# DOMESTIC MEDICINE

AND

# HOUSEHOLD SURGERY

OCCIPITO FRONTALIS
TEMPORAL
ORBICULARIS PALPEBRARUM
MASSETER
ORBICULARIS ORIS
LARYNX
TRACHEA
TRAPEZIUS
DELTOID
RIGHT LUNG
HEART
PERICARDIUM
LEFT LUNG
BICEPS
DIAPHRAGM
LIVER
STOMACH
TRANSVERSE COLON
FLEXORS OF HANDS & FINGERS
GALL BLADDER
SMALL INTESTINE
BLADDER
VASTUS EXTERNUS
RECTUS FEMORIS
VASTUS INTERNUS
SARTORIUS
PATELLA
GASTROCNEMIUS
BAKER-CO.

THE

# AMERICAN CYCLOPÆDIA

OF

# DOMESTIC MEDICINE

AND

# HOUSEHOLD SURGERY.

## A RELIABLE GUIDE FOR EVERY FAMILY.

CONTAINING FULL DESCRIPTIONS OF THE VARIOUS PARTS OF THE HUMAN BODY; ACCOUNTS OF THE NUMEROUS DISEASES TO WHICH MAN IS SUBJECT—THEIR CAUSES, SYMPTOMS, TREATMENT AND PREVENTION—WITH PLAIN DIRECTIONS HOW TO ACT IN CASE OF ACCIDENTS AND EMERGENCIES OF EVERY KIND; ALSO, FULL DESCRIPTIONS OF THE DIFFERENT ARTICLES USED IN MEDICINE, AND EXPLANATIONS OF MEDICAL AND SCIENTIFIC TERMS.

WITH NUMEROUS ILLUSTRATIONS.


EDITED BY

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WITH AN APPENDIX BY

N. H. PAAREN, M. D., V. S.




Complete in One Vol. (Three Parts).

PART I. A—COCOA.




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# PREFACE.

Although very great progress has been made during the last two decades in disseminating knowledge among the people of this continent, it is beyond dispute that the most *lamentable* ignorance still prevails in many quarters in regard to the laws which regulate health, and the science which treats of the *prevention* and *cure* of disease. Much of the sickness and misery which almost continually linger around so many of our American homes, might be avoided by a little more sensible attention to sanitary requirements. Many valuable lives are lost to the community every year by want of cleanliness, insufficient ventilation, deficient water supply, impure or improperly-cooked food, and the total neglect of those *general principles* which lie at the very foundation of human life and health. The idea which once prevailed, that a knowledge of these subjects should be monopolized by the medical profession and dealt out to the people as it was paid for, or as an act of charity, is one not worthy of a moment's consideration. There are a thousand reasons why a fair acquaintance with the science of *Medicine* and the philosophy of *cure* and *prevention* should be acquired by all, and it is a gratifying fact that already in our common schools, as well as in our higher institutions of learning, physiology and hygiene are being taught as an indispensable branch of the education of every child in the land. The spreading abroad of knowledge of this kind, instead of engendering presumption in the treatment of serious forms of illness, and endangering life, will enable people more intelligently to state their case to their physicians, and will be the best safeguard against the unblushing *quackery* which to-day disgraces our country.

It is not intended, in any way, by the publication of this work to supersede the regular physician. Cases, however, are constantly occurring, in which a little intelligent nursing, and the application of some simple remedy in the outset, will serve to ward off a serious attack of illness, and in which a knowledge of those symptoms which indicate danger, will result in professional assistance being sought and secured before it is too late. Alarming and dangerous accidents frequently occur at such a distance from proper medical or surgical aid, that unless some one happens to be present with presence of mind to act, and knowledge *how* to act in cases of emergency, valuable life is forfeited which might have been saved. To meet these every-day requirements of our people, and to furnish them at as cheap a rate as possible, consistent with usefulness, with a clear, concise and readable account of popular sanitary science, domestic practice and household surgery, is the object of the publishers in the production of this work. In its preparation the standard works and medical and surgical journals of both Great Britain and America have been freely consulted, and in many cases, new ideas and much excellent matter have been drawn from them.

The articles have all been arranged alphabetically, in order that the unprofessional reader may the sooner meet with the information desired, while numerous cross-references will enable him to peruse connectedly all the different articles relative to any particular subject.

In describing diseases, topical headings have been made use of, so that each subject may be presented in the clearest and most intelligent manner.

*In the treatment of diseases, the doses given in all cases, where not otherwise stated, are those for an adult, and they may be diminished to suit the age by consulting the table found under the article* Dose.

The *weights* and *measures* used are those prescribed by the United States Pharmacopœia, and described under the article Weights and Measures, but an account will also be found under the heading Metric System of the French method, which is now coming into vogue among many prominent physicians and druggists, and will doubtless before many years be the standard method of weights and measures on this continent.

The articles of the materia medica have, in most instances, been inserted under their scientific and botanical names, with references from their simpler and more commonly used appellations. This has been done for the purpose of educating the reader, and accustoming him to the use of the scientific terms which are now very frequently met with in newspaper and magazine articles.

*In the pronunciations* throughout this work, we have only used marked letters where the sounds of the vowels could not be made apparent without the use of characters; and this has rarely occurred excepting with the letter *a*.

The long sound of each of the vowels marked thus, *ā*, *ē*, *ī*, *ō*, *ū*, is termed its *alphabetic* or *name* sound, from the fact that it is the sound that is heard in naming the letter. We have rarely had occasion to mark this sound.

The Italian or grave sound of *a* is marked thus, *ä*—as in the pronunciation of *almond*. (See ALMOND EMULSION.)

The slight, indistinct, or obscure sound of the vowel is marked thus, ạ— as in the pronunciation of *mental*. (See MENTAL EXERCISE.)

The letter *a* at the end of a word, marked with a dot under it, approaches the Italian sound of *a* in father, for example, the pronunciation of CINCHONA, which see.

All vowels marked with the dot underneath, occur only in unaccented syllables.

All vowels occurring in the pronunciations contained in this work, that are not marked, have *distinct* sounds, which are apparent independently of characters.

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## A.

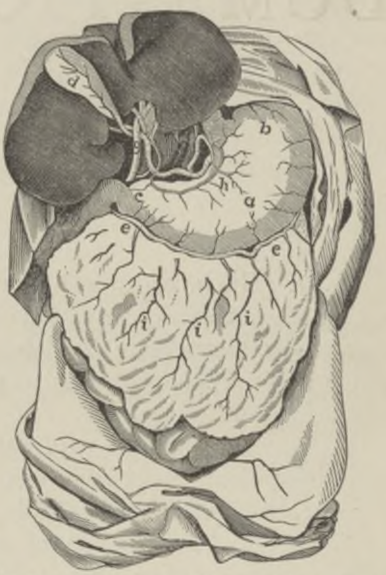
A. 1. [Gr. *a*, privative], is a prefix of numerous medical terms, denoting the absence or privation of anything; as *aphonia*, loss of voice; *anodyne*, without pain; *asphyxia*, loss of pulse. When the word to which it is prefixed commences with a vowel, *v* or *n* is inserted: thus, *anorexia*, want of appetite.

2. A. Ā Ā, [*ava*, *ana*, of each], used in prescriptions after two or more ingredients have been mentioned, denotes that the specified quantity of each ingredient should be taken.

3. Ā.Ā.Ā, a contraction of *amalgama*, an amalgam, a mixture of mercury with another metal.

ABBREVIATION, *ab-bre-ve-a'-shun* [*abbreviatio*, *onis*, *f.*], certain abbreviations, consisting of signs, letters or parts of words; are used in medical formulæ and prescriptions, for the sake of expedition: thus, ℞ signifies *recipe*, take. (See PRESCRIPTION.)

ABDOMEN, *ab-do'-men* [Lat. *abdo*, I hide], the abdomen or belly, which is the largest cavity of the body, is separated from the chest or upper part by the diaphragm, and is bounded below by the pelvic bones. The pelvic bones also form a cavity, called the pelvis. Posteriorly the abdomen is supported and protected by the spine, and is enclosed by the short ribs and abdominal muscles. To facilitate description, medically, the abdomen may be divided by imaginary, horizontal and vertical lines. The horizontal lines drawn round the abdomen, separate it into three zones, which, by means of the vertical lines, are divided into nine anterior regions, namely: 1, Epigastric; 2, umbilical; 3, hypogastric; 4 and 5, right and left hypochondriac; 6 and 7, right and left iliac; 8 and 9, right and left inguinal. In the upper zone lies the liver, reaching from under the right ribs across to the left; the small end of the stomach is located in the epigastric, and the large end in the left hypochondriac region, and in contact with the spleen or milt. The pancreas, or sweet bread, lies behind the stomach. The middle zone contains the large bowel, the omentum, or caul, a part of the small intestines, and posteriorly, close to the spine, the kidneys. The inferior zone also contains, centrally, a portion of the small intestines; laterally, the extremities of the large intestines or colon, and when it is distended, the superior portion of the bladder. All these parts, or viscera, are supported and covered by a smooth, glistening, moist membrane, the peritoneum, which is continued over the parts within the cavity, bounded by the pelvic bones. These are, more particularly the bladder and terminal extremity of the bowels, named the rectum, and in the female, the womb and its appendages. The bladder and the womb, when distended, rise from their own proper cavity into the cavity of the abdomen. The viscera of the abdomen are divided into solid and hollow; the liver is an example of the solid; the intestines and bladder of the hollow. These give different sounds, when the covering of the abdomen, under which they lie, is slightly struck with the finger. This is a fact of much importance to the physician in his examination of this cavity. The contents of the abdomen change their position considerably according to posture. One of the most important accidents to which this cavity is liable, is protrusion of a part of its contents through its walls, constituting rupture, or hernia. Accidental wounds penetrating the cavity of the belly, are generally fatal, and if they penetrate any of the viscera, are almost necessarily so. The diseases to which the contents of the abdomen are subject will be noticed under their respective heads. (See Stomach, Liver, Diaphragm, Peritoneum, Pelvis, Rupture.)




In this view of the abdomen, *d* is the gall-bladder, lying on the under side of the liver, the dark mass to which it is attached; *h* is the *coronary* artery, which supplies the stomach, *a*, *b*, *c*, with blood. The curve of the stomach is well shown. *e e*, the arteries which supply the caul, marked *i i*, which falls down from the front of the stomach, over the intestines, like an apron; *g*, a vessel of the liver. The *pancreas* is behind the stomach.

ABDUCTOR MUSCLES, *ab-duk'-tor*, those muscles which draw one part of the body from another. They are the antagonists of the adductor. (See ADDUCTOR MUSCLES.)

ABERRATION, *ab-er-ra'-shun* [Lat. *aberro*, to wander from]. 1. The passage of a fluid in the living body into vessels not destined to receive it, as of red blood into the capillaries. 2. The determination of a fluid to a part different from that to which it is ordinarily directed, as in vicarious hemorrhage. 3. Alienation of the mind, which is its most usual acceptation.

ABLEPSY, *ab'-lep-se* [Lat. *ablepsia*], want of sight; blindness.

ABLUENT MEDICINES, *ab'-lu-ent*, a term formerly applied to those medicines used for purifying the blood. It has now fallen into disuse.

ABLUTION, *ab-lu'-shun* [Lat. *abluo*, I wash away]. The term ablution usually denotes the removal of foreign matter from any substance by washing. It is more particularly applied to the washing of the body, or any portion of it, with water or other fluids. Washing the body regularly, is, happily in this country at least, becoming more common; but it is far from being a general habit as it should, particularly among the laboring classes, who stand the most in need of it. It is undoubtedly true that many go from January to December without thinking it necessary to bathe more than the face or hands. The body is constantly giving out through the skin, gaseous, saline, and greasy matters, which is essential for the health of the body. These, if not frequently removed by washing, accumulate on the surface of the skin, shut up the pores, and prevent them from performing their proper functions. Of course, if the skin is caked over with perspiration and dirt, either its own, or the dust to which many are exposed in the performance of their employments, it cannot possibly perform its functions properly. The result of neglect is, that much is retained in the system which ought not to be there; an additional load of duty is thrown upon other excreting organs, as the liver and kidneys, and if they have not the power to compensate for man's own carelessness, languor, low spirits, headaches, local accumulations of blood, gout, gravel, and many other diseases are the result. Fortunately, complete neglect cannot entirely stop the skin's functions, otherwise death itself must result. For the purpose of cleansing the skin, soft water ought to be used, if possible, with soap, good brown soap being the most effectual. A thorough purification of the entire surface of the body is necessary, at least once a week, for the proper preservation of the health. Along with this, washing over the surface with simple water, every night or morning, using the bare hands, or a sponge, followed by vigorous rubbing with a very rough towel, and if convenient, with a flesh brush also, will preserve a healthy state of the skin. The robust, if they wash in the morning, should do so with *cold* water, immediately on rising, while heat is abundant; but the depression and subtraction of animal heat which this occasions, cannot be sustained by delicate persons, as it leaves them chilled, languid, and with impaired digestion and heartburn. Such persons ought to try the water slightly warmed, or content themselves with washing only a portion of the skin each morning. If even this cannot be borne, dry friction with a rough towel, hair-glove, or flesh brush, may be substituted. After bathing or washing, it is always important to rub the surface thoroughly with a towel, till a warm glow is produced. The towel may be followed by hair-glove or flesh brush to advantage. Water slightly warmed is always preferable for washing at night. The feet require to be washed very frequently. It is to be wondered at, how otherwise respectable people, are so insensible on this point. A large proportion of our people cannot command the use of baths for the purposes of ablution, but any person who can command water and a towel, need not dispense with the luxury. Frequent and thorough ablution is most requisite for the aged, and is often shamefully neglected by those who have the care of old people, and is visited upon them in querulousness, and troublesome bodily ailments, which attention to the duty would have prevented. It should be added, that in persons of a gouty habit, the use of the cold bath in the morning is injurious, unless followed by active exercise, which effectually restores the excretory functions of the skin. Such persons should use water slightly warmed if they bathe in the morning, or bathe later in the day with cold water. (See BATHS, SKIN, CHILDREN.)

ABNORMAL, *ab-nor'-mąl* [Lat. *ab*, from, *norma*, a rule], irregular; not symmetrical, or according to rule.

ABORTION, *a-bor'-shun* [Lat. *abortio*], expulsion of the fœtus from the womb previous to the sixth month of pregnancy, is called abortion. A birth after the sixth, and before the ninth month, is known as a premature labor. It is more liable to occur at the time of each month corresponding to the menstrual period than during the interval. It is always an untoward event, and likely to exercise an unfavorable influence on the patient's health. The expulsive action of the womb may be excited at any time, but is more likely to take place before the third month, owing to the slight connection between the womb and the ovum.

*Causes.*—These may be either maternal or fœtal. Among the former may be mentioned, a debilitated condition of the system, uterine weakness, the presence of certain diseases, as leucorrhœa or the whites, typhus fever, scarlatina, small-pox, measles, etc. The action of certain irritating medicines, as aloes, ergot, etc., suckling the child too long, blows, falls, straining, severe coughing, excessive exertion and mental emotion caused by anger, sorrow, joy, good or bad news suddenly told, etc. In reference to the fœtal causes, it may be stated, that anything that compromises the life of the child will produce abortion. Disease of the placenta or after-birth, loss of blood, contagion communicated from the mother to the child, insufficient nutrition of the fœtus, are all liable to produce miscarriage.

*Symptoms.*—General uneasiness, languor, and weariness, pain in the back and limbs, succeeded after the lapse of time, by labor pains of more or less intensity, and a discharge of blood or mucus from the vagina. The stomach often becomes irritable, the skin hot, and the pulse increased in frequency. The tumor in the lower part of the abdomen will be found to be tense, and larger than the period of pregnancy would warrant. These symptoms, unless the trouble is arrested by proper treatment, continue to increase in intensity until the ovum is discharged.

*Treatment.*—The first indication is to avert, if possible, the disaster. If the hemorrhage be very slight, and the pains be trifling, this may often be successfully accomplished. The patient should recline on a hard bed, lightly covered with clothes, in a cool room; stimulants of every kind must be avoided, and all causes of both mental and physical irritation must be removed. An attempt must be made to suspend the pain by the administration of opium, in full doses, 25 drops of laudanum repeated in two hours if necessary. Cold cloths may be applied to the external organs, and cold water be injected into the rectum. The following mixture will frequently arrest the flowing: Tincture of Indian hemp, 4 drops every two or three hours in water. If these efforts fail to arrest the action of the womb, the case must be treated as a regular confinement, and proper medical aid be solicited at once.

*Preventive Treatment.*—The state of the stomach and bowels should be carefully regulated, the diet be light and nutritious, and gentle exercise be taken in the open air, but not so as to occasion fatigue. Cold sponging has proved highly beneficial, applied gently, so as not to produce too great a shock. Rest, more or less absolute, is one of the most powerful preventive measures we possess. If the female has been in the habit of miscarrying, as the same period approaches again, the utmost caution must be exercised, all causes of irritation be avoided, and complete relaxation from labor indulged in until the time passes by. Both during the time, and after miscarriage, the general health must be supported by strong animal broths, fresh eggs, and meat, and if there be great debility, wine or malt liquor may be requisite.

ABORTIVES, medicines supposed to have the power of exciting abortion.

ABRASION, *ab-ra'-zhun* [Lat. *abrado*, to scrape off], a superficial lesion of the skin; a trifling but often painful accident, and where the part is subject to the action of poisonous or irritating substances, it may be a dangerous one. The cuticle is soon restored, but in the meantime it is necessary to provide a substitute. Common adhesive plaster, so frequently employed for this purpose, is much too irritating, and sometimes causes ulceration. Court plaster is much better, but is not suitable for large surfaces. Collodion is another excellent application for this form of injury. A mixture of one part of collodion with two parts of castor-oil, applied with a camel's hair brush, forms a very smooth, elastic covering. It produces some smarting, which in a few minutes passes off. The principle in the treatment of an abrasion, is to protect the sensitive true skin with a light, dry, unirritating application, until nature restores the proper covering.

ABSCESS, *ab'-sess* [Lat. *abscedo*, to separate from], a circumscribed cavity in any of the tissues of the body, of abnormal formation, containing pus. (See PUS.) An abscess may be either superficial or deep, acute or chronic, common or specific. It is said to be superficial when it is immediately beneath the integument, or among the superficial muscles, and deep, when it is in some internal organ, in the substance of a bone, or bound down among the deep muscles by a large quantity of tissue. The terms, acute and chronic, have reference to the time occupied in the formation of an abscess; a common abscess is the result of ordinary inflammation, while a specific abscess is the result of some specific poison, as syphilis, glanders, or small-pox. For purposes of treatment, abscesses may be divided into phlegmonous, scrofulous, and metastatic or multiple: The first being incident to all persons; the second only to those of a strumous taint; while the third term is used to designate those collections of purulent matter, which are consequent upon injuries, operations and diseases.

1. PHLEGMONOUS ABSCESS.—Runs its course with unusual rapidity. May be found in any part of the body, and at any time of life, and may exist simultaneously in different parts of the body.

*Causes.*—Its immediate cause is obstructed circulation of the blood and consequent pressure upon the nerves of the affected structures. It is sometimes dependent upon some external injury, at other times upon constitutional cause, as derangement of the digestive organs, or the suppression of some important secretion, as that of the liver, kidney or womb.

*Symptoms.*—When open to inspection, the part is found to be red, hot, tender, and throbbing in unison with the heart. In the majority of cases the system sympathizes with the local trouble, and, even when the abscess is of trivial size, the patient will be seized with chills, alternating with flushes of heat, and followed by copious sweats. When the case is severe, there will be high constitutional excitement. The countenance will be flushed, the eye suffused. The pulse will be full and frequent, the skin hot and dry, the urine scanty and high-colored, and great thirst and restlessness. Delirium may be present, and last until the part is relieved. When pus is fully formed, both local and constitutional symptoms usually abate, and the patient enjoys tranquil sleep. Pointing is a symptom of importance in any abscess. It is most conspicuous where there is most discoloration of the skin; looks livid and dusky, and feels thin, as if it were ready to give way. Fluctuation is another symptom of great importance. It is discovered by alternate pressure with the hands or fingers resting upon opposite sides of the abscess. As the one hand or finger sinks in, the other is elevated, and when this takes place, there is no doubt about the presence of some kind of fluid. The nature of the fluid may always be determined by inserting an exploring needle. The affections most likely to be confounded with abscess are aneurism and hernia.

*Treatment.*—As soon as suspected, frequent fomentation with hot water, and the prompt administration of a cooling laxative, as epsom or rochelle salts, may succeed in preventing its formation. When the symptoms indicate with tolerable certainty the presence of matter, warm, soft poultices—linseed or bread and water—must be continually applied, having as much regard to ease as possible. The practice so common, of applying irritating applications, such as soap and sugar, shoemakers' wax, honey, etc., for the purpose of breaking the abscess, should never be indulged in. If the matter is not discharged naturally, when pointing and fluctuation indicate that the abscess is fully formed, resort must be had to the lancet, but as this can only be safely done by one possessed of anatomical knowledge, the unprofessional should content themselves with simply palliative measures, and at the proper time seek the aid of a physician.

2. Scrofulous Abscess.—It is often called a chronic abscess on account of its tardy development, and the term cold is frequently used to designate it on account of the absence of inflammatory symptoms. It is never met with except in the scrofulous constitution. Weeks and months sometimes elapse before it acquires any considerable bulk. There is neither heat nor redness of skin, the surface being cold and blanched, and feeling and looking as if there were great deficiency in the circulation. Pain is almost entirely absent. The general health slowly and almost imperceptibly declines, the countenance becomes pale and sallow, and there is an entire absence of those inflammatory symptoms which

mark the former variety. On account of its passive character, its presence is frequently overlooked until great mischief has been done. The matter of the scrofulous abscess is generally of a whitish or yellowish cast, slightly inclining to greenish; of the consistence of thin syrup, and intermixed with particles very much like pieces of soft boiled rice.

*Treatment.*—The treatment is essentially different from that of the former variety. The system does not tolerate energetic interference. When the quantity of matter is small, its removal is frequently effected by absorption, aided by internal and external remedies. The following prescription may advantageously be used under such circumstances:

Take of Iodide of potassium..................One dram.
Infusion of colombo ..................One pint.—*Mix.*

A tablespoonful to be taken four times during the twenty-four hours. When general debility exists, use the following combination:

Take of Sulphate of quinine.............Twenty grains.
Tincture of iron .................Half an ounce.
Pure water .......................Half a pint.—*Mix.*

A large tablespoonful before each meal and at bed-time. Or the following:

Take of Citrate of iron and quinine...........One dram.
Pure water..........................Half a pint.—*Mix.*

A large tablespoonful before each meal. At the same time the following may be applied locally, with a feather or a camel's hair brush, twice a day:

Tincture of iodine.
Rectified spirits.
Of each one ounce.—*Mix.*

The evacuation of the purulent matter at the proper time, is of great importance, but caution is necessary, lest air be introduced into the cavity, a circumstance likely to be followed by the most disastrous consequences. After the abscess has been opened, the best local applications are emollient poultices, and when the matter has thoroughly drained out, tincture of iodine, gum ammonia, soap, compound galbanum, or iodine plaster, care being taken always to leave an opening for the discharge of matter. Whatever mode of treatment is adopted, care mus be taken to sustain the system by tonics, and to allay pain by anodynes.

3. Multiple Abscess. (See Pyemia).

*Causes.*—The causes are numerous and diversified. Loss of blood, depression of the vital powers, and all such as are productive of great shock to the system. It supervenes upon severe injuries, especially of the head, compound fractures of the larger limbs, gunshot wounds and capital operations. It frequently follows severe cases of erysipelas, carbuncle, small-pox, typhus fever and scarlatina. Lying-in females are particularly obnoxious to attacks of this form of abscess. No period of life is exempt from it. It has been known to attack infants a few weeks old. Wounds of the large veins, or operations involving this class of blood-vessels, are very apt to be followed by abscess of this form. Impure air, unwholesome food and imperfect drainage are fruitful causes of this disorder.

*Symptoms.*—The patient is restless and ill at ease, face pale and sallow, impaired appetite, deranged secretions, cheek flushed, pulse irritable and frequent, violent chills, lasting from fifteen minutes to two hours, and followed first by violent reaction and then by profuse sweats. The tongue is dry and clammy, thirst urgent, bowels irregular, stomach very irritable, urine high-colored and scanty, extremities cold, and as the disease advances the symptoms all assume more or less of a typhoid character, death frequently supervening at the expiration of a week or ten days. As many as one hundred of these multiple abscesses have been found in one individual after death. The matter found in them is generally of a dirty grayish or drab color, in old cases mixed with dark blood and flakes of fibrin.

*Treatment.*—The first indication is, as far as possible, to remove the exciting cause; the second, to support the system so as to enable it to throw off the poisonous influence. The first indication may be fulfilled, in part, by paying great attention to the dressing and the position of the part, the former being changed almost incessantly, and the latter arranged so as to favor the escape of the secretions. Lotions containing chlorinate of lime and carbolic acid, diluted so as not to irritate, are serviceable, and the dressings should be sprinkled with chloride of lime in quantities sufficient to allay fetor, while the air in the apartment should be frequently renewed by opening the doors and windows. The second indication may be accomplished by the use of tonics and stimulants: wine, brandy, ammonia, quinine and iron, with concentrated animal broths persistently administered at short intervals. Pain must be allayed and sleep induced by strong opiates; morphia in full doses being the best form for administration in these cases. The recurrence of the chills may be best combated by strong doses of quinine. The following may be advantageously given:

Take of Sulphate of quinine . . . . . . . . . . . . . . . . Two drams.
Dilute sulphuric acid . . . . . . . . . . . . . . . Two drams.
Pure water . . . . . . . . . . . . . . . . . . . . . . . . . . Half a pint.—*Mix.*

A large tablespoonful to be given every four hours. The irritability of the stomach may be controlled by mustard blisters externally, and the internal administration of ice and aromatic spirit of ammonia in dram doses every two or three hours. Throughout the whole case the utmost attention must be paid to cleanliness; the bed-clothes and the patient's garments should be frequently changed, his body sponged with salt and water, and the apartment be kept thoroughly ventilated. Under the most favorable circumstances the complete recovery will be exceedingly tardy, and the greatest care must be exercised in regard to subsequent exposure or irregularity of diet for a long period of time.

ABSCISSION, *ab-sizh'-un* [Lat. *abscindo*, to cut off], the cutting away of some superfluous part. The premature termination of a disease.

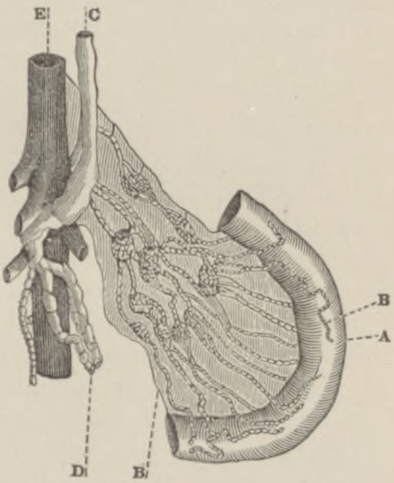
ABSINTHE, *ab-sin'-the* [Gr. *a*, without, and *psinthos*, pleasure], the name given to an intoxicating drink much used in France, Algiers, etc. It is made by infusing in concentrated alcohol the ends of wormwood (*somnutes d'absinthe*)—from which the liquor takes its name—angelica root, aniseed, calamus, dittany seeds, and common marjoram. The color is improved by the addition of indigo, turmeric, juice of hyssop and nettles. The consumption of this pernicious, pale-green liquid, has increased to an enormous extent in France of late years. (See ABSINTHISM.)

ABSINTHINE, *ab-sin'-thene* [Gr. *a*, without, and *psinthos*, pleasure], the bitter principle of wormwood, which, when pure, occurs as a yellowish powder, slightly soluble in water, very soluble in alcohol, and less so in ether. It is used sometimes as a stomachic in dyspepsia, and as a remedy against worms.

ABSINTHISM, *ab'-sin-thizm*, this name is given to the effect produced by the continued use of absinthe. The first effect is a species of cerebral excitement, which is said to be rather agreeable. The intoxication comes on rapidly; the head swims, and the experience is much the same as by poisoning with a narcotic. The excitement the liquor produces diminishes daily in intensity, and each day an augmentation of the dose is necessary. (See ABSINTHE.)

ABSINTHIUM. (See ARTEMISIA, SANTONINE.)

ABSORBENTS, *ab-sorb'-ents* [Lat. *absorbeo*, I suck up], a term used in Anatomy to designate small vessels which imbibe fluids that come in contact with them, and carry them into the blood. They are called lacteals, or lymphatics, according to the nature of the fluid they convey. The lacteal absorbents take up the nutritive portion of the food named chyle, and uniting in one common trunk which ascends in front of the spine, pour it into the large veins going directly to the heart. The chyle, before being taken up by the lacteals, has to pass through a set of vessels called mesenteric glands, and as the health and vigor of the body depends upon the purity of the blood, it is of the utmost importance that these organs be maintained in a state of perfect health. These glands are the seat of frequent disorders in children. (See TABES.) The lymphatic absorbents are distributed throughout the whole body, and take up and convey into the general circulation, whatever nutrient matter is fit to re-enter the blood. They also pass through glands, many of which are observable on the sides of the neck, in the armpits, and on the inside of the thighs. The enlargement of these glands is what is popularly known as "waxen kernels." The lymphatic glands are very apt to become inflamed, and sometimes suppurate, especially in persons of a weak constitution, or when there happens to be a sore on a part of the body more distant from the heart than the gland. When any irritation is visible in any of these glands, a thorough search should be made over the whole body, for any scratch or small sore which may be the cause of the trouble, for it would be evidently useless to be treating the effect while the cause remained untouched. When found, if the existing sore be treated with rest, fomentations, soft poultices, and some simple, laxative medicine be given, a seidlitz powder, or a dose of epsom salts, the irritated gland will generally resume its healthy condition. If the gland continue inflamed, it must be soothed by the same means. Suppuration in the neck ought, if possible, to be avoided, as it is likely to leave an unsightly eschar. When matter, however, has formed there, the after-traces will be much less visible, if the abscess be opened at the proper time by a surgeon. The lymphatics are apt to assume a state of chronic enlargement and slow suppuration, and as the root of this trouble is found in a debilitated constitution, every effort must be made to invigorate the system. This can best be accomplished by nourishing animal diet, by early hours, regular exercise, and change of air. Cod-liver oil is useful in these cases, and may be rubbed over the enlarged glands as well as taken internally. The syrup of the iodide of iron in doses of 20 drops, gradually increased to 40, three times a day before meals, is an excellent preparation, while tonic medicines generally are all indicated.




THE ABSORBENTS.
A, Small Intestine. B, Lacteal.
C, Thoracic Duct. D, Absorbents.
E, Blood-vessel.

In *Medicine*, substances used to absorb or neutralize the acids formed in the stomach; chalk and magnesia, for example, are called absorbents, and in *Surgery*, the same term is used to designate certain spongy substances used in dressing wounds, such as lint and amadou. (See Amadou.)

ABSORPTION, *ab-sorp'shun*, a term used in *Physiology* to denote the natural function of the body, which is exercised by the absorbent vessels. Absorption is not performed by the lacteals and lymphatics alone—the blood-vessels take up a large quantity, particularly in the case of liquids. It may also take place through the skin; and in this way, persons unable through disease or accident to swallow liquids, may have their distress partly relieved by tepid baths.

In *Chemistry*, the disappearance of a gaseous body on entering into combination with a fluid or a solid is called absorption. For example, when ammoniacal gas is put into water, absorption takes place, and the result is liquid hartshorn.

ABSTINENCE *ab'-ste-nense* [Lat. *abstineo*, I abstain]. Abstinence is the act or habit of abstaining from something to which we have a propensity, or in which we obtain pleasure; but it is more particularly applied to the privation, or sparing use of food. It has been enjoined and practiced for various objects, namely: sanitary, moral and religious. Physicians relate remarkable cures effected by abstinence. The Pythagoreans, Stoics and others, recommended it as a means of bringing the animal part of our nature into greater subservience to the spiritual. Abstinence is likewise enjoined by various religious sects. Abstinence may be a great good, or on the other hand it may be a great evil. With those who live freely, eat much animal food, and drink wine and malt liquors, the remedy is excellent, either in their peculiar ailments, or in general sickness. If the constitution be tolerably sound, nature will set herself right if unopposed. A dose of medicine may very often be omitted when such patients can be persuaded to *starve*. More persons hurt themselves by excess than by the opposite, but not a few sustain much injury by too much abstinence. The latter are generally persons of weak digestive powers who, finding the less they give the stomach to do the better they feel, run into extreme, and consume barely enough aliment to support health, and the general system suffers; the stomach, liver, bowels, blood and circulating system are not sufficiently supplied with stimulus, and consequently act and react on one another; the general tone is generally lowered, and organic disease may be originated. This error has been fostered by medical authorities, and the case of Cornaro and others held up as examples of the health and longevity to be attained by extreme abstinence. Undoubtedly some men will retain health and strength on much less nutriment than others, but still, for most men, a tolerably liberal supply of varied food is essential, and they cannot materially lower the standard permanently without injury. Living moderately, instead of stinting the whole body to favor the stomach, they ought, by exercise, relaxation and other means — by medicine if requisite—so to strengthen the organ that it may comfortably digest sufficient for the wants and support of the whole body. By acting on the reverse, nothing is gained eventually, for the stomach, participating in the general debility, becomes daily more unfit to perform its functions. The effect of abstinence on those who practice it on religious grounds is too often most injurious, and lays the foundation of organic disease of the stomach.

In the event of persons having suffered from long abstinence, nourishment should be administered cautiously, and in very small quantities at a time, but frequently. At first it should be mild and farinaceous, with soups, and the heat of the body should be promoted at the same time by friction and other means. In the beginning of febrile and inflammatory diseases, abstinence from solid or very nutritious food is absolutely necessary. (See CORPULENCE, DEBILITY, DIGESTION, FOOD, REGIMEN.)

ACACIA, *a-ka'-she-a*, in Bot., a genus of plants belonging to the natural order *Leguminosæ*, sub-order *Mimoseæ*. The *Acacia vera* yields gum arabic; and the inner wood of the *A. Catechu*, an Indian shrub, affords a kind of catechu, or cutch, rich in tannin, which is used for tanning, and, in medicine, as an astringent. (See GUM ARABIC, CATECHU.)

ACARUS, *ak'-a-rus* [Gr. *akari*, a mite], the tick or louse, a genus of insects of the order *Aptera* or wingless. It contains various species, as the domestic mite, the itch mite (*Acarus Scabiei*), the harvest bug, the sugar mite, the red spider, etc. The bite of the harvest bug produces considerable inflammation and swelling of the part, with much itching. It may show itself upon the head or body during sickness, notwithstanding the most scrupulous care, and some kinds of cutaneous eruptions and sores are with great difficulty freed from it. Washing and cleanliness are the great counter agents; after washing, equal parts of sal-volatile and water may be used to the part, or a solution of the aromatic spirit of ammonia will afford relief. The itch insect is an acarus, also the harvest bug. (See ITCH.)

ACCIDENTS, *ak'-se-dents*. What are commonly called accidents, such as drowning, suffocation, poisoning, fractures, dislocations, wounds, cuts, falls, burns, etc., are all described under their respective heads, and here it is only necessary to give certain general directions, which in all cases it is well to be acquainted with. An accident almost invariably attracts a crowd. The first thing to be done is to disperse it. A half a dozen persons are generally sufficient for the relief of the injured individual, and the kindest thing the crowd can do, is to remove at least fifteen or twenty feet away. If any more assistance is required, it can easily be secured from the bystanders. It is well for others to be within call, to run messages, summon friends, and procure means for conveying the patient home or to the hospital. If, in consequence of the accident, the nervous shock should be so great as to occasion fainting, the person should be immediately placed on his back with the limbs extended, and the head and shoulders slightly raised. The collar or cravat, or anything else that is tight around the patient, and interferes with the circulation of the blood or the respiratory movements of the chest, should be at once loosened or removed. If the accident be only slight, a draught of cold water, a teaspoonful of brandy and water, or twenty or thirty drops of aromatic spirit of ammonia in a tablespoonful of cold water, given every two or three minutes, will generally suffice to bring about reaction.

The proper disposal of the sick-room for the reception of accidents, as soon as possible after their occurrence, is of great consequence, so that the patient may at once be placed under circumstances the best adapted for his recovery, and the least likely to cause him pain or inconvenience.

