthy nutrition. The food can not be too pure and simple. It should consist of fruit and farinacea, with soft water to drink.

The scrofulous matter, with this treatment, *does come out*. It exudes from every pore. Sometimes it comes out in eruptions, or boils, filled with the characteristic matter; and whether the matter comes out by the pores, or a pint at a time from abscesses, the result is purification, and purification is health.

All general poisonings of the system, as by opium, tobacco, coffee, tea, ardent spirits, mercury, lead, quinine, syphilis, are to be treated upon the same principles as scrofula.

Scurvy, hydrophobia, glanders, cancer, rheumatism, and the more external affections, as salt rheum, psora, impetigo, and the whole list of skin diseases, are subject to the same laws, and require, with simple and obvious modifications, the same course of invigoration and purification. I shall speak of many of these separately, but I group them here to illustrate a principle.

CHAPTER XXIV.

INFLAMMATION AND BRAIN DISEASES.

Inflammation.—As inflammation is the essential constituent of nearly all acute diseases, and lays the foundation of nearly all chronic affections, an understanding of its nature, causes, effects, and treatment, will make the rest of my task an easy one.

Inflammation is characterized by four signs—heat, redness, pain, and swelling. But either may exist alone, without inflammation. There may be redness from blushing, heat, or friction; pain may be neuralgic, or spasmodic, when it is diminished by pressure; swelling may be dropsical, or impossible, as in inflammation of the brain.

The exciting causes of inflammation are heat, cold, injuries; the real cause lies deeper, in a morbid condition of the system. In a pure and vigorous system, neither heat, nor cold, nor injuries cause inflammations. The most terrible wounds heal rapidly, and with no bad effects; while, in an impure and debilitated system, a slight chill will produce an inflammation of the lungs, and a slight injury the swelling of an entire limb. We have, then, the same cause for inflammation as for fever; and fever, as I said before, is only a general inflammation, and inflammation is only a circumscribed fever.

Inflammation may terminate spontaneously, by the return of the part affected to its natural state; this is resolution. By an increase of the natural discharges, as in catarrh, diarrhœa, dysentery, gleet, etc., and by dropsy. By schirrus, or an indolent hardening, with shooting pain, liable to become cancerous. By hemorrhage in vascular parts. By metastasis, or the shifting of the disease from one region to another. By suppuration, or the formation of pus. By gangrene, or mortification. Inflammation of a part may also be attended or followed by the formation of various tumors, or morbid growths, both mild and malignant; and by the gathering of scrofulous, or other matter of disease.

In all cases, inflammation is the act of the part affected. The blood is summoned to it, and retained in it. The nervous power increases capillary action, by which heat is evolved, and the pressure upon, or distention of, the nerves of sensation, causes the pain. All this is done for something. The increased flow of blood to a part brings an increase of morbid matter, and that calls for an increased effort to dislodge it. Calomel is washed through the parotid glands in floods of saliva; foul matter runs from the nose and air passages in an increased flow of mucus; it is poured through the intestinal glands in a diarrhœa; from the kidneys in diabetes; or, when deeper seated, and harder to dislodge, it comes out in purulent secretions. A sliver in the flesh is removed, brought to the surface, and cast out by this process.

A full diet promotes inflammation; because the organic powers, which should be engaged in freeing the system of its impure matter, are expended in digesting

and conveying away unnecessary food. It is in this way that every ounce more than a man requires is an injury. It takes vital force that is needed for other uses. A clean, abstemious man—in a word, a healthy man—is not liable to inflammations. The law of inflammation is the same as for fever, and its treatment is to be governed by the same principle.

If an inflammation is external, we may generally cut it short at the beginning by the application of extreme cold, as ice, or ice-water. If internal, our method is to derive to the surface, and relieve the inflamed part, by drawing the blood away, and opening other avenues for the excretion of morbid matter. By this means, we produce an artificial metastasis, as when we relieve an internal inflammation by bringing out an eruption on the skin. This is the use of blisters. The objection to them is needless violence, and the poisonous means by which they are produced.

Sometimes inflammation is reduced by applying cold to the part affected, and warmth to some other near or distant part. An ingenious remedy for felon, in its early stage, is to place the elbow in very warm water, and apply, at the same time, ice-water to the finger. Inflammation of the brain is also met by putting the feet and legs in hot water, and applying ice-water to the head.

The wet-sheet pack, as an equalizer of the circulation, is the best of all remedies for inflammation of any part, external or internal—from a finger or toe, to the lungs or brain. The half-bath may be, in some cases, a more rapid and powerful remedy; but it is not of such universal application.

The first stage of inflammation is called congestion. It is the gathering of the blood in the part, before the diseased action is fully established. In this stage, relief is easily effected, but when there is induration or sup-puration, it can not be overcome so quickly.

Let us now see what are the characteristics of inflammation in particular organs.

Inflammation of the Brain or its membranes, is characterized by great heat, fullness, violent pain, suffusion of the face, redness of the eyes, vomiting, general fever, delirium; then stupor, fixedness of the pupils, coma; rigidity or convulsion of the muscles; followed by relaxation and death.

The treatment is the application of cold to the head in the most decided and thorough manner, with warmth and friction to the lower part of the body. I have kept the head encased in snow for six hours, with the body in a wet-sheet pack.

Pathologists distinguish between congestion and inflammation of the brain and its membranes, each membrane, and even the different portions of each; but there is no practical benefit in these niceties. If there is acute inflammation within the cranium, we have but one means of meeting it.

Chronic Inflammation of the Brain is characterized by the various symptoms of insanity. Water has been used for ages for the treatment of this disease, and sometimes with good effect. I have great faith in its continued persevering application, and hope to see it fairly tried in some of our insane asylums. A daily bath, pack, and injections, with all healthy conditions, and a pure vegetable diet, would give promise of cure.

Insanity appears often to be a disease of exhaustion, as it is caused by masturbation. It is also excited by disappointed love, grief, and various discordances of the passions. The risk of it, in any case, is greatly increased by hereditary predisposition.

Delirium Tremens is a form of insanity, depending upon an exhausted and irritable condition of the brain. It is caused by the use of intoxicating drinks, and milder forms come from the use of tobacco, tea, coffee, and opium.

All these affections are beautifully managed in water-cure—the treatment being adapted to the condition of each case. A half-bath, or a wet-sheet pack, is a sovereign soother of nervous irritability. In severe cases of mania, or delirium tremens, the half-bath should be used perseveringly, with frequent cold affusion to the head.

Apoplexy is a sudden paralysis, insensibility, or stupor, resembling deep sleep, with full breathing, and regular pulse, and producing hemiplegia, or death. It is caused by pressure on the brain, either distention of the blood-vessels, effusion of serum, or effusion of blood. It is a disease of exhaustion, and generally of old age. Men who have worked with their brains, using stimulants, and eating too much, are most subject to this disease.

The only reasonable treatment is the application of cold to the head, and warmth to the extremities. This may relieve and cure, if there is no actual effusion.

When the patient survives the first attack, and is left with paralysis of one side of the body, a thorough course of invigorating treatment, with a strict diet, and

absolute temperance and continence, may restore him to health.

Apoplexy so much resembles drunkenness, that it can not always be distinguished ; it is also closely simulated by paroxysms of hysteria.

Tubercular Disease of the Brain is often met with in scrofulous children of large brains and unusual promise. It is one of those insidious diseases, which are fatally developed before any sign can be perceived. The period of access, if it can be designated at all, is marked by unusual brightness and activity of mind and body. It ends with a gradual stupor, sometimes with slight convulsions. The patient sinks into a comatose state, which may last for two or three weeks. When this disease is well marked, there is no hope. In the cases in which I have made *post mortem* examinations, I have found the surface of the brain studded with scrofulous tubercles ; and in one case a remarkable thickening of large patches of the dura mater.

I believe that after this disease declares itself, no treatment is of any avail. We have nothing to do, but to put the patient in healthy conditions ; evacuate the bowels by injections, regulate the temperature, cool the head to its normal standard, and keep up the action of the skin. We can do no more. In all the insidious diseases of the brain, preventive treatment is alone of any avail. We can only avoid all causes of disease.

Paralysis is a disease, either of the brain, the spinal cord, or of the nerves. It is a loss of action, from oppression or exhaustion.

Hemiplegia is paralysis of one half the body, caused by pressure or atony of the opposite side of the brain.

Paraplegia is palsy of the lower part of the body, from some point in the spinal column.

Shaking Palsy is a general partial paralysis, in exhaustion, generally from old age.

Paralysis may affect a single organ, limb, or muscle; it may also affect either the nerves of motion or sensation, or both. It is generally, however, in the nerves of motion. It is seldom complete; and in hemiplegia, we find the arm worse than the leg, simply because the latter has been more exercised.

The two causes of palsy are exhaustion and poisoning. The exhaustion generally comes from amative indulgence; the poisoning from tobacco, but the exhaustion *may* come from any labor or excitement of body or mind, and the poisoning from food, drink, bad air, etc. The two great causes, however, of all this class of diseases, are licentiousness and tobacco. It is seldom that we see women affected with them, because they seldom indulge in both, if they do in either.

Paraplegia may come from apparent disease or injury of the spine, or from some derangement of the digestive organs; more commonly from the latter.

These diseases are seldom cured; but here, as everywhere, the water and hygienic treatment have had their triumphs. We must govern our applications by the age and vitality of the patient, and also by the causes of disease. If there is exhaustion, we must give invigorating treatment—if poisoning, we must wash the offending matter from the system. In every case there must be a strict diet, and the best possible conditions. The wet-sheet pack, the douche, long-continued friction with the hands of strong persons,

are the best remedies. The palsied limbs must be regularly exercised. Much good has been attributed to electricity or galvanism.

Chorea Sancta Vita, or St. Vitus's Dance, is commonly a disease of childhood or youth. It is produced, unquestionably, in nine cases in ten, by solitary amative indulgence. Sometimes it is attributed to worms, or other irritations of the digestive organs. It yields readily to a strict diet, wet-sheet pack, sitz-baths, the douche upon the spine, and injections, if the cause is attended to and removed.

Epilepsy is one of the most terrible of this class of diseases. The patient is suddenly, with or without warning, attacked by violent convulsions, foaming at the mouth, grinding the teeth, with every appearance of agony, but no after memory of suffering. The fit lasts from ten minutes to an hour. Sometimes there are several in succession. These paroxysms may occur daily, several times a day, or at intervals of weeks or months.

Epileptic fits are caused in infants by dentition or worms; they sometimes precede or follow eruptive fevers; but I have never seen a case of epilepsy that was not caused by amative excess, and generally by masturbation.

Parents, friends, and even patients have denied this, but, upon a full investigation, I have never failed of tracing it to this prolific source of nervous exhaustion and disorder. In some cases tobacco, ardent spirits, and dietetic irregularities have lent their aid.

The treatment is the absolute avoidance of these causes of disease, an absolutely strict diet, full treat-

ment, especially that of an invigorating character. Coarse bread, or wheaten grits and fruit, with sitz-baths and injections, should secure the action of the bowels. I can not too strongly urge the necessity of continence and the hunger-cure. In cases I have seen, when the patient had been going on well for some time, a single amative indulgence, social or solitary, or the least variation from a strict diet, in quantity or quality, would cause a fit. When a fit has been coming on, I have arrested it by magnetizing him with my will, assuring him that it would not come, and making him drink a glass or two of water.

Catalepsy, or trance, is a spasm or paralysis of the nerves of motion and general sensation all over the body. The special senses are often retained, and the cataleptic or paralyzed person may know every thing that is going on, while his friends believe him to be dead. So complete, in some cases, is the suspension of all apparent vitality, that many persons have been buried alive in this state.

Sometimes the soul seems to have a supernatural activity. Very extraordinary visions of the spiritual world are related by those who have been in this condition.

In treating such a case, we must be governed by general principles and particular symptoms.

Neuralgia.—Under this name may be included those painful affections which are not connected with any apparent organic lesion. Spinal irritation is an obscure pain and weakness in the back, extending down the thighs.

Tic Douloureux is pain in the expansion of some external nerve, usually of the face. Visceral neuralgia

is a paroxysmal and recurrent affection of the nerves of internal organs. In every form it is an atrocious disease, and the anguish is indescribable. The toothache is a sample.

What are the causes of neuralgia? Every cause of general disease may produce this particular development. Its center is dyspepsia. It is caused by nervous exhaustion of any kind, or from any cause. Tea, coffee, tobacco, high living, bad air, all unhealthy habits, and particularly all exhausting passions, produce this disease. It has been cured by surgical operations, pulling teeth, or cutting off nerves; but the last often fails from the nerve reuniting. Abstinence from all causes of disease is a cure. Cold water, even in a local application, has cured cases which defied all the usual remedies. The wet-sheet pack relieves and cures. In severe cases we must use all means of purification and invigoration. If it comes from dyspepsia, we must cure that; if from uterine or ovarian disease, that must be attended to. The local affection, when it can be reached, may always be relieved by intense cold.

Gout and Rheumatism are nearly allied to these nervous diseases. Gout is hereditary, and so, to some extent, is its milder neighbor. Gout is mostly confined to the joints, especially of the extremities, and usually attacks those of the great toe. Rheumatism attacks every part of the body. Each is believed to leave external for internal organs, so that we hear of gout in the stomach and rheumatism in the heart. Both change rapidly from one part to another. Gouty patients are liable to violent affections of the brain, heart, lungs, stomach, etc.

When Harvey had the gout, he resolutely plunged the affected foot into a pail of the coldest water he could find. I believe that this was with no more danger than in any other species of inflammation. Strict temperance, pas-sional and dietetic, with exercise, is a perfect preventive. No man, whatever his predispositions, ever had the gout, without indolence or excess. The gouty patient must bring himself into healthy conditions, and he will surely banish the gout. It may be relieved by the cold bath to the part, the wet bandage, and the wet-sheet pack. A gouty patient needs a full course of water-cure treatment; but he will get well if he follows an old prescription—"Live on sixpence a day, and earn that."

Acute Rheumatism comes on with stiffness and pain in the joints or muscles, followed by fever. The pain is severe, the part swollen and red; the pulse full, hard, and frequent, the tongue lightly furred, the skin harsh, hot, and dry. It lasts ten or twelve days, and then slowly subsides.

It is a disease of excess in diet, stimulants, and ama-tive indulgence, with bad air, and want of proper exer-cise. I have seen it usually in young persons of full habit.

Treatment the same as for fever, with wet bandages to the parts affected. In these cases, the cold, full, double, and treble wet-sheet pack is "heaven" to the patient. It is better than all the opium in the world. With a course of thorough and frequent packing—a dozen a day, if needed—the system is thoroughly puri-fied. Its prevention is as evident and easy as that of the gout.

Chronic Rheumatism is a disease "better felt than expressed," and too common to render any description necessary. It is the disease of exhaustion and age. It produces shrinking of the muscles, and swelling and stiffness of the joints. Some poor patients are drawn into terrible distortions. Lumbago is rheumatism of the back; sciatica of the posterior part of the hip and thigh.

A careful, moderate diet, alternate packing with the wet-sheet and blanket pack, inducing thorough sweating with the latter, drinking water, and plenty of rubbing, will cure any case of rheumatism, when the patient has strength enough left to be cured. When the joints are stiffening, they must be moved, even if the pain is severe. Stimulating bandages may be worn almost continually upon the parts affected.

CHAPTER XXV.

DISEASES OF THE ORGANS OF RESPIRATION.

THIS class of diseases destroys nearly half of all civilized races, so vital a thing is it to breathe. In the earliest infancy, death is caused by inflammation of the lungs, from the mere contact of the air with its delicate, half-formed tissues. Tubercular consumption also occurs in infancy. Then comes that terror of mothers, croup. Hooping-cough is sometimes fatal. Further

along comes bronchitis, pneumonia, pleurisy, the tubercular phthisis of early middle age, and asthma.

The throat and lungs are made up of air-vessels, blood-vessels, and nerves. Their healthy condition requires good air and a free respiration, pure blood and a free circulation, and sufficient nervous energy. Disease comes from the lack of either, or all of these conditions.

Croup is an inflammation of the larynx, extending to the trachea. It usually attacks children of one year old and upward. Its signs are, difficult breathing, with cough and fever. It usually comes on toward evening, with the appearances of a common cold, sneezing, etc. The breathing becomes rapidly more difficult, the face is red, the eyes suffused; the patient sits up in bed, and struggles for breath. The cough, and finally the breathing, has a peculiar sound, called "croupy." A false membrane is formed in the throat, and that, with the swelling of the larynx, chokes him to death.

This is a disease of scrofulous, fat, over-fed, and delicately reared children. No child, with a moderately good constitution, who takes exercise outdoors, breathes good air night and day, eats moderately of simple healthy food, and is washed all over every morning in cold water, ever dies of croup. In some cases of delicate children, the disease comes on so insidiously, that the membrane is formed almost before its nature is suspected.

No disease is more simple to treat, or, taken in season, easier to cure. It is a simple inflammation of an organ within our reach; and the treatment is the immediate, continued, and thorough application of the coldest water to the throat. Apply this for fifteen min-

utes, with friction over the throat and chest, and follow by a partial or full wet-sheet pack, according to the fever. Renew the cold by a compress to the throat, in the pack. Repeat the whole, if necessary, but it seldom will be. The pack, as in all cases, followed by a wash-down, and in this case, much friction. A strict diet, morning bath, and cold affusion and rubbing of the throat for a week, completes the cure. The thorough washing of the throat with cold water is a prevention against this and all throat diseases. I believe that children have an hereditary weakness of the throat from their fathers wearing thick cravats. The same coddling gives a tendency to what is commonly called bronchitis—more properly *Chronic Laryngitis*, sometimes called Clergyman's Sore-throat. Why clergymen's? Because they use the larynx in the most monotonous and exhausting manner, and under the most unfavorable circumstances. What are the habits of clergymen? They live without exercise, sedentary lives, in hot, close studies. They eat too much, and of all the "good things" their affectionate parishioners urge upon them. For the most part, they are utterly ignorant of the laws of God, as written in the constitution of man and the whole book of nature. "Blind leaders of the blind," they and their people all fall into the ditch. On Sunday they preach—no, they *read*—sermons in a church, crowded it may be—hot it is likely to be, in winter, and at all seasons without ventilation. Reading, by its monotony, is far more fatiguing than conversation or extemporaneous discourse. Disease falls upon the exhausted organ. There is soreness, a tickling cough, a slight expectoration, hoarseness, and finally, loss of voice.

The clergyman lives in nearly all the bad habits of civilization. He takes tea, coffee, sometimes opium, very often he smokes tobacco. I have heard it said, that none but tobacco chewers have this disease. I have reason to suspect that few men are so lecherous as clergymen. All their habits lead them to amative excess; and the throat sympathizes directly with the genital organs. Restricted, like the Quakers, in their enjoyments, they plunge, like them, into the two that are lawful to them, gluttony and debauchery—debauchery with their own wives; gluttony at not only their own, but their neighbor's tables. The amativeness of clergymen sometimes becomes outrageous, breaks all bounds, and becomes a scandal to the church, as in many notorious cases. I know of a clergyman who has attempted to seduce two of his own daughters.

Our clergyman with a sore throat is attracted to New York by some arrant quack, who may be the professor of a medical college. His uvula is cut off, perhaps his tonsils also, and his throat swabbed a few times with solution of lunar caustic, or nitrate of silver. Or, more fortunate in having a rich and liberal congregation, he is sent to Europe, where rest, exercise, traveling in the open air, and the enjoyment of pleasant amusements, and being separated from his wife, effect a cure.

How shall we treat this disease? By avoiding all its causes first. By strengthening the affected region; by washing with cold water; wearing the wet compress; general packing, and especially sweating; and sitz-baths. Why sitz-baths? Because of the sympathy between the throat and the genital organs. In scrofu-

lous subjects, with tendency to consumption, which often begins in this way, treat as for scrofula.

Acute Bronchitis is an inflammation of the mucous membrane, lining the air passages of the lungs. We may include the trachea, as the beginning of these tubes. It begins like any common cold; there is sore throat, and a dry, tickling cough; fever follows, with a harsh, hot skin, flushed face, pain in the back and limbs, difficult breathing, tightness across the chest, pain in coughing, crepitous rattle through the thorax. As the expectoration becomes free, these symptoms subside.

Scrofulous or any other impurity of constitution predisposes to this disease, and it has many of the causes enumerated in the last article.

The treatment is the wet-sheet pack, and blanket pack alternately; with the wet bandage, or jacket around the lungs at night, well covered; with all other healthy conditions, and *absolute diet*, which means cold water *ad libitum*, and nothing else. Resolution is much promoted by friction of the chest, with a coarse towel, hair mitten, or flesh brush.

Chronic Bronchitis.—This disease is merely a mild and continued form of the above, going on gradually to the thickening of the membrane, interference with the objects of respiration, consequent emaciation, quick pulse, fever, night-sweats, and other hectic symptoms. At a certain stage it is almost as hopeless as phthisis.

In all these affections of the throat and lungs the expectoration may be mucous, muco-purulent, or purulent. Pus is no special sign of tubercular disease. It may occur on any inflamed surface, as well as in deep

ulcers or abscess. When large quantities of pus are thrown off suddenly, we know it comes from abscess.

Bakers, stone-cutters, and others engaged in dusty and unhealthy employments are subject to this disease. It also arises from any of the causes above enumerated.

Treatment the same as in the acute form, modified to suit the strength and reactive power of the patient. The wet jacket may be worn all the time with great advantage. Any action of the skin relieves, if relief is possible. But some cases resist all our efforts. Where there is extensive thickening of the mucous membrane, or hardening of the substance of the lung, the result must be fatal.

Pleurisy and Pneumonia—the inflammation of the lining membrane of the lungs, and of their substance—are so connected in their nature, causes, and treatment, that we need not consider them apart. In the first the pain is acute, hindering the action of the chest; in the latter it is deeper and duller, accompanied by a difficult respiration.

In inflammation of the lungs, we have several stages; congestion, marked by oppression; inflammation, with dull pain and a reddish expectoration; hepatisation, or hardening, with little expectoration; softening, with increased and reddish expectoration; resolution, with mucous expectoration. There is much fever and great distress.

Acute pneumonia may terminate in sudden death by loss of function, in abscess, or in the chronic form of the disease, when it is often mistaken for phthisis.

Pleurisy may end in effusion of water in the chest,

in effusion of pus, and the formation of adhesions ; all dangerous.

The general causes of these diseases are not different from those of all the affections of these organs. Their exciting cause is commonly cold, especially following exhaustion.

The treatment is absolute diet, cold sponging of the chest, the wet compress, and the wet-sheet pack. Alternate and repeat these incessantly. Pleurisy may be cut short by a vigorous application of cold to the affected region, as in croup ; but when pneumonia has advanced beyond its first stage, it requires at least six days for its resolution.

Spitting of Blood.—Hemorrhage is unpleasant under all circumstances, and is often a sign of danger ; but, in most cases, it is not of so much importance as the patient imagines. The nose-bleed is frequent in delicate and plethoric constitutions, and is brought on by any excitement. Thoroughly bathing the head and neck, and snuffing cold water up the nostrils, generally cures it. In some cases, however, it is checked with great difficulty.

The saliva is often tinged with blood from the gums, or a decayed tooth. This may be distinguished from bleeding from the lungs, or air passages, by there being no cough. When blood comes with coughing, its source is below the glottis, or opening into the larynx. When it comes from the upper part of the pharynx, or around the fauces, it is merely hawked up. Blood from the stomach can come up in no way but by eructation or vomiting, and it is usually dark colored.

Blood may come from the whole extent of the organs

of respiration, in several ways. In weakness, and congestion of the mucous membrane, of any part, there may be simple exudation from the small vessels. There may be bleeding high in the throat, from speaking, coughing, or blowing on some musical instrument. This is of no consequence, but as a sign of weakness, and liability to more serious disease. In many persons there is a constitutional weakness in the blood-vessels, which makes them liable to hemorrhages. They spit blood all their lives.

Pulmonary apoplexy is a sudden congestion of some portion of the lungs, with a feeling of fullness and suffocation. The blood-vessels are engorged, and crowd upon the air-vessels, so that they can not be filled. This state may be caused by any excitement, but is especially the result of grief, or other depressing passions. Sometimes it passes off gradually, without loss of blood; often it is relieved by a more or less extensive hemorrhage. The blood gushes into the air-passages, and is coughed up.

In abscess of the lungs, from inflammation or tubercle, hemorrhage arises from some blood-vessel being involved in the abscess. Nature does much in these cases to protect herself; but she sometimes wants the strength to do it effectually. She always makes the effort, first to form the abscess as far as possible from large vessels, and secondly, to thicken or close up those that are involved. But sometimes a severe fit of coughing breaks them apart, and there is more or less bleeding.

The treatment in all these cases must be soothing, cooling, and derivative. A wet compress may be laid upon the throat and chest, while the lower extremities are well rubbed, or put in hot water.

In all cases of tendency to pulmonary apoplexy, or bleeding from the lungs from any cause, severe chills must be avoided. A too cold sitz-bath, a cold half-bath, or staying too long in the plunge-bath, have caused congestion of the lungs and hemorrhage. Heroism is a fine thing—heroic treatment in water-cure is sometimes the best thing—but it is not safe in all cases. For heroic treatment we must have heroic constitutions, and these are not so plentiful as could be wished.

Asthma is a distressing, paroxysmal, periodic, or recurrent disease, the chief feature of which is great difficulty of breathing. Its nature is not well understood. It is supposed to be spasmodic; entirely functional in the beginning, but finally causing organic changes. I believe it to be originally an affection of the pneumo-gastric nerves. It is clearly hereditary.

There are curious differences in the exciting causes. In some, the fits are brought on by the smoky, thick air of a city; others have them when they go to the country. Many can not sleep in the neighborhood of certain trees, as the alanthus. But there is one feature which I believe is never absent. The asthmatic patient is always dyspeptic, and any degree of gastric irritation promotes the recurrence of the paroxysms. A single hot biscuit will bring forty-eight hours of agony.

Cure the dyspepsia, and you cure the asthma. Taking proper care in other respects, you have two great points to effect—two great organs to relieve. The stomach and the skin. I have never seen a case of asthma which could not be relieved; and the worst cases I ever saw were cured by packing and a strict diet. Whoever will resolutely starve and bathe, or,

still better, take packs, may be cured. But it is of little use to try the water, if the diet is not attended to. In one case, I was able to give only blanket packs, followed by a full cold bath, and much rubbing. Every sweat acted like a charm.

Consumption is a name which applies to any wasting disease, but it is specially confined to diseases of the lungs. Considering chronic bronchitis as a separate disease, we may restrict the designation to pulmonary abscess, from pneumonia or tubercle. The latter is called phthisis, or scrofulous consumption; though scrofula may be as clearly the cause of abscess from inflammation as tubercle. In every case, there is a destruction of the lungs from the gathering of morbid matter.

Consumption is a disease of hereditary taint and predisposition. The very infinitesimal germ or zoosperm, is tainted, diseased, scrofulous, and consumptive. Nature, in all cases, makes an effort to protect her new beings, and this effort is often successful. The child may be saved from its parents' diseases. The placenta may protect the fœtus from the morbid matters in the blood of the mother. She may be wise enough not to allow it to nurse. The scrofulous matter may be expelled by the diseases of infancy. These things take place under favorable circumstances, and where nature works with a certain degree of energy; but they are not to be depended upon.

Abscess, from inflammation of the lungs, may be cured. It may break into the pleural cavity, and the pus be absorbed, or find an outward opening, or it may open into the air passages, and be thrown off by expect-

toration, the cavity gradually contracting and cicatrizing, as in any other organ. On the other hand, where the system is weak and full of impurities, the abscess may be kept open, and the strength fail from continued irritation and exhausting action. In this case there will be hectic, emaciation, diarrhœa, dropsy, and death.

Tubercular consumption begins by the deposition of minute, or, as they are called, milliary tubercles in the lungs, usually in the upper portion, just under the collar bone. These are sometimes found in a new born infant. They spread, increase in size, soften, suppurate, form ulcers, and their matter is thrown off. Sometimes many join together to form a large ulcer.

The first effect of tubercle is to render a portion of the lungs useless for the purposes of respiration. This quickens the pulse and shortens the breath, there is consequent weakness and feverishness. The little, dry, hacking cough, which marks the first stages of this disease, seems to come from the irritation of foreign matter, the invasion of a portion of the lungs, and an instinctive effort to expel it. Every stage of the progress of consumption is an effort to cure, and this effort is sometimes effectual. In many cases where consumption has not been suspected, there are found in the lungs after death, unmistakable signs of former tubercles, which have softened, been expelled, and healed. But in the majority of cases, there is too much disease, and too little power.

The signs of tubercular consumption are a delicate, scrofulous appearance; narrow chest; dry, hacking cough; pain in the chest; languor; debility; emaciation; quick pulse; hurried respiration; dry, hot hand,

or cold hands and feet ; panting and palpitation on running up stairs ; purulent expectoration ; hectic fever ; diarrhœa ; swelling of the ankles ; atrophy ; marasmus.

Cheerfulness and hope of recovery are remarkable symptoms, and generally present unless there is dyspepsia.

There are cases of consumption, going on to a fatal termination, in which most of the characteristic symptoms are wanting.

The causes of consumption have been already referred to ; but some are too important to pass over here. The hereditary causes, I am certain, are more than all others, among which are a bad diet, with flesh or stimulants, and amative excess, or irregularities. All the causes of scrofula are causes of consumption. In the individual the same causes develop, certainly, and probably produce, the disease. None are so liable to it as those who have wasted their lives in masturbation or sexual excess. The two causes of this, as of all diseases, are exhaustion and impurity. The causes which especially affect the lungs, such as tight lacing, bad air, irritating substances, are all causes of disease. Its access is hastened by frequent colds, exposure to a damp, cold atmosphere, cold feet, and all causes which tend to irritate, inflame, or congest the respiratory system.

Whole families die of consumption ; it is developed in many persons who are subjected to the same causes, or who live in the same habits ; it is possible that constant proximity may produce similar constitutional conditions and tendencies ; but I have no belief that the disease is truly contagious.

Can consumption be cured? Hundreds of quacks, regular and irregular, draw revenues from millions of victims, by flattering the hopes which belong to this disease, with an affirmative answer. I, too, must say, *consumption can be cured; has been cured; will be cured.* It is curable in its early stages; curable when but a small portion of the lungs is involved; curable where there is a moderate amount of disease, and much vigor to combat it. But where it has gone on to a certain point of weakness; where a large portion of the lungs is tuberculated; where there is much disease and little vitality, it is of necessity fatal. Nature can not effect a cure, and art has no miraculous power. In this, as in all cases, we must depend upon the vital forces.

The cure can not be too soon commenced. We must begin with birth. No infant should be allowed to suck a scrofulous mother or nurse. If a perfectly healthy, cleanly, proper nurse can not be procured, one that has a good constitution, and will observe all the laws of health, a good cow is much better. A respectable cow—not one that is confined and fed into scrofula on distillery slops—neither eats flesh, drinks tea, coffee, porter or gin, nor abuses her amateness.

A pure diet, a pure air at all times, daily bathing in cold water, and much exercise in the open air, are all absolute necessities. If any sign of scrofula is developed, go through a course of thorough wet-sheet packing, and bring it to the surface. Every night put a wet bandage around the abdomen. See that the spine is straight and the lungs expanded. Banish tight dressing, corsets, and all fashionable abominations. See that

the child sleeps on a cool, hard bed, without too much covering. Especially see that this child of your heart falls into no habit of masturbation. Don't presume that he or she will not—make sure of it. A child of a year old may get into this habit, either from some perverted instinct or from some irritation of the genital organs. This is especially the case with little girls. There is some itching of or around the clitoris, the child begins to scratch or rub the parts, and is astonished to find the friction producing keen sensations of pleasure. It is repeated next day with the same result—the habit is formed, and the nervous system is wrecked. Millions of sweet and innocent children fall into this premature and most exhausting debauchery. Every child, male or female, should be carefully watched, until it is old enough to understand the subject, and then it should be carefully explained to it. The earlier this is done, and the stronger the impression made upon the mind of the child of the wickedness of this abuse, the better. It is truly a matter of life and death ; and squeamishness is as much out of place as if the child were really dying.

When the disease has begun, and in any of its stages, we can do little more. The patient must be placed in all healthy conditions, especially those of pure air, light, exercise, and cleanliness. I have no question that a purely vegetable diet, or one of bread, milk, and fruits, is the best. Even the milk may not be so well as pure, soft water ; it certainly is not, if its quality is doubtful ; above all, the quantity must be small. We must invigorate by daily full baths ; we must purify by as much packing as the patient can bear.

The wet jacket may be worn night and day. Sweating is of advantage, if the patient can bear it. The dripping sheet or cold sponging is good for the night-sweats; cold water injections for the diarrhœa.

By these means many have been saved. Some have been cured, who seemed marked for death; others have had their lives prolonged, and made comfortable for months and years.

No drug ever cured consumption—all drugs are mischievous; and none is more so than that which is almost universally given, and which enters largely into the composition of nearly all the nostrums in use. I mean opium. After a time all the soothing effects of opium are lost, and the disease is made more painful.

Change of climate may be favorable. A soft, pure air is better than a harsh, damp, impure one. But I distrust the enervating effects of warm climates. In a mild one, the patient gains by being much in the open air. Change of scene may remove some cause of disease, but going north may be as well as going south. Some think a cold air better than a warm one. It may be, if you can be out of doors. There seems no doubt that a dry atmosphere is better than one loaded with damps and fogs. Either is better than close, hot rooms. When we have lost the use of any portion of the lungs, we should get the best air we can, and breathe as much of it as possible. I think much of strengthening the chest by exercises, and systematic, deep breathing.

Eat pure food, and but little; use up no vital force in digesting and excreting unnecessary food. Breathe pure air, and much of it; the blood wants all the oxygen it can get. Keep the skin clean, and promote its

activity. Live out of doors, in the light and air ; and give Nature a fair chance to save her child. Rely upon her, as a holy mother, who will do all that can be done for her offspring. Do the best you can, and bravely and patiently accept your fate.

CHAPTER XXVI.

DISEASES OF THE ORGANS OF DIGESTION.

As the beautiful development and healthy vigor of the whole system, animal and organic, depends upon the proper performance of the function of nutrition, especially in its earlier processes of digestion and assimilation, it is evident that any disease of these organs, or any disturbance of this function, must be of the first importance ; and so we find it to be. There are many diseases, or forms and localities of disease, of these organs ; but I shall begin with one that is central and pervading—the monster disease of civilization, and the cause or complication of almost every other.

Dyspepsia is more than a disease of the stomach, and means more than indigestion. It is a disease of both sexes, all ages, and all conditions. Infants are born with it—aged people die of it.

Its symptoms are legion, if we give this name to all its effects. Among them are a morbid appetite, acid eructations, heart-burn, a painful fullness, distention or

weight of the stomach, nausea, vomiting, emaciation, flatulence, colics, constipation, diarrhœa, general debility, languor, great depression of spirits, or blues, vertigo, headache, dim and depraved vision, sleeplessness, nocturnal restlessness, hypo, palpitation of the heart, slow or intermittent pulse, foul, white, furred, or red and deeply-furrowed tongue, bad teeth, fœtid breath, pimples, a greasy, dull complexion, pallor, sallowness, dullness of all the senses, loss of all faculties, insanity, suicide, etc., etc. This list might be prolonged to an indefinite extent.

The seat of the disease is in the central ganglia of the organic system of nerves, which preside over the secretion of the gastric juice, and generally over the digestive and assimilative processes. Every other organ of the body is affected either by nervous relation and sympathy, or by the morbid condition of the blood. The causes, effects, and relations of dyspepsia cover almost the whole ground of pathology, Abernethy, when called to an ulcer, or a sore toe, always went to work at the stomach as the center of disease, though not in the most judicious way, according to my "humble opinion."

As a knowledge of the causes of dyspepsia is important in itself, and as an indication of the means of both prevention and cure, I respectfully beg the reader's indulgence while I state them somewhat particularly and at length.

Dyspepsia, I have already said, is hereditary. It may come from either parent. We have no occasion to doubt this; for children "take after" their parents in much less important particulars.

The diet of the nurse may give an infant dyspepsia. Whatever will give the mother or nurse this disease, will so affect the milk as to cause it in the child. We shall see what that is directly.

Eating too much food will cause dyspepsia, by overtasking the power of the stomach to digest and dispose of surplus food, and by the undigested food lying in the stomach, a source of irritation.

Eating too fast, by preventing mastication and insalivation. Those who eat too fast, generally eat too much.

Eating hot food and drinking hot drinks, which enfeeble the stomach.

Eating indigestible food, as new bread, short-cakes, pastry, sweetmeats, pickles, oily and greasy meats, gravies, mince-pies, and *all that sort of thing*. We exhaust the power of an organ, if we overtask it—we disease it, if we task it unnaturally.

Eating condiments, as pepper, ginger, mustard, spices.

Taking drugs. Every poison, of whatever kind, taken into the stomach must injure it. Nature protects it wonderfully. It bears an astonishing amount of poisoning; but not without more or less mischief.

All spirituous and narcotic beverages, tea, coffee, and alcoholic drinks.

Tobacco, above all, by its direct action upon the nervous system, by its acrid, irritating character, and by its constant excitement of the salivary glands and waste of this secretion. Even a constant loss of saliva in moistening linen, will produce dyspepsia; much more the spitting of the smoker and chewer.

Any kind of exhaustion, by bodily labor, action, or anxiety of mind ; sedentary occupation ; absorption in business ; circumstances of depression, all cause dyspepsia. It is especially a disease of exhaustion.

Let a man eat a hearty meal, and then take violent exercise, or get excited, or hear bad news, and digestion is suspended. Frequent repetition of this will cause dyspepsia.

When the process of digestion begins, the vital power gathers around the digestive organs. The blood goes to the stomach. The force of the system is centered there. Now, if this be drawn off, or divided, the work is badly done, if done at all ; the blood is poor and half vitalized ; poor blood makes poor gastric juice ; poor gastric juice makes poor blood ; and so it goes on in a progression of badness. Now, add to all these causes one more—exhaustion from amateness, solitary or social, and you are near the root of evil.

Exhaustion calls for too much food, and stimulating food. Too much food produces exhaustion.

Let us see how dyspeptics are made. A man, in New York, gets up late in the morning, exhausted by a night's excess, takes no bath, hurries down to breakfast, bolts hot rolls or buckwheat cakes, saturated with butter, sausages, and a few other abominations, washes them down with two cups of hot coffee, lights his cigar, and hurries down town ; goes to work fiercely, with an occasional cigar, till twelve or one o'clock ; rushes out, and into some eating-house ; bolts a rapid meal of meat, gravy, condiments, pastry, porter or brandy ; more cigars ; back to work like a steam-engine ; home in the omnibus, to a hot supper, muffins or buckwheat cakes ;

theater; oyster supper; brandy and cigars; bed at midnight, with a feverish excitement made up of beef, brandy, oysters, coffee, and tobacco, prompting to amative indulgence and more exhaustion. Try this two or three years, and see if all the resources of nature will save you from dyspepsia!

Where there is early amative excess, especially of an unnatural character, it does not need all this. The less vital force, the more easily is it exhausted. When a woman's strength is drawn to the uterus, in gestation, her digestion is apt to be feeble. Few have force enough for both processes. The harder any person works, especially in mental labor, the less he should eat. In a tolerably healthy system, this regulates itself, for much excitement of any kind takes away the appetite. Merchants, ministers, lawyers, artists, and vast numbers of women, exhausted by dress, dissipation, amativeness, maternity, and unhappy domestic relations, have dyspepsia.

The effects of this disease, besides those mentioned as symptoms, are numerous and distressing. There is scarcely any disease that is not produced by it, or greatly aggravated. Skin diseases of all kinds, ulcers, cough, headache, asthma, functional disease of the heart, uterine diseases, rheumatism and gout, and a host of affections, are the results of this central cause. A depravation of the blood can not fail to affect every organ, every secretion, every process, every function of the body. Whatever the disease, if we find it complicated with dyspepsia, that must be cured, and generally this is sufficient. Cure the dyspepsia, and we cure all that depends upon it.

But how? First by a removal of every possible cause; and second, by living in the conditions of health. "Cease to do evil—learn to do well." If people who believe the Bible only knew a little of its meaning!

The first requisite in treatment is rest for the poor disordered stomach. The dyspeptic must stop eating. I have already referred to the case of Mr. Robinson, of Nantucket, who for several months weighed out his three ounces of dry unbolted wheat-bread a day; one ounce for breakfast, one for dinner, and sometimes an ounce and sometimes only half an ounce for supper. This was his only food, and water his only drink. He got well, and strong, and even increased in weight on this diet.

We have had patients who have been even more abstemious. The last bad dyspeptic we had, did not eat four ounces in four weeks, and would have been better without what she did eat. She was packed and bathed, was weak, but less so than one would imagine; but at the end of that time, there came a healthy hunger and the power of digestion.

This is the true way to cure dyspepsia. Give up to be cured. Eat nothing. Drink soft water. Be bathed, and rubbed, and packed, as your strength will allow. Take frequent injections; for you may starve a month, and the bowels will act all the time. The stomach is rested, the whole system is purified. Then comes a clean, healthy appetite, and pure secretions. Now be careful. Begin with the smallest quantity of the best food. Increase it very slowly. This is the hardest point, but victory is before you. Go on step by step, and you build up a new constitution; and after being

exhausted and broken down, a poor, miserable dyspeptic at thirty-five or forty, you may live, as Cornaro did, to be a hundred.

This is the way to cure dyspepsia, and every disease of which it is a part, which is four-fifths of all our maladies. Dyspeptic reader, here is the road to health; if you do not choose to travel it, it is no fault of mine. Where there is a will, there is a way; and in this case, the best way is the one I have pointed out to you.

Having done my duty in this central matter of dyspepsia, I shall very briefly notice some other diseases of the digestive organs, all more or less connected with and dependent upon it.

Sick Headache is a symptom of dyspepsia and narcotization. Every case may be cured by a careful diet, and the disuse of tea, coffee, or tobacco.

Toothache and caries of the teeth are dyspeptic symptoms. Early loss of teeth is a sign of a weak and scrofulous constitution. Strong, well-set, and enduring teeth are signs of a good constitution and a good digestion. Sugar, acids, etc., are supposed to injure the teeth in childhood. They do not affect them directly, but by producing disorder of the stomach. A flesh diet also makes the teeth foul and liable to decay. Many persons, subject to caries and toothache, have found the decay stop and the pain cease, after adopting a vegetable diet, with other healthy conditions, the relative importance of which I have no disposition to undervalue.

When the teeth are in a bad condition, covered with tartar, decaying, aching, there are two things to be done. First, go resolutely to a good, intelligent, honest,

faithful dentist. Sit down in his chair; have every tooth pulled that can not be saved; have every carious spot carefully cut out, and filled with pure gold, and all made clean. Then get a good brush, and with soft water, a little clean soap, and some powdered charcoal, keep them so.

The second thing is to lead a pure and healthy life, such as the Almighty intended for all His creatures; but which he has not the power to make them live, unless they choose to do so. Let it be particularly remembered that the teeth were made to be used, and that when any organ is not put to its use, it becomes diseased. This is the law of exercise or use.

The Gums and Tongue are liable to disease, but those affections, I believe, are always connected with some irregularity of diet, or poisoning, and are to be treated accordingly.

Sore Throat is a very common disorder. We have elongation of the uvula, enlargement and ulceration of the fauces and pharynx. This is caused by dyspepsia, or amative excess, or both, and treated accordingly, with frequent washings and garglings of the throat with cold water. Diminish or entirely dispense with cravat coverings.

Inflammation of the Stomach, Acute Gastritis, is caused by poison, as arsenic, corrosive sublimate, etc., or by some peculiarly acrid, indigestible food; sometimes by cold, where the organ is very susceptible. There is acute pain, tenderness on pressure, and vomiting, with fever.

Give a tepid water emetic, so as to cleanse the stomach thoroughly; empty the bowels by injections;

drink cold water frequently, in moderate quantities, and apply the wet compress and wet-sheet pack, according to the amount of fever.

Inflammation of the Bowels is more common than of the stomach. It is either acute or chronic; and each is a severe and dangerous disease.

The symptoms are pain about the navel, fixed and extending over the abdomen, nausea, a sense of heat, dejection and prostration. The patient lies on his back, his knees draw up, and shrinks from pressure. This and the continuousness of the pain distinguishes it from colic. The countenance is anxious, the pulse frequent and tense. Black matter is sometimes both vomited and passed by the bowels. At first there is constipation—afterward diarrhœa, with very offensive discharges.

In chronic cases there is constipation alternating with diarrhœa. The strength fails, the flesh wastes, and the patient dies of what is called consumption of the bowels. The mesenteric glands are sometimes involved in the disease, and inflame, harden, and suppurate.

It is easy to see how disease of the stomach and small intestines must interfere with the vital action of these organs: but we can scarcely comprehend the shock to the system, and the suddenness of death which sometimes occurs in these cases. I have seen inflammation of the bowels produce coma and death in twenty-four hours in a water-cure patient, who was recovering from a bilious remittent fever, who would not obey orders, but would eat every thing bad. Finally, he ate half a drum of figs.

The treatment, in these cases, must be prompt and

heroic. Empty the stomach, empty the bowels, and apply cold to the whole region of the abdomen, with friction of the extremities. Put on large cold compresses, and change them every five minutes, the colder the better. After the symptoms are relieved, use the wet-sheet pack. Starve and drink water until fully recovered.