Let us suppose the case of a shattered or fractured limb. The accident will probably have occurred at some distance from the house, and the patient will have been brought along on a litter, or in some conveyance, in such a position as to rest as much as possible the wounded part. If the hand be shattered, or the arm, it is generally best to bend the elbow at right angles, so as to relax the muscles, to support it in a broad sling and lay it across the chest. If the leg be the part injured, it should be bent or flexed at the knee joint, also to relax the muscles, and laid upon its outer side (if this position be not incompatible with the state and condition of the injured parts). It may be laid upon a board, or a tray, or a pillow, or anything that will support it and can be easily moved along with the limb; as, for instance, in removing a patient by means of a carriage, or by railway, from the scene of accident. Bleeding seldom occurs in shattered or fractured limbs to such an extent as to endanger life, simply from the fact, that the blood-vessels are torn instead of cut through, so that the application of cold, or the mere exposure of the wound to the air, will generally suffice to arrest the hemorrhage. Failing this a tourniquet must be applied over the main blood-vessel, or a handkerchief, or bandage may be passed round the limb, and tightened by means of a stick twisted into it. The effect of this will be greatly increased by placing firmly a pad under the bandage over the situation of the leading blood-vessel, if that is known or can be felt beating by the fingers. A bleeding limb should always be held as high as possible.

The bleeding part rather exposed to the air than covered with a number of cloths, as is the popular custom. If cold is applied, it should be by means of a single cloth, which may be either frequently renewed, or a gentle stream of cold water may be kept playing upon the wound. These precautions, as to bleeding, will be much more necessary in the case of incised wounds where the cut ends of the blood-vessels bleed with great activity. It is to be remembered as a golden rule, that almost all bleeding, even of the most urgent kind, can be checked for a time, or, at all events, till the arrival of the medical man, by direct pressure applied to the part, either by the fingers, or by a pad of lint, or a dry sponge.

Another rule is always to keep a limb which is broken, in a natural, easy, or relaxed position, otherwise, from the action of the muscles, the ends of fractured bones may be forced with violence through the skin, or may injure blood-vessels, and may convert what was a tolerably simple into a very severe injury. Should severe shock and depression of the system supervene after an accident, wine and water, or brandy and water, may be freely given at once, and if there are any symptoms of coldness of the extremities and shivering, warm bottles, heated blankets, hot bricks, or bags of hot salt, should be applied.

Let us suppose, now, that the patient has been carried from the scene of accident to his own house, or to the room where he is to be laid up. The first thing to be done is to choose a good room, according to the principles laid down in the beginning of this article; a well-ventilated, and well-managed sick-room being quite as essential to the healing of a wound as to recovery from sickness. In case an operation should be required, a room should be chosen with a good light, or if artificial light is required, several good lights should be provided, and the bed so disposed that it can be easily got at and easily lighted up. The next thing to be done is to arrange the bed properly, and in doing this, reference should be had as to whether it is the right or left limb that is injured and that requires to be treated. If the patient is suffering much from the shock, or from cold, the bed should be warmed. A macintosh, or piece of water-proof material should be arranged under the wound, so as to protect the bedding from blood and discharge, and when it is desired to irrigate a wound, the macintosh should be large, and so disposed as to allow the current of water to escape over the bed into a vessel placed for the purpose of receiving it. Everything now being in readiness, the patient is to be got into bed, and in getting him in it will be necessary to remove his clothes, an operation giving great pain to the patient unless properly conducted. They should be slit up the seams and cut off where necessary, so that the wound may not in any way be dragged upon, and in this manner they may be removed, as it were, in one piece, even when there are the most painful and extensive injuries, without any pain or inconvenience. While all this is being done, it should be the duty of one person to attend to and hold the injured part, and to support it in a relaxed position, which is one of ease to the patient. When all the clothes are removed, a night-shirt may be put on; and if it be the arm that is injured, the corresponding arm and shoulder-piece of the night-shirt may be slit open. The patient is then to be placed in bed, and the limb, being still held by the person in charge, deposited safely on a pillow, or otherwise, in the required position. Some loose tow or cotton wool may be placed around it, to absorb the blood if there be any, and care must be taken to prevent the weight of the bed-clothes from pressing upon it, either by means of a "cradle," by pillows, or by supporting the bed-clothes in any other way. The wound must be looked at every now and then till the arrival of the medical man, in order to ascertain if there is any bleeding; and if there is much shock or faintness from previous loss of blood, stimulants must be freely administered.

In cases of injury to the head, or of suspected fracture of the cranium, the patient may be quite insensible, and consequently such patients are often much tumbled about by those who remove them and who put them to bed; but the most serious accidents have resulted from want of care in this respect, and it has happened that bleeding inside of the skull, which had been temporarily arrested, has been made to burst out afresh, with a fatal result, owing to nothing more than rough handling. Wounded parts which are very painful and uncomfortable in any position, may be placed upon a water pillow, the yielding and undulating surface of which readily accommodates itself to them, and does away with the effects of pressure. (See ARTERY, BITES AND STINGS, BURNS AND SCALDS, BRUISES AND CONTUSIONS, CUT-THROAT, CONCUSSION, CONCUSSION OF THE BRAIN, CHOKING, DISLOCATIONS, DROWNING, FALLS, FROST BITES, FOREIGN BODIES IN AIR-PASSAGES, FRACTURES, HANGING, HEMORRHAGE OR BLEEDING, POISONS AND THEIR ANTIDOTES, SUNSTROKE, SUFFOCATION, WOUNDS, ETC.)

ACCLIMATIZATION, *ak-kli-mat-e-za'-shun.* Acclimatization consists in a change in the physical organism, produced by a prolonged sojourn in a place whose climate is widely different from that to which one is accustomed, and which has the effect of rendering the individual who has been subjected to it similar in many respects to the natives of the country which he has adopted. The process takes place to a certain extent so far as some individuals are concerned, but the ability to become acclimated is not possessed to the same extent by all nations. Every race of mankind appears to have its prescribed salubrious limits, and whenever they emigrate many lines above or below these, they begin to deteriorate. The white race appear to reach their highest physical and intellectual vigor above 40° in the western, and 45° in the eastern hemisphere. There is a certain pliancy of constitution which enables all races to endure more or less changes of temperature with impunity; and it is a fact that those races which are indigenous to warm climates, support best the extremes of other latitudes. The Esquimaux cannot well bear transplanting to equatorial regions nor the negro or Malay to the latitude of Greenland or Kamtschatka. The Englishman placed in Bengal or Jamaica, though he may suffer from no acute disease, and may live to a good old age, ceases to be the plump, plethoric, healthy individual he once was, and his descendants are certain to degenerate. The European in the Antilles becomes prematurely old; he is constantly a prey to fever and dysentery, and after a continual struggle for existence he perishes. Statistics show beyond doubt that certain races cannot become acclimated in certain realms, though they may in others, at equal distance from their original homes. Climatic influences are combated most successfully by individuals adapting themselves to new conditions, carefully regulating their mode of life, manners and customs, so as to suit the climate in which they live. Food, clothing and habits are particularly to be attended to.

The air and its temperature are largely concerned in the process of acclimation; the former is so much more rarefied in hot than in cold climates, that in the vital process of respiration, a comparatively much smaller quantity is habitually consumed; less oxygen is taken in, and the process of oxidation or combustion, which is continually going on within the body, is slower; we reasonably conclude, that by this process of combustion, the animal heat, in part at least, is maintained, but, of course, in a hot climate, a less active condition is sufficient to keep up the average temperature. The process of oxidation or combustion effected on the one hand by the oxygen inspired, is supported on the other by some of the elements—carbon and hydrogen—of the food. It is evident, therefore, that if an individual who has become resident in a hot climate, makes a practice of consuming as much nutriment as he used to do, without injury to health in a cold one, he must take more than is requisite, consequently the blood becomes overcharged with a load of noxious matter, which the rarefied air and inactive habits of warm countries do not tend to remove; and if the course be continued, an attack of illness, probably of a biliary nature, is the consequence. Even in temperate climates, the difference between the consumption of oxygen in winter and summer is considerable. In Germany it has been calculated at one-eighth less in the latter. How great must be the difference to those who permanently settle in tropical heats! certainly, sufficient to require much alteration in habits of living. The abundant animal diet, the fats and alcoholic drinks of the colder climes, all of which contain carbon and hydrogen in abundance, and assist materially to sustain temperature, must give place to the farinaceous and watery fruits of warmer regions, *vice versa*, on going from a warm or temperate country to a colder—as the experience of all arctic travelers testifies—a larger proportion of animal diet, and that of a more fat or oily character, is requisite to maintain health and strength, and those only who are capable of consuming and digesting this full allowance, are fit for encountering the cold of the north. From what has been said, it is evident, how important due regulation of the food is to safe and speedy acclimation; it is the main element, and the one most under man's control. Modern science and discovery will render him much assistance, but study of the natural products of the soil, and of native habits, is essential.

The great increase of the functions of the skin, which takes place on removal to a warm climate, requires attention; it renders the constitution more susceptible to the influences of a damp or chill air, such as frequently occurs in evening. The above remarks apply to our own climate in summer. The best preservative is woollen clothing of some kind, be it ever so thin, worn next the skin. Persons who from a warm climate, of which they are either natives, or to which they have become accustomed, come to reside in a variable or cold country, are peculiarly liable to affections of the chest or lungs, and not unfrequently become the subjects of consumption. The gipsies are a remarkable example of a race capable of enduring almost all varieties of climate, and the Chinaman also appears to be highly favored in this respect. The principal difficulty to be met with in all attempts at acclimatization is the persistent, pernicious influence of marsh malaria. This chronic and enduring influence of marsh malaria finds abundant illustration among the people who inhabit certain insalubrious localities in Italy. "We do not live," said a miserable inhabitant of the Pontine Marshes to a stranger, astonished that existence could go on in so unhealthy a region, "we do not live—we die!" The study of climatology is of the greatest importance to the physician, as well as to the invalid seeking to restore an exhausted system by change of air. There can be no acclimatization to causes of disease, and it is an admitted fact that climate has often been made the scape-goat for the neglect of sanitary precautions. (See Air, Respiration, Diet, Climate.)

ACCOUCHEMENT. (See Parturition.)

ACCOUCHEUR, *ak-ko-shur'*, the French term for midwife; the physician who attends and assists during the process of childbirth.

ACEPHALOUS, *a-sef'-a-lus*, a term applied to a monster born without a head.

ACETABULUM, *as-e-tab'-u-lum*, in Anatomy, is the term applied to that deep, cup-like cavity of the os innominatum, which receives the head of the femur, or thigh bone, thus forming the hip joint. (See PELVIS.)

ACETATE, *as'-e-tate* [Lat. *acetum*, vinegar.] A salt of the acetic acid. Acetates are characterized by the pungent smell of vinegar, which they exhale on the addition of sulphuric acid; by yielding, on distillation, in a moderate red heat, a very light, odorous and combustible liquor, called pyroacetic spirit, or acetone; by being all soluble in water, many of them so much so, as to be uncrystallizable. The acetates commonly employed in the cure of diseases are the acetates of POTASH, AMMONIA, SODA, LEAD, ZINC, MERCURY, MORPHIA.

ACETATE OF LEAD is a powerful astringent, useful in severe diarrhœa and dysentery, as the lead or opium pills, of which one or two may be given two or three times daily: useful also in spitting of blood, and in loss of blood from other parts. Dose, 2 to 4 grains twice or thrice daily.

ACETATE OF POTASH is a diuretic and laxative, specially useful in acute rheumatism. Dose, from 20 to 60 grains for adults; 10 to 15 for children; may be given repeatedly at intervals of some hours.

ACETATE OF ZINC. It is astringent, and is chiefly used in injections and collyria. It is not often used as an internal remedy, though sometimes recommended in typhoid fevers, conjoined with stimulants, tonics or antispasmodics, as the case may demand. When astringents are necessary to restore the mucous secretions to their normal state, particularly in gonorrhœa and ophthalmia, the acetate of zinc is an important agent. One or two grains dissolved in an ounce of rose water, or an ounce of the mucilage of sassafras made with rose water, makes a very good collyrium or wash for the eyes. Dose, as a tonic or antispasmodic, 1 to 2 grains; as an emetic, 10 to 20 grains.

ACETIC ACID, *a-set'-ik*, in Chemistry, is produced by the oxidation or destructive distillation of organic bodies containing its elements, carbon, hydrogen and oxygen. When pure, it is a colorless liquid of specific gravity 1,065, which crystallizes at a temperature below 60° F. It has a pungent smell, and is highly corrosive. Vinegar and pyroligneous acid are impure varieties of acetic acid. All liquids susceptible of the vinous fermentation are capable of yielding vinegar. Of these, the most important is wine, which becomes vinegar by spontaneous acidification. The chemical composition of acetic acid is represented by the symbol $C_4H_3O_3 + HO$. In Medicine it is used externally as a local irritant, and when diluted with water it forms an excellent cooling lotion. It is also useful as a gargle; and the vapor, when inhaled, is beneficial in various affections of the throat. Diluted acetic acid is formed by mixing one part of the acid with seven parts of distilled water. It is used internally as a cooling acidulous drink in cases of fever. Dose, from 1 to 2 teaspoonfuls in this diluted form. It is sometimes taken to reduce corpulence, but this is not to be recommended, as it tends to injure the stomach, and may be productive of very serious results.

ACETOSELLA. (See Oxalic Acid.)

ACETUM. (See Vinegar.)

ACHILLEA MILLEFOLIUM. (See Yarrow.)

ACHILLES, TENDON, *a-kil'-lees ten'don* [Lat. *tendo Achillis*], in Anatomy, a tendon which connects the soleus and gastrocnemius muscles of the calf of the leg with the bone of the heel. It takes its name from the fable of the mother of Achilles dipping him in the river Styx to render him invulnerable. During this operation she held him by the heel, and here he subsequently received his death-wound.

ACIDITY OF THE STOMACH, *a-sid'-e-te.* This is not, strictly speaking, a disease, but simply one of the numerous symptoms of that hydra-headed monster, dyspepsia. It is characterized by a disagreeable sensation in the stomach, and the discharge of sour gas or liquids upwards.

*Causes.*—Improper diet, more especially pickles, pastry, butter, fish and certain kinds of vegetables, particularly cabbage. Constipation is also a frequent cause of this unpleasant symptom.

*Treatment.*—Those medicines known as absorbents are to be used, which, acting chemically on the excess of acid in the stomach, form harmless salts. The following prescriptions will be found very useful:

Take of Carbonate of ammonia..............Five grains.
Peppermint water..................One ounce.—*Mix.*

Take every three or four hours until relieved.

Take of Aromatic spirit of ammonia .......Thirty drops.
Simple syrup.....................A teaspoonful.—*Mix.*

Repeat every two or three hours if necessary.

Take of Calcined magnesia..........One dram.
Water of ammonia..........One dram.
Spirit of cinnamon..........Three drams.
Pure water ........... .....Five and a half ounces.—*Mix.*

Two or three tablespoonfuls after each meal, or when required. Lime water, in doses of one or two ounces after each meal, will be found very beneficial. These means, however, are only temporary.

*Prevention* must be sought by carefully abstaining from those articles which tend to produce this condition, and by strengthening the stomach by tonics, and regulating the bowels by gentle aperients. When the stomach is weak and the appetite poor, the following may be used with much benefit:

Take of Solution of potash.......Twenty or thirty drops.
Infusion of calumba.....One ounce.—*Mix.*

Take half an hour before each meal. (See DIGESTION, DYSPEPSIA, BILIARY DISORDERS, BILIOUSNESS, FLATULENCE.)

ACIDS, *as'-idz* [Lat. *acidus*, sour], a numerous and important class of chemical bodies, which are distinguished by the property of combining with bases to form salts. They are generally sour to the taste; in most instances they have a great affinity for water, and are soluble in it; they redden nearly all the vegetable blues; they unite with metals or their oxides, alkalies and earths. It was long held that oxygen was contained in all the acids. This element does indeed enter into the composition of the greatest number; but it has been ascertained that in very many cases the acidifying principle is hydrogen. It has consequently been considered necessary to divide acids into *oxyacids*, formed by oxygen, and *hydracids*, formed by hydrogen. These, again, are subdivided into *anhydrous acids*, or acids without water, and *hydrated acids*, or acids containing water. According, however, to the latest researches of chemists, all acids are hydracids. The acids furnished by the mineral kingdom are termed *mineral acids*. *Metallic acids* are formed by the combination of oxygen and a metal; and *organic acids* are those which contain carbon, or are formed with organic substances. The two syllables *ous* and *ic* affixed to the names of acid compounds, indicate two different modifications; *ic* always denoting an acid which contains more oxygen than the acid whose name terminates in *ous*: for example, sulphur*ic* acid has for its acidifying principle more oxygen than sulphur*ous* acid. The most important of these chemical bodies are—among the mineral acids, sulphuric, sulphurous, nitric, phosphoric, arsenic, chromic, hydro-chloric, chloric, carbonic, boracic; among the organic acids, hydrocyanic, oxalic, acetic, malic, tartaric, benzoic, citric, carbolic, salicylic, etc. (See EACH OF THESE WORDS.)

ACIDS, POISONOUS. (See POISONS.)

ACNE, *ak'-ne*, a disease of the follicles of the skin. It appears on the face, neck, back and shoulders, first as small, hard collections of matter, which open on the skin by blackish points. These black points are vulgarly called "grubs" or "worms in the skin." They continue to appear and disappear in successive crops until mature age, unless removed by a course of treatment.

*Causes.*—Irregularity in the matter of diet, intemperance, impure blood, want of cleanliness, etc.

*Treatment.*—The frequent bathing of the parts affected with water, of the temperature of 88° or 90°, is of the very greatest importance. The patient should take plenty of exercise, avoid all kinds of stimulants, such as wine, spirit and coffee, restrict himself almost entirely to a milk diet, and in washing or bathing avoid all rubbing, using only a very soft towel for such purposes. Emollient applications, such as emulsion of bitter almonds, bran water or tepid milk, are very useful. As a general rule, all cathartic medicines are to be avoided. When the eruption is not removed by attention to these general rules, resort must be had to more active treatment. The following is an excellent mixture for internal use:

Take of Tincture of muriate of iron.........Two drams.
Sulphate of quinine................One dram.
Pure water........................Eight ounces.—*Mix.*

Take a tablespoonful three times a day, half an hour before eating.

As a local application either of the following will be found effectual:

Take of Milk sulphur........................One dram.
Spirits of wine........................One ounce.—*Mix.*

Apply with a piece of soft flannel night and morning.

Take of Corrosive sublimate..............Twelve grains.
Sal ammoniac....................Thirty grains.
Cochineal.......................One grain.
Rose water......................Six ounces.—*Mix.*

Use in the same way with a piece of soft flannel. (See ACNE ROSACEA.)

ACNE ROSACEA, or that form of the disease most frequently met with in those who have indulged too freely in the pleasures of the table, is said to be quickly cured by the following draught, taken night and morning:

Take of Compound infusion of horse-radish..Two ounces.
Compound spirit of ammonia.......Ten minims.
Syrup of ginger....................One dram.—*Mix.*

A milky infusion of the fresh root to be used frequently to the parts affected. The use of vinegar by some individuals is invariably followed by an accession or increase of the eruption. (See ACNE.)

ACONITE. (See ACONITUM NAPELLUS.)

ACONITINE, OR ACONITIA, *a-kon'-e-tin*, in Chemistry, a powerful vegetable alkaloid, prepared from the root of the *Aconitum Napellus.* It is one of the most virulent of poisons, but, at the same time, a very valuable medicine. Externally applied, it produces on the skin a prickling sensation, which is followed by a peculiar numbness. An ointment containing aconitine is often used in cases of neuralgia. (See ACONITUM NAPELLUS.)

ACONITUM NAPELLUS, *ak-o-ni'-tum*, or aconite, commonly known as monkshood and wolfsbane, is a perennial plant, belonging to the Nat. order *Ranunculaceæ.* It is a native of Europe, but is cultivated in this country as a garden plant for the sake of its handsome purple flowers. The leaves and the roots are the parts used in medicine. It is a virulent poison, but in proper hands is a very valuable remedy. The most prominent symptoms of poisoning by aconite, following irritation of the mouth and stomach, are general paralysis and loss of sensation. In such a case, medical assistance should at once be sought. In the interval, place the patient in a recumbent posture, applying friction over the heart, and chafing the limbs. Vomiting must, if possible, be produced by the readiest emetic; such as mustard, salt, or a feather down the throat. When vomiting has been induced, it should be encouraged by copious draughts of thin gruel or warm water, a little wine or aromatic spirit of ammonia being added, if the depression be extreme. The extremities in hot mustard and water, and large mustard plasters down the spine, will greatly assist in rousing the nervous system. In this, and in other cases in which the natural sensibility of the skin is impaired, care should be taken that the water used is not too hot, as the patients' feelings afford no guide in the matter. As aconite grows in almost every garden, it is advisable not to use any root about which there is any doubt, and so avoid a repetition of those tragedies which have been so frequent of late years. It should also be borne in mind that the tincture of the root, known as Fleming's tincture, is many times stronger than that made from the leaves. In every prescription it should be distinctly stated which preparation is intended. Aconite is used medicinally in the treatment of acute rheumatism, neuralgia, sciatica, and as a sedative of the heart's action in pneumonia and other diseases of an inflammatory nature. It should never be used internally, except by direction of a physician. Aconite proves fatal by producing a powerful sedative impression on the nervous system, by suspending the functions of the respiratory organs, or by syncope, consequently it should never be administered to patients suffering from any of the following affections: Chlorosis, anæmia, paralysis, great depression of the brain and vital powers, feebleness of the circulation with a tendency to hemorrhage, and when any mechanical impediment to the passage of the blood exists, particularly through the heart or lungs. The principal preparations are:

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| Fluid extract leaves................ | Dose, two to four drops. |
| „ root.................. | „ one to three drops. |
| Tincture of the leaves................ | „ twenty to thirty drops. |
| „ „ root................ | „ one to three drops. |
| Solid extract...................... | „ quarter to one grain. |

Aconite Liniment.—Made by macerating 20 ounces of the powder and 1 ounce of gum camphor in 30 ounces of rectified spirit for seven days.

Another.—1 dram of tincture of aconite and 1 dram of chloroform, and 10 drams of soap and opium liniment—or, *Linimentum Opii* of British Pharmacopœia. These form effectual and safe liniments, as an external application only, in severe pain, sprains and bruises.

Although very unsafe as an internal remedy, in unprofessional hands, the tincture of aconite is perhaps the most powerful medicinal agent one possesses for immediately allaying neuralgic pain, for which use the above liniments to apply on the parts affected. We would repeat, that as aconite is a deadly poison, none of its preparations should be taken internally, except under the special directions of a physician.

ACORUS CALAMUS *ak'-o-rus* [Gr. *a*, without, and *kore*, pupil of the eye], the sweet flag, a member of the natural order *Orontiaceæ.* This plant grows in watery places, and abounds in the margins of the rivers and small streams of Europe and America. It blossoms during the months of May and June. The thick creeping stem or rhizome, commonly called the root, is the valuable part of the plant; it is somewhat spongy, and powerfully aromatic, and has a bitterish taste. It is used by the rectifiers to improve the flavor of gin, and is also employed to give a peculiar taste and fragrance to certain kinds of beer.

In medicine, the sweet flag is sometimes used as an aromatic stimulant and a mild tonic. In ague or intermittent fevers it succeeds sometimes when quinine fails. Dose of powdered root, 10 to 20 grains. Dose of infusion—made by infusing 1 ounce of root in 12 ounces boiling water—1 to 2 ounces.

ACQUIRED DISEASES, *ak-kwīrd' diz-eez'-es*, strictly speaking, all diseases which are not hereditary or born with the individual are acquired. The term, however, has come to be used in connection with those affections which result from the carelessness or improper exposure of the patient. A long train of disastrous consequences follow as the result of the improper use of alcoholic stimulants. Insanity, consumption, dyspepsia, cirrhosis, etc., are frequently acquired in this way. Syphilis and gonorrhœa, with all their terrible consequences, are acquired as the result of violating the seventh commandment. Phthisis is frequently acquired by rash exposure to cold while the pores of the skin are all open and the body bathed with perspiration. Many cutaneous and other diseases are acquired by carelessness in regard to the selection of a proper bed-fellow. The young should never be compelled or allowed to sleep with those very much advanced in years, neither should the physically strong be permitted to sleep with the debilitated or diseased. Dyspepsia is almost invariably the result of indiscretions in eating or drinking. All those affections which might be avoided by a proper regard for the common-sense rules of every-day life, might fairly be classed under this head.

ACTEA RACEMOSA. (See BLACK COHOSH.)

ACTIVE, *ak'-tiv*, acting with energy; opposite to passive, as active hemorrhage, active aneurism, etc.

ACTUAL CAUTERY, *akt'-yu-al kaw'-te-re*, a term now restricted to the red-hot iron as a means of destroying morbid growths, arresting hemorrhage, and setting up counter-irritation. (See MOXA.)

ACUPRESSURE, *ak-yu-presh'-ur*. In Surgery, is a method of arresting hemorrhage from cut arteries, recently introduced. It was first suggested by Sir J. Y. Simpson, and described by him in a communication to the Royal Society of Edinburgh in 1859. Since that time it has come into extensive use; and while there are many who speak of it in the highest terms, there are not a few who are still opposed to it. It consists simply in substituting for the old system of tying the arteries, the compressing of them by means of pins or needles and iron wire.

ACUPUNCTURE, *ak-yu-pungkt'-yur* [Lat. *acus*, a needle, and *punctura*, a puncture], a surgical operation practiced very extensively in the East, where it is performed by puncturing the part affected with a gold or silver needle. It has been practiced both in Paris and England with satisfactory results in different kinds of disease, principally neuralgic pains and chronic rheumatism. It has also been practiced in this country to some extent, and in some cases with marked success, especially in acute rheumatism. The needle, which is usually of steel, and from one to four or five inches long, with round or annular heads, is passed by a slight rotatory motion to the required depth, and allowed to remain from a few minutes to several hours. The needles are sometimes used as conductors of the galvanic currents to the deep-seated parts, and are sometimes made hollow in order to convey some sedative solution. From one to twenty may be inserted at a time, and allowed to remain from a few minutes to several hours. The distance to which they should penetrate should depend upon the nature and seat of the disease. The pain of the operation is very trifling, and such as none need shrink from.

ACUTE, *a-kute'*, is opposed to chronic, and is applied to diseases which are attended with violent symptoms, whose course is short, and usually terminate in a few days in relief, cure or death. For example, inflammation of the lungs and erysipelas are *acute* diseases; consumption and ringworm are *chronic*.

ACUTE BRONCHITIS. (See BRONCHITIS.)

ACUTE RHEUMATISM. (See RHEUMATISM.)

ADDER BITES. (See BITES and STINGS.)

ADDISON'S DISEASE, *ad'-dis-onz*, BRONZED SKIN OR DISEASE OF THE SUPRA RENAL CAPSULES, called after Dr. Thomas Addison, of London, who made it subject of special investigation several years ago. There is still a good deal of doubt as to the real causes of this disease.

*Symptoms.*—Great debility from the very outset; anemia, a peculiar pearly appearance of the white of the eye, and sooner or later a peculiar dusky bronzing of the skin, which appears most marked about the face and neck, the armpit, the genital organs and the navel. The discoloration presents itself in all degrees of intensity, from the slightest darkening to the swarthy hue of the mulatto.

*Treatment.*—This disease is almost always fatal, therefore the treatment is for the most part palliative. Absolute rest is of prime importance as well as nutritive diet and the constant avoidance of all causes of depression. When the stomach will not bear meats and soups, oysters, eggs and jellies should be given. Cod-liver oil is of decided advantage when the stomach will tolerate it. Constipation is habitual, but great care has to be exercised, as fatal collapse often follows a dose of cathartic medicine. Temporary improvement frequently takes place under the use of the following mixture:

Take of Pure glycerine ..........................Two drams.
Tincture of iron and spirit of chloroform..Twenty drops of each.—*Mix.*

Take three times a day.

ADDUCTOR MUSCLES, *ad-duk'-tur* [Lat. *adduco*, I draw towards], are those muscles which draw the parts to which they are attached together. They are opposed to the abductor muscles. (See ABDUCTOR MUSCLES.)

ADEPS. (See LARD.)

ADHESION, *ad-he'-zhun*, is the process by which parts, naturally separate, or separated by artificial means, become united. It is caused by the effusion of a lymph, or sticky fluid, produced by inflammation; and hence it is sometimes necessary to produce inflammation, by scraping or paring, in surfaces which it is desirable to unite. This tendency of inflamed surfaces to adhere when in contact is sometimes troublesome, as in inflammations of serous membranes. A common cut unites by adhesion, and when it does so at once, without the formation of matter, it is said to unite "by the first intention."

ADHESIVE PLASTER, *ad-he'-siv plas'-tur*, commonly called strapping-plaster, is used to protect raw surfaces, and for dressing cuts, wounds, and ulcers. It is a gentle external stimulant, and assists the healing process. It is composed of lead-plaster (a mixture of oxide of lead and olive-oil) melted over a slow fire, with powdered resin and hard soap mixed with it in the proportion of sixteen parts of lead-plaster to two parts of powdered resin and one part of hard soap.

ANOTHER.—Three-fourths pound of diachylon, half an ounce of pounded yellow resin. Put these in a jar, and melt them by the side of the fire, or on the stove, stirring them continually. The plaster should be spread on narrow strips of new cotton cloth or washed leather, and one end of the strip, after being properly warmed, is pressed upon one side of the cut, sore, or wound, and after having brought the divided skin and flesh together, the other end or part of the strip is pressed hard upon the other side. In the same manner one, two, or more strips are laid on, with a little space between them, to allow the matter to escape, if any is formed. In most cases, it saves the pain and disfiguration of taking stitches, or sewing up cuts and wounds. (See WOUNDS, PLASTERS.)

ADIPOSE TISSUE, *ad'-e-pose* [Lat. *adeps*, soft fat], is a peculiar tissue or membrane composed of an aggregation of minute cells filled with fat, which they appropriate from the blood. This tissue serves several important purposes in the animal body; filling up interstices, forming a pad or cushion for the support of the movable parts, and assisting in the retention of heat.

ADOLESCENCE, *ad-o-les'-sense* [Lat. *adolesco*, to grow], youth; the period of life between puberty and the full development of the frame; extending, in man, from the age of 14 to 25, and in woman, from 12 to 21. (See AGE.)

ADULT AGE, *a-dult'*, manhood or womanhood. The period between youth and old age. In Medicine, a person is considered an adult who has fully arrived at maturity.

ADULTERATION OF FOOD, *a-dul-tur-a'-shun.* Some adulterations are positively *dangerous* and *poisonous*, as, for instance, the coloring of sweetmeats with arsenic or lead; others are merely and simply fraudulent, as the adulteration of flour with potato starch, of butter with salt and water, etc.; but we do not stop here, for even the articles used to adulterate are themselves in their turn adulterated, so that, when the knave, who has lent himself to the dishonest custom, trusts to escape detection by using a substance which is at all events, *as he supposes*, harmless, he finds to his surprise that he again has been duped, and that, perhaps, a poisonous substance has been used to drug the very article he had used as a counterfeit. In this way chicory, which was itself so much used as an adulteration of coffee, is adulterated with carrots, red earth

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and molasses; and anatto, used to dye cheese of a rich color, has been adulterated with red lead, so as to cause fatal poisoning.

It cannot be too strongly impressed upon the public mind that to adulterate at all is in every way wrong, and that, willingly and knowingly, to add substances of a poisonous or deleterious nature for the sake of gain, is a crime of the deepest dye, for which all those guilty of it will have one day to answer!

It is manifestly of the greatest importance that the public should know and guard against adulterations of all kinds which are to be met with in the articles of our daily consumption, and that they should, to some extent, at all events, be acquainted with the nature of the substance used, whether it is injurious or not to life and health. Even our bread, "the staff of life," is adulterated to an enormous extent, sometimes with alum and carbonate of magnesia, which are added to improve its appearance when made from coarse or inferior flour, and sometimes with the meals or flours of other grains or vegetables, such as oats, barley, Indian corn, potatoes, beans, peas, rice, etc.

It is sad to think that the poor man, who buys his loaf of bread with the wages of a hard day's toil, is not only unable to get the worth of his money in the shape of pure, wholesome, nourishing food, but that he actually is forced, through these abominable "tricks of trade," to eat a substance containing deleterious or poisonous ingredients, such as by daily enfeebling his health, positively unfits him for the proper discharge of his daily duties.

There is little doubt that the bakers themselves are mainly to blame for the excessive adulteration of bread, flour being tampered with by the flour merchants only to the extent of mixing it with flours of inferior quality, or those which, having been exposed to damp, etc., are in a state of decomposition. Potato starch, alum, bone dust, and an Egyptian grain called Dari, have all been used as adulterations, and several kinds of alkalies have been found in flours, added no doubt to overcome the tendency to grow acid existing in flour which has been exposed to damp and moisture.

A great deal has been said about the adulteration of milk in large towns, and the pale, sky-blue mixture sold in cities has been said to consist of chalk and water, sheep's brains, and various other disgusting compounds. It may be said, for the comfort of those who are ever ready to believe in anything marvellous, that it is not the practice anywhere to put the brains of any animal whatever into milk, and that after all, almost the only adulteration we have to fear is plain water, which, unfortunately, can be added in large quantity without much marring its appearance.

This is without doubt the only serious adulteration, and a very serious one it is, because the importance of good milk as an article of diet for all, and specially for certain cases of disease, can scarcely be exaggerated, and even now medical men are becoming every day more alive to the advantages of a substance which, being of easy digestion, can so readily take the place, both of animal, and vegetable food, and has in itself, unlike any other substance whatever, all the elements requisite for the support of life. Our national scourges of scrofula and consumption, as well as all other debilitating diseases, would not be so common if we could obtain for the young children of the poor in our large towns an adequate supply of good and pure milk.

Of course, chalk is never used to adulterate milk or cream, because it would fall at once to the bottom of the vessel and be detected. Next to water, perhaps the most important adulteration is arrowroot, which is often mixed with milk or cream, to give it a thick or rich appearance. It is surprising what a small quantity of arrowroot will produce the effect, if skilfully mixed with it.

The adulteration of sugar may be disposed of in one word. The fact is, that *almost all brown sugars are, as a rule, unfit for human consumption*, and contain all manner of animal and vegetable impurities in greater or less quantity. The grand and simple test for sugar, then, is its color and appearance; and the only fraud practiced by the venders of it, is to mix up inferior with the better qualities. Lump sugar is the best and cheapest; and a good sugar must be of bright color, crystalline, and *dry*. The inferior brown sugars are mixed up to a great extent with water, mould-insects of several kinds, and dirt.

A very objectionable adulteration or fraud, inasmuch as it is practised upon an article often specially ordered for sick people or young children, consists in the substitution of potato starch for arrowroot. Dr. Hassall found twenty-two, out of fifty samples of arrowroot, to be adulterated; and ten of the twenty-two had scarcely a trace of genuine arrowroot in their composition. The prevailing, and almost the only adulteration, was potato starch.

One scarcely knows how to approach the subject of the adulteration of meat. We have heard with horror, in childhood days, of cats, kittens, and even articles still more objectionable, which have found their way, by some means or other, into the so-called mutton and beef-steak pie. A humorous writer, lately describing his experiences of the latter compound on a given occasion, says:—"Mean and degraded indeed must have been the spirit of the bullock that would confess to any share in such a production; in fact, I am convinced that the bovine element entered no more into its composition at all than the flesh of the unicorn into pease porridge." A most pernicious custom exists of coloring potted meats with red earths—with one, in particular, called "bole Armenian;" so that it may be laid down as a general rule that potted meats, other than ham and tongue, having a red color, cannot be good. This bole Armenian is also largely used in the preparation or manufacture of counterfeit Anchovies (for real Anchovies are now almost unknown), and, like chicory, though itself an adulteration, does not escape being tampered with in its turn and is often mixed with red lead, an active and fatal poison.

Good, fresh, or sweet butter, is certainly one of the most important nutrient articles of diet we possess, and it is matter of regret that so much pains should be taken, to spoil and adulterate it by adding water and salt, to increase the weight. The butter is half melted, and then the salt and water are stirred up with it to about one-fifth of the whole weight. The most inferior qualities of butter, that are good for nothing else, are mixed up in this way, and are sold to the poor at a comparatively low price; but it may safely be said that it is the reverse of economy to purchase what is called salt butter, seeing that it is always inferior to fresh, and, in the worst cases at all events, it is simply a rancid butter, with perhaps 50 per cent. of salt and water.

Coffee, as is well known, is still, and was to an enormous extent adulterated with chicory, which is a much cheaper substance than the cheapest coffee. Other adulterations are unimportant, and are not often met with, though Dr. Hassall mentions roasted grains of all kinds—peas, beans, roasted carrots, and acorns, and even *mahogany sawdust.* The difference between coffee and chicory is very marked. A little of the former when put into a cup of water floats on the top, and imparts no color to the water, while the latter sinks to the bottom, and gives a deep red tint to the water. This is a very ready and convenient test which may be tried by any one at home.