Inflammation of the Peritoneum is to be treated in the same manner.

Diarrhœa is cured by fasting, drinking water, cold injections after each passage, the wet bandage, and exciting the action of the skin by friction, wet-sheet, or blanket pack. As soon as the skin acts freely, the morbid action of the bowels ceases.

Chronic Diarrhœa, treat as for dyspepsia, with injections after each passage, and sitz-baths and packs. A series of sweatings in the blanket pack has great power over this affection. Let the morning bath be followed with much friction.

Dysentery is an inflammation of the lower part of the large intestines. It is a violent, dangerous epidemic, and at times, seems like a contagious disorder. Flesh-eaters are very liable to this, as to all inflammatory diseases. Bad air, low, damp situations, and uncleanly habits, are all causes of this disease. Children are more subject to it than adults.

In this disease, we must starve, drink soft water, take ice-cold injections, cold sitz-baths, wear the wet bandage or compress, and use the wet-sheet pack, or the dry, warm blanket pack, according to the strength of the patient and the reactive power. Chilling the surface may increase the internal congestion. With these

means, and a little judgment in applying them, we may save every curable case. It is particularly necessary to open the pores of the skin.

Colic is of two kinds, nervous or spasmodic, and wind colic. The former is limited to some portion of the bowels, and comes on in more decided paroxysms than the other, in which gases, secreted by a morbid state of the intestines, or arising from the fermentation of indigestible food, are the cause of pain.

Thorough cleansing of the bowels by injections is generally an effectual remedy. The nervous, and more purely spasmodic kind, however, is more obstinate, and requires absolute diet, the half-bath, or thorough packing. Hot fomentations give relief, but rather favor future attacks, and should be used sparingly. Intense cold overcomes spasm, as well as heat, without being weakening.

Where there is stoppage of the bowels from mechanical or any other cause, give injections to any extent, to the amount of two or three quarts even, if needed; but no cathartic medicine. If there is intussusception, or the stoppage of one of the small intestines by a fold of another part of the tube, every grain of cathartic medicine increases the difficulty and hastens the fatal result. The best treatment, like that of hernia, is to find the place of difficulty, as nearly as can be, and apply ice-water or ice, so as to thoroughly chill the parts.

Some persons are subject to terrible attacks of pain from the passage of *gall stones*, and from *gravel* in the ureters. I have found nothing so effectual in these cases, as to cool the parts as thoroughly as possible.

Fold a sheet so as to make several thicknesses, wring out of ice-water, and apply, rubbing the extremities, putting hot bricks or bottles to the feet, or wrapping up well in blankets. Repeat the cold application as needed. This is a good method of treating all violent, painful, local inflammations.

Hernia may be reduced, in almost every case, by pouring a stream of very cold water upon the part, until thoroughly cooled, and then pushing up the bowel. Snow or pounded ice, may also be used in all these cases.

Cholera is the common, mild, sporadic, or the malignant and epidemic. Each is characterized by vomiting, purging, pain, and cramps of the bowels. The latter is more severe and fatal, and determined by a specific and, as yet, unknown cause. The same persons are subject to both kinds; for there are in both the same constitutional causes of exhaustion and irritation.

The treatment is the same in both cases, but proportioned to the intensity of the disease, and the strength of the patient. Cleanse and quiet the stomach by large draughts of tepid water; empty the bowels by injections; give a thorough half-bath, or a rubbing sitz-bath, by letting the patient sit in a tub of moderately cold water, and rubbing the bowels for ten or fifteen minutes. Put a wet bandage around him, cover him up well in bed, and rub the extremities till they are warm. If the symptoms return, repeat the rubbing sitz-bath; or if not so severe, use the wet-sheet pack.

I have seen the hot stimulating treatment tried in Asiatic cholera, and it only hastened the fatal result.

Medicines are of no avail; mild cases recover in spite of them; but I feel perfectly certain that fewer persons in this country would have died of cholera, if there had not been a doctor in it. The statistics of the disease everywhere point to this conclusion. What are called medicines often kill. I believe they seldom cure.

Cholera Infantum is the fatal disease of weak and scrofulous infants, who are exposed to bad air and unhealthy conditions. It is especially the disease of crowded populations. Among its causes, as given by medical writers, are dentition, improper food in all its varieties, including *the milk of a pregnant mother, or one who uses the means to become so*, want of cleanliness, heat, bad air, etc.

It comes on slowly, with feverishness and general derangement of the whole digestive system, sore mouth, fretfulness, thirst, vomiting, diarrhœa, tenesmus, or painful straining at stools; the abdomen is tender, the face haggard, the limbs emaciate; sometimes incessant crying, tossing of arms, and drawing up the feet; in others there is insensibility, approaching to coma. It may carry off a child in one day; or, where not hastened by medicines, may last three months. Every summer, during the hot season, hundreds of children die in New York, every week, of this fatal disease.

Prevention is better than cure; and the two indispensable means for either are good air and good food. Change of air alone is often sufficient for a cure. If we secure a patient good air, and give it very little food, and that of undoubted purity; if we bathe the skin, and wrap the bowels in wet bandages; if we give the wet-sheet pack as often as there is fever, and a

cooling injection after each movement of the bowels, it is all we can do, and offers the best promise of cure ; but a scrofulous child may dissolve and die, with all our efforts.

Worms.—No healthy child, living in healthy conditions, ever suffered from worms. It may be doubtful whether we should have any of these parasites in a perfectly natural condition ; but I am sure that the kinds and quantities that do mischief are the result of disease. For the ordinary kinds of worms, I would use nothing but the common conditions of health, treating symptoms as they appeared, giving coarse bread, grits, and fruit, and frequent injections of cold water to the bowels. If I had a tape-worm, I should try water and starvation ; but if this did not answer, I should be much tempted to poison him. Probably the safest way to do this would be to take an ounce or two of spirits turpentine ; a less quantity is more dangerous. The tape-worm grows to the length of forty or fifty feet, and has a small head, on the sides of which are three suckers, by which he fastens himself to the intestine. Hypoish people, who are simply dyspeptic, are always imagining that they have tape-worm, or some “live critter in their inards.” The only certain sign of a tape-worm is to have a few feet or yards of it come away.

Many affections of children, such as bad breath, restlessness, picking the nose, fever, startings, and convulsions, are attributed to worms. These are signs of irritation of the stomach or intestines from *any* cause, and worms is the least likely. Even when worms exist, they are not so apt to be the cause of these bad symptoms as improper food, or too much of even the best

that can be eaten. Mince pie, raisins, candy, and green apples are worse than worms.

Liver Complaint.—I can remember when every sick person had liver complaint, and I can well believe it, for this organ must be affected by any unnatural condition of the diet and digestion, or any exhaustion of the system. Every thing, food or medicine, goes through the liver, and this viscus can not fail to be very often disordered.

The liver is subject to acute inflammation, chronic inflammation, enlargement, shrinking, hardening, softening, excitement, and torpidity. Acute inflammation, marked by pain, tenderness, fever, cough, is to be treated like other inflammations—the other affections like dyspepsia, with the wet compress over the affected region.

Jaundice is cured by the wet-sheet pack and general treatment, as for dyspepsia.

Constipation is pre-eminently a disease of exhaustion. It is caused by any thing that uses up the vital power; by indolence, by licentiousness, by gluttony, and is promoted by inattention to the calls of nature. Habit governs somewhat in this as in other processes. Food of a too concentrated, fine, and purely nutritious character favors constipation. On the other hand, coarse food, as unbolted wheat, vegetables, and fruits, give the bowels tone and action.

Constipation is a symptom in many diseases, and a cause of many more. That is, this is one of the chain of causes and effects united. But no cause of constipation is so frequent as the use of purgative medicines.

We cure constipation by the restoration of health.

We promote the action of the bowels by proper food, in proper quantities. We relieve, as well as cure, by daily full injections of cold water, by which we cleanse and strengthen. For this purpose the water may be retained fifteen minutes with advantage. If absorbed, it will be because it is needed in the blood. The regular use of the sitz-bath and abdominal bandage, are among the best applications. Either of these is better than all the cathartics ever swallowed by the whole human race.

Piles are caused by constipation and all its causes; but more especially by sedentary employments and amateness. They are cured by continence, exercise, and the same remedies as for constipation.

Disease of the Heart is, just now, the complaint most in fashion. The action of the heart is liable to derangement in all diseases of exhaustion, but its serious organic affections are very rare. It is an organ remarkably well able to take care of itself. Its possible organic diseases are hypertrophy, or thickening of one or both ventricles, dilatation, and ossification of the valves. These may be indicated by the force or weakness of action, and by certain sounds. Hypertrophy of the right ventricle may cause hemorrhage of the lungs; of the left, apoplexy.

All that we can do for a patient in any case, is to give him the best conditions of health, and enjoin the strictest "temperance in all things."

Angina pectoris is a painful, spasmodic, paroxysmal disease of the heart, of the most distressing character. It is rare, and we know little of its cause or cure.

Functional Disorders of the Heart depend upon

passional excitements, amative excesses, dyspepsia, hysteria, or exhaustions of any kind, and must be treated accordingly.

The Arteries are liable to inflammation, and to aneurism, a distention which increases till it bursts and causes a fatal hemorrhage. Rare; treated like organic disease of the heart, or, if it can be reached, life may be saved by surgery.

The Veins are also liable to inflammation and distention. Cooling treatment, as the wet-sheet pack, is adapted to one, invigorating to the other.

Dropsies are unabsorbed effusions of serous or watery matter, in serous membranes, morbid cysts, or in the areolar tissue. Generally diseases of exhaustion, and often caused by bleeding. Dropsy sometimes arises from pressure on the large veins, by preventing the return of blood to the heart. In a healthy state of the system, this watery matter is continually poured out of the arteries, and taken up by the veins, exuded, and reabsorbed by the serous membranes.

Hydrocephalus is dropsy of the brain, a fatal disease of infancy and childhood. It is acute or chronic. In the latter case, the head is sometimes enormously enlarged. Its signs are, in the acute kind, vomiting, restlessness, pain in the head—then coma, slight convulsions, strabismus. Then comes a remission of the symptoms, then collapse, and death.

There is dropsy of the pleura and pericardium in the chest.

In the abdomen we have *ascites*, or general effusion from the peritoneum; or encysted dropsy around the liver, or of the ovaries.

Over the whole body, but especially in the lower extremities, there may be edema or anasarca, dropsy of the flesh or areolar tissue. This occurs in consumption, or from pressure or exhaustion.

Dropsy of the brain is nearly hopeless; that of the heart almost as bad; the pleura reabsorbs more readily; ascites is sometimes cured; encysted dropsy yields to tapping, occasionally; and edema ceases when its special cause has disappeared. On the whole, the prognosis is unfavorable. If there is a capital stock of vitality, we may so invigorate the system, as to promote absorption any where. The treatment is to invigorate the system, promote the circulation, and especially strengthen the skin. I have seen a course of alternate wet-sheet and blanket packings do wonders.

Diabetes is a large flow of urine, of either a natural or morbid character. In the latter case it contains sugar formed by some unnatural state of the digestive function. It is curable, in either case, by strict vegetable diet, and the wet-sheet and blanket pack, with other general hygienic regulations. Cases that have resisted the *elite* of the medical profession in this country, have yielded to this treatment.

Cancer is an intense concentration of morbid matter and action—of intense malignancy. I believe it to be a constitutional disease, and often hereditary. It attacks the breast and uterus in women, the testicles in men, and the tongue, rectum, stomach, etc., in both sexes. Surgical operations are seldom effectual. I know of but one cure—the strictest diet, verging on starvation—the purest and most invigorating life, and a course of

the most active purification. In this alone is there a well-founded hope of cure.

Stone and Gravel are caused by drinking hard water, by a flesh diet, and by dyspepsia. Soft water, and a fruit diet may effect a cure; but where the stone is large there must be an operation.

Rickets yield to the cold bath, good air, and a pure diet. A wet bandage, and the wet-sheet pack, by relieving the system of scrofula, will expedite the cure. An infant with rickets should be weaned, or have a healthy nurse.

Marasmus, or atrophy, is the last stage of consumption, either of the lungs, the bowels, the spine, or the lacteal glands.

CHAPTER XXVII.

DISEASES OF THE GENERATIVE SYSTEM.

I COME now to the most important portion of this work, with the conscientious determination to do it faithfully. Much of what I have given you, of diseases and their treatment, you may find in other works on water-cure, but I know of no book which contains all the information that is needed on the subject of this chapter. It is such as few care to write or print. I believe it is such as few physicians have any knowledge of. They are either ignorant or faithless.

Every function, when itself in healthy action, is a fountain of life and energy to all the rest of the system. Thus the healthy soul gives strength and beauty to the body; thus the brain showers down its energy upon the organic system; thus the organic system nourishes all the organs of animal life; and in the same way the generative powers give force, and spirit, and intense vigor to every organ of the body and every passion of the soul. It is like the mutual interpenetration and influence of the elements of nature. The water dissolves earth and atmosphere; the air contains vapor of water, telluric emanations, and vegetable and animal aromas; the earth is penetrated by water and air, and all are pervaded by the active forces of heat, electricity, etc.

But when a function is diseased, it brings pain, disorder, and weakness to every other. Poison the brain, and the whole system reels; let disease attack the stomach or intestines, and life trembles; exhaust or disorder in any way the generative function, and the whole being suffers. If you have read my description of the nature and action of this function, you will be able to understand the terrible effects of its morbid conditions.

Some of the diseases of the generative system are common to both sexes, some peculiar to each.

Masturbation, or the solitary indulgence of amative-ness, I have already spoken of as a cause of disease; but it is none the less truly a disease, or a diseased manifestation. Those who practice it are more unfortunate than guilty. Inheriting an excess of passional desire, and a peculiar excitability of organism, they fall into this habit as the morbid expression of morbid feelings.

It is a sin, a crime, if you please ; but it is a sin or crime against nature, often not against reason or conscience. It is a crime that brings its own punishment—a sin that makes its own hell. Nature can not forgive such sins. They are unpardonable, as are all sins against the holy spirit of life.

There is no reason or conscience to govern a child not two years old, and many such fall into this habit. Many a child sinks into the grave from the infantile practice of masturbation. In these cases, no doubt, the disease is hereditary. A diseased parent has impressed the full force of his sensual passions upon his child. A mother has marked her infant with this vice, by having her own amateness excited during the sacred period of gestation.

This is not always the cause—at least, it is not the sole cause of the disease. In little girls it comes by the accident of some uncleanness, or eruption, irritating the parts, and compelling the friction which results in the unnatural gratification. Boys are abused by ignorant and libidinous nurses, who play with their organs, both to gratify their own sensuality, and to keep the children quiet or please them, when they are peevish or ill-tempered. Older boys and girls, allowed to sleep with servants, or children already corrupted, are initiated into this practice. Children at school, especially at boarding schools, teach each other, and one boy or girl will infect a whole school.

I see around me many reasons for believing that this practice is fully as common—perhaps more common—with girls than boys. Few of either sex escape this pollution. When it is not at first a disease of the gene-

rative organs, it soon becomes so. The desire grows by gratification, and the act is accomplished often a dozen times a day. Boys perform the act with the hand at first; but sometimes they find means to vary it, and aid the imagination by other means. Girls use several methods. They mostly excite the clitoris and external parts by friction with the fingers, by rubbing against each other, or some soft substance; or, not satisfied with this, in some cases they find means of penetrating the vagina, using some round, smooth article, as a candle or slim Cologne bottle; there is even an elaborately manufactured instrument made expressly for this purpose.

It is supposed by many that the mischief of this practice is from the loss of semen. The loss of this secretion is certainly exhausting; but this is far from being the greatest source of evil. Boys secrete no semen before puberty, and girls never secrete any. The real source of mischief is in the nervous orgasm, that vivid, ecstatic, and, in its natural exercise, most delightful of all sensuous enjoyments. The orgasm is almost a spasm. When prematurely excited, though then imperfect, it gives a shock to the whole system; and when often repeated, the nervous power is completely exhausted. All the vitality of the body goes to supply the immature and too early exhausted amative organs in the brain and body. The cerebrum is robbed, and the child loses sense and memory; the digestive system is robbed, and we have dyspepsia and decay, with a terrific train of nervous and organic diseases.

Even after the age of puberty, when the organs are fully formed, and ready for, and imperiously demand-

ing, their natural use, solitary indulgence is far more exhausting than social. When two persons, loving each other, and adapted to each other, come together in the sexual embrace, nature has provided that a portion of the nervous expenditure of each goes to strengthen the other, and there is comparatively but little loss. In a union without love, or where all the enjoyment is on one side, the loss is greater, for there is less compensation. A merely sensual union is destitute of spiritual and magnetic compensations; but where there is the simple, artificial, and utterly unnatural excitement of the orgasm, without reciprocity, compensation, or use, the result is only evil.

The following are given by reputable and scientific medical writers as among the symptoms or effects of this disease, and cause of diseases:

Loss of memory and mental power; entire concentration of mind and imagination on one feeling and act; a besotted, embarrassed, melancholy, and stupid look; loss of all presence of mind; incapability of bearing the gaze of any one; tremors and apprehensions of future misery; morbid appetite; indigestion and the whole train of dyspeptic symptoms, constipation, foetid breath, etc.; pale, sallow, cadaverous, or dirty-looking, greasy skin; eruptions of pimples over the face, particularly the forehead, and on the back between the shoulders; hollowness and lack-luster of the eyes, with a dark circle around them; feebleness of the whole body; indisposition to make any active exertion; weakness, weariness, and dull pain in the small of the back; creeping sensation in the spine. Finally, there comes insanity or idiocy; atrophy, and death by consumption,

most probably of the lungs ; but often of the spine or the bowels.

“ The young girl who gives way to it, loses her color, grows emaciated, does not increase in proportion to her age ; from time to time she complains of pains in the chest, stomach, and back ; of lassitude, without there being any known cause to give rise to such symptoms. She grows weak, her color alters more and more ; her eyes, mouth, her walk, her mode of speaking, all her features, all her carriage, in fact, bespeak langour and indifference. Menstruation comes on either too much or too little, amid nervous affections, and other serious derangements of health, with which it would not have been accompanied, if the patient had been moral in her conduct ; the periods of this periodical evacuation are prolonged or become too frequent, sometimes they are changed into true hemorrhages, and generally are much more in quantity than ordinarily. From this may result, in a longer or shorter period of time, an habitual deranged state of the womb, and consequently a sufficient cause for all the affections or accidents to which this organ is liable. Some solitudinarians have nervous affections, blue devils, pains in the lower part of the belly, and the whites ; their eyes appear sunk ; they are encircled with a black ring ; sometimes they approach to that state which we call *strabismus*, or appear improperly turned, from the alteration of the nerves which are distributed to the muscles which move them—in fact, they partially squint ; all their face assumes a sombre aspect, an old and care-worn expression ; from weakness they can not hold themselves upright ; at other times, their body does really curve, at

first insensibly, but afterward very manifestly; they have fever, their hands are almost always damp with perspiration, burning, or else icy cold; in the end they become dry, cracky, trembling, and without power; their arms are characterized by the same peculiarities; the skin is rigid and crepitant; they daily lose that soft and elastic roundness which one feels in touching the skin of persons who enjoy health; they are often also bathed in perspiration during the whole night.

“The teeth of some break; the enamel looks as if it were cracked, or it is broken into small notches like those of a fine saw, results of their close pressure and grinding one against another, occasioned by the convulsions which almost always accompany the acts of solitary indulgence.

“This grinding of the teeth sometimes takes place with a very great noise. One of the patients whose history I have reported, exhibited this peculiarity in an extreme degree, in the convulsions which came on every moment, so that one could not listen to it without shivering.

“Every thing bespeaks in these persons exhaustion, and is indicative of sadness, ennui, and disgust; they are timid; but it is not the amiable timidity of modesty and chastity, which is very different from what they display.

“The timidity natural to a young person is an ornament to her; theirs overwhelms them; they are more confused than timid; nothing pleases or interests them, neither the society of their relations or companions, nor dancing, nor the occupations of their sex and age. Repose, indolence, and solitude, of which they are at

once the sad lovers and victims, alone have charms for them. They not only have no desire for marriage, but an invincible repugnance against it. Numberless pustules sometimes make their appearance, and inscribe, in hideous characters, their passions on their brows, where one would expect to read soft modesty and amiability. They avoid the gaze of visitors, and are embarrassed when one suddenly approaches them."

I copy the quoted paragraphs from a French medical author, who has given this subject great attention.

One of the sad, but most natural, effects of this habit is the destruction, to a greater or less extent, in both sexes, of the proper action of the generative function. When young men have gone to a certain extent in this practice, they lose the natural desire for women, and even the power of enjoying the pleasures of love. There is either a morbid irritability that produces the orgasm and the loss of semen at the first attempt to penetrate the vagina; or an insensibility that requires unnatural means of excitement; or, finally, an entire impotence, without even the power of erection, when it is required, though it may occur when it is not.

On the other hand, women who have exhausted themselves by secret licentiousness are often so *virtuous* as to hate the sight of a man, and abhor the idea of the holiest expression of the Divine Creative passion. These are our most censorious prudes, and immaculate virgins, who do not fail to crush and banish from their pure society, any poor girl who yields to the supplications of her lover and her own natural healthy desires. From the continued excitement of the clitoris and labia, the seat of sensation is wholly transferred

from the vagina and womb to these external organs, and even in them the sense of pleasure is finally exhausted. Or if, as in some cases, the vagina itself is the seat of abuse, the artificial instruments made use of, and even their increasing size, destroy the proper effect of the natural organ. When woman so unfortunate comes to be married, she receives the warm embraces of her husband with indifference, and perhaps with disgust or absolute pain. She is cold amid his ecstasies, yields only to his commands, and turns from him with repugnance. Sometimes barrenness is induced, but in most cases nature retains the power of reproduction, even when the sense of desire and pleasure is destroyed. It is not strange that such women should sometimes be impregnated in their sleep.

How shall we cure this diseased manifestation, and prevent all these horrible consequences, from which civilization suffers from center to circumference? Without which, also, its moralities could not exist.

Prevention here is the all-important thing. Every man and woman should endeavor to have such a healthy control over their own amative propensities and manifestations, as to avoid giving their children the terrible inheritance of diseased and disordered passions. All nature points out those laws of the passions which man alone, of all beings, and especially civilized man, habitually violates. And there is no violation of nature which brings not its penalty.

It is the duty of the parent, the nurse, the teacher, to watch over the child, from its infancy, with the utmost care; to watch for and prevent the first indications of this disease.

Bathing, clothing, bedding, air, food, exercise, every thing should be pure and healthy. In little girls, care should be taken in washing to keep the genital organs free from any cause of irritation. Both girls and boys should be kept from those "evil communications" which "corrupt good manners."