Tea is most extensively adulterated, both in this country and in China, where they give it the appropriate name of "lie tea." Both black and green tea are liable to be tampered with; and an infinite number of substances are used as counterfeits, and also to give color and increased weight. Again, powders are made up and advertised (such as "The Chinese botanical powder," and "Veno bono" "possessing four times the strength of the best tea") which are utterly worthless, and consist for the most part of wheat flour mixed up with catechu or with some earthy or coloring matter. The absurdity of coloring teas for the market is very great, and is only kept up by the ill-informed on such subjects giving a preference to teas that have a fine bloom. *The Chinese do not themselves drink* colored teas. The principal matters used for "facing" the teas, as it is termed, are Prussian blue, graphite or black lead, gypsum, and turmeric. Various leaves are used to counterfeit the genuine tea, amongst which may be mentioned those of the sloe, the hawthorn, the beech, the plane, the horse-chestnut, the willow, and the elm. Sloe leaves are used whole, but the others are for the most part broken up and mixed with gum and some substance such as catechu, and rolled up into small masses. Coloring matters are added in the most reckless way, and a black or green tea readily produced at will. Some of these coloring matters are of a poisonous nature, but, for the most part, they are either innocent, or of such powerful coloring property, that only a very small quantity requires to be added. It is lamentable to think that there should be a distinct and separate trade in selling articles solely for the adulteration of tea, and there can be little room for doubt that until government can be induced to take measures to confiscate and destroy adulterated or "lie tea," the practice, which is a very lucrative one, will increase, till it is impossible to obtain a pure tea at a reasonable price from the retail dealers. Numbers of persons are employed to collect the used-up tea leaves from hotels throughout the country, these are redried, mixed with a little gum, recurled, recolored and sold as green or as black tea.

The practical lesson to be derived from all this is, to deal only with respectable dealers, and to make such inquiries as are possible into the purity of all articles which are to be consumed in the household. Also, to beware, especially, of articles which are sold by second-rate dealers, at a cheaper rate than they can be bought pure in the market. Refer to various articles of food. (See FOOD, CONFECTIONERY, WINE.)

ADVICE, MEDICAL. (See MEDICAL ADVICE.)

ÆGLE MARMELOS, *e'-gel mar'-me-los*, Bael or Bengal quince. The fruit of a tree belonging to the natural order *Aurantiaceæ*, found in the East Indies. It is said to possess valuable properties in arresting diarrhœa, and acting as a mild aperient when constipation exists. A liquid extract of the half-dried fruit is the preparation used, in doses ranging from a teaspoonful to two tablespoonfuls. It is sometimes used as a marmalade prepared in the same way as orange marmalade.

ÆGOPHONY, *e-gof'-o-ne*, a peculiar sound observed in using the stethoscope, resembling the sound made by the goat.

AERATED BREAD. (See BREAD.)

AERATED WATERS, *a'-e-ra-ted* [Gr. *aer*, air]. This term is applied to drinks in which water is impregnated with gases by pressure. The best known of these is the so-called soda-water, which generally consists of plain water charged with carbonic acid gas. This is effected by submitting the water to carbonic acid under a pressure of 30 or 40 lbs. to the square inch, and bottling it off without any diminution of the pressure. On uncorking the bottle, the imprisoned gas is released, and taken into the stomach in the form of bubbles. Various mineral constituents, such as soda, potash, lithia, the salts of iron, and magnesia, are often introduced into the water with excellent medicinal effects. Aerated drinks, such as effervescing lemonade, are often impregnated with air only; but this is easily detected by the taste of the gas.

AERATION, *a-e-ra'-shun.* Blood, during its circulation through the body, becomes impure in quality, dark in color, and unfit for the support of the vital functions; being passed through the lungs by the powers of the heart, it undergoes purification, and the dark color of the venous is exchanged for the bright, red hue of the arterial fluid; it has undergone "aeration"—it has robbed the air drawn into the lungs of a portion of its oxygen, and given off carbonic acid. This aeration of the blood is essential to the maintenance of life; if stopped entirely, but for a few minutes, death is the result. This fact is obvious, and known to all; not so the injurious, ultimately fatal effects of the imperfect aeration of the blood, to which thousands of our town and city populations are daily and nightly exposed; living in a contaminated atmosphere, the vital fluid never fully purified, disease and shortened lives must be the result. (See RESPIRATION, BLOOD, AIR, VENTILATION, OXYGEN, CARBONIC ACID.)

ÆSCULUS, *ees'-ku-lus,* in Botany, the horse-chestnut, a genus of the soapwart order, or *Sapindaceæ.* Æsculus Hippocastanum, the common horse-chestnut, is the typical species. Its bark, which contains a peculiar principle called *Æsculin,* is febrifugal, and is occasionally used in medicine, while its young leaves are somewhat aromatic, and have been substituted for hops. In France, large quantities of starch are obtained from the seeds, which in England are considered worthless. The bark is tonic, astringent, febrifuge, narcotic, and antiseptic. In intermittent fever, or fever and ague, cures are said to have been effected by the bark in doses of a teaspoonful, four or six times a day. The oil of horse-chestnuts has been considered a valuable local application in neuralgic and rheumatic affections.

ÆTHER. (See ETHER.)

ÆTHER, CHLORIC. (See CHLORIC ETHER.)

ÆTHIOPS MINERAL, *e'-the-ops min'-er-al.* Æthiops mineral is a powder formed of sulphur and quicksilver ground together in a mortar. It is used in diseases of the skin, such as affect children in early infancy. It is also used in glandular disorders, such as scrofula and indurations of the glands. It is sometimes administered for worms. The dose for a child one or two years old, is 2 grains; for an adult, 8 to 10 grains. It is less likely to salivate than any other mercurial preparation. It is black, and looks very much like powdered charcoal, and is often given mixed with syrup or molasses.

ÆTHUSA, *e-thu'-sa*, in Botany, a genus of umbelliferous plants. *Æthusa Cynapium*, fool's parsley, is a common indigenous plant, highly poisonous, which has been frequently mistaken for parsley.

AFFINITY, OR CHEMICAL ATTRACTION, *af-fin'-e-te* [Lat. *affinitas affinis*, bordering upon]. Affinity, or chemical attraction, is the force which causes the particles of dissimilar kinds of matter to combine together, so as to form new matter. This definition indicates the differences between affinity and cohesion, which is another modification of molecular attraction. Cohesion merely binds similar particles into a mass; affinity brings about the combination of heterogeneous particles, and causes them to lose their individual properties, and assume new forms. Chemical combinations do not take place indifferently, but in accordance with certain strict rules or laws. One substance will unite with another in preference to a third, or in some cases in preference to any other. This preference is denoted by the term elective affinity. By means of this discriminating action of affinity, some combinations may be decomposed. The attraction of one body for another is greatly modified by the circumstances under which the two bodies are brought together. Alteration of temperature is one of the causes which influence the force of chemical attraction. The discoveries of Faraday and others have established the fact, that whenever two substances unite to form a compound, they are in opposite electrical conditions; one being electro-negative, and the other electro-positive. This and other facts go to prove that chemical affinity is a particular modification of electrical attraction.

AFFUSION, *af-fu'-zhun*, the act of pouring water, or other fluids upon the surface of the body. It is employed in febrile diseases, more especially in typhus and scarlet fevers. Where it does not cure the disease, it makes the patient more comfortable. The patient may be placed in a tub or other convenient situation, and cold water poured upon him; after which he should be wiped dry with a coarse towel and put into bed. The cold affusion should be employed in the hot stage of the fever, and never when there is any chillness or depression of strength. Neither should it be employed when the body is under a profuse perspiration, nor when the fever is complicated with any visceral inflammation. Sponging the body in fevers is in most cases preferable to affusion, although it fail to produce the same impression on the system. (See SPONGING, SCARLET FEVER, TYPHUS FEVER, BATHS, ETC.)

AFTER-BIRTH, *af'-tur-berth*, in medical language, the placenta. It is usually discharged at a period varying from five to forty minutes after the birth of the child. There is always some little anxiety, both on the part of the patient, and of the medical attendant, until this concluding part of childbirth has been accomplished. Within the above time, in most cases, sometimes immediately after the child is born, the patient complains of an accession of labor pain, caused by the contraction of the womb, which casts off the after-birth; at times, expelling it entirely from the body, but generally propelling it so far towards the external orifice as to make its withdrawal perfectly easy. When all is as it should be, the business is concluded by the ordinary midwife without the least difficulty, at the same time, it must be remembered, that some of the most formidable accidents of the lying-in chamber are connected with the management of this part of its duties; and if a female only be in attendance, should the slightest embarrassment occur, not one moment is to be lost in summoning proper medical aid; above all things, let the attendants beware of any attempt to force matters by pulling strongly at the navel cord—they can only do mischief. The chief danger to be dreaded when the after-birth is retained, is loss of blood or flooding; if this comes on to any extent, the patient must be kept as quiet and cool as possible, gentle but firm pressure must be maintained over the bowels generally, and especially over their lower portion by the bandage, and by the hand—cloths dipped in cold water are to be applied over the external parts and frequently changed; should extreme faintness occur, a little wine, or brandy, or sal-volatile may be given in water, but stimulants must not be too readily resorted to. The retention of the after-birth is at times the result of irregular contraction, but often of adhesion to the womb; the possibility of such an occurrence should make those who are advanced in pregnancy careful to avoid anything which may press upon any portion of the distended womb, as for instance, the stays, and guard against habitually leaning, even gently, against any hard body. A careful attendant will always examine the after-birth: it ought to be nearly circular, about the size of a dinner plate, and should not exhibit any signs of tearing on the surface which is next the womb. The membranes which line the interior of the womb during pregnancy are for the most part discharged along with the after-birth, and are more readily and neatly brought away, by giving the latter body a slightly twisting motion as it is withdrawn. If they are very tender, a portion may remain and pass off with the discharge; it is well to be aware of the fact, as persons are often needlessly much alarmed at this occurring a few hours or more after delivery. Occasionally, the after-birth is so placed over the mouth of the womb, that it must necessarily be detached in the first stages of labor; the case is always attended with danger, and cannot be too soon put under medical superintendence; it may generally be suspected, if simultaneous with the occurrence of labor pains, a free discharge of blood takes place, which is increased every time the pain recurs. In the event, as in the country, of any delay in procuring medical assistance, the measures recommended in the treatment of hemorrhage in "Abortion" may be resorted to. (See CHILDBED.

AFTER-PAINS, *af'-tur-panez.* After-pains are the regularly recurring pains which women experience for a day or two after childbirth. They are rarely troublesome after a first confinement, but are apt to increase in severity at each succeeding one. After-pains are, in moderation, salutary, and are caused by the efforts of the womb to attain that properly contracted condition on which the woman's safety depends. If they are very severe, it is generally owing to the presence of clotted blood, which must be expelled before they moderate. A constant, unintermitting after-pain, coming on very soon after the termination of labor, is often symptomatic of internal flooding, and should be attended to accordingly. If after-pains are very severe, they are advantageously relieved by the administration of 20 drops of laudanum, which may be repeated, but if the amount of pains be moderate, this is unnecessary. If the discharge is not profuse, a hot flannel to the lower part of the abdomen affords comfort. After-pains are often kept up after the first four-and-twenty or six-and-thirty hours, by the bowels being loaded; a tablespoonful of castor-oil is at once a safe and effectual remedy. Too tight bandaging may aggravate after-pains. (See CHILDBED.)

AGARICUS, *a-gar'-e-kus* [Lat. *agaricum*], the generic name of mushrooms. A genus of fungi, with a cap, and gills underneath of a different substance from the cap. The genus comprehends an immense number of species, many of which are edible. They grow in wet and shady places in fields and woods, and on hotbeds prepared for their cultivation. The species of *Agaricus* commonly eaten in this country are *Agaricus compestris*, the common mushroom; *A. arvensis*, *A. Georgii*, and *A. oreades.* The last is the Champignon, which is highly esteemed for its savory qualities. Many genera of fungi allied to the one under consideration include edible species, which are used for food in this and other parts of the world. Dr. Badham enumerates no less than thirty fungi, natives of Britain, which are eaten by himself and his friends, and complains of the prejudice existing against several species which might form dainty and nutritious articles of food. However this may be, fatal cases of poisoning by fungi are not uncommon, and great care should be taken to ascertain whether a fungus is or is not poisonous, before introducing it into the market as a wholesome vegetable. There are no certain characters by which the edible and poisonous species may always be distinguished; but there are some general characters which help us to separate the two groups. Professor Bentley has tabulated these general characters as follows:

*Edible Mushrooms.*

1. Grow solitary, in dry airy places.
2. Generally white or brownish.
3. Have a compact brittle flesh.
4. Do not change color, when cut, by the action of the air.
5. Juice watery.
6. Odor agreeable.
7. Taste not bitter, acrid, salt, or astringent.

*Poisonous Mushrooms.*

1. Grow in clusters, in woods and dark damp places.
2. Usually with bright colors.
3. Flesh tough, soft, and watery.
4. Acquire a brown, green, or blue tint, when cut and exposed to the air.
5. Juice often milky.
6. Odor commonly powerful and disagreeable.
7. Have an acrid, astringent, acid, salt, or bitter taste.

Professor Bentley suggests that we should avoid all fungi which insects will not touch, and those which have scales or spots on their surface; and, further, that whatever may be the apparent qualities of the fungi, we should use with caution all which have arrived at their full development, or when they exhibit any signs of change. By soaking doubtful fungi, cut into slices, for about an hour in vinegar, and afterwards washing them in boiling water, we get rid of any poisonous principles they may possess, and the process will not spoil them for the table. The purging agaricus is found growing on the larch tree in Asia, and in Russia, in Europe. The agaric found growing on the oak tree, has been used as a styptic. The *Boletus Fomentarius*, found growing on similar trees with the latter, when cut in slices, beaten, and soaked in a solution of nitre, and dried, forms an inflammable substance, known as German tinder or amadou. (See POISONS AND THEIR ANTIDOTES, AMADOU.)

AGAVE AMERICANA, *a-ga'-ve a-mer-e-ka'-na*, American aloe or century plant. The fresh juice is said to act upon the kidneys and bowels, and to promote menstruation. Some medical men prefer it to lime juice as a remedy in scurvy, giving it in doses as high as 2 ounces three times a day.

AGAVE VIRGINICA, *a-ga'-ve ver-jin'-e-ka*, false aloe, Nat. order, *Amaryllidaceæ*, a perennial, herbaceous plant with a tuberous root, found growing on dry or rocky banks in Pennsylvania and the Southern States. False aloe is reputed laxative and carminative, and has been beneficially employed in obstinate diarrhœa, flatulence and spasm of the intestines.

AGE, *āj* (Fr. *age*). In Physiology during the progress of life from infancy to manhood, and from manhood to old age, the body undergoes certain marked changes, which distinguish the different periods or stages of life. These are usually denominated ages, and are properly seven in number, though some make them fewer. They are—1. Infancy. 2. Childhood. 3. Boyhood or Girlhood. 4. Adolescence. 5. Manhood, Womanhood. 6. Age. 7. Old Age. The first age commences at birth, and extends to the end of the second year, by which time the first dentition is generally completed; the second extends to the end of the seventh or eighth year, when the second dentition is commonly over; the third extends to the age of puberty, which varies in different countries, but with us is from twelve to fourteen in the female, and from fourteen to sixteen in the male; the fourth extends to about the twentieth year in the female, and the twenty-fourth in the male; the fifth period extends in the female to about the forty-fifth, or fiftieth year, when the power of procreation usually ceases, and in the male to about the forty-ninth or fiftieth year; the sixth period extends to about the sixty-third year, when the seventh and last period of life commences. (See Age, Old.)

AGE, OLD. Although the powers of life may have shown symptoms of decline, the period of incipient old age is usually fixed, in women, about the fifty-third, and in men, about the sixtieth to sixty-third year. After this, it generally becomes evident that the vigor of prime is giving way, and that the powers of the constitution are no longer able to recruit themselves, or to sustain exertion with the same ease as formerly; diseases, too, peculiar to this stage of life, begin to show their symptoms of approach, symptoms which can scarcely be too soon detected, or too carefully watched. As time goes on, the individual becomes more dependent upon the affectionate care—and equally important—the intelligent supervision of those around. The subject of the treatment of the aged has been a neglected one. A valuable English work, by Dr. Day, has lately supplied the want of a special treatise upon it. With old age, increases the liability to such hereditary diseases as gout, gravel, rheumatism, apoplexy, and, in women especially, to cancer. Now, the effects of excesses and of dissipation in early life, which may have been unfelt during the vigor of manhood, too often add to the natural infirmities. Whatever may have been the previous modes of living, it is always a dangerous experiment to make any material or sudden change in them after age has begun to tell upon the constitution, it should not be done but for important reasons, and under direct medical control. The natural sensations will gradually guide the individual to those modifications of previous habits which accord with the altered structures and diminished powers; and this, more particularly in the case of active or violent exertions, which the hardening and ossification of the various tissues, but more particularly of the various coats of the arteries, render hazardous. The weakened digestion of advanced life should be considered in the food, which, while it is nutritious, ought at the same time to be lightly cooked, and everything like hardening avoided. Where the teeth are deficient, meat should be well divided, either by mincing before cooking, or by the knife after. The meals light, not at too long intervals. If the dinner be early, as it ought to be for the aged, who are not obliged to hurry off to business, supper, but a light one, should always be taken. The skin of old people is often most shamefully and disgustingly neglected, and no point in their management is more closely connected with their comfort and health; it should frequently be sponged with tepid water, and well rubbed afterwards with a rough towel to promote reaction. It ought at the same time to be carefully protected by woollen clothing; old people are most injuriously susceptible of the changes of external temperature, particularly cold; indeed, a few degrees fall in the thermometer may be the immediate cause of death in very advanced life, and the average number of old people affected by apoplectic or paralytic seizures is apt to be notably increased at the setting in of frost. Exercise by the old should be continued as long as they are able to take it, but should never extend to fatigue. Sleeplessness, so frequently and loudly complained of by aged people, is, in some respects, natural; as life advances, nature would seem to require less of the soft restorer. It is not well to endeavor to overcome it by narcotic medicines. If possible, the time of sleep should, by habit, be kept to the early hours of night, and in summer especially, the tedium of the early morning may be relieved by reading, knitting, sewing, or some other light employment, even in bed.

In advanced life, the urinary organs require the greatest care, the call to relieve them should never on any account be delayed; on the slightest symptoms of derangement proper medical advice ought to be taken at once, it may prevent evils which too often render the latter years miserable. It is most important for old people to give themselves time to empty the bladder thoroughly; they do this with more difficulty than the young. The medicines prescribed for the aged should be, whenever it is possible, of a warm character, to counteract the tendency to flatulent distension: large doses of mercurials, neutral salts, and strong purgatives are all to be avoided. Alkalies, even when given to counteract a tendency to the acid of gout or gravel, must be carefully watched, and not too long continued; they may produce the opposite state from that which they are intended to correct, a much greater evil. Pills, especially if at all hard, are apt to pass through the bowels unchanged. When an aperient is required by an old person, none is more suitable than a moderate dose of infusion of senna, to which a little ginger, or a teaspoonful of bark or of gentian is added. Six to eight drams of the compound decoction of aloes answers well, if there is no great tendency to piles. When the bowels are habitually constipated, a clyster, of a pint to a pint and a half of warm soap-water, must be given occasionally as required, this counteracts the great tendency to fæcal accumulation. The doses of medicine ought always to be diminished after the period of incipient old age. (See SANITARY SCIENCE, CLIMACTERIC DISEASE, HEALTH, DIET, EXERCISE, CLIMATE, AIR, CLOTHING, LONGEVITY, DECAY, HOUSES, SLEEP, STIMULANTS, TOBACCO, LIFE; EYE, DISEASES OF; EAR, DISEASES OF; HEALTH RESORTS, MINERAL WATERS, RHEUMATISM, GOUT, GRAVEL, APOPLEXY, PARALYSIS, BATHS, ABLUTION, SICK-ROOM, COOKERY FOR THE SICK.)

AGENT, *a'-jent*, in Medicine, anything which acts or produces an effect upon the body. In Pathology, the extraneous causes of disease are called morbific agents; and in Therapeutics, medicines, and all things used in the treatment of the disease, are called therapeutical agents.

AGRIMONY, *ag'-re-mo-ne* [Lat. *Agrimonia*], also called cockleburr and stickwort. The Agrimony, a genus of dicotyledonous plants, belonging to the Rose order, or *Rosaceæ*. The species *A. Eupatoria* is one of our common roadside plants, and is found in flower about June. The leaves are very handsome, being large and deeply cut at the edge, and divided even down to the main stalk; the flowers are yellow, arranged on a long simple spike, with a little leaf at the base of each, and the fruit is beset with bristles. Agrimony is a mild tonic, alterative, vermifuge, and astringent.* Is highly recommended in bowel complaints, gonorrhœa, leucorrhœa, chronic mucous diseases, and chronic affections of the digestive organs. A strong decoction, if persisted in, is reputed very successful in scrofula; it is also useful as a gargle in ulcerations of the mouth and throat. Dose of the powdered leaves 20 to 60 grains; of the decoction, 2 or 3 ounces three times a day. (See DECOCTION.)

AGUE, INTERMITTENT FEVER, *a'-gu, in-ter-mit'tent* [Fr. *aigue*, sharp], sometimes called chill fever. This is a febrile disease, occurring in paroxysms, and observing a certain regular succession, characterized by unnatural coldness, unnatural heat, and unnatural perspiration. These phenomena are developed in a succession, more or less regular, which pass into each other by insensible steps. It prevails chiefly in marshy districts; the production of that condition of the atmosphere which originates it being generally associated with the presence of decaying vegetable and animal matter. To this peculiar atmospheric state, the terms marsh miasma, and malaria, have been applied. A certain degree of heat appears necessary for the origination of malaria; ague is unknown in cold regions, and becomes more virulent the nearer the tropics are approached. The malarious poison does not seem to extend to any great height above the surface of the marsh, and persons who are compelled by circumstances to sleep in a locality where ague prevails, are more likely to escape the effects, by occupying rooms in the upper stories of the house. Moreover, marsh poison may be carried a considerable distance by the wind; the leeward side of a malarious district is always the most dangerous. High and thickly grown trees have the power of attracting and retaining marsh miasmata; their vicinity, therefore, in malarious districts, at night, and especially as sleeping stations, is to be avoided; at the same time, the fact is taken advantage of by the residents in such districts, for if they can place their dwellings so that a belt of trees intervenes between them and the marsh, they are safe. Strangers are more likely to become the subjects of ague than those who are regularly resident in the district; the latter, however, if the district be a decidedly malarious one, even if they do not suffer from regular ague, are scarcely ever healthy. An individual, whether in this country or abroad, should consider well before placing himself within the influence of a malarious atmosphere; no worldly advantage can be set off against the miserable condition of a man subject to periodic ague. The emigrant, in choosing the scene of his future labors, ought to make himself very certain upon this head, and when he is assured, should be very careful not to expose himself, even for a night, to the influence of an ague district if he possibly can avoid it. One of the most remarkable features of intermittent fever, is its tendency to return upon those who have once suffered from it. An east wind, indiscrĕtion in diet, anything which lowers the tone of the general health, may bring back the enemy. A paroxysm of ague is divided by scientific writers into three consecutive stages, called respectively the cold, hot, and sweating stages.

*Symptoms.*—A sensation of uneasiness and distress of the pit of the stomach; the patient is languid, tired, debilitated, and incapable of exerting himself; he occasionally stretches his limbs and is continually yawning; he soon begins to feel cold chills running down the back, and gradually extending over his whole frame; the skin turns blue, and is cold to the touch, the surface being raised into little roughened prominences, giving rise to the characteristic appearance called in popular language "goose skin," and in technical terms *cutis anserina;* the features shrink and turn pale, the lips and nails assume a blue color, and the fingers are much drawn up, so that rings which previously fitted tightly, now fall off; the urine is scanty, the tongue white and furred, the respiration is hurried, and the teeth chatter. By degrees this state of things passes into the hot stage: flushes of heat begin to wander over various parts of the body; the skin, previously rough and pale, regains its natural smoothness and color, the face becomes hot and plethoric-looking, the features regain their ordinary condition, the countenance assumes its natural expression, and the pulse returns to its normal frequency and fulness. After the skin has remained in this hot and dry state for a short space of time, perspiration begins to break out in various parts of the surface, especially upon the face and forehead, the thirst is allayed, the breathing becomes natural, and the urine secreted in its healthy proportion.

The disease does not always run so regular a course as described above; but one or more of the stages may be left out, and rare instances have been known in which the order of the stages has been reversed. The aguish paroxysm returns with great regularity, and this is one of the most interesting points in the history of the disease, and one very difficult to account for, and so has been thought, as is usual in such cases, to be due to many different chains of circumstances. By the time of the regular return of the paroxysm, ague has been divided into three different species, called quotidian, tertian, and quartan ague; and we shall now proceed to say a few words about each of them.

The time elapsing between the end of one paroxysm and the begin ning of another is called an *intermission*, and that between the com mencement of one fit and the beginning of another an *interval*. In the *quotidian* form of ague, fits occur every day, and usually in the morning, lasting from ten to twelve hours, and, of course, having the shortest interval. Its cold stage is short; but the whole paroxysm lasts longer than those of the other two species. The quotidian form most frequently occurs in the spring, and is easy of cure. In *tertian* ague, the attacks recur every second day: thus, a person being attacked on Monday, will have a return of the disease on the following Wednesday. It commences about noon, and is the form most commonly met with. *Quartan* ague occurs in paroxysms which return every third day: a person who has a fit on Monday, will have another on Thursday. It is the most severe form of the disorder, and the most difficult to cure. It occurs late in the afternoon, and as it has the longest cold stage, so it has the longest interval. It prefers the autumnal months for its attacks, and often proves fatal to life.

There are various modifications of these three forms described by scientific writers, and occasionally met with in actual practice, but which need no remarks in a work of the present kind, the three detailed above being those commonly occurring, and are types of the disease. Sometimes intermittent fever occurs in an erratic form, accompanied by no well-marked symptoms; but by its capricious behaviour is easily distinguished, and readily cured by the experienced medical practitioner.

*Treatment.*—When an individual is attacked with the cold stage of the fever, the application of external warmth is at once the most natural and beneficial remedy; this may be done either by means of bags of heated bran, salt, or any other convenient method; or if a vapor-bath be at hand, it may be used, or an extempore one made, by seating the patient, wrapped in a blanket, on a chair over a bucket containing hot water, which is kept steaming by means of heated stones thrown into it from time to time. Warm, diluent drinks may be freely allowed, weak tea, barley-water, and such like; only in a very few debilitated cases may a little wine be added. Emetics have been given at this stage, but are not advisable; a brisk purgative is, however, required at the commencement; none is more convenient than a pill containing one grain of calomel, and three grains of the compound rhubarb pill. Of these, two may be given to an adult, or

| | | |
|---|---|---|
| Take of | Sulphate of magnesia | Twelve drams. |
| | Carbonate of magnesia | Three drams. |
| | Peppermint water | Six ounces.—*Mix.* |

Take two tablespoonfuls when required.

When the hot stage has fairly set in, cooling drinks may be allowed, and the surface of the body sponged with tepid water, and when sweat begins to moisten the surface, the trunk and limbs must be rubbed dry with towels, and the sweating encouraged by tepid drinks, until the feverish symptoms are quite gone. The individual paroxysm being over, the object is to cure the disease and prevent its recurrence. For this purpose numberless remedies have been proposed, tried, and the vast majority of them rejected as little less than worthless. The sheet-anchor still is to be found in the cinchona bark, or its chief alkaloid, quinine. Whatever remedy may be selected, it is essentially necessary to preface its use by thoroughly clearing out the whole passage of the alimentary canal by some active purgative; and there is none that will more frequently meet the desired indication than the calomel and rhubarb, 3 grains of the former to 5 of the latter, followed in four hours by a dose of castor-oil. If, however, the patient be anæmic, and the fever of a low type, the calomel must be omitted. Various methods of administering quinine in ague have been proposed, each having a numerous body of advocates. One proposes to give it in large doses, not only during the intermissions, but also during the hot stages. Another says it should be given in one large dose immediately after the paroxysm of the fever. Another, that it should be given in one large dose immediately before the expected paroxysm. Yet another, that it should be given in one 10 grain dose on a day free from fever. While the celebrated Prof. Graves, who objects to the continued use of quinine, proposes to give it at long intervals, administering it for four successive days, then intermitting it for the following six, thus embracing the interval comprehended in three fits. By this means, he says the system is kept sufficiently under the curative influence of the remedy without being rendered too familiar with it. The weight of the testimony from all quarters, however, appears to be in favor of its administration in comparatively small doses during the intermission of the fever. A very safe plan is the following: After having given a brisk purgative, and when the stomach is loaded, an emetic composed of 10 grains of powdered ipecac, also,

Take of Sulphate of quinine....................Eighteen grains.
Dilute sulphuric acid....................One dram.
Compound tincture of lavender .........Two drams.
Pure water......... ....................Six ounces.—*Mix.*

Let two tablespoonfuls be given every four hours.

Very large doses of quinine have been taken, apparently without injury, but the practice is not, by any means, without danger. In the congestive variety of ague, the chief reliance must be placed upon the immediate administration of full doses of quinine, from 10 to 20 grains repeated every hour or two until there is reaction. If the patient cannot swallow, or if there be persistent vomiting, it should be administered by enema in a larger dose. At the same time mustard should be applied over the chest, abdomen, and to the extremities, or along the spine, or flannels steeped in hot water to which mustard has been added, or friction with the hands or a woollen cloth.

When quinine fails, as it sometimes will, arsenic may be safely, and generally, successfully given as follows:

Take of Fowler's solution of arsenic......... ....Twenty drops.
Infusion of gentian......................Eight ounces.—*Mix*

Take an eighth part three times a day.

If any unpleasant symptoms arise, such as nausea, vomiting, purging, watering of the eyes, itching of the eyelids, and headache, the arsenic must be promptly stopped.

Salicine is another remedy which has been much used in this disease, but it is inferior in its effects to quinine. It may be taken thus:

Take of Salicine................................Half a dram.
Pure water ............................Six ounces.
Tincture of cardamoms .................Two drams.—*Mix.*

Give two tablespoonfuls three times a day.

Nitric acid has also been very highly recommended in the treatment of ague. Twenty-five drops of the dilute acid of the pharmacopœia may be given every six hours in a wine-glassful of water, or some bitter infusion, as chamomile, which is itself said to have some influence over ague.

Among the other substitutes for quinine, may be mentioned piperine, the active principle of the piper nigrum, or black pepper, in doses of 6 or 8 grains three times a day; berberine, ferrocyanuret of iron; common salt, given in half dram doses in some mucilaginous vehicle, such as slippery-elm water, every two or three hours; sal-ammoniac, and the Cornus Florida or American dogwood. The latter used in the form of decoction made by boiling a handful of the bark in a quart of water, and given in wine-glassful doses every three or four hours, will certainly exercise a very marked influence over even severe attacks of this disease.

*Preventive Treatment.*—Persons who are compelled to go into, or reside in malarious districts, should always take certain precautions which are more or less effective in warding off an attack of this unwelcome visitor. The clothing should be suited to the temperature of the particular region, the night air should be carefully avoided, the bed-room occupied should be in the upper part of the house, the windows should be closed at night, and a fire lit in the neighborhood, as it is an undeniable fact that fire has a tendency to destroy malaria. Care should be taken not to drink the water from ponds, creeks or superficial springs, and if this cannot be avoided, the water should first be well boiled. Bathing in these streams, especially after sundown, should not be indulged in. Persons going into such a district, should never go without a supply of quinine. Two or three grains in a glass of infusion of chamomile, or calamus root, before breakfast, will often suffice to carry one through a temporary residence with comparative safety. It is also of very great importance that the stomach and bowels should be maintained in a healthy condition. Constipation must be carefully obviated by proper regard to regimen, and an occasional dose of aperient medicine. "Early to bed" in these situations, is good advice, but not "early to rise." Before going out from the house, the stomach should be replenished with a good supply of food, and care should be taken not to sleep by the way. Parties erecting dwelling-houses in malarious localities, will be wise to see that a belt of trees is left standing between them and the marshy ground. They should be built also on high ground, and on the windward side of any swamp or suspicious ground. On account of this remarkable property of marsh poison to cling to the foliage of trees, it is very dangerous in malarious places, to go under large thick trees, and more dangerous still to sleep under them. There is very high authority for stating that the common sunflower is a very powerful corrective of the miasmatic poison. Large quantities of them planted around the dwelling are said to effectually ward off the disease. Dr. Cartwright, of Natchez, asserts that the *jussiœa grandiflora*, or floating plant of the bayous and lakes of lower Louisiana, possesses the power of preventing the development of malaria in regions particularly adapted for its generation. Of course, removal of the person from the malarious locality is of prime importance, but where this cannot be done, attention to the above suggestions will very much ameliorate the situation. (See QUININE, CORNUS FLORIDA, CLIMATE, MALARIA.)

AGUE CAKE, the enlarged spleen, which is frequently the result of repeated attacks of ague. It forms a perceptible tumor in the left hypochondriac region of the abdomen. (See ABDOMEN, SPLEEN.)

AILANTHUS GLANDULOSA, *a-lan'-thus*. The bark is said to be antispasmodic and a muscular depressant. It is used in epilepsy, palpitation of the heart, asthma, hiccough, and dysentery. Dose of the fluid extract, 10 to 30 drops three times a day.

AIR, *are* [Gr. *aer*, air], a term commonly applied to the atmosphere; the fluid which we breathe, and with which our globe is surrounded. It is believed to extend to the height of about forty-five miles. The weight of our atmosphere, amounting to fifteen pounds upon every square inch of surface exposed to it at ordinary levels, exerts a pressure of nearly fourteen tons distributed over the surface of every grown man. We do not feel this, because it is counteracted by the aeriform elasticity of the fluids contained within our bodies; but when the pressure of the atmosphere is taken off any portion of the surface, as by an exhausted cupping-glass, it is the elastic counteracting force within the body which pushes up the covered portion of the skin. Air is not a simple body, but it is a mechanical mixture of two gases, oxygen and nitrogen, with small quantities of water and carbonic acid, as follows:

| | By Measure. | By Weight. |
|---|---|---|
| Nitrogen | 77.5 | 75.55 |
| Oxygen | 21 | 23.32 |
| Water | 1.42 | 1.03 |
| Carbonic acid | .08 | .10 |

These proportions, however, are not always the same, and sometimes minute quantities of ammonia, ozone, and certain other substances are detected. That air, in common with all other bodies, is possessed of weight, is proved by weighing a flask before, and after it has been exhausted of air. According to Biot, 100 cubic inches weigh 31 grains. Heat causes air to expand; cold to contract. Thus, if a bladder is half filled with air and held near a fire, it will expand until the bladder is quite full, and on being taken away it will gradually contract to its former bulk. Air being elastic and compressible, it follows that the higher we go the lighter the air becomes. The air analyzed at the foot of Chimborazo has the same composition as that analyzed at its summit, though it differs materially in density. The nitrogen of the atmosphere is believed to serve the purpose, chiefly, of diluting the oxygen, and moderating its action. It is to the oxygen contained in the atmosphere that its chemical actions are mainly due. It is this that supports combustion, and sustains the respiration of animals. In the process of respiration the air is being constantly rendered impure by a portion of its oxygen being converted into carbonic acid. The average quantity of carbonic acid given out by the lungs constitutes about 4.48 per cent. of the expired air, and the quantity exhaled by a healthy man in 24 hours is estimated at 8 or 9 ounces. It is remarkable, however, that the more impure the air, or the greater the quantity of carbonic acid it already contains, the less is the amount exhaled. Knowing then the importance of a free excretion of carbonic acid, we see the necessity of breathing a pure air, and consequently the importance of ventilation, or of keeping up a constant supply of fresh air, particularly in rooms where a number of persons are breathing together.

*The headaches* and uneasy sensations caused by close, crowded rooms, are familiar to all; the tragedy of the black hole of Calcutta, and that of the Irish steamer a few summers ago, are notorious. In the latter, sixty persons fastened down in a close, small cabin, perished in less than six hours. These individuals were actually poisoned by the carbonic acid gas they had themselves expired. Such effects are too obvious to require comment. It is the gradual undermining of health, the slow poisoning of those who habitually breathe a vitiated air to which attention requires to be drawn, and more particularly in the case of sleeping apartments. When it is considered that one per cent. of carbonic acid in the air will cause uneasiness; that ten per cent. is the probable limit where immediate danger to life commences, and that every adult man vitiates at least two hundred and sixteen cubic feet per hour of the pure element, it is needless to say more upon the necessity for proper ventilation; moreover, exhalations from the surface of the bodies, even of the healthy, is constantly adding a considerable proportion to the other sources of atmospheric impurity. Notwithstanding facts like the above, people lie singly, or in numbers, for six or eight hours every night, breathing over and over again the same contaminated atmosphere. They sleep heavily, and rise in the morning, wondering perhaps that they feel even more languid than when they lay down at night.