And as soon as the child is old enough to understand any subject whatever, it should be taught by its father and mother the uses and laws of the generative function. Were it possible to keep children in ignorance, where can be the use? But it is not. The animals and the very insects will be their teachers. They will learn enough for evil; but not enough for good. A pure, thorough, scientific knowledge should come from the parent, at an early age, and when the child reposes unlimited confidence in its natural protectors. I have seen children who were early educated in a knowledge of the laws of the passions, and I have seen none more modest, more pure, or more capable of taking care of themselves. Depend upon it, the best and the only safeguard to chastity is knowledge. Thousands of poor children, of both sexes, are corrupted and ruined from sheer ignorance. The boy who has been instructed in the nature and evils of vice, is warned and armed against it. The girl who understands the physiology of the passions, will neither plunge into solitary debauchery, nor can she be seduced, as the ignorant girl can who falls a victim to some artful man, in a moment of passionate weakness, before she knows what she is doing. Be assured, that knowledge is the best safeguard of purity.

But when this habit is formed, and is producing its

terrible effects upon the mind and body, how can it be arrested? By moral suasion, combined with hygienic regimen. Not an hour is to be lost in any case where you suspect this evil. Explain lovingly to the child or the youth all the enormity, unnaturalness, and evil consequences of this vice. Encourage him, or her, by every motive of hope and terror, of manhood, virtue, and religion, to overcome it. Provide a pure, simple, and not too nutritious diet, with an avoidance of all exciting food and condiments. Give full employment to mind and body, plenty of exercise in the open air, constant society. There should be no solitude.

In bad cases, where the habit overpowers reason, the patient should never be alone for one moment, night or day. He should only go to bed when so sleepy as to lose himself in a moment. He should rise the moment he wakes. The bed should be hard, with cool and light coverings. A wet bandage may be worn around the loins, and folded so as to cover and protect the genital organs, like a child's diaper. A full cold bath should be taken every morning on rising, and a cool sitz-bath on going to bed. Let the bladder be often evacuated, and the bowels kept regular. An injection may be taken on going to bed, with advantage.

If the patient will join in the effort, with a hearty good will, these are the means of cure; if not, he or she should be treated as already insane, and put under any necessary degree of restraint, for loss of the power of will is one of the sad effects of this diseased habit.

The rising douche, or dashing cold water on the genitals, with the free use of the vagina syringe for females, will assist in restoring the tone of the organs.

Society, especially that of proper persons of the opposite sex ; reading, in science, history, and biography ; the pursuit of such natural studies as botany, mineralogy, and other branches of natural history ; the cultivation of music and the arts of design ; all that can interest, elevate, and purify the mind, will aid in the cure. On the other hand, every thing exciting to voluptuousness and amateness must be avoided.

Voluptuousness in nature and art has its proper sphere and uses, and is a source of delicate and exquisite pleasure ; but it is not for those whose passions are diseased. In a healthy world we should find the true uses and enjoyments of this passion. A picture, or a living form of voluptuous beauty, gives to a healthy person a feeling of calm, pure, and exquisite enjoyment ; but it excites in a morbid mind and organism nothing but libidinous fancies and lascivious desires. The two signs of unhealthy passions are the extremes of squeamish prudery and shameless indecency.

Nymphomania in women, and *Satyriasis* in men, are names given to inflamed and excited conditions of the generative function. The seats of this disease are in the cerebellum, extending to the whole brain, and involving every feeling ; the lower part of the spinal cord, exciting continual erections and automatic and spasmodic action ; and the generative organs.

Its causes are masturbation ; exciting diet ; an indolent, sensual, and voluptuous life ; and continence, or entire abstinence from the enjoyments of love.

Weak passions may be quieted into atrophy, by repression ; but not strong ones, such as the instinct of breathing, or alimentiveness, or amateness. Hunger,

it is said, will break through stone walls. Not less fierce are the struggles of lust, when its fires are kindled by passional starvation. Continence, in the season of vigor and passion, is a terrible discordance. All male animals especially suffer from it. It is said to be the cause of canine hydrophobia. The law of every faculty is proper, natural, harmonious exercise. The motto of every organ should be that which is sometimes printed on the ace of spades, in a pack of cards, "use, but don't abuse me."

The symptoms of this disease are an excessive and perpetual desire for sexual intercourse; a mind filled with lascivious ideas, and excited to frenzy by every voluptuous image; a real monomania, in which one idea fills the whole horizon to the exclusion of all others. There is no longer any discrimination of beauty, or fitness, or attraction; to the diseased man every female, and even a female animal, is an object of desire. Black or white, old or young, beautiful or ugly, it makes no difference. Under the influence of this disease men have committed rapes on little children and aged women. It is a frequent cause of incest.

When women or girls are affected with nymphomania, or furor uterinus, there are similar and even more striking manifestations. There is often a mild attack at the age of puberty, when girls have such a desire for the other sex, that, as one said, "every man looks like an angel." They invite familiarity, and seek personal contact under every pretext. Plays and romps are often accompanied with these manifestations. Their embraces are full of warmth—their kisses humid

with passion. When the disease is a little further advanced, they lose all sense of decency ; inviting men to sexual commerce by words and gestures, and with passionate tears. Under these influences women have committed excesses of which men are not capable. It is true that a man may be affected with a protracted priapism, or erection of the penis, which no amount of sexual intercourse may relieve, but he is not capable of a great number of successive orgasms, nor can the testicles form a continuous supply of the spermatic fluid. But in women, when all the force of their natures is turned in this direction, there is a capacity for enjoyment far exceeding that of men ; and women have been known to receive and exhaust a large number of men in rapid succession, without being satisfied. In either sex, this disease may go on to a permanent insanity, and a death as horrible as the imagination can conceive.

The processes of water-cure give us the means of controlling this disease to a remarkable degree. A spare and entirely unstimulating diet, the sitz-bath, the cold douche, or ice-water to the cerebellum, are plainly indicated. The vagina syringe helps to overcome the inflammation of the womb, and the wet bandage, often renewed, should be worn around the loins by women, and should cover the genital organs in men. The treatment is, in fact, very similar to that for masturbation or inflammation of any other part of the system.

Amative diseases and irregularities lead to *Sterility* and *Impotence* in men, and *Barrenness* in women. These are sad afflictions ; for nature, with an ever-

yearning heart, demands the perpetuation of our species. No desire is so universal as that for offspring. It is next to the love of life—often it exceeds it. It pervades the whole organic world, vegetable and animal. To procreate a being like ourselves, and formed of us, is to imitate the Deity. It is to prolong our own existence. Not to have children is like the apprehension of personal annihilation. As all healthy beings procreate, not to have the power of producing offspring is the effect of disease.

Sterility in men is the result of inaction of the testicles, by which the spermatic animalcules are not produced; or some abnormal condition, which prevents the semen being conveyed to its destination. Exhaustion may stop the secretion. The semen may pass off in involuntary emissions, by night or day, or into the bladder, so as to be voided with the urine; or there may be impotence, or the lack of power to erect the organ, and consummate the sexual act. These conditions may be accompanied with the subsidence of sexual desire, or a state of complete eunuchism; or the desire may exist without the power. Where desire remains, there is more prospect of recovery.

“Some are born eunuchs,” the Apostle affirms. It is true that many persons of both sexes are born without amative desire or power. Unfortunate victims of ancestral vice, how can they ever obey the command, “Honor thy father and mother.”

Masturbation leads directly to impotence in men and women; often to sterility in the former.

Barrenness in women is not, as in men, the result of impotence. The organs, external and internal, may

lose their sensibility to pleasure—there may be merely the cold, indifferent, or even painful or repulsive reception of the masculine embrace, and still the ovaries may form their germs, and the uterus may nourish them. Barrenness in women may proceed from falling or other displacement of the womb; from the closing of its mouth; from leucorrhœa or whites, or other diseased discharge, which may arrest and destroy the zoosperms; or it may be caused by inflammation, or excessive irritability of the uterus, by which the embryos are thrown off in a series of early abortions; and the same result may be produced by the frequent excitement of amateness.

The cure of sterility in men in those rare cases in which it exists without impotence, must come with health. Use the same treatment as for dyspepsia, or masturbation, or scrofula, or whatever may be the condition of the patient.

The cure of impotence must be a course of gradual invigoration. Put the patient into the best of possible healthy conditions, and the cure will come. As he gains in general vigor, there should be the natural incitements to amateness.

The company and friendly intercourse of strong and affectionate women, the moderate indulgence of the sentiment of voluptuousness, will favor a cure, by gently directing the current of life into the cerebellum, and its special organs.

The impotence of women requires corresponding treatment, with bathing, the sitz-bath, the wet bandage, and the vagina syringe; there should be combined, if possible, the love, the magnetism, and the tender

caresses of some strong, healthy man. This magnetism gives a strength, health, and life, of which few are aware, but which every exhausted nature craves with an infinite longing. When a delicate, exhausted woman lies upon the bosom of a strong man, with his loving arms around her, a new life is infused into her being.

But when barrenness comes from excessive action, it must be treated like nymphomania; and the woman who desires to have a child by the man she loves, should receive his embrace at the proper period, which I have already pointed out, and but once. She repeats it at the risk of losing her desires. She must wait until the recurrence of the period.

Where there are diseases or displacements, they must be remedied. There are more impotent and sterile men than barren women. Nature has provided for this, in her maternal care for the species. No woman can be the mother of more than twenty or thirty children at the utmost, but any well man may be the father of thousands. A woman can possibly have one or two children every year; a man may possibly have a hundred in the same period.

Among the noblest animals below man, only the most vigorous males are allowed to procreate. Nature has so provided for the conservation of the species; but every miserable, diseased, idiotic specimen of humanity thinks he has a right to beget children, and perpetuate his diseases in a miserable and depraved offspring. If I believed in the principle of the Maine liquor law, I should be in favor of one to prevent the perpetuation of human vices and miseries by hereditary transmission. I have no faith in such laws; but I have much faith in

the growing intelligence of women, which will teach them the duty of obeying their natural instinct to select the best possible fathers for their children. Women have an unlimited and acknowledged right of rejection; it may be doubted, perhaps, whether a man has such a right. There is certainly a great difference in this respect. A man feels under far more obligation to gratify a woman, than a woman does to oblige a man. His gallantry is much more comprehensive than her complaisance. Kind, benevolent, and obliging as woman certainly is, she feels a right of refusal and exclusion, which is not felt by a man. But we are not yet prepared for the ultimate results of such speculations.

Venereal Diseases require a brief mention here, as being connected with the disorders of the generative function. At one period of my medical studies I gave this subject very close attention, and I will give here, very briefly, the result of my investigations. I do this the more cheerfully, because, in numerous instances, men, women, and children are the innocent victims to these diseases; and they should have, without needless exposure, the means of cure. Men give these diseases to their wives, women to their husbands, and children inherit them from one or both parents.

The two diseases, considered venereal, as resulting from a poison communicated by sexual connection, and gonorrhœa and syphilis.

Gonorrhœa has probably existed since men and women first became diseased. It is an inflammation of the mucous membrane, caused by a peculiar or specific virus; but this virus may be developed, I believe, by filthy habits, or by general disease of the constitu-

tion. Thus, if a man have commerce with a woman who has a bad leucorrhœa, or in some cases, during the menstrual period, the result will be a poisoning and inflammation of the urethra, followed by first a mucous and then a purulent discharge. If the patient is very healthy, he may not take the infection, or may quickly throw it off. But if his system is full of bad matter, it will be drawn to the diseased surface, keep up, and increase the discharge. There may even arise indolent buboes, from the poisoning of the inguinal glands by the matter coming to the part affected, or which is passing off into the system. If any of this matter comes in contact with the inside of the eyelids, it may produce a gonorrhœal ophthalmia. The color of the matter which comes from the urethra is greenish, and this is considered diagnostic of the genuine disease.

In women, this affection exists both in the urethra and the vagina.

It is a disease, filthy and troublesome, and even dangerous in some of its results. When long kept up it causes thickening of the membrane in the male urethra, and consequent stricture, or stoppage of the urine. It is therefore advisable that we adopt at once the means of cure; and especially that we do not tamper with the remedies so much in vogue; for in this, as in many cases, the disease often has the credit of consequences that belong to the treatment.

A strict diet, bathing the whole body, drinking plentifully of soft water, eating watery fruits, melons, etc., and bathing the parts in tepid water, taking tepid sitz-baths, and wrapping them in wet cloths, will cure. I say tepid water, because the action of cold would

continue and increase the disease. In tender parts and small surfaces, as in gonorrhœa and ophthalmia, I prefer not to increase the action of the part by cold.

Women should take many sitz-baths, and use the vagina syringe with tepid water very often. The diet must be very sparing, and contain not an atom of grease. So simple is the cure of this disorder.

Syphilis is a virus of a far more malignant kind. God knows how it was first developed; but I am entirely satisfied that it has only been known to the civilized world for three centuries. It was not produced by any ordinary debauchery. In the worst days of Babylon or Rome, it was entirely unknown. We find no hint of it in ancient authors, medical, historical, or satirical. It was never known in Europe until the period of the return of Columbus from the discovery of America. In five years from that time it had spread over Europe, and committed everywhere terrible ravages.

Some have a theory that it had its origin in Italy, at this period, from a soldier having had intercourse with a glandered mare. It prevailed in an army then in Italy, certainly; but others say it was brought from Spain, by some officers who had been with Columbus, or had got it at Madrid.

My own belief is, that it was developed among the Carib Indians, by the use of the most revolting form of carnivorous diet, the eating of human flesh. Whatever its origin, it soon infected the blood of Spain, spread over Europe, and was carried by commerce to every region of the earth—many of the fairest of which it

has depopulated of their original inhabitants. The Europeans who discovered the Eden islands of the Pacific, carried with them two scourges, rum and syphilis. It is true that they have also carried them missionaries; but the aboriginal races will not long remain to enjoy the benefits of their instructions.

There are three forms in which the disease manifests itself. *Primary*, in the chancre, or ulceration of the inoculated part and of glands in its vicinity. This is by the absorption of a concentrated virus of another chancre. *Secondary*, in eating away the cartilages of the throat and nose, and eruptions of the skin. *Tertiary*, in disease of the bones, and general diffusion of the poison through the system.

Each form of the disease may generate its own, or the one more diffused. Thus the primary chancre may produce itself in another, or be absorbed and make its first appearance in the secondary form. The secondary disease may also produce its own symptoms, or the tertiary. These forms are taken by direct absorption, either from the whole skin, or some particular portion. Thus a person simply sleeping with another, or even in the same bed—possibly by bathing in the same water—may take the disease. The infant with whom it is hereditary, gives it to the nurse, who, in turn, gives it to her husband. We have here no question of moralities; it can not be said that these persons deserved their disease.

The idea that mercury is a specific in this disease, is now utterly exploded. On the other hand, it is widely known that the mercurial treatment produces consequences which can not be distinguished from syphilis.

I know that it can be cured by water, in every stage, without a particle of medicine. Water cures both syphilis and the effects of mercury.

But in the treatment of this disease we must not forget that we have a real virus to deal with—a poison of no ordinary kind, but one which disorganizes wherever it goes, until it either loses its force or the system becomes habituated to it, as it does to malaria and other morbid agencies.

The prevention of this disease is a matter of great importance to individuals and communities. Some enlightened governments of Europe have made efforts at its eradication; but such efforts must be more general to be effectual. In many cities of the continent, all prostitutes are registered, and put under the supervision and protection of the police. They are obliged to submit to a periodical medical inspection, and if found diseased, are sent to the hospital. This makes them careful, and gives a degree of protection; but in England and the United States all this is wanting. Our municipalities can protect men from drinking a glass of brandy, but whole generations may perish of syphilis and its resulting scrofula.

Women may generally protect themselves by carefully examining the organs of men with whom they cohabit, and still more by using the vagina syringe after every possibly suspicious connection. The examination, to be thorough, must extend to the glans under the prepuce and the mouth of the urethra. Men have scarcely the same means of protection. The ulceration of the female organs may be at any point from the labia to the neck of the uterus. A thorough washing with soap and

water is a tolerable safeguard. A perfect condom is an entire protection to both sexes.

When the parts are in a firm and healthy state, there may be neither inoculation nor absorption; and some persons seem to have the power of resisting all kinds of virus. No deadly thing will harm them. This is the condition of purity and vigor, worthy of the name of health.

The regimen for cure must be the same as in gonorrhœa, but we require more active purifying treatment. I order a wet compress to be kept upon the chancre, and the part to be washed in cold water. It is better to keep up the discharge, with the alternation of the wet-sheet and blanket pack, to carry off any absorbed matter by the skin. When the hard rim around the ulcer has softened, and its appearance changed to that of a simple ulceration, we may use a dry dressing, or a covering of simple cerate, and let it heal. I would cut out or burn, either with a hot iron or caustic, a sore on its first appearance; and possibly it would have gone no further; but after the ulcer is well developed, there is no safety short of thorough treatment for six weeks. In every stage of the disease, where it can not be cut short by excision or cautery, we must use the same treatment as for scrofula, or other virulent general diseases.

Many cases of *Stricture* may be cured by the wet compress, sitz-baths, and careful friction of the part.

Other diseases of the generative organs are to be treated in the same way as corresponding diseases of other organs.

Seminal Emissions, however, demand a few words

of very particular notice. Women have no such disease ; but they suffer equally, perhaps, from two causes—profuse menstruation and leucorrhœa.

There are few diseases whose victims are in a more pitiable condition than those who suffer from seminal losses. I have had many cases, and believe that my advice, when faithfully followed, has been attended with benefit.

The general trouble, loss of semen, and consequent exhaustion, takes place under several different circumstances. In some cases, the seminal loss is attended by a voluptuous dream. Such dreams occur to passionate persons of both sexes. We dream of love, as of other passions, and go on to its consummation with some beloved or attractive object. We pass through the excitement of sexual connection, and experience the orgasm. Waking, the male finds a flow of semen ; the female a quantity of mucous, secreted by the glands of the vagina. Where this action occurs but seldom, and in consequence of the accumulation of vital power in this part of the organism, it can not be a source of any great mischief, though a poor substitute for the natural gratification of amative desire. It is something between that and masturbation, and is without the compensations of a pure and proper coition.

But in men, in certain states of the system, there comes on an excessive excitability or irritability of the organs, which makes these dreams occur with exhausting frequency. The semen is continually voided, with a ruinous expenditure of nervous power. The seminal vesicles are irritated by the presence of the smallest quantity of the fluid ; the nervous action is excited, and

the exhaustion follows. It is difficult for any well man to conceive of the weak, hopeless, miserable, despairing condition of the victim to this disease.

He feels coming upon him all the consequences of masturbation, without having the power to prevent them. The habit is not within his volition. The nervous organism is performing for itself what the voluntary muscles perform for the victim of solitary vice. Hundreds of young men are driven to suicide by this disease—hundreds more drown the sense of suffering by the excesses of dissipation. All hope of genial life is destroyed. There is no love, no marriage, no children, no ambition, for all power of mind and body is wasted.

In some cases, the action seems confined to the spinal center—the cerebellum no longer acts. The semen is voided unconsciously. Sometimes, in extreme cases, it oozes away without erection, or the slightest sensation of pleasure, even passing off with the urine.

He who has carefully read this book thus far, will scarcely need that I should point out the causes of this terrible disease. I will notice a few. Masturbation is the cause in nine cases in ten. When the victim of this diseased habit would stop, he finds that a fiend has taken the place of his volition; a fiend he has raised, but can not quell. In some cases, beyond doubt, continence is the cause; and it would be in more, if continence or absolute chastity were more common.

All diseasing and debilitating influences may coöperate in causing this condition. Exhaustion, even by natural means, especially in promiscuous or unloving unions, may bring on the irritability of weakness. Married men have it occasionally, as well as single.

There is no more potent cause than tobacco; and the whole class of nervous stimulants favor this action. It is only a particular direction of what we call nervousness.

The causes are generally evident enough. They may date back of birth; and are important to know only that they may be avoided, both for prevention and cure.

In regard to the cure, I have but two or three directions to give besides those given for the cure of masturbation. Let the patient, in all respects, as far as possible place himself in the conditions of health. Let him regulate his food by his digestion, carefully evacuate his bowels every night, sleep cool, and before going to bed take a sitz-bath, *beginning at a temperature of 90 degrees*. Day after day, cool gradually, at the rate of a degree a day. I wish to moderate the action of the parts, and allay the irritability. Cold water may be applied night and morning to the cerebellum. In the morning take a full bath of cold water, and a thorough rubbing. As the cure progresses, the patient will have his sitz-bath colder, and may apply other means of invigoration, as dashing cold water upon the genitals, the rising douche, etc. When the system has attained to some proper degree of vigor, and this diseased action is conquered, it may be advisable to marry—but it may not be advisable to have children until health is fully established. These are contingencies I am not called upon to provide for. There are quacks in the city who prescribe intercourse with some prostitute. Doubtless that large class of our female population must contain many wise, kind, judicious women, who would do the

best they could for such a patient, but I may be permitted to doubt whether there is not an equal chance of finding those of whom it might be said, "The remedy is worse than the disease." This, however, is the case with most medical prescriptions.

The diseases peculiar to women are so many, of so frequent occurrence, and of such severity, that half the time of the medical profession is devoted to their care, and more than half its revenues depend upon them. We have libraries of books upon them, special professorships in our medical colleges, and hosts of doctors, who give them their exclusive attention. We have quack nostrums without number, and instruments of the most curious and complicated construction. We have, moreover, needless and shameless examinations, with finger and speculum; and libidinous manipulations, to which women and even young girls are subjected, of the most infamous character. Diseased women go to these doctors, and pay hundreds of dollars to be felt of, looked into, cauterized or anointed; when it is all sheer, base, mercenary quackery, or worse. One old wretch, in the vicinity of New York, has followed this trade for years, and accumulated a fortune. Ladies of the "highest respectability" have been through his hands. Day after day there might be seen a long line of carriages before his door, and his parlors were filled with women and girls, waiting their turns. I have known of a woman affected with nymphomania, which he had either occasioned or increased, going to him in the night, getting on her knees, and offering him any sum to perform his accustomed manipulations. I have known a mother to take her virgin

daughter to him, and to find, with horror, that she had subjected her to the beastly pollution of an old lecher.

I do not say that all doctors who make female diseases a speciality are alike infamous in their motives and practices. Many are well-meaning, ignorant men; many are merely mercenary. Nearly all do mischief. The result of all the attention paid to this subject, all the medicines and instruments, is, that never were diseases of this class so common, or so incurable in the common practice, as at the present time. The books and professors are all at fault. They have no knowledge of the causes or nature of these diseases, and no idea of their proper treatment. Women are everywhere shamefully outraged and abused. Civilization is a car of Juggernaut, which crushes millions of victims; but none suffer as women suffer. When the full chapter of woman's wrongs and sufferings is written, the world will stare aghast with horror at the hideous spectacle, and we shall be ashamed of the petty subjects of our present fashionable philanthropies.

I know that I am touching now on delicate ground. I know how much women think of their doctors. Poor woman of civilization, with your oppressions and diseases, you have at least two comforts—your minister and your doctor. And you will not be too hard on me for telling you some truth; for you will say, "Whatever other ministers and other doctors may be, mine are different!"

Very well! It is not my business to take from you any source of consolation. It is simply my duty to tell you the truth about the nature and cause of your diseases, and how they may be prevented and cured.

Amenorrhœa is the technical name given to the *Retention* or *Suppression* of the menses. Retention is where they have never appeared. Suppression, where they stop, after once appearing.

Retention is the consequence of lack of development, or of action of the ovaries, or very rarely of some obstruction, as the closure of the mouth of the womb, or the entrance to the vagina.

Lack of development may occur from hereditary weakness, from scrofula, from any of the causes which hinder the growth of the system. Early exhaustion from masturbation, if complete, may suspend this development; or, if less so, it may hasten it into an unhealthy precocity. This depends upon the age at which the practice begins, its degree, and the strength of constitution.

There is much needless alarm and trouble about the simple lack of menstruation. If a girl, at the common age of puberty, is undeveloped, we must wait. Give her all healthy conditions, air, exercise, happiness. If she have any symptoms of disease, as indigestion, constipation, or scrofulous affections, give her the treatment prescribed for them.

But are there no means to hasten the development of the generative system? Yes. In her morning bath, let her dash cold water upon her bosom, and wash it thoroughly. Let her wear a wet bandage low around the loins; take one cold sitz-bath a day, and use the vagina syringe at the morning bath, with the sitz-bath on going to bed. A course of gymnastic exercises, with this treatment, will do all that art can do in aid of nature.

Retention of the menses, from stoppage, is indicated by pain and swelling of the abdomen, and symptoms like those of pregnancy. Its cure may require a surgical operation.

Suppression is a symptom of some exhaustion, or disease, or new action of the system. Of itself it is of no consequence. What it indicates, may be. It may proceed from inflammation of the ovaries, or womb; from exhaustion, by masturbation or other amative excesses; or from disease of some other organs. It very often occurs when the system is undergoing changes in water-cure. We have patients whose menses stop for months, while they are getting purified and strengthened; and the return of the menses is the sign that these processes are completed. Study, mental excitement, fatigue, local inflammations, fever, cold, debility, and exhaustion, may be causes of suppression, and in every case the cause is to be removed.

The treatment in this case does not differ from that in retention. Give the patient health, and the menses will take care of themselves. Medicines to force menstruation are full of mischief. In any case, the sitz-bath, the wet bandage, and the use of the vagina syringe, will form a part of the treatment. A thorough wet-sheet or blanket pack, with a wet bandage, is one of the best appliances.

Dysmenorrhœa, or painful menstruation, is caused, in almost every case, by unnatural or excessive excitement of the organs, or previous exhaustion. There are neuralgic pains in the pelvis; weakness and distress in the small of the back, tenderness of the bosom; the womb is congested; the menstrual secretion is hemor-

rhagic; clots are formed in the uterus, or false membranes, which are expelled with pains and agonies, like those of childbirth.

During the paroxysms, we have two measures of relief. A long and very cold sitz-bath, or a hot one. With the hot one, the relief is more immediate, but the cold is best. When it is passed, the treatment should be commenced in earnest, to prevent its recurrence. Every possible cause must be abstained from. Every law of health must be observed. The local treatment of sitz-baths, daily increasing in coldness, frictions around the pelvis, the wet bandage, and the vaginal injections, must be perseveringly used. A free, careless, happy, unexciting, and unexhausting life, will add much to the efficacy of all measures of relief. Daily wet-sheet packs, in any bad case, should never be neglected.

Menorrhagia, or profuse menstruation, may be an excessive secretion of the menstrual fluid, or, more commonly, a real hemorrhage. In a perfectly healthy state, the secretion is light in color, lasts not over two days, and does not exceed two ounces. All beyond this is hemorrhage. In irritated, debilitated, and congested conditions of the ovarian and uterine system, the proper menstrual discharge comes on, probably, at irregular intervals, lasts two or three days, and is followed by a week or two of hemorrhage. I have known it to come on with perfect regularity, and then last, with profuse flooding, for ten days, and cease, and do this periodically.

The causes of this disease, whatever they are, must be removed. Thousands of women are consigned to premature graves; some by the morbid excess of their

own passions, but far more by the sensual and selfish indulgences of those who claim the legal right to murder them in this manner, whom no law of homicide can reach, and upon whose victims no coronor holds an inquest. Hard and exhausting labor, care, irritation, and anxiety of mind; neglect, jealousy; these and like causes, contribute to the disease.

During the flooding, quiet, a cool air, and a horizontal position, are usually prescribed. Sometimes the cold wet compress, ice-cold sitz-baths, and injections, will give relief; I have known the douche to act like a charm, falling upon the lower part of the spine. A long wet-sheet pack and the sweating blanket, by deriving to the surface, and equalizing the circulation, may cure with magical rapidity. But at other times the heat of the pack seems to increase the flooding. I have great faith in frictions over the whole pelvic region, extending to the bosom, especially if by a strong, magnetic, and congenial person.

A pleasurable excitement, an evening party, or a dance, has effected a cure.

Where there are signs of congestion, in the pain and tenderness of the region of the ovaries and uterus, use the dripping sheet, the half-bath, rubbing sitz-bath, and wet-sheet pack. If there is exhaustion, and a lax state of the vessels, give very cold injections, both to the vagina and rectum, and short, often repeated sitz-baths. By all means a strict diet; and when one turn is over, persevere in full treatment, to prevent another.

The treatment of this condition will alarm some persons, who think they must not touch cold water, during menstruation. In a large practice, extending over

many years, and to thousands of patients, Mrs. Nichols has never directed treatment to be suspended during menstruation ; nor has she ever heard of a case where it produced any bad consequences.

Irregular Menstruation may partake of all the preceding conditions, and requires in each case the same treatment.

Inflammation of the Ovaries, characterized by pain, heat, swelling, perhaps redness, in one or both groins, is to be treated as in any other inflammation, by cold compress, bandage, sitz-baths, the wet-sheet pack, with rest, and a strict diet ; or, if severe, absolute diet.

Inflammation of the Womb, the same, with the addition of injections, both to the rectum and vagina, cold, if they can be borne, or with the chill off.

The ovaries, uterus, and fallopian tubes are so closely connected in situation and function, that they are generally inflamed together. The cause may be weakness, causing a local determination of some general disturbance, as cold, or irritation of these organs. It follows child-birth, abortions, or excessive and violent sexual intercourse.

Prolapsus Uteri—falling of the womb—is the falling down of that organ, by the weakening of its membranous supports, and the pressure of the viscera above, generally increased by tight lacing, the pressure of “stacks” of long petticoats, sustained by the abdomen, and adding to its weight upon the uterus, and by the pressure of a load of fæces in the constipated rectum, and the daily efforts to expel them. These causes, all acting together, press the uterus down the vagina,

until it sometimes comes out externally. As nearly all women are exposed to some of these causes of prolapsus, nine in ten have more or less of it. Even young girls, eighteen or twenty years old, have falling of the womb. Very few entirely escape it, for very few women are entirely well. The natural place of the womb is from five to six inches from the mouth of the vagina—the usual length of the male organ. I doubt if in half the women past thirty, it is more than three inches when they are dressed.

Whatever exhausts vitality in a woman, may be a cause of prolapsus uteri. Great health, and vigor, if it could be sustained with the present modes of dress, would do much to prevent it; but there can not be health and vigor, until these exhausting practices and fashions are reformed. Women can never have health, or the happiness which belongs to it, until they escape from their slaveries. If the Women's Rights Conventions would achieve for them the right to wear a healthy costume, they would take the first step toward the achievement of all that is desirable in their condition.

The cure of prolapsus is to absolutely avoid every cause. To live aright; dress aright; refrain from all causes of exhaustion, and observe every condition of health. There is never prolapsus without dyspepsia, and this must be cured. There is never prolapsus without general debility, and the patient must have general invigoration. There is seldom prolapsus without many nervous sensations, pain, and a dragging sensation at the small of the back, bearing down, tenesmus, or painful efforts at stool; sense of oppression, or goneness at the pit of the stomach, palpitation of the heart, sadness,

and low spirits ; weakness of the knees ; general exhaustion. These sometimes confine the patient entirely, and always greatly interfere with her usefulness and enjoyments.

Prolapsus may be accompanied by *anteversion*, a turning forward, and more rarely *retroversion*, or a turning backward of the uterus. The latter sometimes takes place at an early stage of pregnancy, when the mouth of the uterus presses against the neck of the bladder, while the fundus, or large part, rests against the rectum, and is pressed down by the fœces. In this case the patient must have immediate relief, by drawing off the water in the bladder, and moving the bowels, when the organ will usually assume its right position. If not, it may be placed right by careful manipulation. As all displacements depend upon prolapsus, we have only to cure the latter difficulty.

The general treatment for this disease is that which belongs to dyspepsia, or its other complications. It is to be especially invigorating. The local treatment consists of frequent sitz-baths, the frequent use of the vagina syringe, injections twice a day to the rectum, and a wet bandage of two thicknesses, drawn close around the hips, and pinned so as to support the abdomen. This is the best of supporters, and should be worn constantly, and renewed as often as it is dry or uncomfortable. This course, with full morning baths, dripping sheets, wet-sheet packs, and a diet more or less strict, according to the degree of dyspepsia, but always simple and exclusively vegetable, *will cure*.

In many cases, animal food, in small quantities, has a direct effect in aggravating uterine diseases.

Ulcerations of the neck of the womb, produced by corroding discharges, and the irritation of continual sexual intercourse, are readily cured by abstinence, general treatment, and vaginal injections of cold water. Cancer of the womb is a determination of cancerous virus, by the same causes. See my remarks on cancer.

Leucorrhœa is the name given to all light-colored discharges from the vagina, womb, etc., from the simple increase of its mucous secretion, to the most purulent, acrid, and offensive matters. The same general and local treatment as for prolapsus, which it generally accompanies.

Hysteria, or *Hysterics*, is a nervous disease, made up of dyspepsia, uterine, or more properly ovarian disease, and general irritability, consequent upon general exhaustion. Its name signifies a uterine affection, but some men are as hysterical as a woman. Hysterical women suffer cruelly from the idea that when they have hysterics "nothing particular ails them." Poor women! every thing ails them. No disease can be more real than this. I copy a description of it from the first medical book I can lay my hands on: "The disorder is generally preceded in its attacks by dejection of spirits, sudden bursts of tears, anxiety of mind, sickness at the stomach, palpitation of the heart, difficulty of breathing, etc. Sometimes there is a shivering over the whole body; a pain is felt in the left side, with a distention advancing upward, till it gets to the stomach, and removing thence into the throat, it causes a sensation as if a ball were lodged there. The disease having now arrived at its height, the patient appears threatened with suffocation, becomes faint, and is

affected with stupor and insensibility. The body is now turned backward and forward, the limbs are agitated, and the hands are so firmly closed, that it is with difficulty that they can be opened. Wild and irregular actions take place in the alternate fits of laughter, crying, and screaming; incoherent expressions are uttered, and occasionally a frothy discharge of saliva issues from the mouth. At length the fit abates—a quantity of wind is expelled upward, with frequent sighing and sobbing. After the patient appears for some time quite spent, she recovers the exercise of sense and motion; but she usually feels a soreness all over the body, with a severe pain in the head.”

Here is a disease of the will; involuntary motions, not altogether unconscious; a disordered and discordant state of the nervous system; and a strange jangling of the animal with the organic. These are not the phenomena of health. Here are evidences of great pas-sional and physical disorder.

Chlorosis is the extreme of dyspepsia and amative exhaustion, with an aggravation of the symptoms of both. There is general debility and bloodlessness, with morbid appetites.

I have no doubt that a fit of hysterics might be relieved by a thorough cold bath, or dripping sheet, or wet-sheet pack. The terror and sympathy of those around the patient evidently protract and aggravate the fit. As hysterical patients are usually impressible, they may be controlled to a great extent by magnetic influences.

But the great point in these cases is to give strength to the system, and harmony to all its functions.

Wherever the health is deranged, there we must direct our treatment. There is dyspepsia always—always uterine disease, or irritability—always exhaustion of life of some kind; and usually some passional discordance or incompatibility. Treat for these disorders. I need not repeat.

In all these diseases of the uterine or ovarian system, firmly reject the medical treatment in vogue. There is not one case in a hundred that requires an examination *per vaginam*. Not one in a thousand that demands the use of a speculum. Retroversion of the womb is the only displacement that ordinarily requires any handling, and that is of seldom occurrence.

Reject the application of caustic—it was never intended for the neck of the uterus; reject pessaries and all instruments to be worn in the vagina; they are foreign substances, and sources of irritation; reject all rattle-traps, and harnesses to be worn outside. When God made woman, he did not forget the muscles and ligaments required for her support. Any artificial support diminishes the power of those made by nature. Exercise and strengthen these.

There are, in rare cases, tumors and morbid growths in the uterus, which may call for surgical examinations and operations. Where the symptoms, such as enlargement of the womb, and false signs of pregnancy, point to such affections, give the case to a good surgeon, and not to a charlatan.

CHAPTER XXVIII.

GESTATION AND PARTURITION.

It is as natural for a woman to have a child as it is for an apple tree to bear apples, or any animal to bring forth its young. Travelers inform us that when Indian women, in their long marches, find labor approaching, they retire to some quiet place, by the side of a brook, alone, even amid the snows of winter, are there delivered, wash the child and themselves in the stream, and join the company again, and the march is delayed but half a day. This is natural childbirth.

In civilization, labor lasts from six to thirty-six hours, and a woman is kept in bed three or four weeks. Three women die every week, on an average, in New York City, from what are called the accidents of childbirth, while more than a thousand children a year are registered as still-born.

It is even believed by many otherwise intelligent persons, that pain and danger are inseparable from childbirth, by the special edict of the Almighty. Every observer, however, knows the contrary of this; for there are millions of women on the earth, and always have been, whose labors have been safe and easy. I am prepared to show that childbirth is always so, just in proportion as the Laws of Health are obeyed. Just as

life is natural, labor is natural; and a natural labor is not a painful or dangerous one.

The organic nerves, with which the uterus is supplied, are never sensitive in a healthy state. It is only in disease that they have pain. No natural process is painful. We might as well suppose that it would be painful to swallow with a healthy pharynx, or to digest with a healthy stomach, as to expel the fœtus with a healthy uterus. All the pain, and difficulty, and danger of childbirth is the result of disease. Banish disease, and we rid ourselves of its consequences.

This is not mere theorizing. I testify that I do know. We have had many parturient patients. Some have been attended at their own dwellings; some have remained with us; some have had several children under our care. Just in proportion as these women have been healthy, or have become so, under our treatment, their labors have been easy, and they have recovered quickly from their effects. In several of these cases, where previous labors had been long and severe, they have become short and easy. Under the best circumstances, these labors have not lasted more than fifteen minutes, and have been accomplished with no more than three or four contractions of the uterus, which, in some cases, were very little, and in others not at all painful. One patient could not remember, a few hours after, whether she had any pain; another said the efforts were not disagreeable—she had rather have them than not. Surely this is better than to make women dead-drunk on ether or chloroform!

Three years ago, I wrote in the *Water-Cure Journal* an article entitled, "THE CURSE REMOVED; a State-

ment of Facts respecting the Efficacy of Water-Cure in the Treatment of Uterine Diseases, and the Removal of the Pains and Perils of Pregnancy and Child-birth." I then had this article stereotyped in a tract of over twenty pages, and printed many thousand copies for gratuitous distribution. I wish now, by means of this work, to enable every woman to realize the advantages I there described as the effects of the water-cure, and the observance of the laws of health.

The question of man-midwifery has been much discussed of late in this country. In fact, the custom of having men is confined to a recent period of time and a small portion of even the civilized world. It was never known elsewhere. It is a question which I think women should decide. If they want men to attend them, they should have them; and the most proper man, I think, is the one a woman most wants; provided he knows how to give the requisite assistance. I hope to give here such instructions as will enable any man, or any woman, to do all that is required, in nine hundred and ninety-nine cases in a thousand.

The first thing to be learned in this matter is to fully realize what I have stated in the outset, that childbirth is a *natural process*; and however painful, or complicated, or dangerous it may be made by disease, still nature must do the work. Our efforts to assist nature, to expedite her operations, or to take her own work out of her hands, all end in mischief. The only cases in which we are justified in interfering, is where her powers are exhausted, or some malformation or malpresentation renders all her efforts unavailing. These are rare accidents, and always the result of disease;

how rare, even amid all the vices of civilization, is shown by the following statistics :

Of twelve thousand six hundred and five deliveries at the Maternity Hospital in Paris, only one hundred and seventy-eight required assistance ; and instruments were used in only thirty-seven cases ! Yet we have fashionable doctors in New York, who give ergot, and use the forceps in a large proportion of the cases to which they are called. The consequences are, prostration, hemorrhage, prolapsus, and long-continued uterine, and general disease. But the common practice of medicine, discarding all trust in nature, and relying on drugs and instruments, is full of such horrors, and the world is full of victims. I work in the earnest hope that I may somewhat diminish the number.

When a woman, fully developed in mind and body, has that love for some man which makes her desire a union which will naturally result in the production of offspring, she owes it to herself, her husband, her child, and all the possible generations of her posterity, to prepare herself in the best manner for the enjoyments of love, and the functions of maternity. To neglect this is a crime no punishment can atone for, a sin no repentance can wash away.

The marriage-bed should be a shrine of health and happiness—never the receptacle of disease, and the couch of suffering. It should be a heaven of mutual love—never a hell of indifference, disgust, and hatred. Yet the world is full of children born of the indifference, disgusts, and hatreds of what civilized law and Christian morality call marriage !

One who is to be a bride, and who hopes to be a

mother, then, should observe all the conditions of health; and if suffering from any disease, or in the practice of any diseasing habit, she must lose no time in seeking reformation and cure. For this I have given sufficient directions. But when she has reason, according to the rules I have given in treating of the generative function, to expect that the embraces of the man she loves will produce pregnancy, she has many motives to be true to herself, and to the laws which God has impressed upon her constitution. Let her be calm, temperate, and happy. Let her guard against amative excess. Especially in the honeymoon, love runs into absorption and exhaustion; and permanent happiness is sacrificed to a few days of delirious and not very satisfying enjoyment. The tone of the uterine system is relaxed by this excess; the germ is weakened; the spermatic fluid is exhausted of its vital qualities; and the result is, a sickly, nervous pregnancy, a protracted and painful parturition, and a sickly, short-lived infant.

Begin right, then, with temperance, as the best conservator of health and pleasure; and were there no motive but the preservation of your beauty and attractive charms, so as to keep the love of your husband, that alone should be sufficient. But the woman who has the joys of a mother in prospective, has holier motives to perform her duty.

When a woman finds herself pregnant, she should double her care and diligence. I have very strongly expressed the belief that in this state no strength should be expended in sexual intercourse. "When pregnancy exists," says a distinguished physiologist, "every wish is consummated; satisfied with her

work, Nature immediately robs woman of her charms, and of that attraction which brings man toward her." The husband now folds his arms around her with a respectful tenderness, and a protective love; but he is no longer attracted to her by amorous desires and every time he excites in her the sexual passion, he robs his child of some portion of its vitality, and his wife of some of the strength she needs to sustain her.

During pregnancy, while a new and powerful action is going on in the uterus—the evolution of a new being—less strength remains to the rest of the system. The stomach has less power of digestion, from which come nausea and vomitings; consequently the food must be more than ever sparing, and of a pure quality. Low spirits and hysterical feelings arise from the limited supply of vital power to the brain. The pregnant woman needs general measures of invigoration; the full morning bath, gentle frictions; the rubbing of the dripping sheet. She needs especially the strength and support of the wet bandage over the abdomen, the derivative action of the cold sitz-bath, and the strengthening effect of the vagina syringe. She may also require, in addition, daily injections to move her bowels. She must take daily exercise in the open air to a moderate extent; never so as to induce great fatigue; she must live in a cool, pure atmosphere; and sleep, and dress, and eat according to the rules I have so often repeated. Above all, let her diet be pure. Let not the delicate tissues of the unborn child be made up of the flesh of dead animals—*corpses* brought round in those *hearses* of swine and cattle, the butchers' carts, to find their *graves* in

human stomachs. And let not its delicate brain and nerves be poisoned with tea, coffee, alcohol, or tobacco, either taken herself, or inhaled or absorbed from her husband. Avoid also all the poison of drugs. An infinitesimal embryo may possibly be poisoned by homœopathic doses. The fussings and physic, bleedings and dosings which some doctors keep up, during the whole period of pregnancy, seriously injure both mother and child.

If these directions are followed, there need be no apprehension of the abortion of a tolerably healthy fœtus, by a tolerably healthy mother. But some imprudence, excitement, or exhaustion may produce it, in a delicate constitution, especially when abortions have occurred before.

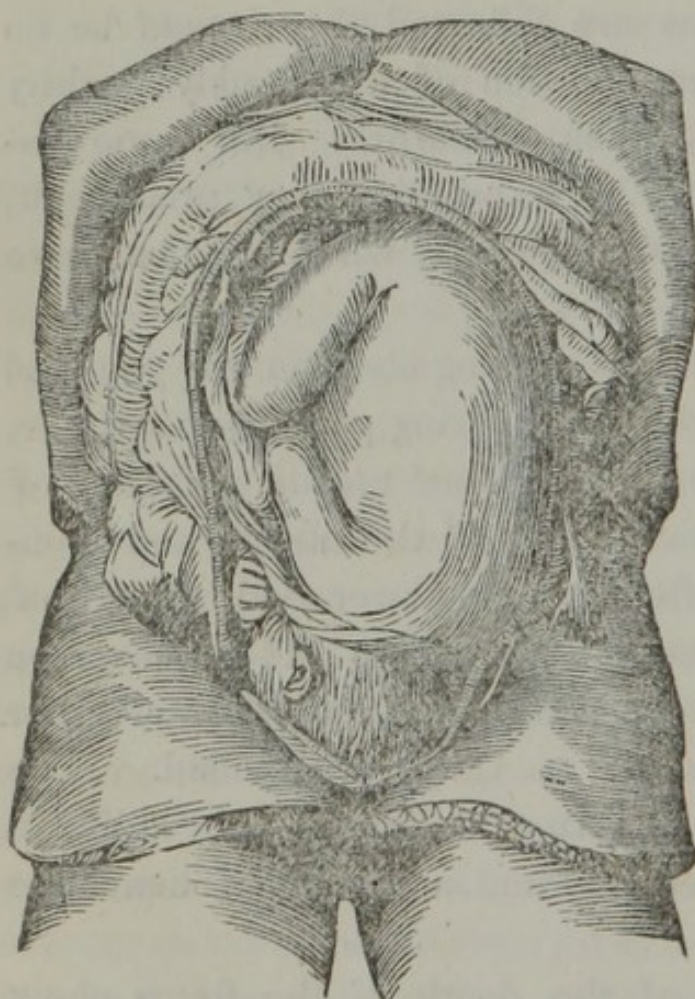
The symptoms of approaching abortion are pain and irregular action in the neighboring parts, hemorrhage, paroxysms of pain in the back and uterus, a feeling of weight, tenesmus, the descent of the uterus, and opening of its mouth. Often these are preceded by signs of the death of the fœtus. These are a sudden cessation of the morning sickness where that exists, or of other sympathetic symptoms, as they are called. The breasts become flaccid; the motion of the child, if already perceived, ceases, and a feeling of heaviness takes its place.