*The notorious cases of low lodging-houses*, and other such resorts, are not now alluded to, but the less suspected nurseries, and well-furnished apartments, even of the higher classes, many of which, with door, window, and chimney closed, and heavy curtains drawn round heavy sleepers, are perfect hot-beds of disease. It is time such ignorant, culpable disregard of all the principles of health should cease. We spend on an average, one-third of our lives in our bed-rooms for the purpose of refreshing the body, how important then to have them as airy as possible, with free entrance for the good air, free exit for the deteriorated. If the door of a room *must* be fastened at night, let it be by a chain-bolt, or if it must be locked let the upper panels be perforated, or the window fitted with a pane of perforated glass or zinc—at all events let air in somehow. Keep the chimney open that it may carry off the impure air; this it will do, particularly if fitted with a good ventilator. Breathing the air in crowded assemblies of people is only occasional, and generally for a short time; it can do comparatively slight mischief, but the air we breathe for one-third of our lives cannot be vitiated without the most serious injury to health, and curtailment of life. Many a mother has mourned over the untimely grave of a child, little suspecting how the close, hot nursery had undermined the young constitution, before the fatal cold, or epidemic snatched her treasure away.

*Diet*, *clothing*, *exercise*, all claim serious attention, still more, for old or young, the purity and ventilation of the sleeping apartment.

*Burning candles or lamps* vitiate air in the same manner as the respiratory process of animals, they consume oxygen and form carbonic acid, consequently, they are undesirable in close rooms at night, or indeed at any time, if there is insufficient renewal of the air. A fire in the bed-room is recommended as a means of ventilation, and undoubtedly is so as long as it is burning briskly, if kept well replenished, and if the chimney draws well, but when, during the hours of sleep, the fire gets low, and the draught up the chimney is diminished, the air vitiated by the burning embers is very apt to become diffused through the apartment, and with it, sulphurous and other fumes. This point is one frequently overlooked, and from the very injurious consequences which may result, requires strict attention. Plants or flowers kept in a sleeping apartment are another not unfrequent source of impure air, for although living vegetation under the influence of sunlight has the power of abstracting carbonic acid from the atmosphere, which in fact it continually purifies from the effects of animal respiration, in darkness, the case is reversed; not only do leaves cease to absorb carbonic acid, but they give it out. When it is remembered, that in a school in which pupils had been taking lessons for three hours, with doors and windows closed, the amount of carbonic acid has been found to be eight times the average; that much less than this causes uneasiness, that a little more may cause death, enough has been said, to prove the necessity for preserving the air we breathe in a state of the highest possible purity, and of avoiding every known source of deterioration. In the room of sickness, the necessity is increased tenfold; both for the sake of the patient and of those around, the air must be kept pure. In the few cases in which ventilation cannot be had recourse to, Liebig recommends the use of slacked lime spread on a board; this quickly absorbs the carbonic acid of any closed space in which it may be placed, and fresh air must rush in through the crevices to supply the place of the former gas. It scarcely requires mention, that all decomposing substances in whatever situation, cannot fail to render the air impure—moist vegetable matter particularly; damp decaying wood, sawdust, straw, etc., all exhale carbonic acid, and in close places may also originate serious disease. It is worthy of note, that whilst decomposing *dead* animal matter does not seem so materially to affect health, the morbid exhalations from living animal bodies poison the atmosphere to such an extent as to occasion the most malignant fevers.

*Locality*, it is well known, exerts much influence over the purity of the atmosphere; the air of towns must, of course, be less pure, principally from admixture of sulphurous vapor, the product of combustion. The air of the coast is stimulating and strengthening, probably in some measure owing to its containing minute portions of the sea constituents. The air of all damp, low situations is particularly unhealthy; doubly so if the situation is surrounded by elevations which prevent atmospheric changes. Intermittent fevers, and diseases of a neuralgic character prevail in these places; the noxious influence is generally more potent near the ground, and those who are compelled to reside in such localities, may escape much evil by occupying rooms as elevated above the soil as possible.

*Dry air* is generally good, but it may be too dry, and produce disagreeable effects upon the skin; chapped hands, etc. Moist air, when combined with cold, is worst of all. The state of the atmosphere varies much in the twenty-four hours. The fresh air of early morning, salubrious to the strong and healthy, requires to be dried and warmed by the sun before it is suitable for the invalid; even in summer, in this climate, this is scarcely the case before eight o'clock. Exposure to the damp air of evening and night must always be shunned by the weak in health; so noxious is it in some tropical or marshy regions, that one night's sleep within its influence is certain to be followed by an attack of illness. That a uniform temperature and unchanging climate is not so well adapted to maintain health as a variable one, is admitted on the authority and experience of Sir James Clark, Dr. Combe, and others.

It has become a question of the greatest moment to determine the quantity of air that is necessary to be supplied to human beings to maintain them in a state of health under varying circumstances; to determine whether the air they breathe, though sufficient in quantity, may not be altogether hurtful on account of certain impurities; to determine what these impurities are, and how to destroy them, or render them innocuous; and how, by the help of apparatus or otherwise, a sufficient quantity of air may be admitted to, and circulated through buildings in which large numbers of people are congregated. It is also one of the most interesting inquiries of modern times to ascertain what, and how many diseases may be due to deficient quantity of air for respiration, or, on the other hand, to the presence of impurities in the air that is breathed. It is almost needless to say that these are points upon which medical science is throwing more and more light every day; and it will be the object of this article to give a mere sketch of what is being done to advance our knowledge of the subject, in the hope that all may lend a helping hand to put an end to the prejudice and ignorance which still exists on these vital points, but which, nevertheless, are points concerning the every-day life and health, not only of ourselves, but of generations yet to come.

*As to the requisite quantity of air*, it may be well to say, once for all, that although it is desirable to know the least quantity that is compatible with health, still, wherever practicable, the quantity should not be restricted to anything like this amount, but a full and large supply should be ungrudgingly given, with the assurance that benefit will accrue.

*In all calculations as to the proper amount of air to be supplied to buildings*, an ample allowance must be made for the consumption of air by artificial lights. In his excellent work upon Practical Hygiene, Dr. Parker, an English writer, says:—"A common gas burner will burn nearly 3 feet per hour, and will consume 10, or probably 12 cubic feet in an evening (four hours), and therefore, from 18,000 to 21,600 cubic feet of air must be introduced in the four hours, in order properly to dilute the products of combustion, unless they are removed by a special channel." It consists with the experience of medical men that in cases of typhus, cholera, small-pox, and perhaps, more particularly of hospital-gangrene and erysipelas, nothing is so effectual as an unlimited supply of air, and that if they must name a figure which will satisfy them, their demand should be for not less than five or six thousand cubic feet per head per hour, in order properly to dilute and remove the poisons with which the air is loaded.

*Those who have charge of the ventilation*, either of public buildings, or private houses, should not forget that they cannot at all trust to their own senses to inform them as to the purity or impurity of the air, for, after a time, the nerves of smell and taste lose their delicacy of perception; and it is familiar to every one that a person may be in a very close room, and be quite unconscious of the fact, although a stranger coming in from the fresh air at once perceives the disagreeable odor. Again, people living near certain manufactories which emit odors very prejudicial to health, become so accustomed to them after a time, that they fail to notice them, and are often lulled into a dangerous tranquillity on the subject, ascribing the effects of these effluvia entirely to other causes; and it must never be forgotten that although the natural means for the removal of noxious vapors are very wonderful and very effectual, such as the diffusion of gases, their dispersion by winds, their decomposition into innocuous compounds, etc., still, there are in existence in this country, many neighborhoods where the atmosphere is polluted to a degree quite incompatible with the life or health either, of animals, or vegetables. In considering this subject, every one would do well to reflect that the atmosphere comes into direct contact with the surface of the air cells of our lungs, which, if spread out, would cover an area of from ten to twenty square feet. Over this surface our blood is circulating with immense rapidity, ready at once to absorb all the contents which the air, pure or impure, may offer to it, and in addition to this, the impurities contained in atmospheric air are swallowed directly as well as respired, and are absorbed by the digestive system also. It is even now matter of interesting inquiry how much the evil effects of poisonous emanations in the atmosphere are to be ascribed to their being swallowed or respired. In the disease familiarly known to medical men as "Miner's lung," the atmospheric impurities to which the miners are exposed, are found after death in their lungs, in the shape of pieces of carbon or charcoal, which have become covered by part of the investing structure of the lung, which has so to speak grown over them, and it may be fancied what an amount of irritation the presence of such substances will give rise to in so delicate an organ as the human lung.

*By the aid of the microscope*, we are enabled to demonstrate the presence of numerous substances in the air which we breathe, and especially in the atmosphere where certain trades and industries are carried on. It would be quite impossible, in an article like this, to attempt to give an account, or even an enumeration of the investigations on this subject. Let it suffice to mention a few of those trades which are most detrimental to health in this way; and it is a melancholy instance of the perversity of human nature, that some of the most ordinary precautions, against the injurious effects of certain trades, afforded by liberal employers, have met with such a cool reception from the men, and, in not a few instances, have been deliberately refused, although the reduction of mortality from their use has been proved over and over again. Employers, on the other hand, must take care that the means they offer are good and sensible, and must not, for instance, expect their "hands," perhaps already enfeebled in health from long hours and bad air, to adopt all at once a faulty system of ventilation, the only effect of which is to add to their sufferings, by causing them to take cold, or by making them the prey of some inflammatory disease to which they are predisposed, owing to the circumstances above named.

*Amongst the trades and occupations* which are most injurious, on account of the impurities in the air which those employed are forced to breathe, we might mention mining, grinding (wet and dry), button-making, brassfounding, glass-making, water-gilding, electro-plating, painting, and many others; besides all those trades which, though perhaps not positively injurious in themselves, are made so on account of the way in which they are carried on, by bad management, bad ventilation, etc. It has been proved that the colliers where the mines are well ventilated, do not suffer from diseases of the lungs to anything like the same extent as those working in mines where the ventilation is deficient. "Potter's asthma" is the popular name for disease of the lungs induced in that class of workmen by the irritating dust to which they are exposed, especially those called "flat pressers." Brassfounders are very subject to bronchitis, owing to irritation caused by the fumes of oxide of zinc which escape in the process known as brass-mixing. Makers of pearl buttons, especially those who *grind* the material, are liable to consumption, owing to the minute particles which are inhaled. Many other instances might be noted; but the above are probably sufficient. It is indeed a dreadful thing to think that many of our trades and industries are the direct means of destroying the flower of our population, and that this is owing generally to two causes—to the trade being in itself unhealthy, and to its being carried on in such a way as to make the preservation of health, under the circumstances, almost an impossibility. It is well known that, during the last ten or twenty years, many cases of poisoning by arsenic occurred, owing to the inhalation of the dust of rooms papered with green paper, into the composition of the green coloring matter of which, arsenic largely enters.

If any further proof were wanted to establish how, in certain circumstances, it may be truly said that—

> "The all-surrounding heaven, the vital air,
> Is big with death,"

we may mention that, by the aid of the microscope, suspended matters have been discovered in the air of hospitals, barracks, and other public places, of such a nature that even the most ignorant may conceive how the poisons of various diseases may be transmitted through the air. Not only are the products and parts of the structure of our own bodies so discovered, but also the lower forms of animal and vegetable life. It should be remembered that, in the air of sick-rooms and such situations, these accumulations are much more liable to occur than in places not subject to emanations from the body or from its excretions, sores, or wounds; and hence a more effectual system of ventilation ought to be maintained.

*In manufacturing towns* people should take care, before fixing on a residence, that it is not too near any of these well-known "works," which so pollute the air as to render it unhealthy, and unfit for respiration. Such are the various glue and bone works, as well as slaughter-houses, which emit peculiar animal or organic odors of the most abominable kind; alkali works, which give off hydro-chloric acid gas; chemical, bleaching, India rubber works, etc.

*In order to ascertain how foul air may be deprived of its impurities*, the reader is referred to article DISINFECTANTS.

In conclusion, one word of warning to those who work in, and spend the greater part of their time in bad, foul air, such as tailors, dress-makers, printers, boot and shoe makers, and those who work in many manufactories. A large series of the most extended observations, prove incontestably the sad state of those who work in many large establishments of the above kind; and though there are many honorable exceptions, where everything that money, science, and care suggest, is willingly done to promote the health of the employed, yet, in a large proportion, the state of matters is indeed lamentable. Irregular work, long hours, insufficient time for meals, but, above all, deficient ventilation, are too often found combining to sap the foundations of constitutions once healthy, and to lay the seeds of irreparable disease, which sooner or later (generally wofully soon) brings the victim to a premature grave. It is quite true that, occasionally, instances of this find their way into the public prints, and excite momentary surprise and indignation; but "to mend the world's a vast design," and years roll on without any radical cure being applied to a system which threatens greatly to weaken the physique of the country at large. It will scarcely be believed that there are to be found numerous tailors' workshops in the country where the men are huddled together in dens, the atmosphere of which is rendered intolerable by the gas, the stoves, and their accumulated breaths and emanations, and where the amount of air supplied *is not one-tenth part of what we are deliberately told is necessary for health.* The same state of matters obtains as to dressmakers and printers, and many heart-rending instances might be given of blasted health and hopes; but while dealing with a subject of such grave importance, it is better to avoid any attempt at dramatic effect, and rather trust that the bare statement of general truth may induce all who have any influence in such matters to aid in remedying what is well known to be such a crying evil.

*Many diseases* are produced by changes from heat to cold, and from cold to heat. Most inflammatory diseases are produced, in a greater or less degree, by changes in the temperature of the air. To avoid these changes, proper attention should be paid to our clothing, our houses, and the degree of heat and cold we are capable of supporting with comfort. Living long in a very hot air drains the body of its moisture, and disposes it to fevers, diseases of the liver, cholera morbus, etc.; and living long in an extremely cold air exhausts the heat and weakens all the vital functions. Sudden changes in the temperature should be particularly guarded against. Changes in the weight of the atmosphere affect our health very materially, being sometimes much heavier than at others. When we consider that the difference in the pressure of the air upon the body of a medium-sized man at different times is equal to a ton weight, we do not wonder that such changes affect the health. When it is heavy, the fluids and flesh of the body are rendered denser and firmer; and, on the contrary, when it is light, the flesh, the vessels and the fluids expand, and the whole body is rendered tumid. In very windy weather the air is always light, and this accounts for most people feeling so uneasy under such circumstances. The nerves are particularly affected by the weight of the atmosphere. Hysterics, hypochondria, and all nervous affections are very much aggravated by changes which are indicated by the barometer. The human body contains a large quantity of air incorporated in every tissue, and when the pressure of the external air is diminished, the air within expands, and forces asunder every fibre in the system. It cannot be doubted that disease is often caused by this alone; and though there is no known remedy for this evil, still a knowledge of the fact may explain many symptoms otherwise mysterious, and it may be owing to this cause that many sick people and invalids become bloated, and appear more fleshy than they really are.

*Damp air* is very injurious to health; hence people who occupy cellars and other low, damp places, are necessarily and invariably unhealthy. The occupants are sooner or later overtaken by inflammations, dysenteries and putrid fevers. There should be legal enactments prohibiting people from living under the ground, or in damp, wet cellars.

*The sea air* is the most pure, healthy and invigorating; not only being a promoter of good health, but of good spirits and a cheerful mind. It is the freest of foreign gases and vapors, and therefore contains the most *vital* air in the same bulk. Fevers are milder, and sores, ulcers and diseases heal quicker at sea than upon the land, if the same kind of nourishment is afforded. Sea air has an instantaneous and remarkable effect upon the digestive organs. It stimulates the appetite, and quickens the conversion of food into blood. The sea air is much more favorable than the inland air to those suffering from dyspepsia, nervous diseases, liver complaints, ulcers, sores, abscesses, diarrhœa, dysentery, the bowel complaint of children, dropsy, and all chronic diseases excepting consumption, and during the summer the sea-shore air of New England is better than that of the Southern States, being cooler. But the States bordering on the Atlantic, north of Florida, are the least favorable for consumptives and rheumatic persons, of any in the Union, being so subject to variations. This is especially true in the winter season.

*The inland air* is charged with a variety of gases, vapors and odors, arising from the earth in the decomposition of vegetable and animal substances. The decay of these substances is so rapid and extensive in some seasons that a malignant state of the air is produced; consequently, fevers are much more prevalent in inland towns, particularly where vegetation is abundant and rapid in growth, than upon the sea-shore or islands.

*Marshes, ponds, lakes,* and large rivers which overflow extensive intervals or meadows, are much the sickliest locations upon the land. A miasma or putrid air arises from such places which generates malignant dysentery, bilious fever, and fever and ague. In such locations the houses should be set high, either upon piles, or the highest and driest soil; and the night air should be carefully avoided; the body should be well defended from sudden chills, and the diet wholesome and abundant.

*Dry, sandy places,* though not so fertile and prolific, are much healthier than moist, alluvial, clayey soils. But, though the country air is not so pure as the sea air, it is vastly more healthy than that of the city. A much larger proportion of children is raised in the country than in the city. The city air confined and still, and mixed with a thousand noxious vapors, odors, gases and smokes—the smoke of chimneys alone occupies a large space in the air of cities—and the perspiration and effluvia arising from a dense population of men and animals also contribute largely to the contamination. Besides these, the decay and putrefaction of large stores of fish, grains, meats, vegetables and fruits, and the natural accumulations of filth and dirt in the streets and sewers, are all agents in contributing to the impurity of the atmosphere. From these and many other sources, innumerable deadly gases constantly arise into the air, to be breathed by the inhabitants. Cities located upon high, dry land, upon the sea-shore, upon the lake, or upon the prairie, where the air can be changed by daily breezes, or fanned away upon the open sea or lake, are *comparatively* healthy. Ventilation should be the study of all, but especially of those who live in the city. Every hour that can be spared from business should be spent in the parks, or if possible in the country. Having your business in the city and your residence in the country, is the most preferable practice both for enjoyment and health. Even in cities it is much better to allow your children to romp in the open air, than to be shut up in the house, deprived of light and breezes, as well as exercise. Exercise quickens the circulation of the blood, and thereby makes up to a certain extent for the want of a pure atmosphere. Those who live a great deal in the open air uniformly sleep better, have better appetites, fewer diseases, more strength, and live longer than those of sedentary habits. (See CLIMATE, RESPIRATION, LUNGS, AERATION, VENTILATION, OXYGEN, CARBONIC ACID, DISINFECTANTS, NITROGEN, HOUSES.)

AIR-BEDS. An air-bed consists of a sack, in the shape of a mattress, divided into a number of air-tight compartments, a projection at one end forming the bolster. Each compartment is provided with a valve, and can be inflated with air by means of a bellows. Air-beds were known at the commencement of the 18th century; but, being manufactured of leather, were of considerable cost. They are now made of macintosh cloth and vulcanized india-rubber. Their advantages are coolness, elasticity, and portability, and they are especially valuable to invalids. They are especially useful for invalids, as they maintain a uniformly soft surface, and do not, like feather-beds, take an unyielding impression from the weight of the body lying upon them. They require no "making," as it is termed, and an invalid can without difficulty change his position upon them. They are made of some air-tight material. When in use they require to be filled with air; but when not in use, the air may be let off by means of the valve, and the bed folded up. Great care should be taken that the valve is in proper order, or the bed may collapse, and cause much annoyance to the patient. (See BED, BED-ROOM.)

AIR PASSAGES, FOREIGN BODIES IN. (See FOREIGN BODIES IN AIR PASSAGES.)

AIR SWELLINGS. (See TYMPANY.)

ALBINO, *al-bi'-no* [Lat. *albus*, white], an individual in whom the usual coloring matter of the body is absent. The complexion is un-naturally white, the hair white in every part of the body, the iris is of a pale rose color, causing the eye to appear pink; the constitution is feeble. White rabbits with red eyes are albino rabbits. Albino is a Spanish term for the white progeny of negro parents.

ALBUGO, *al-bu'-go* [Lat. *albugo*, whiteness; a white spot], a white speck in the eye; a disease in the eye by which the cornea contracts a whiteness; leucoma.

ALBUMEN, *al-bu'-men* [Lat. *albus*, white], in Chemistry, a whitish viscous matter, which forms an important element in vegetable and animal organic substances. It is distinguished by its peculiar property of becoming coagulated or insoluble at a high temperature. White of egg and serum of blood consist almost entirely of albumen. The hair and nails contain large quantities of it in its coagulated state. Pure albumen is insoluble in water. White of egg and serum contain a certain amount of free alkali, in which it is dissolved; hence its precipitation when acids are added. It is also precipitated when salts of mercury, copper, silver, lead, etc., are added to its solution, forming with them definite insoluble compounds. This property renders it valuable as an antidote to metallic poisons. Tannin, gallic acid, and extractive matter behave with it in a similar manner; for which reason it is used much in the arts as a clarifying agent. Its composition is given below, the presence of sulphur being rendered familiar to all by the effects of cooked eggs upon silver spoons.

| | |
|---|---|
| Carbon | 53.5 |
| Hydrogen | 7.0 |
| Nitrogen | 15.5 |
| Oxygen | 22.0 |
| Phosphorus | 0.4 |
| Sulphur | 1.6 |
| | 100.0 |

Heat first coagulates and then hardens albumen, thus impairing its digestibility; a reason for avoiding over-cooked meats as well as eggs.

ALBUMINURIA. (See Bright's Disease.)

ALCOHOL, *al'-ko-hol* [Arab. *al*, the, *koohl*, any volatile substance.] Alcohol is the intoxicating principle of all spirituous liquors, or the principle upon which the characteristic properties of fermented and distilled liquids depend. It is highly rectified or pure spirit; sometimes called spirits of wine, from the fact that it was at first obtained by the distillation of wine. A mixture of equal weights of absolute alcohol and water, is called proof-spirit. If a solution of sugar be exposed to the air for any length of time, no change will take place; but if vegetable or animal organic matter be present, fermentation commences, and a fresh principle is formed, which may be separated by distillation. The first distillate is comparatively weak; but by the use of caustic potash, which has a powerful affinity for water, absolute alcohol is obtained. Pure alcohol is colorless and limpid, pungent to the taste and smell. Its specific gravity at 60° is .7938. It boils at 173°, and has been rendered gelatinous by cold, but has never been frozen. It is very inflammable, and burns without smoke. It mixes with water in all proportions, and has a great attraction for it. Its solvent powers are great, especially with respect to resins and resinous gums. The strength of alcohol is in exact proportion to its density, which is estimated by means of a hydrometer. Proof-spirit has a specific gravity of .918, and contains 49¼ per cent. of absolute alcohol. Wine, beer, and spirits owe their intoxicating properties to alcohol. The chemical composition of alcohol is $C_4H_6O_2$, and it is regarded by chemists as a hydrated oxide of the organic base ethyl; *i.e.* $C_4H_5+HO$. The alcohols are very numerous, their numbers being increased daily. Alcohol of different strengths is much used in the arts, as a solvent for varnishes, resins, and essential oils; as a fuel in spirit-lamps; as an antiseptic, and as a stimulant in medicine. The following tables give the amount by measure of alcohol in various liquids contained in one hundred parts:

| | |
|---|---|
| ***Spirits.*** | |
| Hollands | 57.60 |
| Whiskey | 48–56.00 |
| Rum | 53.68 |
| Brandy | 53.39 |
| ***Wines.*** | |
| Raisin | 25.12 |
| Marsala | 25.09 |
| Sherry (Brown) | 23.01 |
| Port | 22.96 |
| Madeira | 22.27 |
| Gooseberry | 11.84 |
| Grape | 18.11 |
| Currant | 20.55 |
| Elder | 9.87 |
| Orange | 11.26 |
| Sherry (Amontillado) | 20.05 |
| Claret | 15.10 |
| Burgundy | 14.57 |
| Champagne | 12 61 |
| Hock | 12.08 |
| Tokay | 9.88 |
| Mead | 7.32 |
| Perry | 7.26 |
| Cider (highest average) | 9.87 |
| " (lowest average) | 5.21 |
| Lager Beer (New York) | 5.86 |
| " " (Munich) | 4.70 |
| Ale (Burton) | 8 88 |
| " (Edinburgh) | 6.20 |
| Stout | 6.80 |
| Porter | 4.20 |
| Small Beer | 1.28 |

In Medicine, alcohol is used to hold in solution certain vegetable, and in a few cases mineral substances, which are most conveniently administered in this form. Some of these, such as camphor, will dissolve to the extent required, only in strong alcohol or rectified spirit; for others a more diluted alcohol or proof-spirit is sufficient.

In addition to its solvent properties, alcohol is likewise valuable from its power of preserving the infusions or solutions to which it is added.

One ounce by measure of alcohol, mixed with a pint of water, forms a good evaporating lotion to be used when it is desirable to reduce the external heat of any portion of the body. As a topical application in cases of inflammation, cramps, pains, fevers, bed-sores, alcohol is a most valuable remedy. It is an excellent lotion in bruises or sprains. A black eye produced by a blow may often be avoided by persistently bathing the part with alcohol or some other spirit. It is not taken internally in its pure state. In rheumatic inflammations, both acute and chronic, hot spirits of wine, or hot alcohol, applied to the part is an excellent remedy. In inflammation of the uterus, breasts, and bowels, hot applications of alcohol are among the best means of cure. It is the alcohol contained in wine, that makes it useful as a lotion for fresh wounds. Scratches, burns, cuts, and bites are relieved by bathing with alcohol, or some kind of liquor.

Alcohol, as a counter-irritant, is very effectual in deep-seated pains generally, as well as in sore throat, pleurisy, etc. It may be applied as a counter-irritant in the following way, namely: rub the part affected thoroughly with the alcohol, then wring a cloth out well in it, with which cover the part, after which wrap the whole with a dry cloth; the effect is similar to that of a mustard plaster. It will thus be seen that externally applied, alcohol produces two opposite effects—when used as an evaporating lotion it is cooling, and when used as a counter-irritant it is heating.

Alcoholic liquors are sometimes useful, and in fact, necessary, to be taken internally. In cases of great prostration and exhaustion, following a wound or severe accident, wine, brandy, or whiskey should be administered in large doses, at once. Poisoning from the bites of venomous serpents may generally be effectually treated by immediately administering large doses of spirituous liquor, which must be continued till signs of intoxication appear. In low fevers it is sometimes necessary to use alcoholic drinks. The custom of some people of using spirituous liquors for "all the ills and ailments of life," cannot be too much discouraged. This practice often becomes a curse, resulting unconsciously in fixed habits, which lead to intemperance and woe. (See SPIRITS, WHISKEY, BRANDY, ALE, WINE, STIMULANTS; STIMULANTS, ALCOHOLIC; TINCTURES, ETC.)

ALDEHYDE, *al'-de-hide.* When alcohol is submitted to any process by which hydrogen is extracted from it (deoxidation, for instance), it becomes an aldehyde, every alcohol having its corresponding aldehyde. Ethylic, or vinous aldehyde, is limpid and colorless, with a peculiar and characteristic odor. Its density is .790; it boils at 72°, and is neutral to test-paper. On exposure to the air, it absorbs oxygen, and resolves into acetic acid.

ALDER. (See Alnus Rubra.)

ALE, *ail* [Saxon *eala*, *eale*, or *aloth*], a fermented malt liquor. The name was formerly given to unhopped malt liquor, but now applied to very strong and comparatively light-colored beer. The hop was brought into England from the Netherlands in the reign of Henry VIII., and the word *beer*, from the German *bier*, was then employed to distinguish the hopped liquor from the more ancient beverage. The connection between hops and the word beer is indicated by the old couplet:

"Hops, reformation, bays, and beer,
Came into England all in one year."

Ale made from malt alone was a favorite beverage of the ancient Germans, and was esteemed by the Danes and Anglo-Saxons. Isidorus and Orosius state that the ancient Britons and other Celtic nations drank ale, which they made by a process very similar to our modern brewing. They inform us that the grain was first steeped in water and made to germinate; it was then dried and ground, after which it was infused in a certain quantity of water, and the whole fermented. Ale was formerly regarded in England as a necessary of life, and various ordinances or assizes have been passed for regulating its price and quality. Thus, in 1251, during the reign of Henry III., an assize of bread and ale was struck, which settled the price of the latter article as follows: "A brewer may sell two gallons of ale for a penny in cities, and three or four gallons for the same price in the country." The penny of that time was worth about six cents of our currency. Ale, as now distinguished from porter and small beer, is prepared from pale malt, and, except in the case of bitter ale, a comparatively small proportion of hops. Strong ale is made from the best malt and the finest kind of hops. The fermentation is allowed to proceed slowly, until the yeast is exhausted and perfectly separated. The Scotch ales are remarkable for the very small quantity of hops which they contain. Strong ales contain from 5½ to 10 per cent., by weight, of alcohol. They also contain, besides the saccharine matter, alcohol, and a bitter principle—a proportion of lactic acid, especially when old and hard. Lager beer contains from 4 to 6 per cent. of alcohol. There are debilitated conditions of the system, nervous prostration, dyspepsia, etc., in which good table beer, small beer, or lager beer taken in moderation, and with discretion, may be useful, providing malt liquor agrees with the patient. The beer is a gentle stimulant and tonic, and the bitter principle assists to maintain the tone of the stomach. All malt liquors are much healthier kept in bottled form, unless they can always be drawn from a cask just opened. Lager beer becomes stale or hard in a few hours after the cask is tapped, and ale in a few days, and hard or stale ale or beer is always injurious.

Some people on this account habitually add a small portion of carbonate of soda to their malt liquor, but the practice is most hurtful, and rapidly debilitates the stomach, and deteriorates the blood.

Though ale and beer are often prescribed for the delicate, and in convalescence, with good results, it is not usually a healthy beverage for the robust, but for those who *will* use stimulant in some form, the malt liquors and lighter wines are undoubtedly the best; though the constant use of them by the healthy or robust—for whom a stimulant or tonic is unnecessary—is pernicious.

India bitter beer agrees with some, and the great amount of bitter it contains, acts as a powerful tonic to weak stomachs, but for this very reason, its use ought not to be persevered in long at a time. The amount of spirit it contains is not large, but the narcotic properties of the hop are apt to affect the head. It is lighter than the more saccharine ales. Malt liquors or ale and beer never agree with those who are liable to gout or gravel, and if their use be continued, they are almost certain to induce a paroxysm of either of the diseases; the slightest degree of acidity or hardness aggravates their bad effects, tenfold. A single glass of hard ale is sufficient to induce an attack of gravel in the predisposed. Those who suffer from plethora, and consequent head symptoms, from chronic cough, or oppression of breathing, from gout, gravel, or habitual acidity of the stomach, should never touch either ale or beer.

It should be remembered there is a limit to the use of tonics of any kind, and bitter tonics, if taken regularly for a length of time, may tend rather to weaken than to strengthen the digestive powers, On this account it is to be feared that the now fashionable "bitter beer," and lager beer, although good tonics in some states of the system, will, if taken too continuously, tend rather to mischief than to benefit.

Ale or beer is usually most beneficial, taken before or with meals, and before retiring, when it induces sleep. Lager beer is preferable to ale, as it contains a smaller per cent. of alcohol (See ALCOHOL, STIMULANTS; STIMULANTS, ALCOHOLIC; TONICS, PORTER.)

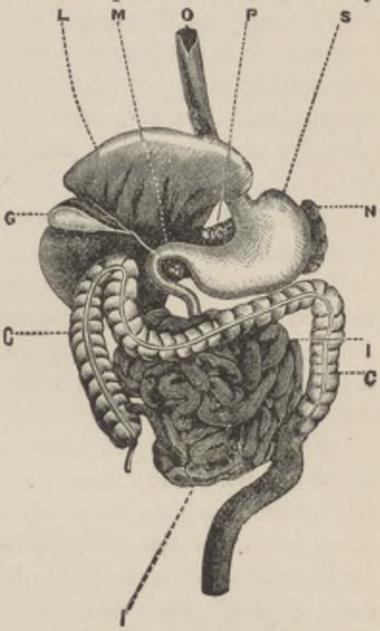
ALETRIS, *a-lé-tris*, Unicorn root, belongs to Nat. order *Liliaceæ*. Known as star grass, colic root, ague root, crow corn, etc. Indigenous to North America. When dried is used as a bitter tonic; useful in dyspepsia, hysteria, flatulence, and also as a uterine tonic. The resinous extract is called *Aletrin*. Dose of extract, 1 to 2 grains every four or six hours; powdered root, 5 to 10 grains three times a day; tincture, 5 to 15 drops in water every four or six hours.

ALGÆ, *al'-jee* [Lat. sea-weeds], in Bot., comprehends the sea-weeds and the multifarious green vegetable forms of simple cellular structure met with in fresh water and in permanently damp situations. The humblest members of the vegetable kingdom belong to this class. Algæ are flowerless, and consequently seedless. They are propagated in various ways by reproductive particles, called spores or sporules. The class comprehends a vast variety of plants, exhibiting a wonderful multiplicity of forms, colors, sizes, and degrees of complexity in structure. Professor Bentley roughly estimates the number of species of algæ at 2,500. Many are used for food in different parts of the world, their nutritious properties being due to the presence of starch, mannite, mucilage, albumen, and glucose. The ashes of several kinds of sea-weeds form *kelp*, formerly extensively used for the preparation of carbonate of soda. Iodine is also obtained from sea-weeds. None of the plants in this great class are known to be poisonous.

ALIMENT, *al'-e-ment* [Lat. *alimentum*, from *alo*, I nourish]. Any substance that is capable of nourishing the body may be termed aliment. Every aliment must be derived from either the animal or vegetable kingdom, as the capacity of affording nourishment to the animal system would appear to belong exclusively to organized matter, or that which has possessed life. Nevertheless, certain substances appertaining to the inorganic kingdom, although incapable of themselves to form an aliment, have yet the power, when taken in conjunction with aliments, of assisting in the process of nutrition. These inorganic substances are principally water, salt, lime, etc. Aliments have been distinguished into nine classes. The first, or *Farinaceous* class, includes barley, wheat, oats, rice, maize, potatoes, haricots, lentils, peas, etc. The second, or *Mucilaginous* class, comprehends melons, cabbages, turnips, beet-root, carrots, asparagus, etc. The third, or *Sweet* class of aliments, includes dates, apricots, dried grapes, figs, the various sorts of sugars, etc. In the fourth, or *Acidulous* class, are grapes, strawberries, raspberries, mulberries, pears, prunes, apples, cherries, oranges, gooseberries, etc. In the fifth, or *Fatty* class, there are animal fats, oils, butter, cocoa, nuts, walnuts, olives, sweet almonds, etc. The sixth, or *Caseous* class, includes the various sorts of milk, cheese, etc. In the seventh, or *Gelatinous* class, there are several kinds of fish, the flesh of young animals, calf's-foot, etc. In the eighth, or *Albuminous* class, there are included brain, eggs, etc. The ninth, or *Fibrinous* class, comprehends the flesh and the blood of various animals. To these nine divisions a tenth may be added, comprehending the *Condiments*, as pepper, salt, mustard, vinegar, horseradish, etc. Certain liquids, or *Drinks*, should also be reckoned among the aliments, as water of various kinds (spring-water, well-water, river-water), the infusions of tea and coffee, the various kinds of fermented liquors, as cider, perry, beer, wine, etc.; the alcoholic liquors, as gin, whiskey, brandy, etc. As a rule, aliments require to be prepared by cooking, so as to be made more agreeable to the palate, or more easy of digestion, but few aliments being used in an undressed or natural condition. Amid the great variety of nutrient materials with which man has been furnished by his Creator, it is by no means a matter of indifference which he selects. The first point is to be certain that the aliment used contains all the principles required to support health and strength. In a mixed diet, this is tolerably sure to be the case; but not so when the food is restricted to one or two articles; and most grievous mistakes have occurred on this point.

Some alimentary substances contain within themselves whatever is required for the nourishment of the animal body; of these, albumen, milk, bread, are examples. Others, such as jelly, arrow-root, sugar, contain only parts of the elements required for proper nourishment, and could not of themselves support life. Children have actually been partially starved to death on arrowroot mucilage, made with water and sugar alone, whilst those around considered them to be receiving full nourishment. At the same time, even in the case of a single nutrient compound, such as albumen, containing all requisite principles, experience has shown that it alone is unfit to preserve health and strength. The whole alimentary system requires the stimulus of change. Aliment, before it can actually enter the system, must all be reduced to the state of liquid. Some persons err in diluting their food too sparingly, but more err in the opposite direction. Aliment may be very nutritious, but difficult of digestion. This question, however, falls more fitly under the head of diet. (See FOOD, DRINKS, DIET, BREAD.)

ALIMENTARY CANAL, *al-e-ment'-a-re ka-nal'* [Lat. *alimentum*, nourishment, food]. Alimentary canal is the name given to that great canal or conduit in animal bodies through which the food passes from the mouth to the anus. It distinguishes animal from vegetable life, plants having no common receptacle for their food, nor canal for carrying off the excrements. In the human subject, it comprises the pharynx, œsophagus or gullet, stomach, and large and small intestines, being, in a full-grown individual, nearly forty feet in length. The œsophagus extends from the throat to the stomach, which it enters towards its larger extremity, passing down the posterior part of the chest. From the smaller extremity of the stomach proceeds the first portion of the small intestines, named the duodenum, divided, however, from the stomach by the pyloric valve. The small intestines, divided normally into two more portions, jejunum and ileum, extend in a continuous coil to the length of about twenty-five feet, and then enter the large intestine in the right iliac region. The opening of the small intestine into the large, is slit-like, and is protected by a valve. The large intestine or colon, five feet long, ascends from where it is entered by the smaller gut, as high as the under surface of the liver, it then passes across the abdomen, and descending, after making a peculiar turn, ends in the rectum or vent-gut. The calibre of the colon is much greater than that of the small intestine, and it is thrown into succuli or folds by three longitudinal muscular bands. As soon as food reaches the back of the throat, it passes from the power of the voluntary to that of the involuntary muscles, and is conveyed into the stomach by a regular wave-like action of the muscular gullet or œsophagus. When persons eat too fast, and one morsel is passed into the throat too quickly after the other, this regular muscular action becomes spasmodic, producing a very painful sensation. The mass of food from a meal, being collected at the larger end of the stomach, is there mixed with gastric juice, and converted into a pulpy gray-looking mass, the chyme, which, as it is formed, is propelled towards the pyloric or smaller extremity, by successive wave-like motions of the organ. At the pyloric valve, all well-digested food is allowed to pass, but in the healthy stomach, any portions which are not thoroughly softened, are stopped, and passed back into the organ. The food, having passed through the pylorus into the upper part of the small intestine, quickly becomes mixed with the bile, which flows into the duodenum from the liver by its proper duct, and also with the pancreatic juice. The mass of chyme is now propelled forward by a worm-like motion of the small intestines, the nutrient portions being absorbed from it as it passes onward, by the lacteal vessels. The lining membrane of the intestines is thrown into folds to increase the surface to which the chyme is exposed. Having traversed the small, the chyme is discharged into the large intestine, or colon, through the slit-like valve, and here the contents of the bowels thought by some to undergo a kind of second digestion, assume the feculent character. After yielding up in the colon the remains of nutrient matter, the mass is discharged through the rectum and anus. The




THE ORGANS OF DIGESTION.

O, Œsophagus. I, Small Intestines.
S, Stomach. C, Large Intestines.
L, Liver. P, Pancreas.
M, Pylorus. N, Spleen.
G, Gall-Bladder.

whole of these movements are effected by the muscular powers of the alimentary canal itself. The main object of the alimentary canal is, most undoubtedly, the digestion of food, but this is not its only office, it is one of the great and important drains and sewers of the body, and into it is cast a large proportion of the used-up material of our frames, which would be hurtful if retained, particularly so in illness, such as fever. The fact is a cogent one, why at all times the bowels should be kept clear, and will explain to people, wherefore, during illness, even when food is not taken, and when they often think and say, "there can be nothing in a patient," the medical attendant is so careful to keep this great drain, the alimentary canal, clear of its noxious contents. (See ABDOMEN, ABSORPTION, DIGESTION, STOMACH, INTESTINES, CATHARTICS, ETC.)

ALISMA PLANTAGO, *a-lis'-ma plan'-ta-go*, water plantain. Sometimes called mad-dog weed. Belongs to the Nat. order *Alismaceæ*. It inhabits North America and Europe. The root was formerly considered efficacious in hydrophobia. An infusion of the dried leaves has been used with good effect in urinary diseases. Dose of the infusion, 4 to 6 ounces three times a day (See INFUSION); of the powdered leaves, 1 or 2 drams. The fresh powdered leaves produce vesication.

ALKALI, *al'-ka-li* [Arab. *al-kali*, soda], a name applied to a class of bodies which neutralizes acids, more or less perfectly, and thus forming by the combination a salt that differs from either of its components. They are characterized also by their acridity and caustic property, and by their action on vegetable colors. Nitrate of potash or saltpetre is a compound of potash and nitric acid. The ancient chemists included only three substances under this name—vegetable alkali, or soda; mineral alkali, or potash; and volatile alkali, or ammonia. To these, modern chemists add three alkalis proper—lithia, cæsia, and rubidia, and the alkaline earths—lime, strontia, baryta, magnesia, and a number of others too rare to need mention. With the exception of ammonia, these alkalies are all oxides of metals, called alkaline and alkaline-earth metals. The pure form of these oxides is called the caustic state, from the burning properties possessed by them all when not combined with any acid. When they are in combination with carbonic acid, which is a very weak acid, they are said to be in their mild form, and still preserve, in a minor degree, many of their characteristics as alkalies. Many vegetable substances—such as bark, opium, nightshade, and others—possess crystalline principles which, from behaving like alkalies, have been named alkaloids. Quinine, morphine, and atropine, are examples of these. Most of these form salts with acids; for instance, we have disulphate of quinine, acetate morphine, and so on. In Medicine, alkalies and their carbonates, when taken internally, act chemically in counteracting or neutralizing acidity in the stomach or bowels. When absorbed into the system, they serve to diminish acidity of the secretions. They tend, also, to allay irritation, and are thus useful in certain kinds of cutaneous eruptions; but their frequent use is injurious. (See POTASH, SODA, AMMONIA, ETC.)

ALKALIES, POISONING BY, *al'-ka-lize.* The alkalies are: Potash, soda, and ammonia, or common smelling-salts, with their principal preparations—pearlash, soap lees, liquor potassæ, nitre, sal prunella, hartshorn, and sal-volatile. Alkalies are seldom taken or given with the view of destroying life. They may, however, be swallowed by mistake.

*Symptoms* produced in those who have swallowed them: There is at first a burning, acrid taste in, and a sensation of tightness round the throat, like that of strangling; the skin touched is destroyed; retching, mostly followed by actual vomiting, then sets in; the vomited matters often containing blood of a dark brown color, with little shreds of flesh here and there, and always changing vegetable blue colors green. There is now great tenderness over the whole of the belly. After a little while, great weakness, with cold, clammy sweats, a quick weak pulse, and purging of bloody matters, takes place. The brain, too, mostly becomes affected.

*Treatment.*—Give two tablespoonfuls of vinegar or lemon-juice in a glassful of water every few minutes until the burning sensation is relieved. Any kind of oil or milk may also be given, and will form soap when mixed with the poison in the stomach. Barley-water, gruel, arrow-root, linseed-tea, etc., are also very useful, and should be taken constantly, and in large quantities. If inflammation should take place, it is to be treated by applying leeches and warm poppy fomentations to the part where the pain is most felt, and giving two tablespoonfuls of the following fever-mixture every few hours: Mix a dram of powdered nitre, 2 drams of carbonate of potash, 2 teaspoonfuls of antimonial wine, and a tablespoonful of sweet spirits of nitre, in half a pint of water. The diet in all these cases should only consist of arrow-root or gruel for the first few days, and then of weak broth or beef-tea for some time after. When very strong fumes of smelling-salts have in any way been inhaled, there is great difficulty of breathing, and alarming pain in the mouth and nostrils. In this case let the patient inhale the steam of warm vinegar, and treat the feverish symptoms as before. See POISONS AND THEIR ANTIDOTES.)

ALKALINE BATHS. (See BATHS.)

ALKALOIDS, VEGETABLE, *al'-ka-loid*, [Arab. *alkali*, Gr. *eidosi*, likeness]. The discovery of these substances is one of the most remarkable of modern chemistry. They are all salifiable bases, found in various vegetable substances, and are similar in their actions to the mineral alkalies mentioned above, uniting with acids to form salts. They are violent poisons, highly nitrogenous, sparingly soluble in water, but more so in alcohol and dilute acids. They are prepared by boiling the substance containing them in dilute hydrochloric acid, neutralizing by a mineral alkali when the alkaloid is precipitated in an insoluble form. The following is a list of the principal vegetable alkaloids, and the substances from which they are derived. They are of the greatest value in Medicine, the exhibition of the fraction of a grain being attended with the most marked curative results. They are often found in books with the termination *ine* instead of *ia*.

Morphia, from opium.
Quinia, Cinchonia } from Peruvian bark.
Strychnia, from nux vomica.
Veratria, from hellebore.
Atropia, from belladonna.
Nicotia, from tobacco.
Aconitia, from aconite.

ALLIUM, *al'-le-um* [Lat. *garlic*], in Botany, a genus of plants belonging to the Nat. order *Liliaceæ*, the lily tribe. Many species are very familiar plants, being largely cultivated for the sake of their nutritious and piquant bulbs; such are *Allium Cepa*, the onion; *A. sativum*, the garlic; *A. Porrum*, the leek; and *A. ascalonicum*, the shalot. All the species are characterized by a strong, and, to most people, an extremely disagreeable odor. The substance which gives the garlic and onion their pungent smell and flavor is a compound oil, called by chemists *sulphide of allyle*. In America and England the onion is used much more frequently than any other species. In France the garlic is held in great esteem, and employed to flavor almost every savory dish. In Spain and Portugal the two bulbs are employed rather as every-day articles of food than as mere condiments; while the Arab, Moorish, and Ethiopian tribes are even greater devourers of garlic and onions than the inhabitants of the Peninsula. The different species of allium, when cultivated in warm climates, lose much of their pungency; hence the mild flavor of the Spanish onion. The bulb of the common garlic, *Allium sativum*, though rarely used by the medical practitioner, is known to have properties which might render it a valuable agent in the treatment of some diseases. When taken internally, it is tonic, stimulant, expectorant, and diuretic. Externally it acts as a local irritant and resolvent, and is employed as an antispasmodic liniment for infantile convulsions. (See ONION.)

Alnus Rubra. (Tag Alder.)

ALLOPATHY, *al-lop'-a-the* [Gr. *allos*, other, or different, and *pathos*, disease], is a term used to denote the method of curing disease by means of remedies which are believed to act contrary to the nature of the disease sought to be cured. It is applied to the ordinary system to distinguish it from Homœopathy.

ALLSPICE, *awl'-spice*, the dried unripe fruit of the *Eugenia Pimenta*, a plant of the myrtle order. It is much used as a spice, and is thought to combine the flavors of cinnamon, cloves, and nutmegs; hence its common name. It is sometimes called Jamaica pepper, from the island in which it is chiefly cultivated, and sometimes pimento. It is an aromatic stimulant and tonic, and is used in dyspepsia, flatulence, etc. The tincture of allspice has been recommended as a local remedy in chilblains. Dose of powder, 10 to 30 grains; dose of tincture, 1 to 2 drams; dose of the oil, 2 to 5 drops.

ALMOND. (See Amygdalus.)

ALMOND EMULSION, *ä'-mund e-mul'-shun*, useful for removing sunburns. Ingredients:

Half ounce of blanched bitter almonds.
Half pint soft water.

Pound the almonds in a mortar, and beat them well into the water with a silver fork. When thoroughly beaten strain off the liquid and bottle it for use. Use it as a lotion.

ALMOND PASTE, used to remove freckles, and make the skin soft and delicate. Ingredients:

One ounce of bitter almonds.
One ounce of barley flour.
A little honey.

Blanch the almonds, and reduce them in a mortar to a fine powder; add in the barley flour, and mix all into a smooth paste by adding the proper amount of honey. Use as a salve.

ALNUS RUBRA, *al'nus ru'-bra*, tag alder, smooth alder, Nat. order *Betulaceæ*, well-known shrub, growing on the borders of ponds and rivers, and in swamps. The bark is the part used in Medicine. It is alterative, emetic, and astringent. It is useful in scrofula, secondary syphilis, and some forms of cutaneous disease. The inner bark of the root is emetic. The decoction of the bark of the shrub may be used in doses of 2 or 3 ounces, three times a day. (See Decoction.)

ALOE, *al'-o* [Lat.], in Botany, a genus of monocotyledonous plants, belonging to the Nat. order *Liliaceæ*, the lily tribe. There are several species, all natives of warm climates, but capable of being cultivated in colder regions as ornamental garden plants. The leaves are succulent, and edged with spines; they yield the juice which, when inspissated, constitutes the bitter drug called aloes. The flowers are usually red, growing in a bunch at the top of the stem.

ALOES, *al'-oze.* Aloes, a drug used medicinally in small doses as a tonic, and in larger doses as a purgative and an emmenagogue. It is the inspissated juice of the leaves of various species of aloe. There are several commercial species imported, but the origin of some is not accuratelv determined. Barbadoes aloes is obtained from the species *Aloe vulgaris.* Both socotrine and hepatic aloes are probably prepared from *A. socotrina* and *A. purpurascens;* for the difference between the two kinds may be accounted for by a difference in the mode of treating the juice. Thus, when the juice from the species *A. socotrina* is inspissated by artificial heat, the product resembles socotrine aloes; but when it is allowed to dry up without the aid of artificial heat, it resembles hepatic aloes. Cape aloes is chiefly obtained from *A. piscata;* Indian aloes from *A. indica;* but the varieties known as horse or caballine aloes, Mocha aloes, and Curacoa aloes, have not been traced to their respective sources. Aloes acts chiefly on the lower bowels, where costiveness is the oftenest situated. It is employed in a variety of forms, as extract, decoction, tincture, wine, powder, pills, simple or in composition with iron, myrrh, or assafœtida. It is also used in the form of enema for dislodging small worms from the rectum. The action of aloes is certain, and except in peculiar cases, easy and safe. Three or four pills will generally cure common headache. Aloes is one of the most potent remedies in female obstructions. In pregnancy, and where any tendency to piles exists, the use of aloes is better avoided. The action of the medicine upon the stomach is, in small doses, tonic; but, as said before, the principal effect of aloes is upon the lower bowels, the movements of which it appears to excite, without increasing the discharges; it seems to act similarly to the bile, and when that is deficient, as a substitute for it. The preparations into which aloes enters are generally better provided ready made. Of the pills, the simple aloetic, the compound rhubarb, and the compound colocynth are the best; the last is the most active. Of any of these, one or two pills, three grains each, may be taken at bed-time as an average dose. The compound decoction of aloes is a most excellent form, and may safely be given when quick action is required, in 1 to 2 ounce doses. For old people, it often answers well, and is preferable to pills. It is made as follows: take of aloes, saffron, and myrrh, bruised, of each one dram and a half; extract of liquorice, 7 drams; carbonate of potash, 3 scruples; water, 30 fluid ounces. Mix the whole together, and boil down to 20 fluid ounces. Filter, and add compound tincture of cinnamon, 7 fluid ounces. Aloetic purgatives may be taken habitually for a long time without an increase of the dose being required; the continued use, however, may induce piles. Dose of fluid extract, 10 to 20 drops; dose of tincture, 1 to 2 teaspoonfuls. (See ALOIN.)

ALOIN, *al'-oin.* Aloin is the active principle of aloes. It operates invariably as a cathartic, in the dose of 1 or 2 grains, and occasionally in half grain doses. (See ALOES.)

ALOPECIA. (See BALDNESS.)

ALTERATIVES, *al'-ter-a-tivz* [Lat. *altero*, I change]. Alteratives are medicines which gradually change the varied disordered actions of the body, and restore it to its healthy or normal state, without producing any sensible effect when taken. There are not many medicines which may be regarded as solely alterative, but there is scarcely a single drug, however violent in its operation in large doses, which may not, by the proper regulation of the dose, or by its mode of preparation, be converted into an alterative. Mercury, arsenic, and antimony, may be taken as examples of this fact.

Alteratives are especially applicable to chronic diseases and passive derangements; those of an acute character requiring a more active class of remedies. In all chronic diseases, it may be laid down as a general rule, that nothing is to be gained, and that much permanent mischief may result, from the employment of violent remedies. When medicines are given with a view to their operating as alteratives, they generally require to be administered in small doses, and to be persevered in for a lengthened period, namely, for weeks, and perhaps months; the practitioner being satisfied with witnessing, at considerable intervals, an improvement, however small, in the state of the patient. A careful regulation of the diet, and a strict attention to the laws of health are indispensable auxiliaries to an alterative course of medicine. Without these, remedies can be of little avail; and though medicinal alteratives are often indispensable, still, temperance in eating and drinking, exercise, attention to the state of the skin, and to the ventilation of sleeping rooms especially, are alteratives which every one may employ. A course of medicinal alteratives should generally be left to medical direction. (See MERCURY, IODIDE OF POTASSIUM, BERBERIS AQUIFOLIUM; CALCIUM, COMPOUND ELIXIR IODO-BROMIDE OF, ETC.)

ALTHÆA, *al-the'-a* [Gr. *altheo*, I heal], the marshmallow, a genus of plants belonging to the Nat. order *Malvaceæ.* The species *A. officinalis*, the common marshmallow or wymote, is an indigenous perennial, growing in salt marshes near the sea, and on the banks of rivers, blossoming during August and September. Its flowers, which are rather large and rose-colored, are arranged, three or four together, on axillary stalks. The leaves are hoary, green, odorless, soft, and downy, having a mucilaginous taste. The whole plant abounds in mucilage, particularly the root, which is used in medicine. In France, marshmallow is a favorite demulcent. The famous *pate de Guimauve* is composed of the substances obtained from the root, with gum-arabic, sugar, and white of egg. Buchner states that the chief constituents of the marshmallow root are a fatty oil, starch, glutinous matter, uncrystallizable sugar, altheine, and mucilage. Its chief principle, *altheine*, is identical with *asparagine*. It is crystallizable, odorless, and almost tasteless. In Medicine, this plant is used as a demulcent in visceral inflammations and affections of the mucous membrane, as bronchitis, diarrhœa, etc. It is also sometimes used as an emollient in the form of a poultice or a fomentation for external sores.

ALUM, *al'-um* [Lat. *alumen*], a salt, consisting of sulphate of alumina in combination with sulphate of potash, soda, or ammonia. Alum is obtained by submitting alum-shale, which consists of alumina, iron pyrites, and coaly matter, to the action of fire in enormous heaps for one or two years. During the combustion, the sulphur of the iron pyrites (sulphide of iron) combines with the oxygen and alumina, forming sulphate of alumina, which is dissolved out of the cooled mass by water. This solution is then converted into alum, by the addition of either sulphate of potash or sulphate of ammonia, the latter being most generally used on account of its cheapness. The principal sources of alum-shale are at Hurlet and Campsie, near Glasgow, and at Whitby, in Yorkshire. Alum is also manufactured in great quantities by Spence's process from various materials derived from coal and from the coal strata. Ammonia alum is more valuable than potash alum, from containing 11.90 per cent. of alumina, which is the active ingredient, while potash alum contains but 10.82 per cent. It has taken the place of the other in the last edition of the British Pharmacopœia. Alum acts chemically as an astringent on the animal fluids and tissues. It is used externally or internally, and serves to check hemorrhage, diminish secretions, etc.; hence it is frequently given in diarrhœa. When taken internally in large doses it produces nausea, vomiting, purging, etc. Usual dose, from 10 to 20 grains. It produces contraction or corrugation of the tissues, and hence is useful as a gargle, a wash, or an injection. It is one of the most successful remedies that have been employed in lead colic. Alum is soluble in about 18 parts of water at 60°. In the form of powder it is slightly caustic. When pure it is without odor, colorless, of a sweetish, acidulous, and powerfully astringent taste. Muslin dipped in a solution of alum is rendered incombustible.

In bleeding, especially from the nose, lint dipped in a strong solution of alum, and applied to the part as a plug, will often stop the flow, or in the case of leech bites, the powder of burnt alum may be sprinkled upon the puncture. In case of wounds—where no large blood-vessel has been cut—the bleeding may be stopped by thoroughly rinsing the wound with a solution of powdered alum in half a pint of water. In the event of an individual being attacked, either with coughing up, or vomiting of dark blood, in the absence of medical assistance, alum may be given in doses of from 5 to 20 grains every two or three hours. In case of painters' colic, alum has recently been found of much advantage in doses of 10 to 20 grains every three or four hours.

A few grains of alum, agitated with the white of an egg form a coagulum, which put between two folds of muslin, is used with benefit to the bed sores of the sick. Powdered alum is a speedy emetic in tablespoonful doses, and is one of the best medicines for croup in teaspoonful doses (mixed in syrup), for a child a year old. Repeat till vomiting is produced. The best form of giving it internally is that of alum whey, made by adding 2 drams of the powder in a pint of hot milk, after which strain to separate the curd. Alum whey is an excellent remedy for chronic diarrhœa. Bathing the feet, armpits, etc., with alum water, prevents offensive sweating.

ALUM, COMPOUND SOLUTION OF; OR BATES' ALUM-WATER, is a powerful astringent lotion, composed of one ounce each of alum and sulphate of zinc, dissolved in one pint of boiling water and afterwards strained. It is used as a wash to old sores, and, diluted with rose-water, as an eye-wash and injection.

ALUM ROOT. (See HEUCHERA AMERICANA.)

ALUM WHEY. (See ALUM.)

ALVEOLAR, *al-ve'-o-lar*, belonging to the sockets of the teeth.

ALVEOLUS, *al-ve'-o-lus*, the socket of a tooth.

ALVINE, *al'-vin* [Lat. *alvus*, the belly], appertaining to the belly or bowels—as alvine discharges, concretions, etc.

AMADOU, *am'-a-doo* [Lat. *ad manum dulce*, soft to the touch], a spongy substance, generally known as German tinder, which can be ignited by a spark from a flint and steel. It is prepared by soaking thin slices of the fungi *Polyporus igniarius* and *fomentarius* in a solution of nitrate of potash (saltpetre), after they have been softened by beating with a mallet. Similar slices, not treated with the salt, are sometimes used in Surgery to give support to affected parts, and also to restrain hemorrhage. When impregnated with gunpowder, the prepared fungus forms black amadou.

AMALGAM, *a-mal'-gam* [Gr. *malagma*, that which is made soft], mercury mixed with any metal with which it will combine forms a pasty or fluid mass called an amalgam, and is, in fact, an alloy of mercury.

Amalgam for electrical machines is made by adding tinfoil in small pieces to mercury, until they form a paste.

AMARANTH, *am'-a-ranth*, Prince's feather, red cockscomb, Nat. order *Amaranthaceæ*, an annual herb, growing from three to four feet high. It is a native of the Middle States. It is an astringent. The decoction is highly recommended in menorrhagia, diarrhœa, dysentery, and hemorrhage from the bowels. It is also used as a local application to foul, indolent ulcers. The decoction may be drunk freely. (See Decoction.)

AMAUROSIS, *am-aw-ro'-sis* [Gr. *amauros*, obscure], is a blindness or obscurity of vision, proceeding from a diseased state of the optic nerve, or of that part of the brain in connection with it. It generally comes on gradually, with dimness or confusion of sight, variations of color, or the presence of floating objects called *spectra*. It is commonly occasioned by long-continued over-excitement of the organs of vision, or by sudden exposure to a bright light, or it may proceed from a disordered state of the stomach. It is also sometimes hereditary. It may be permanent, or only temporary. It is owing to congestion or chronic inflammation of the nerves connected with sight. The appearance of the eye is unaltered beyond the dilatation of the pupil, which gives it a peculiar dark, deep look, but the expression is unmeaning. A person threatened with amaurosis, first observes in the daytime, dark moats or specks floating, as it were, before the sight, at first distinct from one another, but gradually becoming connected, and forming as it were, a thicker and thicker veil, as the sight becomes obscured. In the dark, the motes or specks frequently appear luminous. Sudden flashes of light appearing, is a symptom not unfrequent; there is usually pain in the eye and head. It must not be supposed, however, that every one who sees motes or specks, is becoming amaurotic, some persons have this peculiarity of vision, either habitually or whenever the stomach is disordered.

In addition to the causes above stated, amaurotic blindness may be the result of overfulness of blood, or of the contrary condition; of indigestion; sexual excess; hysteria; gout; over-nursing, etc.

*Treatment.—Amaurosis* is to be treated by depletion, by blood-letting or cupping in the back of the neck, behind the ears, or on the temples, by counter-irritants, as blisters or setons, by purgatives, and by mercury administered in frequent doses to the extent of affecting the gums. The eye is at the same time to be kept in a state of perfect repose. All stimulants should be avoided, unless there is evidence of extreme weakness. If the patient is a nursing female, the child must be weaned at once. A person threatened with amaurosis, should immediately submit himself to skilled advice.

Amaurosis or blindness coming on without obvious cause in a person of full habit of body, is always a grave symptom, and, as in such a case, every minute may be valuable, if medical aid cannot at once be got, six or eight leeches may safely be applied to the temples, an active purgative of 20 grains of jalap, and 4 or 5 of calomel is to be given at once, and after the leeches, cold applied to the head; perfect quiet being observed, and professional advice procured at the earliest moment possible.

AMBER. (See SUCCINUM.)

AMBROSIA, *am-bro'-zhe-a*, horseweed, bitter weed, ragweed, etc., Nat. order, *Asteraceæ.* Grows in low grounds and along streams, from Canada to the Gulf States. It is used among farmers for the "slabbers" in horses. It is stimulant, astringent, antiseptic; and useful as an injection in leucorrhœa and gleet. It is an excellent application for mercurial sore mouth. Dose of decoction, 1 to 2 ounces three or four times a day. (See DECOCTION.)

AMBULANCE, *am'-bu-lanse* [Lat. *ambulo*, I walk], a term derived from the French, and applied to those moving hospitals which accompany every army, or division of an army, in the field, furnished with all the requisites for the succor of the sick or wounded. It is also applied to the wagons or carts provided for conveying the wounded from the field of battle. The latter are termed by the French *ambulances volantes*, and were first introduced in 1793, by Larrey, the celebrated French military surgeon.

AMENORRHŒA. (See MENSTRUATION.)

AMERICAN HELLEBORE. (See VERATRUM VIRIDE.)

AMMONIA, VOLATILE ALKALI, ALKALINE AIR, AMMONIACAL GAS, SPIRITS OF HARTSHORN, *am-mo'-ne-a*, is a gaseous compound, possessing the properties of the alkalies proper—potash and soda. It was known in a liquid form long before the gas itself was discovered. This was first done by Priestley, in the year 1774, who named it alkaline air. He procured it from sal-ammoniac; whence its name. Ammonia is composed of three parts of hydrogen to one of nitrogen, but it cannot be formed by the direct combination of these elements. When, however, nascent hydrogen and nitrogen are eliminated by any chemical action, a portion of ammonia is always found in the resulting compound. It is also formed during the distillation of coal in gasworks, the ammoniacal liquor produced in this way being the great source of ammonia for commercial purposes. Ammonia is easily liquefied by the combined action of a pressure of 6½ atmospheres and a temperature of 32°. By submitting this liquid to the action of solid carbonic acid, solid ammonia is produced. Ammonia, when pure, is a transparent colorless gas, with a strong alkaline taste, and a pungent, suffocating odor. It does not support either combustion or life, and inflames with difficulty. It is readily absorbed by water, which takes up 670 times its own volume of the gas, forming the liquor ammoniæ of the chemist, or liquid ammonia, as it is generally improperly called. Ammonia is found in very small quantities in the air, being evolved during the decomposition of most animal substances, more especially excrements and urine. Ammonia, diluted, and in proper doses, acts upon the system as an alkali and stimulant. It is also used by inhalation through the nostrils in cases of fainting, hysteria, epilepsy, cephalalgia, etc. Externally it is irritant and caustic; internally, in large doses, it produces irritation of the stomach, nausea, vomiting, and death. It is also fatal if inhaled alone. In the case of poisoning by the vapor of ammonia, the vapor of hot vinegar should be inhaled. Ammonia forms an infinite number of salts with the different acids, most of them similar in their properties to the corresponding salts of potash and soda.

Ammonia, Solution of Acetate of, or Spirit of Mindererus, is composed of 10 fluid ounces of acetic acid, 3¼ ounces of carbonate of ammonia, and 2½ pints of distilled water. In doses of from 2 to 6 teaspoonfuls it is given as a refrigerant in fevers and inflammatory diseases. As a diaphoretic, its operations should be promoted by the use of tepid diluents and external warmth. Diluted with water. it is also sometimes used as a lotion to inflamed or bruised parts.

Ammonia, Benzoate of, is composed of 3 fluid ounces of solution of ammonia, 2 ounces of Benzoic acid, and 4 fluid ounces of distilled water. It is used as a diuretic, and in inflammation of the bladder, to counteract an alkaline state of the urine. Dose, from 10 to 20 grains.

Ammonia (Carbonate of), Sal-Volatile, or Smelling Salts.—The sesqui-carbonate of ammonia is a volatile and pungent ammoniacal salt, produced by submitting a mixture of sulphate of ammonia or chloride of ammonium and carbonate of lime to sublimation. A solution of carbonate of ammonia, consisting of ½ ounce, dissolved in 10 fluid ounces of distilled water, is used as an antacid, stimulant and diaphoretic, and in large doses as an emetic. Dose, 5 to 15 grains; as an emetic, 30 grains.

Ammoniæ Aqua, Ammonia (Liquid), Ammoniæ Liquor, Ammonia (Solution of).—The solution of gaseous ammonia in water is called by all the above names. It is a colorless transparent liquid, having a characteristic pungent smell, a burning caustic taste, and a strong alkaline reaction. At its greatest strength, its specific gravity is .850, and it can only be kept in closely stoppered bottles. It is made by passing the gas through distilled water kept near freezing-point by means of ice. It is of great use in the laboratory as a reagent, dissolving many oxides and salts insoluble in water. It is employed in Medicine as a stimulant. There are two degrees of strength used—the liquor ammoniæ fortior of .850. and the ordinary liquor ammoniæ, or spirits of hartshorn, of .960. Mixed with oil, with which it forms a soap, it is used as a rubefacient, under the name of soap-liniment. Dose, 10 to 20 drops, diluted with water.

Ammonia, Solution of Citrate of, is composed of 3 ounces of citric acid, 2¾ fluid ounces of strong solution of ammonia, and 1 pint of distilled water. Its properties and uses are similar to those of solution of acetate of ammonia, but it is more pleasant to the taste. Dose, 2 to 6 teaspoonfuls.

Ammonia, Hydrochlorate, or Muriate of, Chloride of Ammonium, or Sal Ammoniac, is a compound of hydrochloric acid and ammonia, $NH_4Cl$. It is used as a diaphoretic, diuretic, purgative, and emetic. Externally, when dissolved along with an equal quantity of nitre, it forms an excellent refrigerant lotion. It is also used as a discutient for dispelling tumors.

Spirits of Ammonia are stimulant and antispasmodic. Ammonia is adapted for speedily rousing the action of the vascular and respiratory systems, and for the prompt alleviation of spasms. As an internal and external remedy to obviate the sequelæ of the bite of rabid animals, venomous insects and reptiles, its power is well known. By way of inhalation, it is administered when it is desired to make a strong impression on the nervous system, in cephalalgia, hemicrania, and faintness or collapse. Dose, 30 to 60 drops, diluted with water.

Ammonia, Aromatic Spirits of, stimulant and alexipharmic. Medicinal properties bear a close resemblance to those of the simple spirits. It is a weaker preparation, and has the preference with physicians on account of its grateful taste and smell. In languor, syncope, hysteria, and nervous debility, it proves very serviceable. In the flatulent colic of children, 2 to 5 drops in milk, it affords more speedy relief than any other remedy. In sick headache, heartburn and acidity of the primæ viæ, it proves speedily effectual. Dose, 30 to 60 drops, diluted with water.

AMMONIACUM, *am-mo-ni'-a-kum*, a fetid gum resin, which exudes from the stem of an umbelliferous plant known to botanists as *Dorema ammoniacum*, growing in Persia and the adjacent parts of Asia. It is occasionally prescribed as an expectorant, and is applied externally to promote the absorption of tumors and chronic swellings of the joints. Dose, from 10 to 20 grains.

AMMONIUM, *am-mo'-ne-um*. The existence of a hypothetic compound metal called ammonium, and having the constitution $NH_4$, has been assumed as the only method of explaining the perfect analogy that exists between the salts of ammonia and those of the various metals. An equivalent of ammonia united to an equivalent of water, is supposed to form the oxide of this metal, $NH_3 \times HO$—$(NH_4)O$, corresponding to potassa, the oxide of potassium, KO. (See Ammonium, Iodide of.)

AMMONIUM, IODIDE OF, alterative, tonic, anti-syphilitic, and sometimes acting as a diuretic. It closely resembles the iodide of potassium, but is more powerful.

Dr. Dunglison observes: "It was introduced into medical practice by M. Biett, of Paris, as a valuable therapeutical agent in certain diseases of the skin. Several successful cases of its employment in lepra and psoriasis, by M. Biett, are given by Dr. Pennock."

Dr. Waring remarks: "It appears especially adapted to syphilitic affections of the skin. In syphilitic affections it was first employed by Dr. B. W. Richardson, who reported favorably of its operation. More recently it has been systematically tried by Dr. Gamberini, who considers: 1. That it is suitable for all cases in which the iodides of potassium and sodium are employed. 2. That it leads to a rapid cure. 3. That there is great tolerance of the remedy. 4. That employed in friction with olive oil (3 grains to 2 ounces of the oil), it causes the disappearance of nocturnal syphilitic pains. 5. That under its internal use indurations consecutive of chancre, disappear, as do also indurated glands of the groin. 6. That arthralgia, rheumatoid affections, periositis, enlarged glands, and papulo-vesicular eruptions, are forms of syphilis most readily cured by this salt. 7. The signs of intolerance are a sense of burning in the throat, and heat of the stomach, but these rapidly disappear on the suspension of the medicine for a couple of days. It seems well worthy of a more extended use. In scrofula, attended with glandular enlargement, in incipient consumption and in chronic rheumatism, Dr. Richardson used the iodide with advantage. In enlarged tonsils, he found a solution of iodide of ammonium half a dram, in glycerine one fluid ounce, very efficacious. It was applied at night with a camel's hair brush." Dose, 1 to 3 grains.

AMOMUM, *ă-mo'-mum*, in Botany, a genus of plants belonging to the Nat. order *Zingiberaceæ*, the Ginger family. Several species have aromatic seeds, which are used medicinally and as spices in many parts of the world. *A. meleguela* is a native of Western Africa, and yields the so-called grains of Paradise, or Guinea pepper, used in this country in veterinary medicine, and for giving pungency to beer, wine, spirits, and vinegar. Most of the fruits called cardamoms, so largely employed in medicine as stimulants, are produced by plants included in this genus;

thus *A. cardamomum* yields the round cardamoms; *A. maximum*, the Java; *A. Korarima*, the korarima; and *A. globosum*, both the large and small round China cardamoms.

AMPELOPSIS, *am-pe-lop'-sis*, American ivy, Virginia creeper, Nat. order *Nitaceæ*. Grows throughout the United States. The bark and twigs are the parts used. It is alterative, tonic, astringent, and expectorant. It is used in the form of syrup in bronchitis and other pulmonary complaints. Dose of syrup or decoction, 2 ounces three or four times a day.

AMPUTATION, *am-pu-ta'-shun* [Lat. *amputo*, I prune or lop off], in Surgery, is a term employed to denote the operation of cutting off a limb or some part of the body. The human frame is so constituted that if one member be diseased, the whole body suffers with it; and frequently the life of an individual may depend upon the removal of an injured or diseased member. The ancients, while they saw the necessity of cutting off a limb, shrank from the operation with dismay, for they knew of no means of stopping the hemorrhage but red-hot irons and boiling oil of resin; and hence, besides the suffering entailed upon the patient, their operations were seldom successful. The advance of modern surgery is here very marked, not only in the improved methods and appliances for operating, but, from their increased knowledge of the human body, surgeons are now able to determine with far greater accuracy when an operation is necessary, or, by a minor operation, are able frequently to save a limb, little or at all impaired, which, even half a century ago, would have been ruthlessly sacrificed; while the recent introduction of anæsthetics has been of inestimable value to the patient. The term is usually confined to operations on the limbs or extremities, for operations on other parts the term "excision" is more commonly used. An amputation may be performed by what is termed the circular, the double-flap, or the single-flap operation. In proceeding to amputate, the patient is first placed in a convenient position, and the main artery is compressed by the tourniquet (see TOURNIQUET) or by the hand of a skilled assistant. The circular operation is performed by first detaching the skin a short distance below where the amputation is to be made. It is then drawn upwards, and the muscles divided down to the bone, which is then sawn through. The arteries are then seized with a small forceps, drawn slightly out, and secured by a thread torsion, or acupressure (q. v.), after which the skin is brought over the wound, and either stitched or held together by strips of adhesive plaster. The double-flap operation differs from the above, in that the skin and muscles are cut down in a slanting manner, on opposite sides, so as to form two flaps, which are then drawn up, and the knife carried round the bone, dividing any flesh that may still be adhering to it; after which the surgeon saws the bone. It is objected to this method, that it makes a greater wound, and that the arteries, from being cut obliquely, will be less securely tied; but it is in favor with many, who maintain that there is little force in these objections, and that they are more than compensated for by the greater protection afforded by the flaps to the bone. The single-flap operation is seldom resorted to, unless where a portion of the limb is destroyed on one side, and it becomes necessary to take the flap from the opposite side.