Whenever signs of the death of the fœtus show themselves, we must prepare for abortion. When there are signs of abortion, and we wish to prevent it, we use precisely the same treatment. In each case, our effort is to strengthen the nervous power, and proper action of the part; and what will save the child,

when it can be saved, will aid its safe expulsion, when its loss is inevitable.

This treatment consists of cold sitz-baths, and the use of the vagina syringe ; the wet bandage, wet-sheet packs, rest, and strict diet, until the danger is over. The expulsion of both fœtus and afterbirth require little interference, if small—if in an advanced stage, we proceed, in all respects, as with a common labor.

Fig. 69.



Uterus laid open, showing the natural position of the fœtus at the full period.

When the full period of pregnancy has elapsed, and all the usual maternal preparations have been made for the expected, and, it is to be hoped, much wished-for stranger, signs of labor make their appearance.

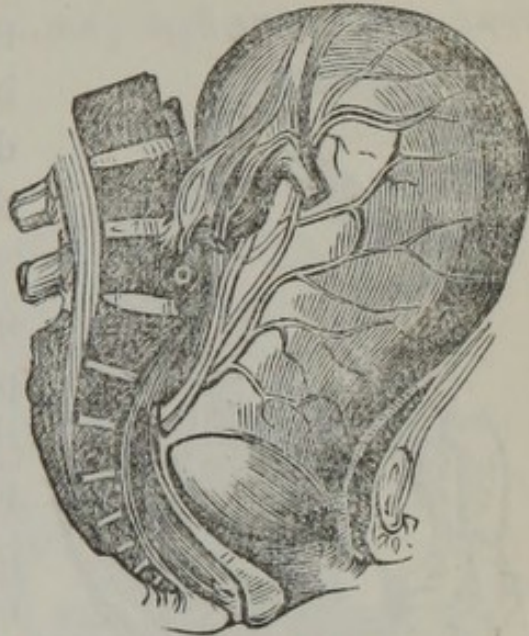
The uterus contracts itself, and prepares for the grand effort of expulsion. In this way it settles lower down, the abdomen is smaller,

and the breathing more free. With this there comes such a feeling of strength and lightness to the patient, that if not cautioned, she will start off on some long, exhausting

walk, instead of saving her strength. The mouth of the womb begins to dilate, as well as the vagina. There is a disposition to evacuate the bladder and rectum with unusual frequency. Sometimes there is chill or tremor at the beginning. The preparatory processes are accompanied with the exudation of a glairy mucus, which continues during the whole process.

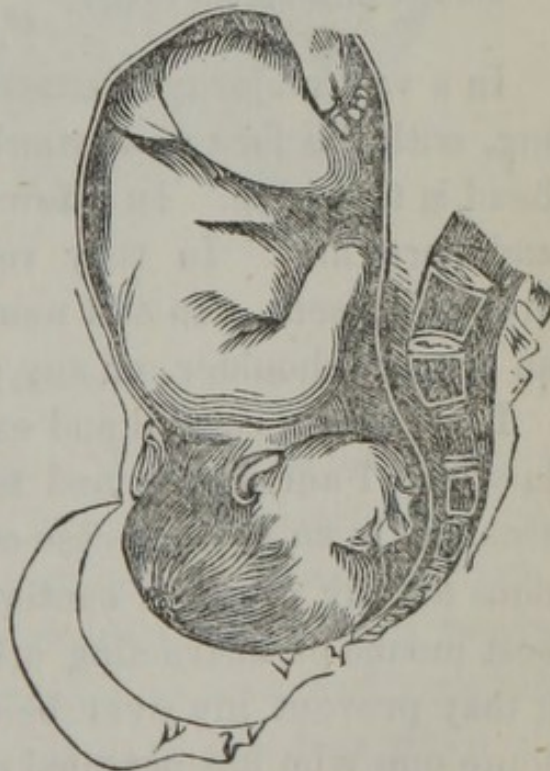
When the labor is painful, it is divided into two stages—the pains of dilatation and those of expulsion. But both processes may take place with little or no pain. At first the efforts occur at long intervals: the pain is in the small of the back. They are sharp, grinding pains, and seem, as the patient says, to do no good. But after the mouth of the uterus is dilated, the action changes. The body of the uterus contracts with all its fibers, and with wonderful force. This action is quite invol-

Fig. 70.



Gravid uterus, with the bag of waters protruding into the vagina.

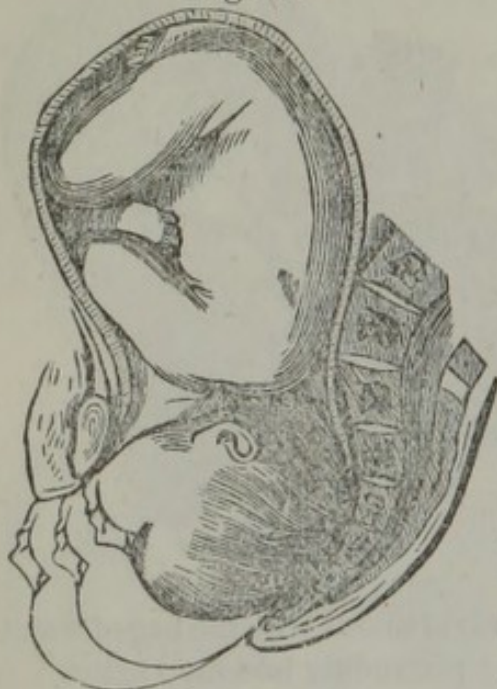
Fig. 71.



Successive positions of the head in the most frequent presentations, the face to the sacrum.

untary, and may occur even after apparent death. But the patient endeavors to assist, and probably does assist

Fig. 72.



Successive positions in birth, when the face presents anteriorly.

the expulsive effort, by holding her breath and bearing down with the muscles of the thorax and abdomen.

At first, the membranes, filled with the amniotic fluid, press through the mouth of the uterus, and aid in its expansion. As the pressure increases, the membranes break, and the waters gush out. The uterus, suddenly contracting, seems to gather new force, and the fœtus is pressed rapidly forward.

In a vast majority of cases, we find the head presenting, with the face downward, so that the crown of the head is first born. In a few cases the face is upward, and born first. In very rare cases, the feet or the breech present. In still more rare ones, we may have an arm, or shoulder, or any part of the body.

I will give a careful and exact account of the manner in which I am accustomed to give my professional assistance, in an average case of natural labor; with directions for any probable contingencies. I do this as the best means of instructing others, and in the hope that it may prevent my ever being called upon, except by some one who has personal claims upon me, for a similar service.

When called to a patient, my first object is to estab-

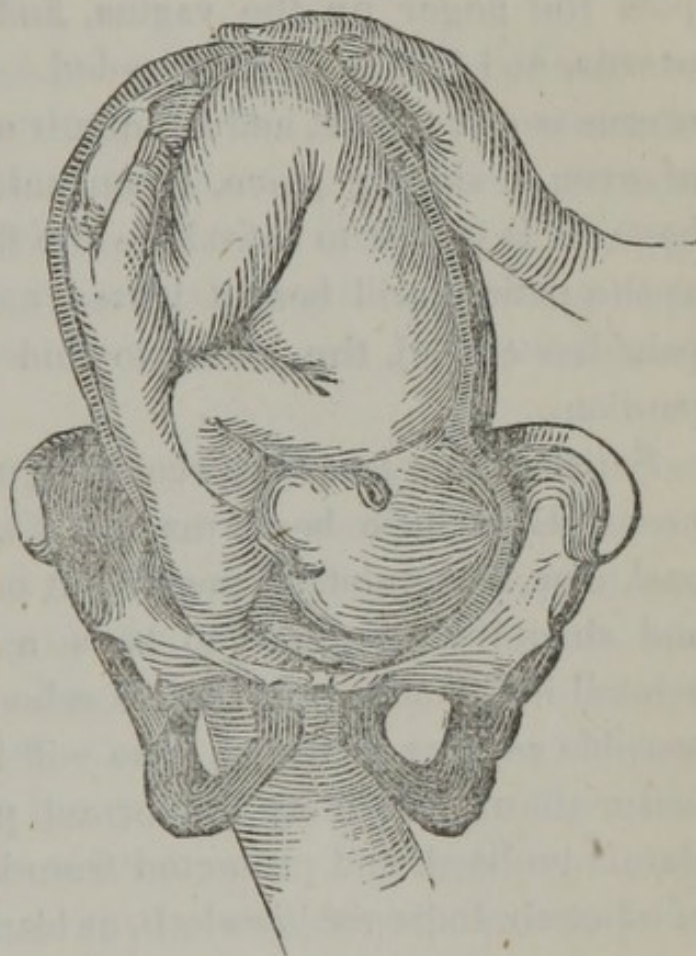
lish with her that degree of friendly and familiar confidence which will make my aid agreeable. This is very necessary; and the want of it may make the labor more protracted and severe.

The next point is to ascertain whether labor has commenced; for we have sometimes false alarms, which pass off a fortnight before labor begins. If the pains are irregular, and accompany some disturbance of the bowels, or do not go on with progressive force and rapidity, let the patient take a cold sitz-bath. This will be likely, if they are not labor pains,

to send them off entirely. When it is an object to know if labor has begun, it may be ascertained with a considerable degree of certainty by an examination.

I never propose an examination when it can be well avoided; and prefer, if possible, to wait, as I generally do, until the patient demands it, as she does when she grows anxious about the progress of the labor. When necessary to be made, I prefer that the patient lie on

Fig. 73.



THE OPERATION OF TURNING.

her back, with her knees drawn up a little. Then, sitting by the side of the bed, I turn up my cuffs, moisten or oil the forefinger of the hand nearest her, and passing it under the bed-clothes, I carefully and delicately move it along the thigh, separate the labia, pass the finger up the vagina, find the mouth of the uterus, and feel if it is expanded. If the neck of the uterus is quite gone, and its mouth expanded to the size of even a shilling piece, I conclude that labor is well begun. It is best to introduce the finger during a pain, as the patient will bear it better, and to wait until the pain has ceased, the better to find the amount of expansion.

Satisfied that labor has really begun, I see that proper preparations have been made. The room should be cool, airy, and quiet. I prefer but one or two assistants, and should wish never to have a professional nurse, bigoted in the notions of the old school of practice. Any sensible servant or friend, who will follow directions, is better than these fussy, important persons. The bed should be hard, and protected from injury by a covering of oil-cloth, India-rubber cloth, or blankets and sheets. I have several towels, a long towel or abdominal bandage, water to wash my hands, and to use for injections, etc., a good vagina syringe, which I put in order, so that it will work easily, and perfectly fill, a sharp pair of scissors, and two strong ligatures. When every thing is in order, and going on properly, if the labor is to last some hours, I walk about, and take it easy. Why not? It is impossible to hurry matters—or, if possible, very wrong. Nature takes just as much time as is needful. There is no better economist. It is very likely that she

knows how to make a beautiful live baby, and don't know how to "born it." I feel a perfect confidence in her powers, and let my patient see that I do. Generally I can fix the time of birth, and I have done so often within five minutes by the watch. But I am careful not to promise too much.

At an early stage of labor, the bowels should be moved freely, and an opportunity given the patient to urinate often. During the dilating pains, no support can be of much service; but after the regular bearing-down pains have set in, a bandage put around the loins, and held firmly by an assistant at each pain, sometimes is a great relief.

The position is of little consequence. Some ladies like to sit in a chair; some walk about the room, and stand, sit, or kneel at each pain, holding on by whatever is handy; some lie on the side, to be delivered, and some on the back. I had one who preferred to be delivered on her knees, and it proved a very convenient way. I prefer that the patient should lie on her back, with her right side toward me. The clothing should be such as not to be in the way, and to be easily removed.

As the pains become more frequent and more severe, the patient and friends grow anxious to know if all is right. I am now compelled to make another examination. If the weather is warm, I beg leave to remove my coat; but if the room is cool, or the people particular, I ask some one to pin a napkin around my arms, to protect the sleeves. With this precaution, I make an examination during a pain, and find the bag of waters protruding, and by waiting until the pain has passed off,

and the pressure is diminished, I am able to distinguish the presenting part; the head, by its hardness and roundity, or the breech, by its softness and shape. I am able to assure the patient that all is right, if I find it so; and I have seldom found it otherwise in a water-cure patient.

When the increased frequency of the pains and force of the contractions, with sturdy downward efforts on the part of the patient, show that the end is near, I stay by; and when I hear the gush of waters from the breaking of the membranes, I am ready to receive the head of the child. It may not come; but I find at the next effort where it is. Generally it comes down to the external orifice, and nothing is wanted but the dilatation of the perineum.

Now, if the head is large, birth, to one unaccustomed to it, would seem impossible. There is a great bulging tumor, and at the upper part, the external orifice of the vagina, nearly as small as ever. If the efforts are very energetic, I involuntarily try to protect the perineum from rupture, by holding my hand so as to restrain a little the forward pressure. There has been much dispute about the use of this, and I have seldom thought it needed; but in two or three cases, I have resorted to it, from an apparent necessity.

Suddenly, the head emerges, comes out like a shot, and the patient feels a sensible relief; perhaps a thrill of delight, at the first cry of her child. The whole body may follow at once, or there may be the usual pause, and the body, turning sidewise, is expelled by another contraction. The child is born. I lay it on the right side, see that its face is free, and that fresh air

comes to it, while I hold the umbilical cord between the thumb and finger of the left hand, so as to feel its pulsations. When it has done pulsating, or as soon as the child is crying lustily, I take a ligature, and tie it tightly and firmly an inch and a half from the abdomen. Then the other, and tie that an inch further. This last is not absolutely necessary. Then, taking the scissors, and seeing that there are no little toes or fingers in the way, I cut between the ligatures, lay the child on a soft cloth prepared to receive it, and hand it to the nurse.

If there is any delay in the child's breathing after birth, let the cool air come upon its skin, which is the natural excitant of respiration; or blow a sudden puff of air on its face and chest; or sprinkle them with cold water; or wet them. If these do not answer, hold the nose, and inflate the lungs by blowing into the mouth, and then pressing the air out. This may be kept up for an hour; for children have so been recovered. In these cases, it is thought best to lay the babe on its right side, to favor the closure of the *foramen ovale*.

Now, or while this was doing, I pass my hand under the cloths upon the abdomen of the mother; to see, first, if there is another child; secondly, if the after-birth has been expelled from the uterus; and, thirdly, if that organ is contracting as it ought. Often the placenta is thrown into the vagina. If so, it may be easily drawn out by a slight traction on the cord, aided by the partial or entire introduction of the hand, beneath it. In any case, as soon as I have ascertained that there is not another child to be delivered, I lay a towel, wrung out of cold water, on the abdomen. This assists in the contraction of the uterus, helps to throw

off the placenta, if still adherent, and to expel it, and is a safeguard against hemorrhage.

I prefer, if possible, to end the labor at once, by the delivery of the afterbirth, but this must not be done bunglingly, and unless one feels quite sure, it had better not be attempted. It will generally come away in half an hour. When the delivery is complete, I take the vagina syringe and throw a pint and a half of cold water, full and far up the vagina; and if contraction has not taken place, so as to prevent it, into the uterus. This will seem strange and harsh; but in almost every case the patient draws a long breath, and exclaims, "Oh, how good that feels!" Next, the soiled clothes around her are to be removed, and a wet bandage pinned closely around the abdomen. Some give a sitz-bath, but I prefer, just now, the horizontal position, in all delicate cases. Then her clothing is to be removed; she is to be washed all over; have clean clothes put on, removed to the nice side of the bed, by being carefully lifted over; a wet cloth is to be laid upon the parts with a dry one over it, and the babe given her to nurse. I now leave her to rest and sleep, without eating, directing that, when she wakes, she shall be helped into a sitz-bath by the bedside; sit there five minutes; be washed all over; use the vagina syringe, and have a fresh bandage put around her, and then have some breakfast; a little brown wheat bread toast, or some wheaten grits; a cup of milk, and a little nice fruit, or something equally good. She is now to take two sitz-baths a day, one full-bath, have the bandage renewed two or three times, and use the vagina syringe, at least four times a day. A tolerably healthy woman

w~~ill~~ be able to take her baths the second day without assistance ; and be round the house on the third day, and to go out on the fourth or fifth. Still, when there is no necessity, it is better to keep quiet a little longer.

Such is the best water-cure practice in ordinary childbirth ; but we have many cases of women of good constitutions who have been faithful in their preparatory treatment, whose labors are over in less than an hour without the least trouble, and who might be round the next day, if they chose, carrying their babies. Water-cure, in fact, brings to women the strength and power of their natural condition. There are women who are shocked at the indelicacy and want of refinement shown in these easy labors ; such ought to have the privilege of suffering as much as their sense of delicacy and ideas of refinement require.

There are a few points connected with unnatural labors, which require some notice.

When there is a breech presentation, there is usually no difficulty ; for the breech and thighs are scarcely as large as the head ; but if there is much delay, it is best to bring down the legs, which may be done by passing the hand up in the interval of the pains, seizing the feet, and bringing them down, when the whole body will soon follow. We must now attend to the umbilical cord, and see that it is pulled down, so as not to strain it. When all but the head is delivered, we may bring down the arms, and the head will soon be born. We may even carefully assist in the operation, and if there is delay, we may hasten the uterine contractions by laying a cold, wet cloth on the abdomen.

In all other presentations than those of the head, breech, and feet, we may assist nature by turning the child, and bringing down the feet. No direction is required for this, but the very evident one that they must be brought so as to bend the body of the child forward, and not backward.

When the presentation is natural, and the pelvis not much deformed, if the labor is slow, we have nothing to do but wait. Labors may last twenty-four hours, thirty-six hours, forty-eight hours, and yet mother and child do well. We must trust to nature, and wait. We are not to give medicines, or apply instruments, until nature fails. The patient will seem utterly exhausted; but after resting awhile, the efforts begin again, and seem as strong as ever. She declares that she *must* die; but she does not. No woman dies of the mere effort and pain of labor. Children are born with their heads mashed out of all shape, by the smallness of the pelvis, but they soon come right again.

There are some cases in which art must interfere—where the pelvis is too small to permit the birth of the child, when the uterus is exhausted, when there is hemorrhage that threatens life, and when there are convulsions. In these cases send for the best surgeon accoucheur to be had, but these cases are very rare.

Sometimes hemorrhage occurs at the beginning of labor, from the placenta being over the mouth of the uterus. Such a case may happen once in a thousand times. When it does, we must, as soon as possible, dilate the mouth of the uterus, introduce the hand, separate the placenta from the womb, bring down the feet, and deliver the child.

When hemorrhage occurs after delivery, from retention or partial adhesion of the placenta, we must deliver it by introducing the hand, guided by the cord, first removing the clots of blood. This operation, with the application of the cold compress to the abdomen, the use of the vagina syringe, and the wet bandage, with a compress under it, will cause the uterus to contract and the hemorrhage to cease.

The signs of internal hemorrhage are great chilliness, bloodless lips, a small, quick pulse, and faintness. The uterus may be felt—a large irregular mass. We shall find it filled with clotted blood, and the afterbirth, which must be removed.

It is useless for me to give directions for the use of instruments—I have only to say that they are only to be resorted to in case of imperious necessity to save the life of mother and child, if possible; the mother alone, if there must be a choice; or the child, if the mother can not be saved. Dr. Dewees, in the course of his practice in Philadelphia, had three thousand labor cases, and was never obliged to destroy the life of a child. One of our fashionable malaperts, in the same practice, would have killed scores.

In all cases of labor of moderate duration, it is better for the patient not to eat, but be content with an occasional draught of water. When all the power of the system is, or should be in the uterus, the stomach can not digest. When food has been taken shortly before labor, it is generally vomited.

In summer, if the water at hand is not very cold, we should have ice to cool it, in case of need.

All attempts to dilate the vagina are irritating, and

full of mischief, and are only made in good faith by the most utterly ignorant. Still there are plenty of quacks who sit by the bedside, with the hand in the vagina, pretending to "help" the patient. I have had women angry, because I would not practice this indecent humbug.

When the pains grow slack and irregular, a cold sitz-bath of ten minutes, first quite suspends them for a short period, and then causes them to come on strong and regular. In a long labor, a sitz-bath may be given every four or five hours with decided advantage.

Where the external parts dilate slowly, the patient had better be discouraged from all voluntary efforts, leaving the downward pressure entirely to the action of the uterus.

We avoid pulling hard on the navel string, or any forcible extrication of the placenta, for fear of turning the uterus wrong side outward, an accident which has sometimes occurred from much violence, and which, if not remedied at once, by the restoration of the organ to its right position, soon becomes impossible to remedy.

If there is any delay in the expulsion of the placenta, placing the child to the breast is one of the best means of bringing on the necessary contractions.

After-pains never occur in a healthy uterus. They are the efforts at a full contraction, and are sometimes caused or aggravated by portions of the membranes, or clots, remaining in the uterus.

A cleansing discharge, called the lochia, is kept up for ten or twelve days after delivery, in the common practice. In that I have given, it is over in four or five.

CHAPTER XXIX.

LACTATION AND THE MANAGEMENT OF INFANTS.

WHEN the nurse takes the infant, it is covered with a slimy matter, with more or less of a whitish substance, not easy to remove. Some babies are much cleaner than others, but all need a pretty thorough washing. The water should be nearly blood-warm; and it is best to rub the skin all over first with some soft sweet oil, especially in the folds of the skin. Wash them with some fine, delicate soap and water, taking great care not to get the soap-suds into the eyes.

The next thing is the dressing of the navel string. Take a piece of old, fine, soft linen, fold it so as to make a piece as large as the palm of your hand of four thicknesses, tear or cut a hole through the middle, so as to draw the navel string through it. Put a thin linen bandage over all, to keep it in place.

Now Mr. Baby is ready to be dressed. Its clothes must be in every respect comfortable; neither tight enough to impede respiration, nor long enough to prevent its kicking about. Its arms and neck should be covered, as well as its legs. The diaper should be loose, so as not to chafe, and pinned with a patent safety pin. Most poor babies are strangled, and fettered, and frozen with their clothes.