AMUSEMENT. (See EXERCISE, PLEASURE, RECREATION, ETC.)

AMYGDALIN, *a-mig'-da-lin*, a white crystalline solid, found in bitter almonds, peach-kernels, and laurel-leaves. By the action of the alkalies, amygdalic acid may be formed. Sweet almonds contain no amygdalin. (See AMYGDALUS.)

AMYGDALUS, *a-mig'-da-lus* [Gr. *amygdale*, almond], a genus of plants belonging to the Nat. order *Rosaceæ*. The typical species is *Amygdalus communis*, the almond-tree, of which there are two varieties; namely, *A. communis* var. *dulcis*, yielding sweet almonds, and *A. communis*, var. *amara*, which produces bitter almonds. The almond-tree grows wild in Syria and other parts of Asia, also in northern Africa, and is extensively cultivated in the southern parts of Europe. In England it is grown more for the sake of its early spring blossoms than for its fruit, which seldom comes to perfection. A fixed oil, commonly known as oil of almonds, is obtained by expression from sweet almonds, and the residue, which contains gum, vegetable albumen, and emulsion, is sold under the name of almond-powder. Bitter almonds yield a similar oil. They also contain emulsion, and, in addition to this and the other constituents of sweet almonds, a nitrogenous substance, called *amygdalin*. When bitter almonds are moistened with water, the emulsion and amygdalin mutually react upon each other, and form a poisonous volatile oil, which is known as the essential oil of bitter almonds, and which is used, in small quantities, for flavoring custards and pastry, also for scenting soaps. *Amygdalus persica* is the peach-tree of our gardens, and a variety of the same species produces the nectarine. Peach-blossoms have been employed in Medicine as a vermifuge, and the kernel of the fruit may be used for the same purposes as the bitter almond. (See AMYGDALIN.)

AMYL, *am'-il* [$C_{10}H_{11}$], a compound radical, discovered by Frankland, by acting on iodide of amyl with zinc. It is an oily liquid, boiling at 311°, and homologous with methyl, ethyl, etc. Like them, it forms an oxide or ether, and a hydrated oxide, or alcohol.

Amylic alcohol, $C_{10}H_{12}O_2$, is formed during the distillation of common alcohol from grain or potatoes by the decomposition of the starch contained in them; hence its name. The fusel, or fousel oil of potato-spirit, consists almost entirely of amylic alcohol. It is this substance that gives to many spirits their noxious properties. It may be easily recognized by rubbing a few drops of the spirit on the hands; the vinous alcohol and water evaporate first, leaving the amylic alcohol behind, which is easily recognized by its characteristic odor. It gives to spirits a fiery acrid taste, and is most commonly found in inferior rum and whiskey. When distilled with dilute sulphuric acid and bichromate of potash, it yields valeric acid, the salts of which are much used in Medicine. Heated with dry phosphoric acid, a hydrocarbon, called amylene, is formed, which has been much used as an anæsthetic.

AMYLUM, *am'-e-lum*, starch of wheat. (See STARCH.)

ANA. (See A.)

ANACYCLUS, *an-a-si'-klus* [Gr. *ana*, in the form of, and *kyklos*, a circle], in Botany, a genus of plants belonging to the Nat. order *Compositeæ*. The root of *A. pyrethrum*, pellitory of Spain, is employed in Medicine as an energetic local irritant and sialagogue, its properties depending on the presence of a volatile oil. (See SIALAGOGUES.)

ANÆMIA. (See CHLOROSIS.)

ANÆSTHESIA, *an-es-thé-ze-ą* [Gr. *a*, not, *aisthesis*, perception], loss of the sense of touch. Diminished or lost sense of feeling. When numbness occurs without obvious pressure, it shows a tendency to a paralytic state, and should be watched. There is sometimes a total loss of the sense of touch, mostly partial, but sometimes general, over the whole surface of the body. (See ANÆSTHETICS).

ANÆSTHETICS, *an-es-thet'-iks* [Gr. *a*, privative, and *aisthanomai*, I feel]. Anæsthetics are those agents which produce insensibility to pain in the whole or part of the human body, usually by acting on the nervous system. The most familiar instance of anæsthesia is that produced by an overdose of alcohol, in the case of drunken people, who become utterly insensible to pain. Nitrous oxide, or laughing-gas, was the first anæsthetic which was used for the production of insensibility to pain under surgical operations, having been first suggested by Sir H. Davy, and first employed by Dr. Wells, an American, in 1844. In 1846 Dr. Morton, of Boston, a former pupil and partner of Dr. Wells, introduced sulphuric ether as an anæsthetic, and it came rapidly into use. In November, 1847, the anæsthetic effects of chloroform were discovered by Sir James Y. Simpson, and it at once came into general use.

CHLOROFORM.—The injurious effects attributed to it are so few and far between as to be as nothing compared with the benefits which it has conferred. Countless lives have been saved by it, and operations have been performed under its influence, that surgeons would not have dreamt of attempting before its introduction. Various other agents have been used as anæsthetics. Indeed there is reason to believe that they were not unknown to the ancients, and that mandragora was used for this end. In China, a preparation of hemp or ma-yo is said to have been used 1,500 years ago to annul pain in surgical operations. The effects of cold to produce insensibility to pain are well known, and hence local anæsthesia is frequently brought about by some freezing mixture, as pounded ice and salt. Ether spray is also used for the same purpose. A new anæsthetic, chloral, has of late years been introduced.

Chloroform should never be given but by a duly qualified person, and certainly should never be administered by any one to himself. There are a great number of chloroform "inhalers" used at present, but the fact is that none of them are to be recommended, and that the simplest method is the best. The patient ought to lie down, to keep his eyes shut, and breathe freely; any tight article of dress round the throat or chest should be loosened; about 2 drams of chloroform should be sprinkled over a folded towel, which is to be lightly applied over the patient's face, and afterwards, when this is partially evaporated, 1 dram should be added from time to time, till insensibility is produced. How much chloroform should be given can only be determined by an experienced person, who tests the sensibility of his patient by opening the eye and touching it, by raising the arms and letting them fall again; thus judging if the muscles are relaxed; or by otherwise testing his patient's power. Many patients, before getting quite under the influence of chloroform, struggle violently, and require to be restrained by one or two assistants, but the administration should be continued till this is overcome, which it speedily will be, the patient then generally passing into complete insensibility. The uninitiated ought to know that patients often shout, and even appear to suffer great pain, when they are quite unconscious, and that there are great differences exhibited by different people in the way in which they are affected by the drug. When it is desired to relax the muscles entirely, as, for instance, to allow of the reduction of a dislocation, it will be necessary to produce even a more decided effect than is required for a painful operation, as the amputation of a limb, the removal of a tumor, etc. On such occasions, the administrator of the chloroform most attentively and momentarily watches the condition of his patient. It cannot be too emphatically repeated that care and experience are the two great requisites in the giving of chloroform. Another mode, which deserves notice on account of its simplicity, and which is in great favor, though, in the writer's opinion, inferior to the above-mentioned method, is to protect the nose of the patient by smearing a little glycerine or cold cream over it, then to spread a handkerchief over the face, and drop the chloroform, drop by drop, over the part just below the nostrils. Bottles are to be had with stoppers adapted for this dropping process. This has certainly the advantage of being a more economical method, but it is not so safe, nor so convenient as the other. Should it unfortunately happen that a person has inhaled too much, or at all events does not appear to rally from the stupor, or should he, during the administration cease to breathe, with a low or absent pulse, livid lips, and all the symptoms of suspended animation, then no time is to be lost, for on the energy and promptitude displayed within the next few seconds or minutes will depend, in all probability, the issue of the case. The head must be kept low, the face should be slapped smartly with a towel dipped in cold water, ammonia at once applied to the nostrils, and artificial respiration commenced, by pressing upon the chest, so as to expel the air, and then allow it to expand again of itself. This should be repeated at the rate of about thirty to forty times per minute (nearly double the ordinary rate of respiration), the surface of the body over the region of the heart being rubbed with a brush, or with the hand, warm blankets, or bottles, or hot bricks applied to the hands and feet, and the galvanic battery (which ought always to be in readiness where chloroform is frequently given) should be applied, to promote artificial respiration, in conjunction with the means mentioned above. The restoration of the pulse, the re-appearance of the healthy color of the lips and countenance, and, above all, the breathing of the patient, or his showing any sign of returning consciousness, will be hailed with joy, and if there still remains great prostration, a little brandy and water, or wine, may be given at intervals.

As a rule, it may be said that no patient with disease of the brain, or with organic heart disease, or with much obstruction to the breathing, from disease of the lungs, ought to have chloroform. It should also be given with extreme caution to young infants (in whom insensibility is very quickly produced by using a very small quantity) to persons advanced in life, and to persons of feeble vital power.

It need scarcely be said that many operations which formerly were very troublesome of performance, especially upon children, are now rendered comparatively easy, by the use of chloroform, many operations also requiring great nicety of manipulation, and almost impossible, without the co-operation of the patient—a co-operation never to be obtained in the case of children, and even of some grown-up people—can be performed with the greatest ease, and without any trouble on the part of the surgeon.

Finally, it would be impossible to omit mention of the great value derived from the use of chloroform in childbed, and more especially in those cases of great difficulty and urgency occurring every now and then in the experience of all practitioners. For its introduction and use in this, as well as in all other departments of Medicine, the world is indebted to the distinguished professor of midwifery in Edinburgh, Dr. Simpson, whose genius has devised, and whose indefatigable energy has brought into general use this, which must rank first among the many improvements he has brought to bear upon the practice of Medicine and Surgery.

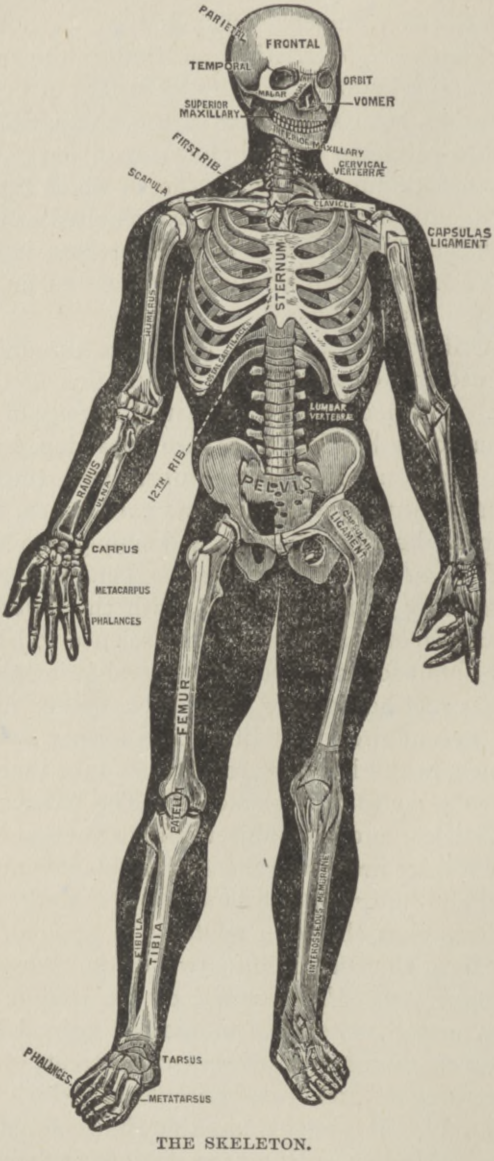
Although in England chloroform has been exclusively used as an anæsthetic, in America, sulphuric ether, which was first used as an anæsthetic in 1846, and was superseded by chloroform, is still much employed, being by some medical men considered safer. Many other modes of producing anæsthesia have been proposed from time to time, such as the inhalation of carbonic acid, of the vapor of turpentine, and of the fumes produced by the burning of some species of fungi. None, however, have been able in every respect to rival chloroform. For the internal use of chloroform, see articles throughout this work. (See CHLOROFORM; ETHER, SULPHURIC; NITROUS OXIDE, CHLORAL, ETC.)

ANALYSIS, *a-nal'-e-sis* [Gr. *analuo*, I loosen, or untie], the resolution of any substance into its constituent elements, or in other words, the art of separating and distinguishing the various constituents of a compound body, either as regards quality or quantity. Analysis is proximate, when the various compound parts are separated as a sulphate into the acid and base, and ultimate when the elementary parts are separated. We may speak generally of chemical analysis, or refer particularly to the analysis of a certain salt. Analysis, being the separation of the component parts of a substance, is directly opposed to *synthesis*, which may be defined as the putting together of elements so as to form a compound. In most analytical operations, however, the chemist works by synthesis, as he usually separates two bodies by means of a third, which unites with one of them, and sets the other free. (See AFFINITY.) It is not always necessary to actually separate the component parts in order to ascertain their nature, as occasionally changes of color, or other results, on the addition of the proper tests, indicate the constituents. If the analyst merely seeks a knowledge of the general *nature* of the substance under examination, he is satisfied when, by the application of certain tests, and by the performance of certain operations, he has obtained evidence of the presence of those elements of which the compound is made up, and the analysis he performs is called a *qualitative* one; but if he desires to ascertain not only the nature but the actual *amount* of the elements present, he must separate the constituents of the compound completely from each other, and obtain them either pure, or in some well-known form of combination; he then appeals to the balance or measure, and the analysis he performs is called a *quantitative* one. The balance was formerly employed whenever great accuracy was required; but of late, methods of volumetric analysis have been brought to great perfection. By *volumetric analysis* is understood the measured bulk of test-liquids, containing known quantities by weight of certain substances capable of producing, with a solution of the assay, sufficiently marked effects to show with precision the complete conversion of the body sought to be estimated, into a compound, the nature of which is perfectly known. When the constituents of a body can be so reunited as to reproduce the substance which has been analyzed, this process is called chemical synthesis, and is the best proof of the correctness of an analysis.

ANASARCA. (See Dropsy.)

ANASTOMOSIS, *an-as-to-mo'-sis* [Gr. *ana*, through, and *stoma*, a mouth], a term used to denote the communication of the blood-vessels with each other. The necessity of a constant supply of blood to every part of the human body has led to a wise provision, by which, though even one of the larger arteries become obstructed, there are numerous smaller ones communicating with the same part, which, by the increased pressure upon them, become enlarged, and supply its place.

ANATOMY, *a-nat'-o-me* [Gr. *anatemno*, I cut up.]. Anatomy is the art or act of dissecting organized bodies, with the object of elucidating their structure and functions; it is also the science which deals with the knowledge thus obtained, and deduces general principles from it. All material substances either are or have been, or are not and have not been, possessed or endowed with life. The former have an organized structure, in which, in the living state, changes take place, and processes are carried on necessary to their existence. The latter are composed of homogeneous particles, and are subject only to mechanical or chemical changes. In the former are comprehended all plants and animals, in the latter all mineral and inorganic substances. It is to the former of these two great divisions that the term anatomy is applied. As organized bodies naturally form themselves into two distinct classes—plants and animals, so we have *vegetable anatomy*, or the anatomy of plants, and *animal anatomy*, or the anatomy of animals. Animal anatomy, again, is subdivided into *comparative anatomy*, which treats of the structure of all animals except man, and *human anatomy*, which deals with the structure of man only. It is to this last that the general term of anatomy is usually applied. Human anatomy, or anatomy proper, then, treats of the several parts and organs of the human body, in respect to their form, structure, and relation to each other. It is usually divided into general, descriptive, and pathological. *General anatomy* treats of the nature




THE SKELETON.

and general properties of the separate substances of which the body is composed, not as these exist combined in special organs, but as they form distinct and peculiar substances. *Descriptive anatomy* comprehends a description of the several parts and organs of the body, with an account of their situation, connections, and relations, as existing in the natural and healthy state. *Pathological*, or morbid *anatomy*, traces and describes the changes produced by disease upon healthy structures, whether existing in individual organs, or in the primitive or common substances of which these organs are composed. As an account of the various parts and organs of the human body, as well as of the diseases to which they are subject, will be found under their several names, in other parts of this work, it is unnecessary to do more here than give a short summary of the subject, referring to these articles for more particular information.

*General Anatomy.*—The human body consists of fluid and solid substances, the fluid bearing to the solid parts a general ratio of from 7 to 1 to 9 to 1. The fluids of the body are various, but may be divided into three classes: the circulating nutritious fluid called the blood; the fluids which are incessantly poured into it for its renewal, viz., the chyle and lymph; and the fluids which are separated from it by secretion, as saliva, bile, gastric juice, etc. The blood is that well-known red fluid which, by means of the heart, arteries, and veins, circulates through all parts of the system, and supplies the waste that is constantly going on. The chyle is a milky fluid, separated from the chyme or digested food after it has passed from the stomach into the small intestines, and become mixed with the bile and pancreatic juice. It is absorbed by the lacteals, and conveyed by ducts or canals to the receptaculum chyli, where it is taken up by the lymphatic vessels, which pervade almost every part of the body. It seems to differ little from chyle, except that the latter contains a greater preponderance of fatty matter. The greater portion of the lymph is poured into the receptaculum chyli, where it becomes mixed with the chyle, and is carried with it into the blood; that, however, collected from the right side of the head and chest, and right upper limb, is conducted into the right subclavian vein, by the right lymphatic or right thoracic duct. The secretions are those fluids secreted or separated from the blood. The term is sometimes used to include the excretions which are thrown off from the body as useless or noxious, as urine from the bladder, perspiration from the skin; but it is properly applied only to such products as are secreted from the blood, but still retained in the system for the performance of certain subordinate actions. These are: 1. Saliva, secreted by the salival glands of the mouth. 2. Gastric juice, by the stomach. 3. Pancreatic juice, by the pancreas. 4. Bile, by the liver. 5. Tears, by the lachrymal glands. 7. Semen, by the testes. 8. Oil, by the vessels of the adipose tissue. 9. Synovia, by the synovial glands of the joints. 10. Mucus, by the mucous glands.

The organized solids of the human body are usually divided into the following seventeen elementary tissues:—1. Bone, or osseous tissue, which forms the framework of the body, to which the other structures are attached, or in which they are contained. 2. Muscular tissue, consisting of fine fibres, which are for the most part collected into distinct organs called muscles, by means of which the active movements of the body are performed. 3. Adipose tissues, which constitute the fat of the body as well as the marrow of the bones. 4. Areolar, cellular, or connective tissue, a soft filamentous substance of considerable tenacity and elasticity, which is extensively distributed over the body, and forms the connective medium of all the other tissues. 5. Fibrous tissue, formed of a number of minute fibres running chiefly parallel to each other, and sparingly supplied with blood-vessels or nerves, and used for connecting, enveloping, or binding together, various parts of the body, as tendons, ligaments, fasciæ, periosteum, perichondrium, dura mater. 6. Elastic, or yellow tissue, characterized by possessing a high degree of elasticity, and employed wherever that quality is required, as in forming the spinal ligamenta subclava. 7. Cartilage, an opaque substance, usually of a pearly or bluish-white color, but sometimes yellow, covering the articular extremities of the bones, connecting the surfaces or margins of immovable bones, or lining the walls of certain cavities, also found in the ear, nose, larynx, etc. Fibro-cartilage is, as its name indicates, a structure intermediate between fibrous tissue and cartilage, partaking, in some measure, of the firmness of the one with the elasticity of the other. 8. Nervous tissue, which goes to form the nervous system. 9. Blood-vessels, comprising the arteries by which the blood is conducted from the heart to all parts of the body; the veins, by which it is brought back again to the heart; and the capillaries, minute vessels by which it is carried from the extremities of the one to those of the other. 10. Absorbent vessels and glands comprising the lacteals and lymphatics, together with the glands in connection with them. 11. Serous and synovial membranes, which resemble each other in general form and structure, but are distinguished by the nature of their secretions, the former lining the cavities of the body which have no outlet, as the peritoneum in the abdomen, the pleura and pericardium in the chest, and secreting a transparent and nearly colorless fluid, which moistens the surface, the latter lining the cavities of the joints, and secreting a viscid fluid which lubricates their surface. 12. Mucous membrane, which lines those internal passages of the body exposed directly or indirectly to contact with the atmosphere, and secretes a viscid fluid of a more consistent and tenacious character than the serous membranes. 13. Secreting glands, a class of organs widely differing from each other in their nature and form, but all devoted to the function of secretion. 14. Vascular or ductless glands, so called from their general resemblance to secreting glands, but differing from them in having no duct for the conveyance of their secretions, which are re-absorbed or filtered through the tissues, or find an outlet by bursting. 15. Skin,—cutis vera, derma, or corium, the innermost of the three structures that go to make up what is commonly termed the skin, and which covers the whole body. 16. Pigment, a black, or dark-colored substance, occurring in various parts of the body, and giving color to the skin of the negro and other dark races. 17. Epithelium, a thin, transparent structure, covering the whole surface of the body, as well as the walls of the different cavities, and named differently, according to the parts which it covers; as, epidermis, covering the skin, the epithelium of mucous membranes, etc.

*Descriptive or Special Anatomy* is commonly divided into several branches, according as it regards (1) the bones (*Osteology*); (2) the articulations; (3) the muscles (*Myology*); (4) the blood-vessels and absorbents (*Angiology*); (5) the nervous system (*Neurology*); (6) the organs of sensation, respiration, digestion, etc. (*Splanchnology*).

*Osteology.*—The number of bones in the human body is variable; but in the adult they are reckoned at about 244. They are usually divided into long, flat, and irregular: long, as in the thigh and leg; flat, as in the skull and pelvis; irregular, as in the hands and feet. Bones are covered with a peculiar membrane, called the periosteum, which serves to conduct the blood-vessels and nerves. The osseous skeleton is divided into head, trunk, upper and lower extremities. The head comprises the bones of the cranium and those of the face, including three common to both. The bones of the cranium are eight in number —the frontal, in the fore part of the skull; the two parietal, forming a portion of its sides and all its superior part; the occipital, forming its lower and back part; the two temporal, forming the lower part of the sides and part of the base; the sphenoid, in the middle of the base; and the ethmoid, in the middle of the fore part of the base. The bones of the face are fourteen in number:—the ossa nasi, which form the arch of the nose; the ossa lacrymalia, at the fore part of the inner edge of the ocular orbits; the malar bones, forming the prominences of the cheeks; the upper maxillary bones, forming the upper jaw, and containing the upper teeth; the ossa palati, situated at the posterior part of the palate, the nose, and the orbits; the vomer, a flat bone, forming part of the septum of the nose; the ossa turbinata inferiora; and the lower maxillary bones, forming the lower jaw, and containing the under teeth. There are thirty-two teeth; sixteen in each jaw; viz., four incisors, or front teeth; two cuspidati, or canine; four bicuspidati; and six molars. The last molar on each side is called the *dens sapientiæ*, or wisdom-tooth, from not appearing till about the age of twenty-one. The os hyoides, or hyoid bone, is placed in the anterior and upper part of the neck, and has no osseous connection with any other bone. The trunk is divided into the spine, thorax, and pelvis. The spine is a pyramidal column extending from the head to the pelvis, and is composed of twenty-four bones, termed vertebræ. Each vertebra consists of a body and seven processes, and has a foramen, or ring, through which the spinal cord passes. They are divided into three classes—the cervical, including the first seven; the dorsal, consisting of twelve, which are larger than the cervical, and are distinguished by having their sides and transverse processes depressed for connection with the ribs; and the lumbar, consisting of five, which are larger than any other. The first two cervical vertebræ differ from the others, and are known as the atlas and the axis, or vertebra dentata. There are likewise five so-called vertebræ, on account of their being separate in early life, but afterwards uniting to form the os sacrum, which constitutes the posterior part of the pelvis. The thorax, which contains the principal organs of circulation and respiration, is the largest of the three great cavities connected with the spine, and is formed by the sternum and costal cartilages in front, the twelve ribs on each side, and the dorsal vertebræ behind. The sternum is a flat, narrow bone, situated in the anterior part of the thorax, and connected with the ribs by means of the costal cartilages. The ribs are twenty-four in number, twelve on each side, of which the first seven are termed vertebro-sternal, or true ribs, and are attached to the sternum; three are attached to the costal cartilages, and are called vertebro-costal; and two are termed vertebral or floating ribs, from their anterior extremities being free. The pelvis, or lower cavity of the trunk, consists of four bones; the os sacrum and os coccygis behind, and the two ossa innominata on either side. The coccygis, which forms the terminal bone of the spine, is sometimes regarded, like the os sacrum, as composed of four false vertebræ, which are at first distinct, but afterwards become united. The ossa innominata are two irregularly-shaped bones, situated on each side of the pelvis, and consisting of three parts, the ilium, ischium, and pubis, firmly united in the adult, but distinct in the young subject. Each of the two upper extremities is composed of the bones of the arm, the forearm, and the hand, and is united to the trunk by means of the scapula and clavicle, which form the shoulder. The scapula is a flat triangularly-shaped bone, placed upon the upper part and back of the thorax. The clavicle, or collar-bone, is a long bone, something in the form of the italic letter *f*, and situated between the top of the sternum and the acromion process of the scapula. The arm has only one bone, the os humeri, which extends from the scapula to the bones of the forearm. The forearm consists of two bones, the radius and ulna, which are parallel, and play upon each other; thus admitting of freer motion in that part. The radius, so called from its resemblance to the spoke of a wheel, is situate on the outer side of the forearm. Its upper end is small, and forms only a small part of the elbow-joint, while its lower extremity is large, and forms the chief part of the wrist-joint. The ulna is placed at the inner side of the forearm, and differs from the radius in being larger at the upper than at the lower extremity. The bones of the hand are divided into the carpus, metacarpus, and phalanges. The bones of the carpus, or wrist, are eight small bones, arranged in two rows, the upper row comprising the scaphoid, semi-lunar, cuneiform, and pisiform; the lower, the trapezium, trapezoid, os magnum, and unciform. The metacarpal bones, or bones of the palm, are five in number, and correspond to the fingers. The phalanges, or bones of the fingers, are fourteen in number, each finger, with the exception of the thumb (which has only two), having three of them. The upper and lower extremities bear a great resemblance to each other in the nature and form of their bones. Like the upper, each of the lower extremities consists of three distinct parts—the thigh, leg, and foot. The thigh is composed of a single bone, the os femur, which is the longest and largest in the body. The upper part forms a round head, which is inserted into a deep cup-like cavity of the os innominatum, called the acetabulum: the lower terminates in two protuberances, known as the inner and outer condyles, separated posteriorly by a deep fossa, called the inter-condyloid. The leg consists of three bones; the patella, tibia, and fibula. The patella, or knee-pan, is a small, flat, triangular bone, of a spongy texture, situated at the anterior part of the knee-joint, between the femur and the tibia. The tibia and fibula in the leg resemble the radius and ulna in the forearm; the tibia is, after the femur, the largest bone in the body. It is situate at the anterior and inner side of the leg, articulating with the femur above and the astragalus below. The fibula is considerably smaller than the tibia. Its upper extremity is small, and placed below the level of the knee-joint, but the lower extremity projects below the tibia, and forms the outer ankle. The foot, like the hand, is composed of three classes of bones—the tarsus, the metatarsus, and the phalanges. The tarsus is composed of seven bones—the os calcis, astragalus, cuboid, scaphoid, and three cuneiform. The metatarsal bones are long small bones, five in number, connected at the one extremity with the tarsal, at the other with the phalangeal bones; these last go to form the toes, each of which has three, except the great toe, which has only two.

*Articulations.*—The different bones of the skeleton are connected together in various ways, and such connections are termed articulations. They are of various kinds, but are usually divided into immovable, movable, and mixed. Immovable articulations exist where flat and broad bones are united to inclose important organs, as in the cranium and pelvis. In some parts the edges indent or interlock each other; in others they are brought into close contact, or are united together by a thin layer of cartilage. The movable articulations are of various kinds, according to the kind of motion required. In such cases, the bony surfaces brought into contact are covered with cartilage, bound together by ligaments, and lined by synovial membrane. Mixed articulation prevails where only a slight degree of motion is required, combined with great strength, as in the vertebræ. The bones of the head and face are connected together by immovable articulation, except the inferior maxillary, the condyle of which articulates with the anterior part of the glenoid cavity of the temporal bone and the anterior root of the zygoma. The different vertebræ of the spine are connected together by ligaments and the inter-vertebral substance; the latter a fibro-cartilaginous, slightly elastic substance, interposed between the adjacent surfaces of the different vertebræ, from the axis to the sacrum, and forming the chief bond of connection between these bones. It varies in shape, size, and thickness, in different parts of the spine. The articulations of the first and second vertebræ are different, and much more complicated than the others, in order to admit of the various movements of the head. In the articulations of the ribs to the vertebræ, the heads of the ribs are connected with the bodies of the vertebræ by one set of ligaments, and the necks and tubercles of the former with the processes of the latter by another set, admitting of a limited upward and downward motion, and a very slight motion backwards and forwards The cartilaginous articulation of the ribs with the sternum admits only of a very slight motion upwards and downwards. In the pelvis, the articulation of the sacrum with the last of the true vertebræ, and of the coccyx with the sacrum, are similar to that of the vertebræ with each other. The lateral surfaces of the sacrum and ilium articulate with each other by means of an irregular lamella of cartilaginous structure and several sets of ligaments. The sacrum is also connected with the ischium by two ligaments, known as the great sacro-sciatic and lesser sacro-sciatic. The two pubic portions of the ossa innominata articulate in front by means of an elongated piece of cartilage interposed between the osseous surfaces, and connected with each; the union being strengthened by ligaments. In the upper extremity, the sterno-clavicular articulation is formed by the sternal end of the clavicle, the upper and lateral part of the head of the sternum, and the cartilage of the first rib. The motion here is in almost every direction—upwards, downwards, backwards, forwards as well as circumductive. The scapula-clavicular articulation is formed between the outer extremity of the clavicle and the upper edge of the acromion process of the scapula, and the movements are gliding and rotary. At the shoulder is what is called a ball-and-socket joint, the large globular head of the humerus being inserted into the glenoid cavity of the scapula, and admitting extensive motion in almost every direction. The hinge-joint at the elbow is formed by the lower extremity of the humerus and the upper extremities of the radius and ulna, and allows extensive flexion and extension movements. The rotatory movements of the forearm arise from the connection of the radius and ulna; at the upper extremity the inner side of the head of the radius rotates within the lesser sigmoid cavity of the ulna; at the lower, the head of the ulna rotates upon the sigmoid cavity at the inner side of the radius; while the middle portions of the two bones are connected by two ligaments, forming what is termed the middle radio-ulnar articulation. The wrist-joint is formed by the radius and the inner-articular fibro-cartilage, which separates it from the ulna and the three first bones of the carpus, and admits of flexion, extension, abduction, adduction, and circumduction. The bones of the carpus are united by special ligaments so as to form two rows, and the rows are connected together by ligaments so as to form a joint. The articulations of the carpal with the metacarpal bones admit only of a slight gliding motion of the different surfaces upon each other, except in the case of the thumb, where it is much more varied. The carpal extremities of the last four metacarpal bones articulate with one another at each side, and are bound together by ligaments to form the palm of the hand. The articulations of the metacarpal bones with the phalanges, and of the phalanges with each other, form hinge-joints. In the lower extremity, the head of the femur is received into the acetabulum, or cup-shaped cavity of the os innominatum, and connected by strong ligaments to form the hip-joint. The knee-joint is formed by the lower extremity of the femur articulating with the head of the tibia and the patella, and give flexion and extension with a slight rotary motion. The tibia and fibula are connected together, like the radius and ulna, by various ligaments, and their upper and lower extremities brought into contact; and have a slight gliding motion upon each other. The ankle-joint is formed by the inferior extremities of the tibia and the fibula, united so as to form an arch, into which the superior convex surface of the astragalus is received, and allows of flexion and extension. The articulations of the tarsal, metatarsal, and phalangeal bones do not differ materially from those of the hand, except that their ligaments are generally stronger, and admit of less motion.

*Muscles.*—The muscles, with their appendages, the fasciæ and tendons, constitute the active organs of motion. They serve also to protect the walls of large cavities, and to give form and symmetry to the whole body. Muscular tissue is of two kinds, distinguished by structural peculiarities and mode of action. The one class comprises the muscles of voluntary or animal life; the other of involuntary or organic life. The muscles of animal life, or striped muscles, are all those that are capable of being exerted or controlled by the will, and include not only the voluntary muscles, but all the muscles of the ear, those of the larynx, pharynx, tongue, and upper half of the œsophagus, the heart, and the walls of the large veins, at the point where they open into it. The muscles of organic life, or unstriped muscles, form the muscular coat of the digestive canal from the middle of the œsophagus to the internal sphincter ani, of the urinary bladder, the trachea and bronchi, the ducts of glands, the gall-bladder, arteries, etc. The muscles are named from their situation, direction, use, shape, or points of attachment; as, tibialis, obliqui capitis, adductor longus, deltoid, sterno-hyoid. In the human body there are sixty-six muscles at each side of the head and neck: ninety at each side of the trunk, and two single ones; fifty-three in each of the upper extremities; and fifty-six in each of the lower. The limits of the present article preclude our attempting to give details of the situation, relations, etc., of this numerous class of organs, which, besides, would have little interest for the general reader.

*Angiology.*—The blood-vessels of the human body are the heart, arteries, veins, and capillaries. The heart is a conical muscular organ, lying obliquely beneath and behind the sternum, with its tip pointing downwards, forwards, and towards the left. It is divided by a longitudinal septum into a right and left half, the former containing venous, the latter arterial blood; and each half is again subdivided into two portions communicating with each other, the upper being termed the auricle, the lower the ventricle. From the right ventricle, the blood is sent, by means of the pulmonary arteries, to the lungs, whence it is returned by the pulmonary veins into the left auricle, passes into the left ventricle, and is thence conveyed by the aorta to every part of the body. The aorta, commencing at the left ventricle, ascends for a short distance, then arches over the root of the left lung, descends along the vertebral column within the thorax, passes through the diaphragm into the abdomen, and divides, opposite the fourth lumbar vertebra, into the right and left common iliac arteries. These last subsequently divide into two branches, named the internal and external iliac arteries; the former being distributed to the walls and viscera of the pelvis, the latter proceeding to the lower limbs, after sending two important branches to the walls of the abdomen The branches sent off from the arch of the aorta are five in number—the two coronary arteries which supply the heart; the innominate artery, dividing afterwards into the right carotid and subclavian arteries; the left carotid and the left subclavian. Each of the carotids afterwards separates into the external and internal carotid; the former being distributed to the external parts of the head and face, the latter to the internal parts of the cranium. The subclavian artery supplies the upper extremity, giving off, as branches, the vertebral, the internal mammary, thyroid axis, and the superior intercostal arteries. From the thoracic portion of the aorta, numerous branches are given off, chiefly of small size, and known as the pericardiac, bronchial, œsophageal, posterior mediastinal, and intercostal arteries. The abdominal aorta gives off numerous branches, which may be divided into two sets —those which supply the viscera, and those which are distributed to the walls of the abdomen; the former comprising the cœliac artery (which shortly divides into the gastric, hepatic, and splenic arteries), the superior mesenteric, the inferior mesenteric, the capsular, the renal, and the spermatic arteries; the latter, the phrenic, lumbar, and middle sacral arteries. The veins which return the blood from the capillaries to the heart are of two kinds—the pulmonary, conveying arterial blood from the lungs to the left auricle of the heart, and the systemic, carrying venous blood from all parts of the system back to the right auricle of the heart. The pulmonary veins are four in number, two for each lung, and differ from other veins in being destitute of valves. The systemic veins are usually arranged into three groups, according to their mode of termination in the heart:—1. Those of the head, neck, thorax, and upper extremities, which terminate in the superior vena cava. 2. Those of the abdomen, pelvis, and lower extremities, which terminate in the inferior vena cava. 3. The cardiac veins, returning the blood from the substance of the heart, and opening directly into the right auricle. The veins, in their general form and distribution, correspond to the arteries. The vena cava superior is a short trunk formed by the junction of the two venæ innominatæ, and terminating in the upper part of the right auricle. The vena cava inferior is formed by the junction of the two common iliac veins between the fourth and fifth lumbar vertebræ, and terminates in the lower and back part of the right auricle. The capillaries [from *capillus*, a hair], are minute vessels pervading every part of the body, and uniting the extreme points of the arteries with those of the veins. Their diameter varies in different parts, but is usually about $\frac{1}{3000}$th part of an inch. For an account of the absorbent system, see ABSORBENTS.