A babe wants three things—warmth, food, and sleep. It is not to be chilled with cold water or cold air—few civilized babies can bear either. The air it breathes should be cool and pure; but there is no sense in freezing a child. It is best to accustom it to cold by degrees. For the first month let it be washed in water at 80° or 85°, the second it may be 70°, the third 60°, and after that it may take its chance.

Our practice has been to use the cool or cold bath, given quickly, in the morning, for invigoration; and a tepid one at night, with a more thorough washing, for cleanliness. The nurse should be careful to wash all the folds of the skin, and in girls the private parts; and if the skin chafes, use a little sweet oil, or fresh butter, or sweet cream.

A child should have a motion of the bowels soon after birth. If it does not have one within twelve hours, an injection of tepid water should be given, with a little syringe, holding one or two ounces. And whenever, at any time, the bowels do not act regularly, or whenever there are signs of pain in the abdomen, the first thing done should be to give injections until the bowels are moved; and the next, to put around a wet bandage. Rubbing the bowels gently with the hand is also very good.

The navel-string shrivels up and comes off in five or six days. Scrofulous children are apt to have an open or even an ulcerated umbilicus. The application of the wet compress rather increases this action, by exciting the part. It is "too drawing." It is better to dress the part with a rag, covered with a little oil, or simple cerate, made of oil and wax.

Sometimes the breast of the mother is gushing with milk when her child is born; at others, it does not come for hours. Nothing helps more to bring it than the sucking of the child. It may also be promoted by bathing in cold water, and wearing the wet compress. Let it be remembered that cold water assists action everywhere, while warm water weakens. If you wish to prevent the flow of milk, bathe in warm water.

Leave the child twenty-four hours to get his breakfast. He will not suffer in that time; but if he does not get any then, it may be well to feed him. And the proper artificial food for a new-born infant is two-thirds cow's milk, one-third water, and a very little sugar. This is better than any pap, being a close imitation of the natural article.

A sick or scrofulous woman should not think of nursing her child. And food, prepared as above, is better than the milk of ninety-nine hired wet nurses in a hundred. When you find a woman as healthy and with as good habits as a cow, you can let her nurse your child. Still, there is an undoubted advantage in following nature. Every mother ought to nurse her own child, if she is fit to do it, and no woman is fit to have a child who is not fit to nurse it. But our life is a choice of evils.

How often must an infant nurse or be fed? Some say, as often as they like. Some children nurse all the time they are not asleep. But many children are born with dyspepsia and morbid appetites. Whenever a child vomits, it has taken too much. When a new-born infant is fed, it may take three table-spoonsful. Once in

two hours is often enough the first month, and not in an unlimited quantity either. The second month, once in three hours; the third, once in four. By the time a child is a year old, it should take its three meals a day, and never eat between meals. The milk may be warmed, but not boiled. For the first year, a child wants no food but milk. The second, it may have with it a little farinacea—brown wheat-bread, and ripe, pulpy, or sweet, juicy fruit, as strawberries, raspberries, peaches, etc.

There is no way to secure the perfect health, beauty, and regular development of a child, like entire simplicity and regularity in its diet. It should not know there is an unwholesome dainty in the world. Bread, milk, and fruit, are the food of infancy, and it would be well if, for the first five years, it had no other; it would be no harm, perhaps, if it never had. I do not object to a reasonable variety of vegetables, after a child has got its full set of teeth; but to candies, cake, pastry, and other breeders of dyspepsia.

A child should have its daily exercise in the open air, at least, after it is a month old; and it should never have its face covered night or day, so that it can not breathe freely. The lungs and blood of a child need pure air, as well as those of a grown person.

A healthy child has no trouble in teething. When there is any fever, it is easily controlled by diminishing its food, giving it cold water to drink, and putting a wet bandage around it, or packing in the wet-sheet pack—moving its bowels, if need be. If the gums are inflamed, rub them with cold water—let it suck a rag dipped in water, or a little bag of ice.

If you can be sure of decently healthy vaccine virus, have your child vaccinated, if you feel that you must. I can not decide for you, but only caution. I think there is no doubt that vaccination sometimes communicates disease I should dread much more than small-pox.

Wean at a year old, or as soon as a child has teeth enough to make a good beginning at mastication. If the mother's health suffers from nursing, it is better to wean earlier.

When the second set of teeth come to replace the first, great care should be taken, in children not entirely healthy, to avoid any disagreeable irregularities, by pulling such of the first set as are loose, so as to make way for the permanent teeth.

Education is a process that begins at birth and goes on till death. Life is a school for the soul's development. Education, in a true sense, is integral development; the strengthening and happy exercise of every power and faculty of body and mind. The stimulation and exercise of a few powers of the mind, to the neglect of all the rest of the system, mental and physical, is a false and mischievous system; full of evils to the individual and the race.

I have given an idea of what I mean by the true development and life of man. Education should assist that development, and be a training for that life. Our present systems and courses of education, in families, schools, and colleges, compare well with all systems of life in civilization. One is as false as the other. The young ladies' boarding-school is no more artificial, false, and ridiculous, than the fashionable life in what is called

society, for which it is the preparation; and our colleges are just as well suited to the training of men, as these are to the development of women.

I hope that a time is coming when men and women, from their birth, will have some chance for a free and true development of what is noble in humanity. I have given here my idea of the nature and relations of man. To his social relations I have only alluded; I hope to be able, at no distant day, to write further upon this branch of my subject; for a work is yet to be written upon social physiology and social health. The laws of the Grand Man, Society, are precisely analagous to those of the Individual. And society has its complex and beautiful Anatomy; its wonderful and mysterious Physiology, its terrible Pathology, and its simple and efficient Therapeutics. These are the subjects to which I would willingly devote my future life. I feel that for man, the Individual, I have performed my duty!

CHAPTER XXX.

ON DEATH.

I HAVE described the natural life of man—it remains for me to describe his natural death, a phenomenon which civilization seldom witnesses. Few men die a natural death, because few live a natural life; and one must be the result of the other.

Even the natural duration of the life of man upon the earth, is but vaguely known. The proverb, "seventy years is allotted to man," is but the expression of an observation of ordinary longevity. But that there is really any providential allotment of such a period, is contradicted by the fact that a large proportion of mankind perish in infancy, while some live a century, and even a century and a half.

Of the several periods of human life, some have a definite duration, while others are indefinitely extended. The periods of infancy, childhood, and youth, are marked by striking physical phenomena, and vary but little in their length. It is the same with senility. The failure of the powers of life, when it once begins, is regular and rapid. But there is one stage of existence, which may be cut short, or indefinitely prolonged. This is the period of manhood, or the full perfection of existence. It may last for ten years, or fifty, or a hundred. We know not to what duration it may possibly extend.

But, when the uses of the bodily organism have been fully answered, comes the inevitable death. The stock of organic vitality is finally expended. The heart can not beat on forever; not from any lack of its own powers of recuperation, but from the failure of nervous energy in the centers of organic life.

In the process of death, we have the reverse of the process of development. First fail the generative functions; next, the animal; lastly, the organic. Still, I believe that each of the former fails, in its turn, from the diminished power of the last. And finally, in the act of death, the system of animal life—of passion, thought,

and sensation—dies before the organic system. When the senses have lost their power to feel, when the brain has no longer its consciousness, the chest expands, the heart beats, and the muscles keep up their automatic motions. What we call the agonies of death, are the unconscious and painless struggles of the organic system, in the midst of which the triumphant soul is serene and happy, rejoicing in its change to a higher and brighter sphere of existence.

Natural death, which is the gradual decay of the system in old age, is as painless as any other healthy and natural function. It is not a proper cause of regret to the individual nor to his survivors. The calm death, which follows at the close of a long and well-spent life, is the most beautiful thing in our whole existence. We may weep over the dying couch of infancy; we may sorrow for those who are cut off in youth or manhood. This earthly life, to them, has been a failure. It has not answered its purpose. It has not been lived in its integrity. Even after a long life, we may regret that it has been less useful, or less happy than it should be. Amid the discordances of our present social state, there are everywhere infinite causes for regret; but even now, death is welcome to the aged, joyfully welcome to all who know the uses of life.

I could give a thousand instances of the calmness with which all philosophers contemplate the natural death which closes a long and honorable life. It is the instinct of humanity, and not the result of any particular mode of belief. I shall give extracts from two letters, written by John Adams and Thomas Jefferson to each other, a short time before their

simultaneous death, on the anniversary of American independence.

The letter of Mr. Jefferson was written soon after an attack upon him by a "Native of Virginia;" and when there was a strong expectation of a war between Russia and Turkey. This will explain some allusions in the letters.

FROM MR. JEFFERSON TO MR. ADAMS.

"MONTICELLO, *June 1, 1822.*

"It is very long, my dear sir, since I have written to you. My dislocated wrist is now become so stiff, that I write slowly and with pain, and, therefore, write as little as I can. Yet it is due to mutual friendship to ask, once in a while, how we do? The papers tell us that General Stark is off at the age of ninety-three. * * * * * still lives, at about the same age, cheerful, slender as a grasshopper, and so much without memory, that he scarcely recognizes the members of his household. An intimate friend of his called on him, not long since. It was difficult to make him recollect who he was, and, sitting one hour, he told him the same story four times over. Is this life?—

"With lab'ring step
To tread our former footsteps? pace the round
Eternal?—to beat and beat
The beaten track—to see what we have seen—
To taste the tasted—o'er palates to descant
Another vintage?"

"It is, at most, but the life of a cabbage, surely not worth a wish. When all our faculties have left, or are leaving us, one by one, sight, hearing, memory, every avenue of pleasing sensation is closed, and atony, debility, and mal-aise left in their places, when the friends of our youth are all gone, and a generation is risen around us whom we know not, is death an evil?

"When one by one our ties are torn,
And friend from friend is snatched forlorn;
When man is left alone to mourn,
Oh, then, how sweet it is to die!

"When trembling limbs refuse their weight,
And films slow gathering dim the sight;
When clouds obscure the mental light,
'Tis nature's kindest boon to die!"

"I really think so. I have ever dreaded a dotting age; and my health has been generally so good, and is now so good, that I dread it still. The rapid decline of my strength, during the last winter, has made me hope sometimes that I see land. During summer I enjoy its temperature; but I shudder at the approach of winter, and wish I could sleep through it with the dormouse, and only wake with him in spring, if ever. They say that Stark could walk about his room. I am told you walk well and firmly. I can only reach my garden, and that with sensible fatigue. I ride, however, daily; but reading is my delight. I should wish never to put pen to paper; and the more because of the treacherous practice some people have of publishing one's letters without leave. Lord Mansfield declared it a breach of trust, and punishable at law. I think it should be a penitentiary felony; yet you will have seen that they have drawn me out in the arena of the newspapers. Although I know it is too late for me to buckle on the armor of youth, yet my indignation would not permit me passively to receive the kick of an ass.

"To turn to the news of the day, it seems that the cannibals of Europe are going to eating one another again. A war between Russia and Turkey is like the battle of the kite and snake; whichever destroys the other, leaves a destroyer the less for the world.

"This pugnacious humor of mankind seems to be the law of his nature, one of the obstacles to too great multiplication provided in the mechanism of the universe. The cocks of the hen-yard kill one another; bears, bulls, rams, do the same, and the horse, in his wild state, kills the young males, until, worn down with age and war, some vigorous youth kills him. * * * * * I hope we shall prove how much happier for man the Quaker policy is, and that the life of the feeder is better than that of the fighter; and it is some consolation that the desolation by these maniacs of one part of the earth, is the means of improving it in other parts. Let the latter be our office; and let us milk the cow, while the Russian holds her by the horns, and the Turk by the tail. God bless you, and give you health, strength, good spirits, and as much life as you think worth having.

"THOMAS JEFFERSON."

MR. ADAMS'S REPLY.

MONTENZILLO, *June 11, 1822.*

"DEAR SIR—Half an hour ago I received, and this moment have heard read for the third or fourth time, the best letter that ever was written by an octogenarian, dated June 1st. * * * * *

"I have not sprained my wrist; but both my arms and hands are so overstrained, that I can not write a line. Poor Stark remembered noth-

ing, and could talk of nothing but the battle of Bennington. ***** is not quite so reduced. I can not mount my horse, but I can walk three miles over a rugged, rocky mountain, and have done it within a month; yet I feel, when sitting in my chair, as if I could not rise out of it; and when risen, as if I could not walk across the room; my sight is very dim, hearing pretty good, memory poor enough.

"I answer your question—Is death an evil? It is not an evil. It is a blessing to the individual, and to the world; yet we ought not to wish for it till life becomes insupportable. We must wait the pleasure and convenience of the 'Great Teacher.' Winter is as terrible to me as to you. I am almost reduced in it to the life of a bear or a torpid swallow. I can not read, but my delight is to hear others read; and I tax all my friends most unmercifully and tyrannically against their consent.

"The ass has kicked in vain; all men say the dull animal has missed the mark.

"This globe is a theater of war; its inhabitants are all heroes. The little eels in vinegar, and the animalcules in pepper-water, I believe are quarrelsome. The bees are as warlike as the Romans, Russians, Britons, or Frenchmen. Ants, caterpillars, and cankerworms, are the only tribes among whom I have not seen battles; and Heaven itself, if we believe Hindoos, Jews, Christians, Mahometans, has not always been at peace. We need not trouble ourselves about these things, not fret ourselves because of evil-doers; but safely trust the 'Ruler with his skies.' Nor need we dread the approach of dotage, let it come, if it must. ***** it seems, still delights in his four stories; and Stark remembered to the last his Bennington, and exulted in his glory; the worst of the evil is, that our friends will suffer more by our imbecility than we ourselves.

* * * * *

"In wishing for your health and happiness, I am very selfish; for I hope for more letters. This is worth more than five hundred dollars to me, for it has already given me, and it will continue to give me, more pleasure than a thousand. Mr. Jay, who is about your age, I am told, experiences more decay than you do.

"I am, your old friend,

"JOHN ADAMS.

"President Jefferson."

This is the mode in which two great men could welcome death, and in which all aged men welcome it, whose minds are unperverted by false theologies, and whose lives bring them no remorse.

Even with the young, and those who die premature, and therefore unnatural, deaths, at all ages, the change is not without its compensations to the one who dies, and its consolations to the survivors. If the soul enters the next sphere of existence under certain disadvantages, from the lack of that development and discipline which this existence was intended to give, it may also have escaped many depravations. Life, in its present discordant and diseased state, so full of poverties and miseries, offers little temptation to the soul to stay. I would counsel suicide to no one—each must judge for himself of the duty of existence. Mine is to live my life; to battle for the right; to try to make life for others more endurable; to work for the great future which God has in store for humanity; and, in doing this, to enjoy all of happiness that belongs to such a life. I have no right to destroy my bodily organization. I must use it with economy, and to the best advantage. Whenever death comes, by any unavoidable accident, providentially, or in the course of nature, welcome death!—welcome all spheres of action, and of enjoyment that lie beyond! So far from death being an evil, in its natural order, the greatest imaginable evil would be not to be permitted to die. Continued earthly existence is an idea almost as repugnant as annihilation.

Longevity, or a life complete in all its stages, is, on the whole, desirable, but extremely rare. The average duration of human life in civilization varies according to circumstances, from thirty to forty years; that is, of a certain number born in any country, a large proportion die in infancy, many more in early manhood, a few live to old age, and, if we add together the ages of all, the

sum, divided by the whole number, will give thirty years to each.

But if we take different classes of people, we find very remarkable results. The average life of the rich is double that of the poor. A gentleman has a fair expectation of living till seventy; a printer till thirty-two. Lives are as recklessly sacrificed in many employments as in wars.

Life is of value only as a means of improvement and happiness. Take away these, and it is of no value. As the means of education and development and the sources of happiness increase, life will be worth more, and the means of its preservation will be better attended to. Those live longest now, whose lives are best worth living. When all live true, useful, and happy lives, there will be far greater general longevity. If human life is held cheap, it is because it is estimated at something like its proper value.

The poverty, oppression, and miseries of civilization, and all prior stages of human development, disgust the soul with its earthly existence, loosen our hold on life, and help to make more welcome even the premature and unnatural death.

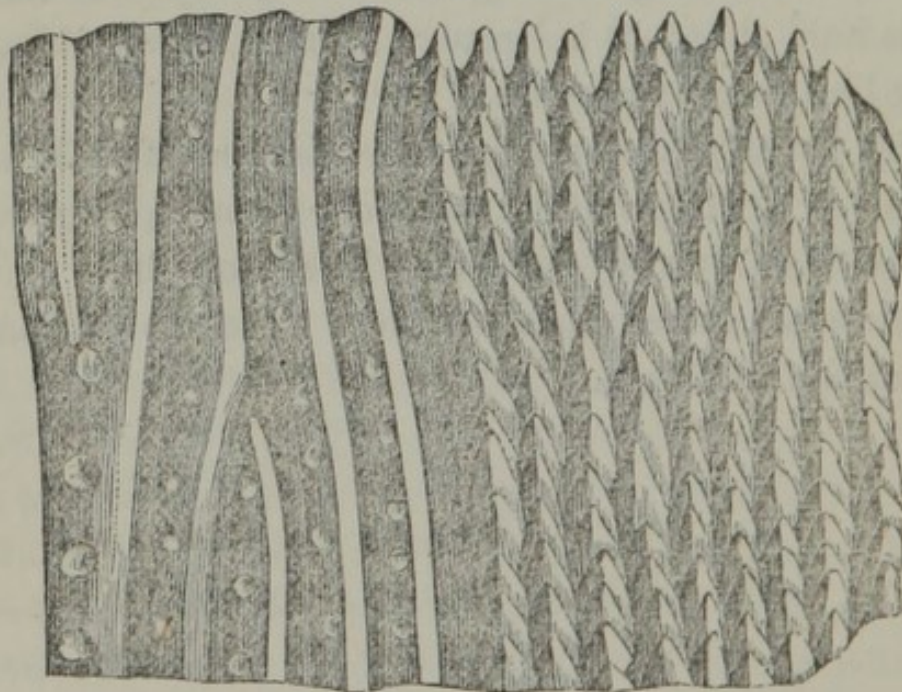
CHAPTER XXXI.

ILLUSTRATIVE ADDENDA.

MANY facts and pictorial illustrations, which could not well be introduced into the foregoing pages, without crowding or interrupting their continuity, I have preferred to give in a final chapter.

Few subjects in Anatomy and Physiology are more curiously interesting than the structure of the human

Fig. 74.



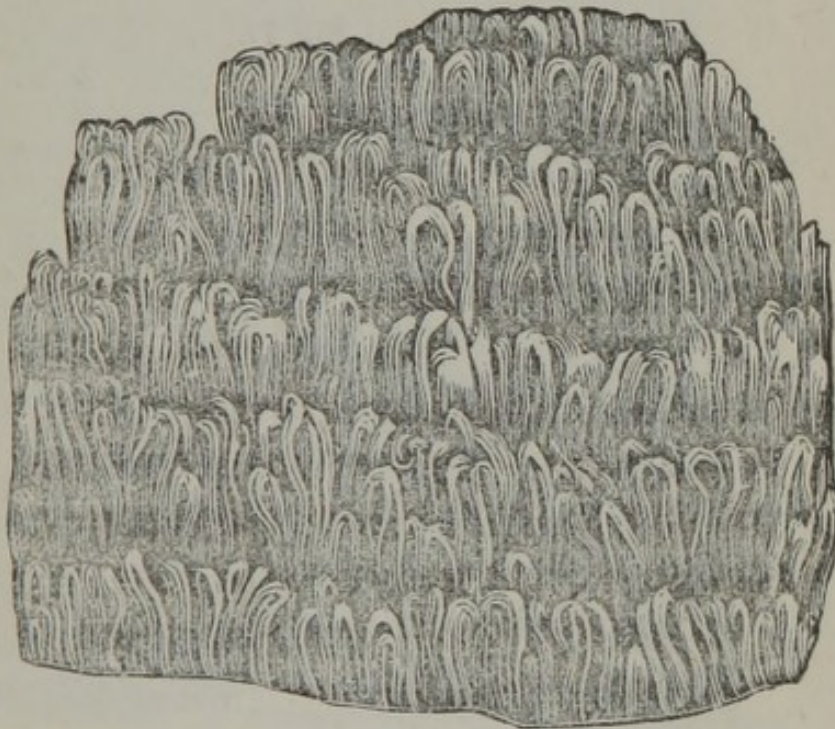
PORES AND PAPILLÆ OF THE SKIN.

On the left is a magnified view of the ridges of the cuticle, as seen in the palm of the hand, with the openings of the pores in their furrows. On the right, the cuticle has been removed, leaving corresponding rows of papillæ.

skin. This organ has become especially interesting, from its relations to the processes of water-cure. When we thoroughly examine its structure, we no longer wonder at the effects produced upon the whole system by external impressions, either morbid or therapeutic. The structure of the skin is further shown in figure 74.

In figure 75 we have a very highly magnified view of the terminal loops of the sensitive nerves as they rise in the rows of papillæ, giving sensibility to all parts of the body, and especially to those in which the sense of feeling is especially acute, as the ends of the fingers, the lips, etc. The finest needle pierces many of those minute nervous fibers.

Fig. 75.



NERVES OF THE PAPILLÆ.

Wherever there is nervous action, there must also be a supply of blood, and the more minute the nervous distribution, the smaller and more compact must be the arrangement of capillaries. In the skin of the finger we have masses of minute

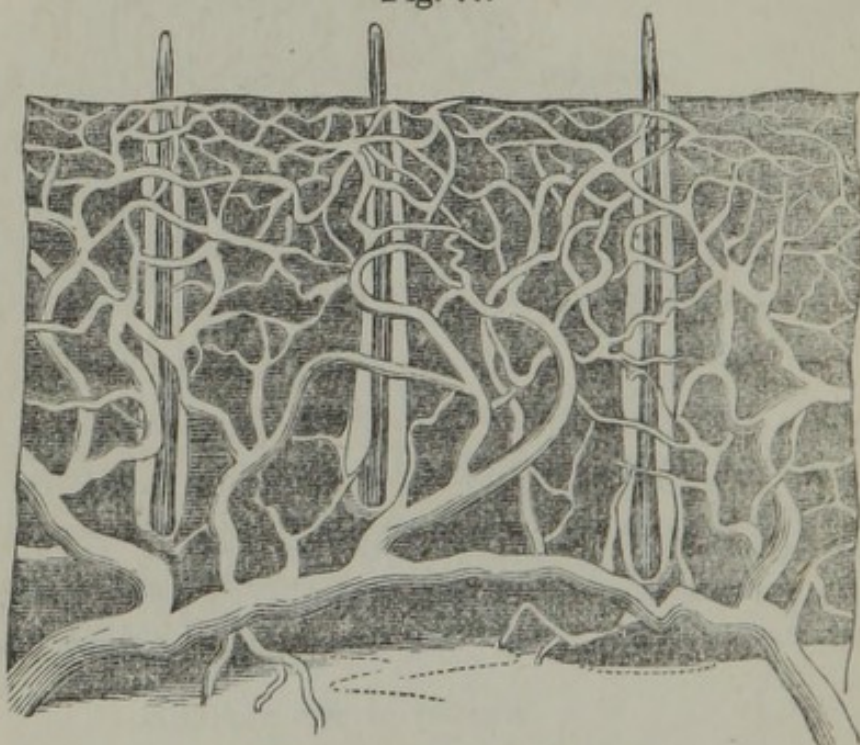
Fig. 76.