*The nervous system* consists of two parts, known as the cerebro-spinal and the sympathetic or ganglionic systems. The former includes the brain and spinal cord, with the nerves proceeding from them, and is regarded as the nervous system of animal life; the latter consists of a double chain of ganglia, running along the spinal column, whose functions seem to be less directly connected with the mind, and chiefly bearing upon the animal life. The cerebro-spinal system is divided into the encephalon, or portion contained within the cranium, and the spinal cord, inclosed within the vertebral canal. The encephalon comprises the cerebrum, the cerebellum, the pons Varolii, and the medulla oblongata, and is covered with three membranes, called the dura mater (or outermost), the arachnoid membrane, and the pia mater. The substance of the encephalon is of two kinds—a cineritious or grayish substance, called also corticle, from forming the outer part of the cerebrum and cerebellum; and a white or medullary matter, forming the inner substance of the cerebrum and cerebellum, but the outer of the medulla oblongata and pons Varolii. The cerebrum, or brain proper, forms by far the largest portion of the encephalic mass. Its upper surface is divided into a right and left hemisphere, by a longitudinal fissure lodging the falx cerebri. The under surface of each hemisphere is marked off into three lobes, called the anterior, middle and posterior. The entire surface of each hemisphere presents a number of convoluted eminences, separated from each other by depressions of various depths. The cerebellum, or little brain, is situate beneath the hinder part of the cerebrum, from which it is separated by the tentorium cerebelli. It is likewise divided into two lateral hemispheres; but the surface is not convoluted, but laminated. It is connected with the rest of the encephalic masses by means of connecting bands, called crura or peduncles, two of which ascend to the cerebrum, two descend to the medulla oblongata, and two unite in front to form the pons Varolii. This last occupies a central position on the under surface of the encephalon, and constitutes the bond of union between the other parts, being connected above by crura from the cerebrum, at each side by crura from the cerebellum, and being in contact below with the medulla oblongata. This last extends from the lower border of the pons Varolii to the upper part of the spinal cord. It is pyramidal in form, with its broad extremity directed upwards, and measures about an inch and a quarter in length. By means of two fissures it is divided into two lateral and symmetrical halves. The spinal cord is situate within the vertebral canal, and extends from the foramen magnum of the occipital bone to the first or second lumbar vertebra, where it terminates in the cauda equina, an aggregation of nervous cords occupying the remainder of the canal. The spinal cord, like the encephalon, is inclosed by the three membranes—the dura mater, arachnoid, and pia mater. It is composed of white and gray matter, the former external, the latter internal. The gray substance is found, on making a section, to be arranged in a crescental shape in each hemisphere of the cord, the posterior cornua being much longer than the anterior. From the spinal cord spring thirty-one pairs of spinal nerves, corresponding to the number of true and false vertebræ, between which they issue, except that there are eight pairs of cervical nerves and one coccygeal. Each spinal nerve arises by two roots—an anterior or motor, and a posterior or sensitive. These approach one another, and, with few exceptions, unite in the corresponding inter-vertebral foramen into a single cord, which almost immediately divides into two branches, one of which proceeds to the muscles, etc., of the back, the other to the anterior parts of the body. Besides the spinal nerves, there are nine pairs of nerves that issue from the encephalon to different parts of the head and face. They are connected with the organs of seeing, hearing, taste, smell, etc., and are hence named optic, auditory, olfactory, etc. They are also distinguished numerically, as first, second, third, etc., according to the part of the brain from which they spring. The sympathetic or ganglionic nervous system is composed of a series of ganglia, or nervous centers, extending along the spinal column from the base of the skull to the coccyx, connected with each other by filaments, and also communicating in various parts with the cerebro-spinal system. They are regarded as the nerves of organic life, and principally supply the various viscera and blood-vessels. (See Nervous System.)

*Splanchnology.*—Regarding the anatomy of the various organs of sensation, respiration, digestion, etc., we must refer to the accounts given under their proper names, in other parts of this work.

*History.*—Some knowledge of the internal structure of the human body was doubtless obtained at a very early period. The ancient Egyptians are said to have acquired great anatomical skill from their practice of embalming, and Homer displays a considerable amount of knowledge of the human body in his description of wounds, in the "Iliad." Hippocrates, who flourished about 400 years B. C., is regarded as the first author who treated anatomy as a science. Erasistratus, and Herophilus of Alexandria, are considered as the first who dissected and described the human body, nearly 300 years B. C. Galen, however (born 131 A. D.), is the author of antiquity that displays the most intimate knowledge of the human body; and even he evidently obtained a great part of his knowledge from dissections of apes and other animals, there being a law in Rome which forbade the use of dead bodies. During the dark ages, anatomy, like other sciences, made little progress. The interest of anatomy began to revive about the 13th century, and in the beginning of the 14th, Mundinus dissected and demonstrated the different parts of the human body at the University of Bologna, and published a work which formed the text-book in Italy for nearly 200 years. During the next 200 years the interest in anatomy continued to increase, and within that period, there are several respectable names in connection with it, as Gabriel de Zerbio, Achillini, Berenger, and Massa. The errors of Galen, however, still prevailed till the time of Vesalius, who flourished about the middle of the 16th century, and boldly, by dissections of the human body, pointed out the errors into which he had fallen. He is regarded as the father of modern anatomy. His great work, *De Corporis Humani Fabrica*, was published before he was twenty-eight years of age. He gave a great impulse to human dissection; and, among his contemporaries, or immediate successors, were — Fallopius, Eustachius, Varoli, and Fabricius. In the 17th century the progress of anatomy was rapid. In 1619 Harvey's great discovery of the circulation of the blood was announced. Asellius, in 1627, gave out his discovery of the lacteals; and in 1651 Rudbeck discovered the lymphatics. Among the other distinguished anatomists of this century were, Bartholin, Pecquet, Jolyffe, Wharton, Swammerdam, Willis, Malpighi, and Ruysch. In the 18th century we have many eminent names. In Italy, which still retained a first place, were Vasalva, Santorini, and Morgagni; in France, Winslow, Vicq d'Azyr, and Bichat (the founder of General Anatomy); in Germany, Haller, Meckel, Zinn, and Soemmerring; in Holland, Boerhaave, Albinus, Camper, and Bonn; in England, Cheselden, the two Hunters, Charles Bell; and in Scotland, the Monroes, of Edinburgh. The present century has been specially characterized by the great advance made in a minute or microscopic anatomy. Among the names of this period may be mentioned Cloquet, Magendie, Müller, Quain, Goodsir, Bowman, Todd, Sharpey, Ellis, Wilson, Gray, and Holden.—See Quain's "Anatomy," Gray's "Anatomy," Holden's "Human Osteology," Wilson's "Anatomist's Vade-Mecum." (See HEART, LUNGS, LIVER, STOMACH, ALIMENTARY CANAL, KIDNEY, BONE, MUSCLE, EYE, EAR, FOOT, HAND, ETC.)

ANCHYLOSIS, *angk-e-lo'-sis* [Gr. *agkuloo*, I bend], the name given to an affection which causes stiffness of a joint: so called on account of the limb in which it occurs being usually bent. It is sometimes written ankylosis. Anchylosis is divided into true, or complete, and false, or incomplete. These conditions may attack any joint of the body, and instances have been known of the whole body becoming anchylosed. In complete, or true anchylosis, no motion whatever takes place, the heads of the bones being connected together by osseous or bony matter. In incomplete, or false anchylosis, the immobility arises from adhesion of the synovial membrane, or a thickening of the parts about the joint, and usually admits of some degree of motion. Anchylosis frequently occurs after sprains, dislocations, or fractures near a joint, and, indeed, may be occasioned by anything that keeps a joint long motionless. In order to prevent anchylosis, the joint is to be exercised as much as the state of the surrounding parts will admit; if it cannot be prevented, the joint is to be kept in the most convenient and natural position. Anchylosis is sometimes very desirable as a termination of diseases of the joints. False anchylosis may be treated by gradual extension, frictions with liniments, and fomentations. The true, bony anchylosis has been remedied by making a false joint, sawing through the parts, but this is a desperate expedient.

ANDIRA, *an-di'-rą*, in Botany, a genus of plants, belonging to the Nat. order *Leguminosæ*, suborder *Papilionaceæ*, characterized by a one-celled one-seeded pod, almost orbicular. The species *A. inermis* is a native of the West Indies, and is commonly known as the cabbage-bark tree. The bark, called either cabbage-bark or worm-bark in commerce, was formerly much used medicinally as an anthelmintic. (See Anthelmintics.) It possesses cathartic, emetic, and narcotic properties. In large doses it is poisonous. The species, *A. retusa*, a native of Surinam, yields a bark with similar properties, which is commonly known as Surinam bark. The dose of the powder is, 1 scruple to ½ dram; of the extract, 3 grains two to four times a day. The dose of this medicine is to be gradually increased till it induces a degree of nausea, the occurrence of which limits the dose; for if it be carried further, it occasions vomiting, fever and delirium. The seeds of this plant possess the same virtues as the bark.

ANDROMEDA, *an-drom'-e-dą*. A genus of plants, family *Ericaceæ*. Broad-leaved moor-wort. A decoction of the leaves is said to be useful in ground-itch, or toe-itch.

ANEMONE, *a-nem'-o-ne*. A genus of perennial herbs of the family *Ranunculaceæ*. So named because the flower was thought to open only while the wind blows. From the anemone pulsatilla, comes the pulsatilla so much used by homœopaths. (See Pulsatilla.)

ANETHUM, *a-ne'-thum* [Lat. *anethum*, dill, anise], a genus of plants belonging to the Nat. order *Umbelliferæ*. The species *A. graveolens* is commonly known as the Dill. The fruits, improperly termed seeds, of this plant are imported into this country from the south of France. They have carminative properties, due to the presence of an essential oil, contained chiefly in the *vittæ* of the pericarp. They are used in medicine, and, it is said, in the manufacture of London gin. The plant is also cultivated in this country. Dose of the oil, 2 to 5 drops; of the seeds bruised, 10 to 40 grains.

ANEURISM, *an'-u-rism* [Gr. *aneuruno*, I widen or dilate.] A tumor formed by the morbid dilatation of an artery. In Surgery, it is usually defined to be a pulsating tumor, containing blood, and communicating with the interior of an artery. It is a tumor formed by a preternatural dilation of a part of an artery, or by the extravasation of arterial blood in the cellular membrane, in consequence of a rupture or wound of the coats of an artery. The former is termed true, the latter false or spurious aneurism. If the two inner coats of an artery are ruptured, and a sac is formed by the outer, it is called a mixed aneurism. Aneurisms arise partly from too violent motion of the blood, partly from preternatural weakness in the membranes of the artery. They are most frequent in the adult, between the ages of thirty and fifty, and occur oftener in the male than in the female; but no age is wholly exempt from them. They may be met with in any part of the body, and are usually divided into external and internal; the former occurring on the limbs, neck, or external part of the head; the latter forming in any of the cavities of the body, as the thorax or abdomen, and generally affecting the aorta or some of its principal branches. In the early stage of aneurism, if external, a small pulsating tumor is observed, which entirely disappears when compressed, but returns as soon as the pressure is removed. It continues to grow larger, and as it increases in size its pulsations become weaker, partly on account of its greater distance from the course of the blood, and sometimes also from the accumulation of fibrine within in the cyst. Sometimes this fibrine consolidates, and becomes connected with the walls of the cavity, which it at length fills up, occasionally bulging into and choking up the artery. This, however, is a termination of aneurism that is unfortunately rare. In most cases, the dilation of the sac goes on until, if not arrested, the inclosing membranes give way, and the patient expires from loss of blood; or death may be produced by pressure upon important parts, as the trachea, œsophagus, nerves, etc.

*Treatment.*—The cure of aneurism consists in applying a ligature to the artery above the tumor: the ingress of blood into the sac is thus prevented, and its contents are gradually absorbed. The blood, being interrupted in its course through the artery, passes with greater force into the collateral branches, permanently enlarging them; and thus the necessary circulation to the parts beyond the obstruction is carried on. In internal aneurisms not admitting of such treatment, recourse must be had to such means as moderate the action of the heart, and depress the general circulation, thus inducing the formation of fibrine within the sac, which may gradually fill it up. These consist of repeated bleedings, low diet, perfect rest, and the administration of gentle laxatives and medicines which moderate the action of the heart, as digitalis, etc. (See DIGITALIS.)

ANGELICA. (See ARCHANGELICA.).

ANGINA PECTORIS, *an-ji'-na pek'-to-ris* [from the Gr. *agko*, to strangle, and Lat. *pectus*, the breast], literally signifies a contraction or tightening of the chest, and in Medicine is the name of a disease of the chest, characterized by a feeling of painful constriction at the lower part of the sternum, or breastbone, inclining to the left side, and extending to the left arm. The pain is very acute, accompanied with a difficulty of breathing, irregular action of the heart, and a feeling of approaching dissolution. The paroxysms last from a few minutes to half an hour or more, and come on suddenly, at irregular intervals.

*Causes.*—They are often excited by violent exercise, strong mental emotion, or a derangement of the digestive organs; but frequently make their appearance without any manifest exciting cause. It is met with chiefly in the middle-aged or old, and is more frequent in males than females. Physicians are by no means agreed as to the seat and nature of this disease, and dissection has shown almost every disease of the thoracic viscera in connection with it. The general opinion, however, seems to be that it is owing to some important organic disease of the heart, which impairs its functional activity, such as fatty degeneration of its muscular fibres, which in very many cases has been found to be present. It is the nature of this disease to proceed from bad to worse.

*Treatment.*—Where the patient is young, or of good constitution, and where there are no symptoms of organic affection, success frequently attends early, active, and judicious treatment. Violent exercise and strong mental emotions are to be avoided, as well as long fasting or too full meals, and sudden exposure to great heat or cold. In fact, the patient "must lead a sober, quiet, and temperate life, in which neither the emotions of the soul are to disturb the functions of the body, nor corporeal affections are allowed to disturb the serenity of the mind." An attack of angina pectoris is an emergency affecting life, to which there are few equal; full, instant, stimulation is demanded, and the first agent of the kind at hand must be used, till other remedies and proper assistance can be procured. A glass of spirits and water as hot and strong as it can be swallowed, and with it, if procurable instantly, sixty drops of laudanum must at once be given. A strong mustard-poultice is at once to be applied to the front of the chest, and the same between the shoulders—hot applications to the feet. If the paroxysm be not subdued in a quarter of an hour, the stimulant is to be repeated with half the quantity of laudanum, and this again, after the same interval, if requisite. Spirits have been mentioned as being the most readily procurable, but when ether and sal-volatile, either one or other, or both, are at hand, they are preferable, and must be given in just so much water as will permit of their being swallowed; a teaspoonful of each with sixty drops of laudanum. A person who has once suffered an attack of angina should never be without these three requisites, laudanum, or better, Battley's solution of opium—ether—sal-volatile. It is needless perhaps to say, that all these measures of an emergency in which not a moment is to be lost, are whilst waiting the arrival of the medical attendant, and that to him must be entrusted the direction of that regulated mode of life, which must ever be adopted after an attack of this disease. The general health is to be improved by means of tonics, attention to diet, and the state of the bowels.

ANGINA TONSILLARIS, *an-ji'-na ton-sil-la-'ris*, inflammatory sore throat, inflammation of the tonsils. (See Sore Throat.)

ANGLE, FACIAL, *ang'gl fa'-shal*, a straight line drawn from the most prominent part of the forehead to the alveolar edge of the upper jaw, opposite to the incisor teeth, and another, from the external auditory foramen to the same point, form an angle called the facial angle. The facial angle does not afford a very correct criterion of the development of the cranium, or the sagacity of the animal; nevertheless, there appears to be some general truth in the indications derived from it, especially in relation to the human species, for in the European race, the facial angle is seldom less than 80°, while in the negro it is seldom more than 70°.

ANGUSTURA BARK, OR CUSPARIA BARK, *an-gus-tu'-ra*, a valuable drug, imported directly or indirectly from South America. In small doses it acts as a stimulant, tonic, and febrifuge; while in large doses it is somewhat emetic and purgative. This bark is the produce of different species of *Galipea*, and its characteristic properties depend on the presence of an active principle, to which the name *Cusparin* has been given. The powder is given in doses of 10 to 30 grains.

ANHYDROUS, *an-hi'-drus*. Oxides and salts containing no water are said to be anhydrous. Water possesses the property of forming compounds called hydrates, with different salts and oxides. Thus we have hydrate of potassa, of lime, of oxide of chromium, etc. The affinity possessed by many metallic oxides for water is so strong that, when once the hydrate is formed, the water cannot be separated but by the addition of an acid. Caustic potassa, for instance, contains one atom of water which is not separated even by a red heat.

ANILINE, *an'-il-een*, a volatile oily alkaloid, obtainable from indigo and from other sources, but principally from coal tar, from which it is extensively prepared for the purpose of forming certain dyes. *Medicinal properties and actions:* It is sedative and antispasmodic, acting apparently in a direct manner upon the nervous system, according to the researches of Dr. J. Turnbull, who first proposed it as a therapeutic agent. The sulphate of aniline, which appears to be destitute of the local irritating properties of the aniline itself, is the form in which it has been chiefly employed. One peculiarity of its action is the presence of a remarkable blue color of the lips, tongue, and nails, together with a more or less dusky appearance of the complexion, which, however, disappears in a few hours after the medicine has been discontinued. In some cases it produces depression of the nervous system and headache, which are also only of a temporary nature. In large doses it is poisonous. The blue discoloration above described is attributed to the formation of a coloring matter or dye produced by the oxidation of the aniline in the blood.

The dose of the sulphate of aniline is 1 grain twice daily, gradually increased to 1½ to 2 grains in solution, either with or without a few drops of dilute sulphuric acid. Its use should be intermitted for a few days on the appearance of blueness of the lips or depression of the nervous system.

ANIMAL, *an'-e-mal*, a symmetrical organization, provided with an internal stomach, and possessing the power of voluntary motion. The nervous system is peculiar to animals. The term animal embraces energy, variety of form, and degree of development. Chemically considered, animals are compounded of carbon, hydrogen, oxygen, and nitrogen chiefly. Phosphorus and sulphur exist in all to a limited extent; the earthy bodies are peculiar to some only. Animals differ from plants in their power of digestion. While plants convert gases, water, and inorganic substances into starch, fibrin, etc., animals are not capable of producing extensive changes in the food they receive, and require that which is highly organized for their nutrition. (See ANIMAL CHEMISTRY.)

ANIMAL ACIDS, those acids produced by the metamorphoses occurring within animals, such as the cholic, uric, cystic, lactic, cerebric, margaric, stearic, etc.

ANIMAL CHEMISTRY, that branch of science which treats of the different changes going on in the living animal; such as the change of the egg, consisting of white, yolk, and shell, into the flesh, blood, bones, and feathers of the young bird. The processes of respiration, digestion, and assimilation of food, are purely chemical operations. The principal chemical substances necessary for the support of the different functions of the animal system are oxygen, hydrogen, carbon, nitrogen, sulphur, phosphorus, and chlorine, and the metals iron, sodium, potassium, lime, and magnesia. These are all received into the system in the form of food, and become distributed to the different parts of the body during the process of digestion and assimilation; as, for example, the iron to the blood and hair, the lime and phosphorus to the nails and bones. If any of these substances are wanting, the system suffers, and they must be restored to the patient. For instance, rachitis, or rickets, in children, is caused by the bone containing too little lime; and the best remedy, therefore, in its earliest stage, is plenty of lime-water, or some other substance containing lime. The following analysis of different parts of the human system will be interesting, as showing the destination of these different substances:

| *Bone.* | |
|---|---|
| Animal matter | 31 |
| Phosphate of lime | 59 |
| Fluoride of calcium | 2 |
| Carbonate of lime | 7 |
| Phosphate of magnesia | 1 |

| *Blood.* | |
|---|---|
| Water | 779 |
| Fibrine | 2 |
| Fatty matter | 2 |
| Albumen | 69 |
| Iron and salts | 7 |
| Blood corpuscles | 141 |

| *Hair.* | |
|---|---|
| Carbon | 51 |
| Hydrogen | 7 |
| Nitrogen | 17 |
| Sulphur | 3 |
| Oxygen | 22 |

*Flesh.*

Coagulated fibre.
Water, three-fourths.
Albumen.
Phosphoric acid.
Phosphates.
Chlorides.

The modern discoveries of animal chemistry have thrown great light upon the vital functions, and the laws governing them, and have purged medical science of much of the rubbish in which it was previously involved. (See Blood, Bone, Hair, Flesh, Respiration, Digestion, etc.)

ANIMAL FLUIDS, the blood, bile, gastric juice, pancreatic juice, mucous and serous exhalations, chyle, lymphatic fluid, semen, etc.

ANIMAL FOOD. (See Food.)

ANIMAL HEAT. Animal heat may be defined to be the temperature which results from vital operations occurring in the bodies of the higher animals, and which maintains them, at a nearly uniform heat, independent of that of the atmosphere, or other media by which they are surrounded. In healthy men, the average temperature of the body is 98° or 99°. Heat is one of the conditions necessary to life, and, when that is reduced below a certain point, all vital activity ceases. The sun is the great source of heat, and on it vegetables and the greater number of tribes of animals principally depend. There are certain tribes of animals, however, especially birds and mammals, which possess the power of generating heat within themselves to such a degree as to render their vital functions almost entirely independent of external influences; and there is probably no species that can exercise this power effectually and through a greater range of conditions than man. Judging merely from our sensations, we should be led to conclude that our bodies undergo very considerable changes of temperature. Such, however, has been proved not to be the case. From a series of 114 observations made by Dr. John Davy on persons of different ages and sexes, and in various latitudes, it was found that the mean temperature of the body was 100° in a mean atmospheric temperature of 74°; the highest temperature of the body being 102°, while the highest atmospheric temperature was 82°, and the lowest temperature of the body 96.5°, while the lowest temperature of the air was 60°. The mean age of all the individuals was 27. In favorable circumstances, the temperature of infants is somewhat higher than that of adults; but, in their power of resisting the depressing influence of external cold, the former are much inferior to the latter. External cold reduces the temperature of the body considerably, especially if at rest. Thus Dr. Davy found the temperature of his own body reduced, on an average of four observations, to 96.7°, with the average temperature of the surrounding air at 37°. An increase of temperature takes place after exercise, as well as after a meal. The usual temperature of the body occasionally undergoes considerable change in disease, from 106° in fever to 67° in cholera. The mean temperature of birds is rather higher than that of mammals, averaging about 108°, while mammals average about 101°. Animal heat arises from the various changes that are constantly going on within the bodies of the animals. Every change that takes place in the condition of the organic components of the body, in which their elements enter into new combinations with oxygen, is necessarily a source of the development of heat. By the union of the oxygen of the atmosphere with the carbon and hydrogen of the body, a species of combustion takes place, and heat is evolved. Hence we find that the more rapidly this combustion is carried on, the greater the amount of heat produced; and hence exercise increases the heat of the body. Some have held that combustion was not sufficient to account for the total amount of heat generated in a living body; but the most recent authorities are now generally agreed that such is the case, especially when we take into account the small quantities of sulphur and phosphorus which also undergo oxidation within the system. One great fulfilment, therefore, of the food we digest, is to keep us warm, by the continual combustion of elements going on within us; consequently, persons who can consume and digest large quantities of food have much greater power of resisting cold than those who cannot, and chilliness is one very constant symptom of impaired digestion; the stomach is unable to keep the system supplied with fuel. The point is one of considerable importance in the selection of crews for arctic expeditions, and ought to have some influence with intending emigrants in their choice of a future home. An individual who suffers from habitual weakness of digestion ought to choose a warm or genial climate in preference to a cold one. Fats and oils especially, which contain much carbon and hydrogen, afford great protection against severe cold; accordingly all northern people, like the Esquimaux, consume them in large quantity, and Europeans traveling in northern latitudes have always copied the natives in this respect. Alcoholic fluids, like fat and oil, contain much carbon and hydrogen, but their stimulant properties, and more evanescent influence, render them unfit for *ordinary* consumption to sustain animal heat, although on *extraordinary* occasions they are invaluable. When from illness or any other cause, sufficient food cannot be taken to keep up a due temperature, fuel is supplied at the expense of the bodily tissues, more especially of the fat—as the case is in hybernating animals—and if illness, such as fever continues, even the supply within the body threatens to fail, and the person is actually in danger of dying of cold. It then becomes imperative to get into the circulation as much "respiratory food," as much nourishment as possible, simply, as fuel. Much may be done by strong animal broths, but alcohol is the great resource, in whatever form is most advisable; it passes readily into and mingles with the blood, and affords an immediately available supply of carbon and hydrogen to keep the animal temperature going. The regular, steady supply of wine when required in fever, must be kept up, and this cannot be too strongly impressed upon the mind of the attendant. Half an hour's nap on the part of the nurse may lose a life.

But internal heat cannot do all in our cold clime, and with artificial modes of living, it is of the utmost importance, especially in the young and delicate, to maintain the full temperature of the surface by proper clothing. The subject is one, respecting which much carelessness and ignorance prevails in all classes of society in this country, and children, half-clothed for the sake of appearance, with bare chests and limbs, and exercise not sufficiently active to counteract the effects of the chill, are exposed to all the evils resulting from internal congestions of the blood repelled from the surface. Warm clothing is, in some respects a substitute for food, and either man or animal requires less nourishment when protected from cold. It is well known to agriculturists, that sheep or cattle will fatten more quickly under cover in winter, than if exposed to the weather. The reason is obvious, they are able to store up in their bodies that which otherwise must have gone to keep them warm. When it is considered that abstraction of animal heat, by cold and wet, is one of the most fertile sources of fatal disease, the importance of maintaining the full temperature of the body is manifest. It is well known that exercise is the best antagonist to cold, it is so, by quickening the respiration, and thus increasing the supply of oxygen taken in by the blood, which is also circulated more rapidly. In fact, to use the simile which compares the body to a stove, exercise gives a free draught for the process of combustion. Continued exposure to an extreme degree of cold, which carries off the animal heat more quickly than it can be generated, it is well known, gives rise to overpowering drowsiness, which, once yielded to, is death. It must be resisted, and when one of a party thus exposed is inclined to yield, the others must resort to every means calculated to rouse, even—as has been done—by thrashing him along; the temper which is excited is a most excellent resistant of cold. It should be remembered that if active exertion continue too long, it will cease to promote warmth, in consequence of the available heat producing agents—in the body—being comparatively exhausted. (See AERATION, BLOOD, LUNGS, CIRCULATION, FOOD, HEAT, COLD, ETC.)

ANIMAL KINGDOM, the entire collection of animated objects. There are four primary divisions, or sub-kingdoms: 1. Vertebrata, or animals furnished with a regular backbone. 2. Articulata, animals which contain no skeleton, but are covered with a crust or shell, made of distinct parts, or articulations, as the lobster. 3. Mollusca, animals destitute of skeleton or articulations, but usually inhabiting shells. 4. Radiata, animals of the lowest organization, destitute of an internal respiratory organ, and having a nervous system composed of mere lines, which are often radiated from a center. Each of these sub-kingdoms contains several classes.

ANIMAL MAGNETISM, the mysterious influence which one man appears, by an effort of the will, to exercise upon the body of another man, and which, undoubtedly, gives rise to many very remarkable phenomena, has been rashly ascribed to a peculiar modification of magnetic force. Those few who have studied mesmeric manifestations in a scientific spirit have, however, very wisely discarded the term *animal magnetism*, as it pretends to define an agent that we have no evidence to exist. (See MESMERISM.)

ANIMATION, SUSPENDED, *an-e-ma'-shun.* Suspended animation is the term applied to that condition in which the life of the body is threatened, in consequence of respiration having been stopped or impeded, but in which there still exists a possibility of life being preserved. The chief causes of suspended animation are drowning, hanging, immersion in choke-damp or irrespirable gas, and intense cold. (See DROWNING, HANGING, COLD, CHOKE-DAMP, CARBONIC ACID, ETC.)

ANISE, *an'-es,* [Gr. *anison*, Lat. *anisum*]. Anise is an umbelliferous plant cultivated in Egypt, Malta, Spain, and Germany, for the sake of its fruit, called aniseed, which is extensively used for flavoring liquors and confections, and medicinally as a carminative. The botanical name of the plant is *Pimpinella Anisum.* Star or Chinese aniseed is the fruit of the *Illicium anisatum*, a small tree in the Nat. order *Magnoliaceæ.* It has a starlike form—hence its name, and a flavor similar to that of the common aniseed. Oil of aniseed is obtained by distilling the fruit, and even the stems and leaves of the common anise. For this, a similar product, yielded by the star aniseed, is frequently substituted. The true oil and its substitute have the aromatic properties of the fruits, and are employed for the same purposes. Dose of the oil from 5 to 20 drops on sugar; of the powdered seeds, from 10 to 30 grains; and of the infusion, a wine-glassful. (See INFUSION.)

ANKLE, *ang'-kl.* The ankle is the joint connecting the foot with the leg. It belongs to the class of hinge-joints. It is formed by the lower ends of the tibia and fibula united so as to form an arch into which the superior convex surface of the astragalus is received. From its position, this joint is very liable to be sprained or dislocated. (See DISLOCATIONS, SPRAIN.) Children have often distorted ankles from feebleness of constitution, or from being allowed to walk too soon. In such cases, the general health is to be improved by means of nourishing diet and tonics, as iron; and the child is not to be allowed to stand or run about too much. Stout elastic stockings should be worn, and even, if necessary, leg-irons; and the boots should be made thicker in the sole on that side to which the ankle is inclined. The ankles should also be bathed twice a day in cold salt water, and vigorously rubbed with a rough towel. (See CHILDREN.) Whenever the least suspicion exists that violence to the ankle has caused more than a sprain, no time should be lost in submitting it to the examination of a surgeon. Such injuries are often obscure, and there is much difficulty in making out their exact nature after swelling has come on. A simple sprain of the ankle is to be treated in the mode directed to be followed in similar cases generally. In case of dislocation occurring at a great distance from medical aid, and when from the extreme distortion of the foot the accident is distinctly apparent, some attempt ought to be made by those near to replace the parts, while some one in the meantime is procuring medical aid. The sufferer being laid down, one individual should grasp the leg firmly just below the calf, whilst another, grasping the heel with his left hand, and the lower part of the instep with his right, endeavors by extension in the first place, and slight turning of the foot towards its proper position, to reduce the dislocation. Children are sometimes born with ankles distorted. (See CLUB-FOOT, DISLOCATIONS, JOINTS, SPRAIN, DEFORMITY.)

ANODYNE, *an'-o-dine* [Gr. *a*, without, *odune*, pain], a medicine which allays pain. The term is usually applied only to a medicine which acts upon the nervous system so as to decrease sensibility and induce sleep, or a state of partial unconsciousness. The most important anodynes are preparations of opium, belladonna, aconite, conium, hyoscyamus, lettuce, hop, camphor. Anodyne must be regarded as constituting one of the most benevolent provisions of the Creator for the relief of his creatures. The removal of pain by an anodyne is like a breath of heaven. (See OPIUM, ATROPA BELLADONNA, ACONITE, CONIUM, HYOSCYAMUS NIGER, LACTUCA, HUMULUS LUPULUS, CAMPHOR, ETC.)

ANODYNE NECKLACES. Anodyne necklaces are made of the roots of henbane, bryony, etc. They are believed by the credulous to facilitate dentition, procure sleep, etc.

ANODYNE PLASTER. Useful in any acute local pain, especially of a nervous kind. Ingredients

One dram of powder of opium.
One dram of camphor.
Olive oil.
One ounce of adhesive plaster.

Mode: Dissolve the opium and camphor with a little olive oil; melt one ounce of adhesive plaster, and work the other ingredients well and evenly into it. Lay the plaster on the part affected.

ANOMALY, *a-nom'-a-le*, a deviation from ordinary laws. Monstrosities are called anomalies of organization.

ANOREXIA, *an'-o-reks-e-a* [Gr. *a*, not, and *orexis*, appetite], loss of appetite.

ANTACID, *ant-as'-id* [Gr. *anti*, against, and *acid*], a term applied to such medicines as possess the quality of correcting acidity or sourness in the stomach. The principal antacids are potash, soda, ammonia, magnesia, lime, and their carbonates. The carbonate is the form in which they are usually administered. Where acidity is conjoined with nausea and faintness, ammonia acts as a grateful stimulant, as well as an antacid.

The use of antacids can only be palliative, and their continued regular

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use is productive of serious mischief, for they inevitably destroy the tone of the stomach, and aggravate permanently the evil they may temporarily relieve. Whenever antacids are frequently required, it is a sign that there is some other disorder, though perhaps less prominent, which must be looked for and corrected. (See ACIDITY OF THE STOMACH, DYSPEPSIA, DIGESTION, ETC.)

ANTAGONIST MUSCLES, *an-tag'-o-nist* [Gr. *anti*, against, *agonistes*, a combatant], in Anatomy, are those muscles which act in opposition to each other; as flexors and extensors, abductors and adductors.

ANTALKALI, *ant-al'-ka-li* [Gr. *anti*, against, and *alkali*], a name applied to such medicines as tend to counteract the presence of alkalies in the system. The antalkalies in most common use are muriatic, nitric, and citric acid.

ANTAPHRODISIAC, *ant-af-ro-dizh'-e-ak*, applied first, to medicines which quell amorous desires, or diminish the venereal appetite; applied second, to medicines used against syphilis.

ANTHELMINTICS, *ant-hel-min'-tiks* [Gr. *anti*, against, and *elmins*, a worm], a term applied to such medicines as have the effect of destroying worms in the stomach and intestines. They are of various kinds, but may be divided into three classes—those which, by increasing the peristaltic motion of the intestines, tend to displace the worms, and may thus occasion their expulsion—as purgatives of various kinds; those which tend to strengthen the stomach and intestines, and the system generally—as tonics or analeptics; and those which act specially upon the worms, dislodging, weakening, or killing them. These last are anthelmintics, properly so called. The principal medicines of this class are tin and iron filings, cowhage, kamala, cusso or brayera anthelmintica, oil of turpentine, male fern, calomel, gamboge, jalap, aloes, quassia, tansy, santonine, scammony and iron. (See WORMS.)

ANTHEMIS, *an'-the-mis* [Gr.], the chamomile plant. In Botany, a genus of plants belonging to the Nat. order *Compositæ*, sub-order *Tubulifloræ*, and distinguished by having the scales surrounding the flower, heads membranous at the borders, like those of a chrysanthemum, from which genus it, in fact, differs chiefly in the receptacle of the flower being furnished with little chaffy projections. The most important plant of the genus is *A. nobilis*, the common chamomile, which is extensively cultivated for the sake of its flowers. It is an indigenous perennial, flowering from June to September, and growing on open gravelly pastures and commons. The *capitula*, which are commonly termed flowers, are each composed of a number of tubular yellow florets, arranged on a receptacle, and surrounded by a circle of ligulate white florets. The double variety is produced at the expense of the tubular florets, which become converted into ligulate florets. The single flowers are to be preferred for medical purposes, as the central yellow florets contain much more volatile oil than the white ones. Both leaves and flowers possess a strong but not unpleasant aromatic odor, and a nauseous bitter taste. The principal constituents of the flowers are volatile oil, tannin, and bitter resinous matter. The oil, which is procured by distillation, is stimulant, tonic, and antispasmodic, alterative and emetic, and is frequently used in the preparation of tonic and cathartic pills, and to relieve flatulence, griping, and eructation. The extract and infusion of the dried flowers have the same properties as the oil, and are used for the same purposes. The infusion is formed by half an ounce of the flowers to ten fluid ounces of boiling distilled water, infused in a covered vessel for fifteen minutes, and then strained. It is also employed externally for fomentation. The infusion taken internally is an aromatic bitter of undoubted tonic properties, and without nauseousness. In simple debility of the stomach and loss of appetite, chamomile tea, if not used too frequently and for too long a time at once, is a safe and good remedy. From 5 to 10 drops of the essential oil of chamomile dropped on sugar, is a useful and not unpleasant carminative. (See CARMINATIVES.) The preparations of chamomile are used in dyspepsia, intermittent and typhus fevers, in flatulence, colic, spasms of the stomach, hysteria, nervous diseases, and in painful dysmenorrhœa. It is also recommended in every case in which it is desired to prevent too abundant or too long continued suppurations.