DISTRIBUTION OF CAPILLARY BLOOD-
VESSELS IN SKIN OF FINGER.

capillary blood-vessels, convoluted so as to give a vast amount of surface for secretory action. Fig. 76 gives a beautiful view of this minute capillary distribution.

Another view of the distribution of blood-vessels in the true skin is given in the following very highly magnified transverse section of a portion of the skin of the scalp, containing the roots of three hairs, in their follicles, with the vessels anastomosing among them.

Fig. 77.



TRANSVERSE SECTION OF SKIN.

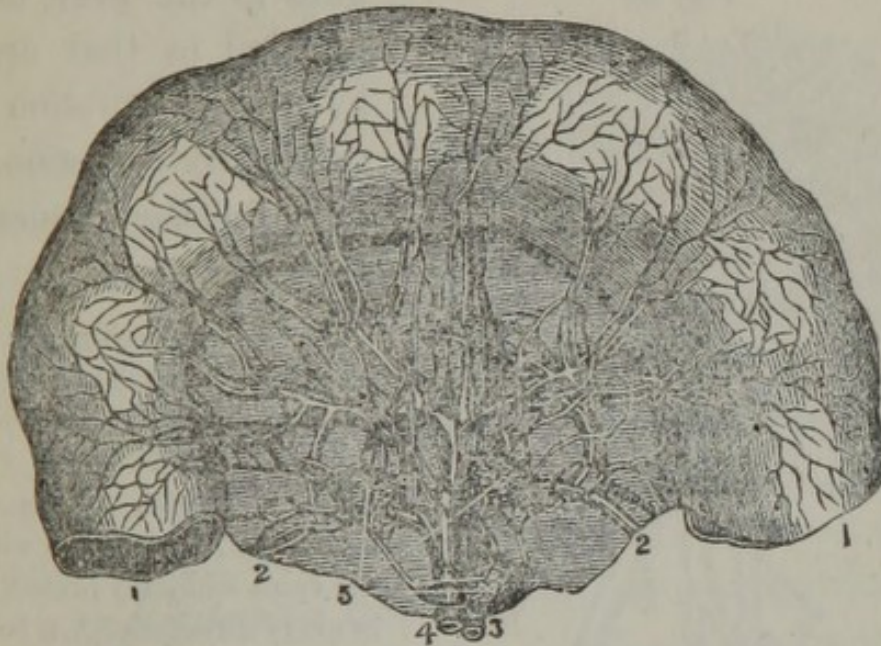
But we must take a magnifier of a higher power, if we would see the manner in which the hair itself is nourished by its own special capillaries, as is exhibited in the following engraving.

Fig. 78.



ROOT OF A HAIR AND BLOOD-VESSELS.

Fig. 79.



MESENTERIC CIRCULATION.

Fig. 79 shows a distended intestine, with its arteries, veins, and lymphatics, or lacteals, with three glands, 5, through which the absorbed matter passes, and in which it is believed that it is vitalized.

We have, in these engravings, with those given in the preceding pages, a very full and careful exhibition of the most remarkable organs and processes of the nutritive function.

Whenever the blood is distributed to any part, by means of arteries, it must be brought back by veins. Consequently we have a system of mesenteric veins, as complex as that of the arteries. The arteries carry blood to nourish the intestines, supply the secreting organs and the matter of secretion; the veins, on the other hand, carry back the remainder of the changed blood from the arteries and matters absorbed from the intestines.

But the blood in all the veins of the digestive organs does not return to the heart, until it has undergone a second distribution, and a second regathering. It all

Fig. 80



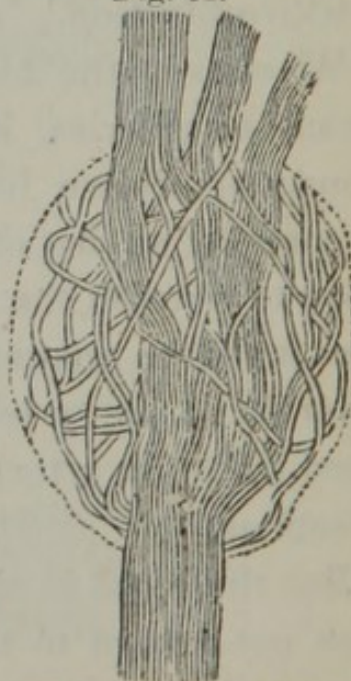
THE PORTAL SYSTEM.

In the anastomosis of blood-vessels, they run into each other, so that the blood moves through the open net-work in every direction. This does not appear to be the case with the nerves, whose fibers unite, indeed, but only to interchange, and perhaps influence each other in a manner not well understood. The structure of a nervous plexus is shown in the annexed engraving.

goes to the liver, to be purified in that organ by the separation of the biliary secretion, as seen in the annexed engraving:

In this engraving, the venous radicles of the intestines, 1, 1, unite in anastomosing branches, to form the vena porta, 2, which carries this blood into the liver, in which the veins suddenly branch out in every direction, 3, 3, 3, being distributed, by minute capillaries, to every gland in that viscous. After the process of secretion, and consequent purification, is accomplished, the blood flows in another set of veins to the ascending vena cava, and so enters the right auricle of the heart.

Fig. 81.



GANGLION OF A SYMPATHETIC NERVE.

STATISTICAL AND SCIENTIFIC FACTS ON DIET.

The following table presents the numbers expressing the composition of the principal kind of food made use of, as well as that of flesh; thus affording a comparison of the nutriment of each article of vegetarian diet, with that of the flesh of animals.

The conclusions of this table are from the results of analyses by Playfair, and other chemists of established repute; and the separation of their parts of nutriment into flesh-forming principle, heat-forming principle, and ashes, is in relation to the necessary elements of food suited to the wants of the body, according to the views of the modern school of Chemistry, after Liebig.

WEIGHT.	ARTICLES OF DIET.	CONTAIN:		AND SUPPLY TO THE BODY:		
		Solid Matter.	Water.	Flesh-forming Principle.	Heat-forming Principle, with Innutritious Matter.	Ashes for the Body.
lb.		lb.	lb.	lb.	lb.	lb.
100	Turnips.....	11.0	89.0	1.0	9.0	1.0
"	Red Beet Root...	11.0	89.0	1.5	8.5	1.0
"	Carrots.....	13.0	87.0	2.0	10.0	1.0
"	Flesh.....	25.0	75.0	25.0
"	Potatoes.....	28.0	72.0	2.0	25.0	1.0
"	Bread (stale)....	76.0	24.0	10.75	64.25	1.0
"	Peas.....	84.0	16.0	29.0	51.5	3.5
"	Wheat-meal.....	85.5	14.5	21.0	62.0	2.5
"	Beans.....	86.0	14.0	31.0	51.5	3.5
"	Maize-meal.....	90.0	10.0	11.0	77.0	2.0
"	Oatmeal.....	91.0	9.0	12.0	77.0	2.0
"	Rice.....	92.4	7.6	8.4	82.0	2.0

The only direct evidence upon the digestibility of food in the human stomach, of indisputable import, is that published by Dr. Beaumont, as the result of his

observations in the case of Alexis St. Martin. The few following statements, expressing the digestibility of various articles of ordinary consumption, are abstracted from the tables containing the results of his carefully conducted experiments :

<i>Articles of Vegetarian Diet.</i>		<i>Articles of Flesh Diet.</i>	
	H. M.		H. M.
Barley Soup.....	1 30	Chicken Broth.....	3 00
Bean Soup.....	3 00	Mutton Soup.....	3 30
Soft boiled Rice.....	1 00	Chicken.....	3 15
Boiled Tapioca, Barley, Milk	2 00	Roast Beef, Beefsteak.....	3 00
Bread (fresh).....	3 15	Roast Mutton.....	3 15
Eggs (variously cooked)....	2 37	Broiled Veal.....	4 00
Potatoes, Beans, Parsnips...	2 30	Roasted Duck.....	4 15
Custard.....	2 45	Roasted Pork.....	5 15

In relation to the economy of vegetable food, Dr. Lyon Playfair stated, a short time since, at Drayton Manor, the residence of Sir Robert Peel, at a meeting of a great many distinguished men, that, "at London prices, a man may lay a pound of flesh on his body with milk for 3s., with turnips at 2s. 9d., with potatoes, carrots, butchers' meat without fat or bone, at 2s., with oatmeal at 1s. 10d., with bread, flour, and barley-meal, at 1s. 2d., and with beans at less than 6d."

It is calculated that fifteen persons may live on vegetable food, on the same land that would supply one with flesh. Some English estimates are more remarkable. Twelve acres are required to feed a man with beef alone ; but on potatoes alone, he can live on the produce of one ninth of an acre.

Another English estimate is given in the following table, which has many points of interest :

ESTIMATED PRODUCE OF AN ACRE OF LAND.

	Per Year.	Per Day.
Mutton.....	228 lbs.	10 oz.
Beef	182 "	8 "
Wheat	1,680 "	4½ lbs.
Barley.....	1,800 "	5 "
Oats	2,200 "	6 "
Peas	1,650 "	4½ "
Beans.....	1,800 "	5 "
Rice	4,565 "	12½ "
Indian Corn	3,120 "	8½ "
Potatoes.....	20,160 "	55 "
Parsnips	26,880 "	74 "
Carrots	33,600 "	92 "
Yams	40,000 "	110 "
Turnip	56,000 "	154 "
Beet.....	75,000 "	205 "

"Adam Smith, in his *Wealth of Nations*, informs us: 'That the most beautiful women in the British dominions, are said to be, the greater part of them, from the lower ranks of the people of Ireland, who are generally fed with potatoes. The peasantry of Lancashire and Cheshire, also, who live principally on potatoes and buttermilk, are celebrated as the handsomest race in England.'

"The peasantry of Wales, Norway, Sweden, Russia, Denmark, Poland, Germany, Turkey, Greece, Switzerland, Spain, Portugal, and almost every country in Europe, from the most northern part of Russia, to the Straits of Gibraltar, subsist principally, and most of them entirely, on vegetable food. The Persians, Hindoos, Burmese, Chinese, Japanese, the inhabitants of East Indian Archipelago, of the mountains of Himalayah, and, in fact, most of the Asiatics, live upon vegetable productions. The great body of the ancient Egyptians and Persians, confined themselves to a vegetable diet; and the Egyptians of the present day, as well as the Negroes (whose great bodily powers are well known), live chiefly on vegetable substances. The brave Spartans, who for muscular power, physical energy, and ability to endure hardships, perhaps stand unequalled in the history of nations, were Vegetarians. The departure from their simple diet was soon followed by their decline. The armies of Greece and Rome, in the times of their unparalleled conquests, subsisted on vegetable productions. In the training for the public games in Greece, where muscular strength was to be exhibited in all its varied forms, vegetable food was adhered to, but when flesh-

meat was adopted afterward, those hitherto athletic men became sluggish and stupid. 'From two thirds to three fourths of the whole human family, from the creation of the species to the present time, have subsisted entirely, or nearly so, on vegetable food, and always, when their alimentary supplies of this kind have been abundant, and of good quality, and their habits have been, in other respects, correct, they have been well nourished and well sustained in all the physiological interests of their nature.'"

"LINNÆUS, one of the most celebrated naturalists that ever lived, speaking of fruits, says: 'This species of food is that which is most suitable to man; which is evinced by the series of quadrupeds, analogy, wild men, the structure of the mouth, of the stomach, and the hands.' M. DAUBENTON, the associate of Buffon, observes: 'It is, then, highly probable that man, in a state of pure nature, living in a confined society, and in a genial climate, where the earth required but little culture to produce its fruits, did subsist upon these, without seeking to prey upon animals.' GASSENDI, in his celebrated letter to Van Helmont, says: 'Wherefore I repeat, that from the primeval and spotless institution of our nature, the teeth were destined to the mastication, not of flesh, but of fruits.' Sir EVERARD HOME says: 'While mankind remained in a state of innocence, there is ground to believe that their only food was the produce of the vegetable kingdom.' BARON CUVIER, whose knowledge of comparative anatomy was profound, and whose opinion, therefore, is entitled to the greatest respect, thus writes: 'Fruits, roots, and the succulent parts of vegetables, appear to be the natural food of man; his hands afford him a facility in gathering them; and *his short and canine teeth, not passing beyond the common line of the others*, and the tubercular teeth, would not permit him either to feed on herbage, or devour flesh, unless these aliments were previously prepared by the culinary processes.' RAY, the celebrated botanist, asserts: 'Certainly, man by nature was never made to be a carnivorous animal, nor is he armed at all for prey or rapine, with jagged and pointed teeth, and crooked claws, sharpened to rend and tear; but with gentle hands to gather fruits and vegetables, and with teeth to chew and eat them.' Professor LAWRENCE observes: 'The teeth of man have not the slightest resemblance to those of carnivorous animals, except that their enamel is confined to their external surface. He possesses, indeed, teeth called canine; but they do not exceed the level of the others, and are obviously unsuited to the purposes which the corresponding teeth execute in carnivorous animals. * * * Thus we find, that whether we consider the teeth and jaws, or the immediate instruments of digestion, the human structure closely resembles that of the simire, all of which,

in 'heir na ural state, are completely frugivorous.' Lord MONBODDO says: 'Though I think that man has, from nature, the capacity of living either by prey or upon the fruits of the earth, it appears to me, that by nature, and in his original state, he is a frugivorous animal, and that he only becomes an animal of prey by acquired habit.' Mr. THOMAS BELI observes: 'The opinion which I venture to give has not been hastily formed, nor without what appears to me sufficient grounds. It is, I think, not going too far to say, that every fact connected with the human organization goes to prove that man was originally formed a frugivorous animal, and therefore tropical, or nearly so, with regard to his geographical position. This opinion is principally derived from the formation of his teeth and digestive organs, as well as from the character of his skin, and the general structure of his limbs.' "

ANIMAL POISON.—The poisonous nature of animal matters, in process of decomposition, is shown by the following experiment of the most matter-of-fact of physiologists, Magendie :

"If we introduce into the jugular vein of a dog a few drops of water which has remained a little time in contact with animal substances in a state of putrefaction, in the course of an hour after the introduction, the animal will be depressed and lie down. Soon he will be attacked with an ardent fever; will vomit black and foetid matter; his alvine evacuations will be similar; the blood will have lost its power of coagulation, will be extravasated into the tissues, and death will soon follow."

HARD WATER.—There is no part of this country in which an abundant supply of pure soft water may not be had for drinking and culinary uses, by having proper cisterns. They should be large, tight, and built, if possible, of flat stones; but they may be made of brick, covered with cement. The water should pass into them through a filter, made of alternate layers of fine sand and charcoal, which may be renewed once a year. No lead should be used about a cistern, as rain water dissolves it, while spring or river water generally does not. The pipes should be wood, tin, or gutta percha. There is one cistern in Constantinople, capable of sup-

plying that vast city with water for sixty days. Perfectly soft and pure water may be obtained everywhere from hard or salt water, by distillation. All that is needed is a small still of iron or tinned copper, or even of common tin, with a tinned worm. Set over the kitchen fire, it will supply all the water for a family. The first water that passes over should be thrown away, and also the dregs.

CAUSES OF DISEASE.—A late number of the *Edinburgh Review* gives the following description of the manner in which the greatest part of the city of London is supplied with water :

"The refuse and dirt from millions of individuals—the enormous accumulation of waste and dead animal and vegetable matter—the blood and offal of slaughter-houses—the outpourings from gas-works, dye-works, breweries, distilleries, glue-works, bone-works, tanneries, chemical and other works—and a thousand nameless pollutions—all find their way into the Thames. The mixture is next washed backward and forward by the tide, and, having been thoroughly stirred up, and finely comminuted by the unceasing splash of two hundred and ninety-eight steamboats, is then pumped up for the use of the wealthiest city in the world."

Even this supply is intermittent, and the water is saved in butts, tubs, etc. Thousands, to whom even this supply is denied, drink from the sewers. The rate of mortality from bad water, other filth, over-crowding, and similar causes of disease, on the east side of London, is double that on the west, or aristocratic side. From twenty to thirty thousand poor laboring people in London are killed every year by filth alone; while the number of those who are sick of fever is twelve times as great.

In the healthiest parts of London the deaths by cholera were 8 in 10,000. In the worst parts, 225 in

10,000. Had London been perfectly healthy, there would have been 0 in 10,000.

DEPRAVITY.—The depravation of circumstance and association is shown in all receptacles of poverty and crime; but one of the most striking instances I have ever seen recorded is in the account of the wolf-children in India. Several cases have fallen under the observation of British officers in one province of the East Indies, in which young children, carried off by wolves, have lived with their cubs, and, after five or six years, have been captured. Their condition has been inconceivably dreadful. Utterly savage; running on all fours; feeding upon putrid raw flesh; their bodies exhaling a cadaverous odor; with no language but growlings and howlings; biting every thing within their reach; they have resisted all efforts to improve their condition, and taken the first opportunity to escape to their savage companions. Those who are interested in education, and who wish to know to what extent “evil communications corrupt good manners,” will do well to ponder on such facts as these.

MORALITY.—I have not written a book on morals, but on science, which is the true basis of morality. But it must be evident that in a discordant society, as in an unhealthy individual, moralities grow morbid. Some of the most crushing sins against social laws, are acts of the simplest conformity to natural law. What is more natural than that a healthful, passionate woman should give herself in love to a man whom she believes to be worthy of her? The stronger, and healthier, and better she is, the more she is impelled to such an act. The weaker, the sicker, and the worse she is, the less

likely is she to have a genuine passion, or to follow its dictates. Yet the "moral" world curses and crushes her for this—when, if she had destroyed herself by solitary vice, and then refrained from what she had made herself incapable of enjoying, the world would have praised her as a model of chastity. I feel bound in honor to say, that, so far as my observation extends, the women most likely to outrage society, in love relations, are the truest, the noblest, the greatest, and those we should most delight to honor.

SOLIDARITY.—That there is a pervading spirit, or soul, which connects and harmonizes the feelings and emotions of masses of people—as in a single individual—is shown by a vast number of observations. We have it in the combined enthusiasm, or *esprit du corps*, of fire-companies, military companies, armies, mobs, public meetings, camp-meetings. It is shown in simultaneous acts of courage and devotion; in panics, and among animals, in stampedes; in political excitements; in outrages; in rebellions and revolutions. It is the basis of what is called public sentiment and popular excitement. All these things exist, and have some cause. If I have not hit upon the true one, let our philosophers explain them. Man is an individual; but he is as much a part of a human society, people, nation, and race, as one of his organs is a part of his body. "We are all members, one of another."

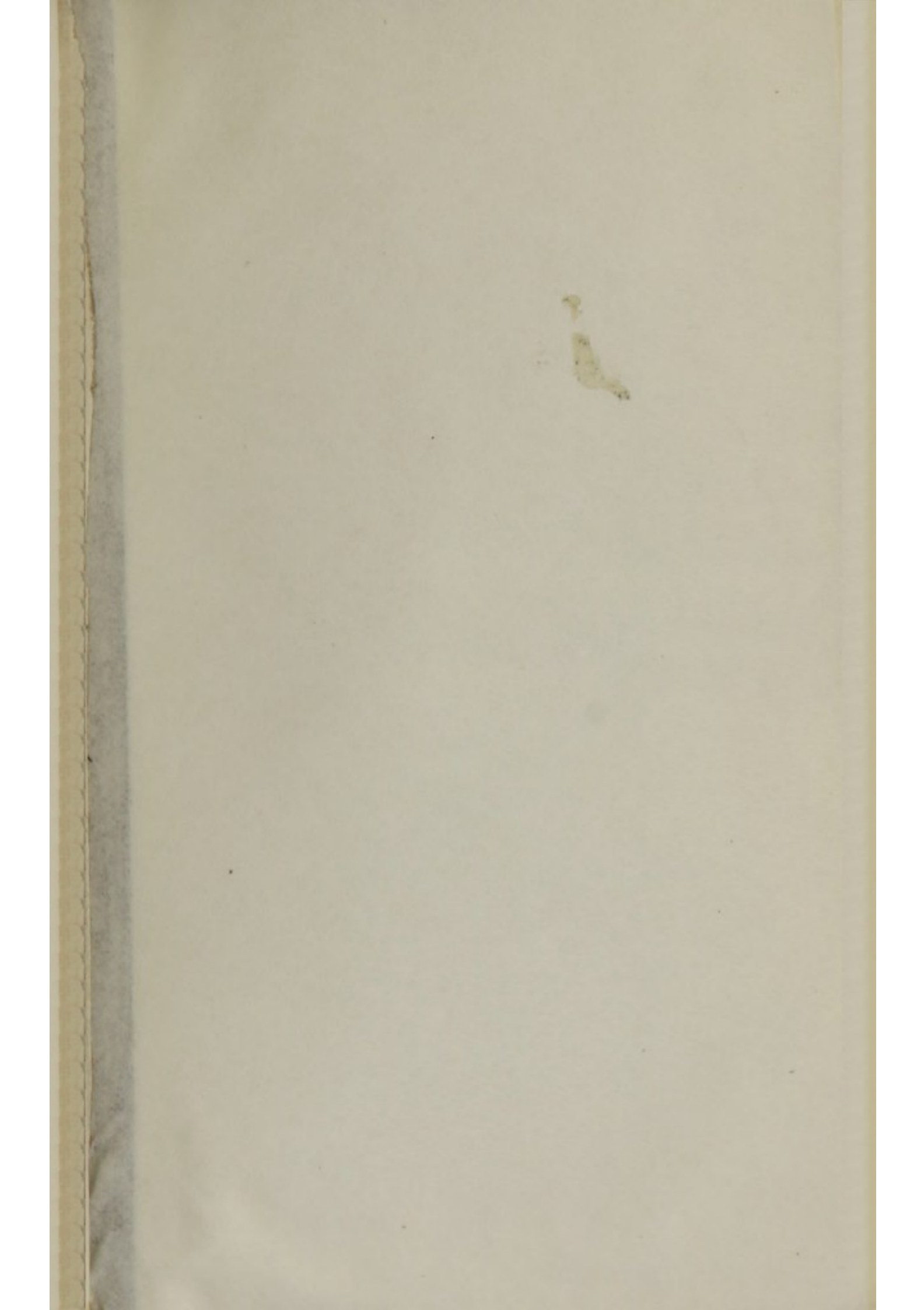
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