PRINCIPAL PREPARATIONS.

| | |
|---|---|
| Fluid extract.............. | Dose, half to one teaspoonful. |
| Solid " .............. | " four to twenty grains. |
| Pills, two grains .......... | " one to four pills. |
| Infusion .................. | " one to four fluid ounces. |

ANTHRAX. (See CARBUNCLE.)

ANTI, *an'-ti*, a Greek word signifying against, and frequently used in compound medical terms, as anti-bilious, anti-spasmodic, medicines that tend to counteract biliousness, spasms. (See BILIOUSNESS, SPASM, ETC.)

ANTIDOTE, *an'-te-dote* [Gr. *anti*, against, and *dotos*, given], in Medicine, a term applied to remedies or preservatives against sickness; but more particularly to substances which counteract the effects of poison. Antidotes are of two kinds (1), such as act chemically, and by decomposing the poison render it inert; and (2), such as act mechanically by simply covering the mucous surface of the intestines, and thus protecting them from the action of the poison, and preventing its absorption into the system. Of this last are oleaginous, albuminous, gelatinous substances. It has lately been discovered that certain poisons act antagonistic to other poisons. In 1869, Dr. T. R. Fraser read a paper before the Royal Society of Edinburgh, "On the antagonism between the actions of Physostigma (calebar beans) and Belladonna," describing a number of experiments which went to show that fatal doses of one of these poisons are counteracted by the administration of the other. (See POISONS AND THEIR ANTIDOTES.)

ANTI-EMETICS, *an-ti-e-met'-iks*, medicines which prevent or stop vomiting. The most effectual anti-emetics are, opium in some of its forms, camphor, peppermint, essence of cinnamon, essence of tansy, and the carminatives in general. (See CARMINATIVES.)

ANTI-FAT REMEDIES. (See FUCUS VESICULOSUS, CORPULENCE.)

ANTIMONIAL POWDER, *an-te-mo'-ne-al*, fever powder. This material is supposed to be the same thing as the James' powder. The powder, when good, is white, and without smell or taste. The gray powder is an inferior article. The chemist obtains antimonial powder by heating the sulphuret of antimony and the shavings of hartshorn, first to a red, then to a white heat, in an earthen crucible. It is composed of the rust or oxide of antimony, and the phosphate of lime. The sulphuret of antimony is a native ore, of a bluish color, and metallic lustre. The phosphate of lime is the material of which bones are chiefly composed, as well as horn. The antimonial powder has the property of raising a sweat in a very high degree. In large doses it is emetic and cathartic. It has a tendency to increase all the secretions. In fevers it is a very important medicine. In low, malignant fevers it is not so appropriate as in those of an inflammatory nature. Dose: for an adult, 6 grains; for a child one year old, 1 grain; two to four years old, 2 grains; and from four to twelve years old, 4 grains. The powder may be administered in syrup, molasses, or thick gruel.

ANTIMONIAL WINE is a solution of tartar emetic in wine, 2 grains to the fluid ounce; in many cases, it is a convenient preparation, but of course liable to the same dangers as the watery solution; it is much—too much, used popularly, especially as an emetic. In inflammatory diseases, the amount of wine which must be given with each dose is objectionable. It is most useful as a simple diaphoretic, given at bedtime, in doses of from 10 to 30 drops, and combined with half an ounce of spirit of mindererus. (See ANTIMONY.)

ANTIMONY, *an'-te-mo-ne*, is a brilliant bluish-white metal, symbol Sb, from the Latin *stibium;* atomic weight, 129; specific gravity, 6.7. It fuses at 850° F. It is so brittle that it may be reduced to powder by being pounded in a mortar. It volatilizes at a red heat. It is a bad conductor of electricity and heat. When heated in air, it burns, and gives off copious white fumes, consisting of teroxide of antimony. It is also oxidized by nitric and sulphuric acid, and dissolved by aqua regia. In its chemical relations it is allied to nitrogen, phosphorus, and arsenic, and forms, with the last, one of the connecting links between the metallic and non-metallic elements. It forms three oxides, viz: 1. *Teroxide of antimony*, $SbO_3$, a grayish-white powder, which is procured by boiling the metal with sulphuric acid, and evaporating to dryness. 2. *Antimonic acid*, $SbO_5$, a pale yellow powder, tasteless and insoluble, made by adding nitric acid to the tersulphide, and driving off the excess of nitric acid by heat. 3. *Antimonious acid*. If antimonic acid be heated strongly, a compound is produced containing antimonic acid, combined with teroxide of antimony. This is erroneously called an acid, but is really either a teroxide of antimony or an antimoniate of antimony, *i.e.*, either $SbO_4$ or $SbO_3$ $SbO_5$. *Terchloride of antimony*, or *butter of antimony*, $SbCl_3$, is formed by heating the tersulphide with hydrochloric acid. It is very deliquescent, and forms a buttery mass, whence its commercial name. *Tersulphide of antimony* occurs native in gray lead-colored masses, and is the chief ore from which antimony is procured. The hydrated tersulphide, mixed with the teroxide, is an amorphous red powder, and was formerly used in medicine under the name of *Kermes Mineral*. The principal medicinal preparations of antimony are the *teroxide* or *oxide of antimony*, called also Flowers of Antimony, given in doses of 3 to 10 grains, in the form of powder or pill; *antimonial* or *James'* powder, formed of one part of oxide of antimony, and two parts of phosphate of lime, mixed and given in doses of 3 to 10 grains; *solution of chloride of antimony*, composed of one pound of black antimony, or prepared sulphuret of antimony, and four pints of hydrochloric acid, sometimes used externally, as an active caustic, but never administered internally; *sulphureted antimony*, composed of 10 ounces of black antimony, 4½ pints of solution of soda, and of diluted sulphuric acid, and distilled water, a sufficient quantity of each—dose, 1 to 5 grains; *tartrate of antimony*, composed of 5 ounces of oxide of antimony, 6 ounces of acid tartrate of potash, and 2 pints of distilled water, given as a diaphoretic, in doses of one-sixteenth to one-sixth of a grain; as an emetic, 1 to 2 grains. *Antimonial wine* is composed of 40 grains of tartrated antimony to one pint of sherry; dose, 10 to 30 drops. The effects of antimonial preparations are all similar in their nature. In small doses they are stimulating, diaphoretic, and expectorant; in larger doses, emetic. They are frequently valuable in colds, catarrhal affections, by stimulating the secretion of fluids by the skin and mucous membranes. The most common and the safest forms in which antimony is used, are *James' powder*, and the tartrate, or *antimonial wine.*

*Tartar emetic, or tartarized antimony*, the most powerful of all the preparations of antimony, is a preparation which stands without a rival as the controller of some forms of inflammation. A compound salt of antimony, potash, and tartaric acid, it is formed in crystals, but usually sold as a white powder. It is sufficiently soluble in water to be conveniently administered in that fluid, which should always be used soft or distilled; a simple solution of the medicine is preferable in most cases. In large doses, tartar emetic acts as a powerful irritant poison, causing intense nausea, vomiting, severe pain in the bowels, purging, bloody stools, and extreme general depression; and even in comparatively small doses, these effects are sometimes liable to be developed in degree, especially in children. Great caution, therefore, is required. In case of a poisonous, or overdose of tartar emetic having been swallowed, the best remedy is some astringent infusion—Peruvian bark, nut galls, or strong tea. There is considerable variation in the strength of the dose of tartar emetic given by medical men; when, under necessity, it is dispensed by others, the sixth to the eighth of a grain only, should be given to an adult. A convenient form, is to dissolve 2 grains of the salt in $\frac{1}{2}$ a pint of soft water slightly warmed, and of this, to give a tablespoonful every three or four hours, so as to keep up continued nausea. Vomiting may follow the first dose or two, but after that, in most cases, the stomach becomes tolerant of the remedy. By giving tartarized antimony dissolved in a moderately small quantity of water, its irritant effects are less liable to be exerted upon the bowels, and should they come on, a few drops of laudanum, if otherwise admissible, must be given in some demulcent, barley or rice-water, and the demulcent alone continued as common drink. To children, tartarized antimony, must be administered with great caution, and is better avoided by the unprofessional, except in the extreme cases of croup, or severe inflammation of the lungs, plainly existing, and occurring at a distance from proper medical assistance. In the former alarming disease, tolerably full doses are required to make a quick impression upon the system, and to induce speedy vomiting. For a child of six or seven years, a single grain must be dissolved in an ounce of water, and a teaspoonful of the solution, given either alone, or in a little water as drink, every quarter of an hour, till free vomiting is produced. In inflammation of the lungs, half the dose must be given; but this advice, let it be remembered, applies only to the severe diseases above mentioned, when occurring at a distance from medical aid. The practice of administering antimony to children, generally is not well, unless under medical sanction, and in those of weak constitution may be productive of serious or fatal results. For a simple emetic, antimony is seldom well adapted, and should not be used when others are obtainable.

ANTIMONY, ANTIDOTES FOR. (See POISONS AND THEIR ANTIDOTES.)

ANTIPATHY, *an-tip'-a-the* [Gr. *anti*, and *pathos*, feeling], in its widest sense, denotes the natural dislike or aversion which an animate being entertains for some particular object; as the antipathy of sheep to wolves, of a turkey-cock to the color red. In the human species we frequently meet with remarkable cases of antipathy by certain individuals to objects which are grateful or indifferent to the generality of mankind. Thus, some have an antipathy to certain kinds of food, as butter or eggs; to certain animals, as toads, mice, spiders; to certain tastes, smells, sounds, etc. In some cases, the antipathy is so strong as to produce sickness or fainting. Doubtless, many of these feelings may be traced to early training, as when children are frightened with certain objects, or nauseated with certain kinds of food. But antipathy is not always a conscious caprice which may be removed by an effort of the will, or by habit, for it is sometimes found that the effects of the presence of these objects are manifested on the individual, though their presence be unknown, and that substances for which he feels an antipathy, when partaken of unconsciously, may produce in him exactly the same symptoms as if he had partaken of them knowingly. It is difficult to account for this, except on the principle that there lie, beyond the sphere of our consciousness, feelings and impressions which only become known to us by their effects. In order to overcome such antipathies, which may otherwise become the source of much pain or annoyance to the individual, it is necessary to accustom him gradually to the object of dislike from early years; and in this way, almost any antipathy may be overcome. Antipathy is sometimes also used to denote that mode of treating disease by means of opposites, or medicines that produce an opposite effect to the character of the disease; as purgatives to relieve constipation, narcotics to ease pain.

ANTIPHLOGISTICS, *an-ti-flo-jis'-tiks* [Gr. *anti*, and *phlogosis*, inflammation], is a term applied to such remedies as tend to remove, lessen, or prevent inflammation; as blood-letting, purgatives, low diet, etc. The antiphlogistic mode of treatment is now much less resorted to than formerly, medical men having come to see the necessity rather of supporting than of lowering the vital powers. (See INFLAMMATION.)

ANTISCORBUTICS, *an-ti-skor-bu'-tiks* [from *anti*, against, and *scorbutus*, a barbarous Latin word for scurvy], a term applied to remedies against scurvy. (See SCURVY.)

ANTISEPTICS, *an-ti-sep'-tiks* [Gr. *anti*, against, *sepein*, to putrefy], are the means or substances by which the decay or putrefaction of dead vegetable or animal substances is prevented or checked. There are three conditions which favor putrefaction—1, a certain degree of warmth; 2, air; 3, moisture; by the absence of one or more of which its progress is retarded or arrested. The preservative power of cold is observable in animal or vegetable substances imbedded in the ice; and the packing of fish with ice is a common means adopted for preserving them. The exclusion of air is another means of checking putrefaction. In this way, meats are frequently preserved by being put into tin canisters, which, after the air is carefully extracted, are soldered down. Again, substances may be preserved by the abstraction of moisture; as in plants, dried fish, bacon, etc. The more important chemical antiseptics are alcohol, salt, nitre, alum, creosote, arsenic, corrosive sublimate, sulphate of copper, chloride of zinc, chloride of lime, and carbolic acid. Cold acts as an antiseptic. (See PUTREFACTION.)

ANTISPASMODICS, *an-ti-spas-mod'-iks* [Gr. *anti*, and *spasmos*, a spasm], in Medicine, are those remedies which are employed to allay or remove spasms. Spasms arise from various causes, and hence the remedies are different. They may be caused by irritation in the intestinal canal by worms, etc., and hence purgatives or anthelmintics are to be used. Anodynes or narcotics, as opium or belladonna, serve to deaden the nervous irritability to which spasms are frequently owing. Sometimes they arise from mere debility; and hence, strengthening diet, and tonics, as nitrate of silver, sulphate of zinc, nitrate of bismuth, quinine, etc. (See SPASM.)

ANTRUM OF HIGHMORE, *an'-trum. Antrum Maxillæ superioris*, maxillary sinus, a large cavity in each superior maxillary bone between the eye and the roof of the mouth, lined by a mucous membrane. The maxillary sinuses are liable to several morbid affections. Sometimes their membranous lining inflames, and secretes a great quantity of mucus or pus. Various polypi, fungi, and other tumors are produced in them. Their bony parietes are occasionally affected with exostitis, or caries. The antrum is subject to abscess, which is accompanied with great pain and swelling, ending in caries of the palate, nasal plate, etc., whereby the pus is evacuated. Inflammation in this cavity may arise from cold, or take place without any apparent cause, but is generally produced by the irritation of decayed teeth, or from blows upon the cheek.

*Treatment.*—It may be remedied by extracting a molar tooth, and perforating with a strong, sharp-pointed instrument, through its socket, the cavity. After the pus is discharged, inject the cavity with tepid water, soap and water, or a weak solution of chloride of soda. Should the discharge be profuse or fetid, there will be reason to suspect that there is some loose piece of bone, for which search should be made with a probe, and if found, removed at once, the aperture being enlarged if necessary. Abscesses in the antrum sometimes break through into the mouth or nostril, or they may point externally and discharge through the cheek; but generally, an artificial opening will be required, and surgical aid necessary.

ANUS, *a'-nus* [Lat.], in Anatomy, is the lowest part of the alimentary canal, forming its outlet. It is surrounded by a muscle, called the *sphincter ani*, by which it is kept close, except when the bowels are being evacuated. When paralysis, or other disease, attacks this part so that it cannot perform its function, the evacuations become involuntary. The anus is not unfrequently the seat of troublesome disease, as fistula, piles, etc. (which see). Sometimes, particularly in delicate children, the lower part of the intestines are apt to protrude out of the body, which is called *prolapsus ani*. (See PROLAPSUS ANI, RECTUM.)

ANXIETY, *ang-zi'-e-te* [Lat. *ango*, to vex, to trouble]. In medical language this term is applied to a painful restlessness and inquietude, usually accompanied with a sense of weight in the præcordial region.

AORTA. (See ANATOMY.)

AORTITIS, *a-or-ti-'tis*, inflammation of the aorta. An extremely obscure disease, usually associated with disease of the heart, lungs, and pleura, and resulting in aneurism and other organic and fatal consequences.

*Symptoms.*—Increased action of the heart, dyspnœa or difficult respiration, uneasiness in the course of the artery, and violent pulsations.

*Treatment.*—Counter-irritation with tartar-emetic ointment (which see), issues, blood-letting, rest, antiphlogistic treatment.

APERIENT, *a-pe'-re-ent* [Lat. *aperio*, *aperiens*, to open], whatever opens the bowels gently—a laxative in contradistinction to purgatives and cathartics, which act strongly. (See CATHARTICS.)

APERIENT AND CATHARTIC MEDICINES, ABUSE OF. (See CATHARTICS.)

APERIENT MIXTURE. Dissolve 1 ounce of Epsom salts in ½ pint senna tea; take a quarter of the mixture as a dose, and repeat it in three or four hours if necessary.

Another, suitable for spring. Ingredients: 2 ounces of Epsom salts, 2 drams of calcined magnesia, 60 drops of essence of peppermint, ½ pint of peppermint water, and 1 quart of spring water. Mix well together. Dose, 1 wine-glassful every morning.

APERIENT PILLS. Ingredients: Compound extract of colocynth 16 grains, submuriate of mercury (calomel) 4 grains. Mix these and divide them into five pills. Take two at bedtime and one the next morning, and repeat the dose if necessary.

APERIENT POWDER, for a child. Scammony, 3 grains; jalap, 3 grains: rhubarb, 3 grains; ginger, 1 grain.

APHONIA, *a-fo'-ne-a* [Gr. *a*, without, and *phone*, voice], a deprivation or loss of voice.

*Causes.*—It may arise from various causes, as from a shock or fright, or it may be a hysterical affection. Disease of the brain is also not an unfrequent cause of aphonia. It may also be owing to disease, inflammation, or ulceration of the vocal chords, or parts adjoining. The instrument called the laryngoscope now throws much light upon this form of the disease by revealing the condition of the throat. Many persons are peculiarly subject to loss of voice by exposure to cold.

*Treatment.*—For its relief, confinement to the house, or to bed, if accompanied by feverish symptoms, is required. The inhalation of the steam of hot water, and the application of mustard over the throat, are useful remedies. In inflammation or ulceration about the vocal chords, a solution of from 40 to 80 grains of the crystals of the nitrate of silver to an ounce of pure water, is recommended to be applied by means of a curved camels' hair brush. If upon examination of the throat there be found no signs of inflammatory action, change of scene and air, with the internal administration of tonics, and the cold shower bath will be found very useful.

| | | |
|---|---|---|
| Take of | Sulphate of iron | Sixteen grains. |
| | Sulphate of quinine | Twelve grains. |
| | Dilute sulphuric acid | One and a half drams. |
| | Compound tincture of lavender | One dram. |
| | Pure water | Eight ounces.—*Mix.* |

Dose, 2 tablespoonfuls to be taken three times a day. When the tonsils are inflamed, the following gargle may be used:

| | | |
|---|---|---|
| Take of | Dilute sulphuric acid | Three drams. |
| | Compound tincture of lavender | Two drams. |
| | Pure water | Half a pint.—*Mix.* |

To be used frequently. After using this application, the mouth should be always rinsed out with cold water, to prevent the acid exerting any injurious influence upon the teeth. (See CLERGYMAN'S SORE THROAT.)

APHTHA INFANTUM. (See THRUSH.)

APHTHA LACTEA. (See NURSING SORE MOUTH.)

APIUM, *a'-pe-um*, the name of a genus of plants, family *Umbelliferæ.*—*A. gravé'olens.* Apium Smallage. The roots, etc., are said to be aperient and carminative; the whole plant is acrid and poisonous. Celery is a variety produced by cultivation.—*A. Hortense*, common parsley: the seeds possess aromatic and carminative powers, but are seldom used.

APNŒA, *ap'-ne-a* [Gr. *a*, and *pneo*, I breathe,] denotes, properly, deprivation of breath, or suffocation. (See SUFFOCATION, ASPHYXIA, DROWNING, ETC.)

APOCYNACEÆ, *a-pok-e-na'-se-e* [Gr. *apo*, against, *kuon*, dog], in Botany, the dogbane order of dicotyledonous plants, included in the sub-class *Corolliflorœ*—trees or shrubs generally having milky juices. The dogbanes are natives principally of tropical regions, a few only occurring in northern latitudes. Some of the plants of this order are intensely poisonous, and all are to be suspected, though a few yield edible fruit. Some are drastic purgatives, and in some the bark is tonic and febrifugal. They have usually large showy flowers, and are on that account cultivated in our hothouses. Caoutchouc, or india-rubber, is prepared from the milky juice of several species. The two principal varieties are *Apocynum Androsœmifolium*, or bitter root, which is alterative, diuretic, diaphoretic, emetic, tonic and laxative. It is used in the treatment of chronic hepatic affections, scrofula, jaundice, amenorrhœa, dyspepsia, syphilitic affections, dropsy and rheumatism. Dose: Fluid extract, tonic, 10 to 20 drops; fluid extract, diaphoretic, 15 to 25 drops; solid extract, 2 to 8 grains.

*A. cannabinum*, or Indian hemp, a powerful tonic, diaphoretic and emeto-cathartic, inducing a tendency to sleep, independent of the exhaustion consequent upon vomiting. It has been successfully used in intermittent fever and ague, dysentery and enteritis, or inflammation of the bowels. Dose: Fluid extract, tonic, 5 to 20 drops; fluid extract, emetic, 20 to 30 drops. Dose of decoction, ½ a wine-glassful. (See CAOUTCHOUC.)

APOCYNIN, *a-pok'-e-nin.* The active principle obtained from the *A. Androsimœfolium*, or bitter root, and used in chronic hepatic affections, scrofula, jaundice, dropsy, amenorrhœa, and rheumatism. Dose, from ½ grain to 2 grains.

APOPLEXY, *ap'-o-pleks-e* [Gr. *apoplexia*, a sudden blow, a privation of sense and motion.] This term is used to signify a peculiar form of nervous disease due to pressure upon the brain from various causes, marked by a sudden loss of thought and voluntary motion.

*Causes.*—Apoplexy is due to pressure on the brain as previously stated, and this may be the result of the effusion of some of the fluid part of the blood, or of blood itself. The third form, in which there is no loss of consciousness, is due to softening of the brain from disease of the arteries or inflammation.

Apoplexy is transmitted from parent to offspring—it occurs in men of a peculiar build, in those who are short, stout, and thickset, with large heads, florid faces, and short, thick necks. It rarely happens before the age of thirty, and is most frequent between the ages of fifty and sixty. It may be brought on by a diseased state of other vital organs of the body, as the heart, lungs and kidneys. Intemperance greatly favors its onset. Before the actual occurrence of an attack of apoplexy, people generally manifest premonitory symptoms of their liability to cerebral disease. They begin to suffer from headache, nausea, giddiness, retchings, eructations, their sense of sight and hearing becomes impaired, and there may be a slight attack of paralysis; there are complaints of numbness and drowsiness, and the disposition and habits are altered—the brave man becoming cowardly, and the wise man and the man of common sense foolish and hazardous.

Anything which increases the activity of the circulation may be an exciting cause of apoplexy; all kinds of violent exercise, as running, rowing, and horseback exercise must be avoided; there must be no obstruction to the free descent of blood from the head, and a person by nature predisposed to this affection should not be allowed to strain or hold his breath, as in playing on wind instruments. The course of the blood in the capillaries of the lung, and in the brain also, is retarded, or actually prevented by vomiting, laughing, coughing, and sneezing, and in this way many forms of lung disease predispose to this nervous affection. Violent emotion and the excitement of drunkenness must be avoided. An attack of apoplexy is sometimes brought on by certain postures of the body hindering the downward current of blood from the head, such as stooping and twisting the neck. A few months since the writer had under his care and treatment a man of apoplectic build, who had arisen in the morning from sleep apparently quite well after a good night's rest, but in the course of dressing, when stooping to pull on his boots, he suddenly fell back, having lost all power of sensation and voluntary motion in the whole of the left side of the body.

Apoplexy is more frequent in the colder than in the warmer seasons of the year, for the following reasons: in the first place, the cold atmosphere of winter drives the blood from the surface of the body, and leads to internal congestion; and secondly, chest disease in all its forms, and with all its symptoms, cough, difficulty of breathing, leading to venous congestion of the cerebral vessels, is more prevalent during the colder months.

*Symptoms.*—There are three distinct forms of attack: in the first, the patient is suddenly stricken down, deprived of sense and motion, he has a slow but full pulse, his breathing is stertorous, and he is like a person in a deep sleep; the second form of attack sets in with acute pain in the head, due to the giving way of a vessel in the brain, the patient is pale and faint, and troubled with nausea and vomiting; these symptoms are generally recovered from after a short space of time, but the headache does not cease, and in due time after blood has been poured out from the ruptured vessel upon or into the substance of the brain, the patient becomes heavy, stupid, drowsy, and forgetful, and sinks into a sleepy state, the apoplectic condition being fully arrived at, as in the previous form of this disease. When apoplexy commences in this way, the life of the patient is in great danger, for it usually proceeds to a fatal termination, a large quantity of blood being extravasated from the gaping vessel. In the third mode of attack there is a sudden loss of voluntary motion in the whole of one side, and the function of the nerves of sensation of that side become more or less impaired, varying in degree from mere tingling or numbness to perfect loss of feeling, but there is no loss of consciousness; the faculty of speech is impaired. This state of things may terminate in perfect recovery, in the limbs being permanently palsied, or may run into the apoplectic state described below. When the apoplectic state is fully formed, the patient is perfectly unconscious, he answers no questions, his pulse is slow and irregular, the act of inspiration is accompanied by snoring or stertor, and during expiration the cheeks are puffed out by the passage of air from the lungs; his countenance is livid, the pupils contracted, and the limbs powerless. The bowels are confined, but the urine flows away involuntarily.

*Treatment.*—Remove the patient into a cool and airy room, gently raise his head, and remove all articles of clothing preventing the free escape of blood from the head; if the patient be strong, young, healthy, vigorous, of full habit, and the pulse be full and hard, and if there be at the same time signs of plethora within the head, blood may be taken from the arm. In many cases blood-letting is contra-indicated, the patient being already well advanced in years and in a reduced state of health. In such cases we must either content ourselves in cupping the nape of the neck or in applying a few leeches to the head, or give up altogether the idea of abstracting blood, and must apply a blister to the back of the neck. When the invalid is not much reduced, great advantage will be derived from the action of an active purgative, and this ought to be given at once, if possible, in all cases; 10 grains of calomel is a convenient form of medicine for this purpose, and may be readily placed upon the back of the tongue: or a drop of croton oil placed upon a small piece of loaf sugar may be sucked down by the patient. Should he be unable to swallow, strong, purgative, stimulating enemata may be thrown up the bowels. In those cases of loss of power over one side, with no loss of consciousness, which are due to softening of the brain, bleeding is unnecessary, but they require quietude and composure, a blister may be placed upon the back of the neck, the purgative treatment as previously described persevered in, and beef-tea, broth, toast, arrowroot, gruel, and tea given at short intervals. If the patient be faint and in a state of syncope, the following stimulating mixture may be given:

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|---|---|
| Take of Carbonate of ammonia .............. | Eighteen grains. |
| Pure water.......................... | Six ounces.—*Mix.* |

Let two tablespoonfuls be taken every three or four hours.

Apoplexy occurring in aged people and debilitated subjects, must be treated by stimulating medicine and nutritious food; a blister or seton may be applied to the back of the neck, and the bowels freely acted upon by a brisk purgative. Cold lotions applied to the head will often give great comfort to the feelings of the patient, and alleviate his symptoms. In the more chronic form of apoplexy, after the more acute stage of the disease has passed away, and the muscles in various parts of the body remain in a weak and palsied state, iron and quinine will often be found of great service, thus:

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|---|---|
| Take of Sulphate of iron.................... | Twelve grains. |
| Sulphate of quinine................. | Twenty grains. |
| Dilute sulphuric acid................ | One teaspoonful. |
| Pure water.......................... | Six ounces.—*Mix.* |

Give two tablespoonfuls three times a day. Or,

| | |
|---|---|
| Take of Sulphate of quinine................. | Twenty grains. |
| Tincture of muriate of iron.......... | One teaspoonful. |
| Dilute hydrochloric acid ............. | Half teaspoonful. |
| Pure water.......................... | Six ounces.—*Mix.* |

Give two tablespoonfuls every six hours.

Galvanism to the affected muscles, and the administration of strychnine internally, will assist the palsied limbs in regaining their power of motion. Strychnine may be safely given thus:

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|---|---|
| Take of Strychnine ............................ | One grain. |
| Confection of roses ....................... | One teaspoonful. |

Mix thoroughly and make 15 pills, and let one be taken every night and morning. Or thus:

| | |
|---|---|
| Take of Solution of strychnine.............. | Two teaspoonfuls. |
| Pure water.......................... | Eight ounces.—*Mix.* |

Take a tablespoonful night and morning.

*Preventive treatment.*—All are more or less liable to an attack of this terrible disorder, but those who inherit a predisposition to it from their ancestry, should constantly be on their guard. Especially is this the case when one or more of the premonitory symptoms are present. Absolute rest and quiet are, under such circumstances, imperatively demanded. Violent physical exercise of any kind, lifting heavy weights, leaping, striking hard blows, playing on wind instruments, singing, long and loud talking, are all to be carefully avoided. Straining at stool is a common exciting cause, and therefore, the importance of those predisposed to apoplexy, by proper diet and regular habits, to guard against costiveness. Coughing may have the same effect, and consequently even a common cold, in such persons, should be immediately attended to. Large fires, crowded rooms, and even the direct heat of the sun favor the disease, and ought to be shunned. Even the warm bath cannot be safely indulged in. Exposure to cold is equally hazardous. All occupations or recreations which involve a great amount of stooping or twisting of the neck, occasioning giddiness or confusion of thought, should be carefully avoided. Excessive indulgence in alcoholic stimulants and venereal excitement, are frequent immediate causes also. When any of the premonitory symptoms referred to frequently recur, or do not speedily disappear, resort should be had to the best physician in the neighborhood for advice and treatment.

APOTHECARIES' WEIGHTS AND MEASURES. (See Weights and Measures.)

APPARATUS, *ap-pa-ra'-tus* [Lat. *apparo*, to prepare], the instruments used in the practice of any art, as chemical apparatus, surgical apparatus. In Surgery, to certain methods of performing operations, as apparatus major, and apparatus minor—particular methods of operating for the stone. In Physiology, to a catenation of organs all ministering to the same functions, as the respiratory apparatus, the digestive apparatus.

APPETITE, *ap'-pe-tite* [Lat. *appeto*, I desire], in general denotes a desire of enjoying something that is believed or felt to be necessary to or conducive to our happiness; and is more particularly applied to that desire for food which, in a healthy state of the body, is felt at regular intervals; and which indicates the necessity of a fresh supply of food in order to compensate for the bodily waste that has taken place. In general, when not depraved, or perverted, or pampered, the appetite is a most valuable and faithful guide as to when, how, and to what extent nourishment is required. When disease comes on, the appetite usually flags, an indication from nature that the process of digestion cannot be carried on as before; and, therefore, in such cases, it is generally injudicious to press food upon one in these circumstances. In fevers, and many other disorders, loss of appetite is one of the most frequent features; but sometimes it occurs as the principal or only characteristic; and then it is owing to a disordered state of the digestive organs.

The longings of appetite sometimes appear to be almost instinctive, especially in illness, particularly where there has been much or obstinate vomiting. The patient will express a strong desire for some article of food or drink which our preconceived ideas or theories would certainly forbid, but which being permitted, seems at once to agree. When the various morbid deviations from natural appetite are considered, such latitude requires of course great caution; but the fact should not be lost sight of: a variable appetite, at one time deficient, at another morbidly active, is scarcely consistent with health. In children, it is often indicative of worms. Depraved appetite consists in the longing for, or devouring substances not intended for food, such as chalk, slate pencils, cinders, earth, etc.; the symptom is not unfrequently a concomitant of the chlorotic diseases of young females. The "dirt eating" of tropical climates is another form of depraved appetite. (See DIGESTION, DYSPEPSIA, FOOD, DRINKS, HEALTH, DIET.)

APPLE. (See FRUITS, PYRUS MALUS.)

APPLE TREE. (See PYRUS MALUS.)

APYREXIA, *ap-e-reks'-e-ą*, the intermission of an ague. Also, freedom or cessation of fever.

AQUA, *a'-kwą*, is the name given in Latin to water. Water, owing to its great solvent powers, is never found naturally in a perfectly pure state, but always more or less impregnated with foreign substances, and hence, the necessity, in most chemical pharmaceutical operations, of using distilled water—*Aqua Distillata.* This is obtained by taking a certain quantity of spring or river water, and distilling it in a copper still with a block-tin worm, rejecting the first twentieth part, and preserving the first three-fourths of the remainder. This is to be preserved in well-corked bottles. Frequently, however, rain-water, filtered through alternate strata of well-washed sand and charcoal, will answer equally well with distilled water; for frequently, in prescriptions, distilled water is ordered when there is no necessity for its use. Frequently distillation is had recourse to to extract and preserve the volatile oil of plants. A certain quantity of the plant is taken with, perhaps, two gallons of water and one half distilled. Thus, we have *aqua anethia*, or dill water; *aqua anisi*, or aniseed water; *aqua cinnamoni*, or cinnamon water. These are seldom used as active remedies, but more frequently as elegant mediums for the exhibition of less agreeable medicines. (See WATER.)

AQUA FORTIS. (See NITRIC ACID.)

AQUA REGIA. (See NITRO-MURIATIC ACID.)

AQUEDUCT, *ak'-we-dukt* [Lat. *aquæductus*, a water-course], this name has been given by anatomists to several canals in different parts of the body, but not very correctly, as several of them contain no fluid.

AQUEOUS HUMOR, *a'-kwe-us*, is the name given to that watery fluid of the eye which is situated between the back of the cornea and front of the lens. (See EYE.)

ARABIC, GUM, *ar'-a-bik.* Gum Arabic, gum Senegal, common sweet gum, obtained from Barbary, Morocco, and India. It exudes spontaneously from several species of acacia, as the *A. vera*, Arabica, Senegal, etc. It is found in pale, yellowish, hard, brittle, and shining fragments, soluble in water, and insoluble in alcohol. The mucilage is prepared by dissolving one part of gum in two of hot water. It is demulcent, and an excellent vehicle for suspending oily medicines, which it renders miscible with water.

ARACHNOID MEMBRANE, *a-rak'-noid* [Lat. *arachnoides*], a very thin and transparent membrane, investing the brain, medulla oblongata, and spinal cord. It is situated between the dura mater and pia mater. Over the whole surface of the brain the arachnoid membrane adheres so closely to the pia mater as to be scarcely separable from it; but in different parts of the base of the brain, especially about the tuber annulare, it is merely in contact with the pia mater, and can easily be raised by means of the blow-pipe. The arachnoid membrane does not insinuate itself between the convolutions of the brain. No blood-vessels or absorbents have hitherto been detected in it, although the phenomena of disease sufficiently evince that it is endowed with both. The inner surface of this membrane is constantly bedewed with a serous exhalation, and there is little doubt that, like other membranes of this class, it forms in its whole extent a closed sac.

ARALIA, *a-ra'-le-a*, a genus of plants belonging to the Nat. order *Araliaceæ.* It contains a considerable number of species—trees, shrubs and herbs, some of which yield useful products.

*A. Hispida*, or dwarf elder. The bark of the root of the dwarf elder is used in dropsy, gravel, and suppression of urine. Dose of the fluid extract, 1 to 2 teaspoonfuls. Dose of decoction, from 2 to 4 fluid ounces, three times a day.

*A. Nudicaulis*, or small spikenard, is a native of North America, and its roots are used popularly in the treatment of rheumatic affections. They are commonly known as false or American sarsaparilla. Dose of fluid extract, 1 to 2 teaspoonfuls. The decoction may be used freely.

The *A. Racemosa*, or spikenard, is alterative and gently stimulant. Used in cutaneous, rheumatic and syphilitic affections, and in pulmonary diseases. Recommended as having been administered with considerable success in dropsies. Michaux cites it as sudorific. Dr. Sarazzin makes mention of it as very useful as a poultice in inveterate ulcers. Dose of the fluid extract, 1 to 3 teaspoonfuls; dose of the decoction, 1 to 2 fluid ounces, three times a day.

*A. Spinosa*, the angelica, or toothache tree, is a native of North America. The bark is used as a stimulant diaphoretic, and the berries are said to be useful in toothache, whence the name. Dose of the powder, 20 grains; of the tincture, 1 to 2 teaspoonfuls; of the infusion—made by infusing a teaspoonful of the powder in a pint of boiling water—a teaspoonful every hour till the desired effect is produced. (See Decoction.)

ARBOR VITÆ. (See Thuja Occidentalis.)

ARCHANGELICA, *ark-an-jel'-e-ka*, in Botany, the herb archangel, a genus of plants belonging to the Nat. order *Umbelliferæ.* The species are mostly herbaceous and perennial, natives of the cold and temperate regions of the northern hemisphere. *A. officinalis*, the garden angelica, is an indigenous biennial, growing in watery places, but somewhat rare in this country. It flowers from June to September, the blossoms being greenish-white. Its root is large and fleshy, resinous, and pungently aromatic. The tender stems and mid-ribs of the leaves are boiled in syrup, and, when dried, constitute candied angelica, which, taken as a dessert, is a very agreeable stomachic. Large quantities of angelica are used in the preparation of London gin and the liquor known as "bitters." The root is aromatic, stimulant, carminative and diuretic. It is used in flatulent colic, heart-burn, and as a remedy to promote menstruation. Dose of fluid extract, ½ to 1 teaspoonful; of the infusion, 2 fluid ounces, three times a day. (See Infusion.)

ARCTOSTAPHYLOS. (See Uva Ursi.)

ARECA, *a-re'-ka*, in Botany, a genus of plants belonging to the Nat. order *Palmaceæ*—the palms, containing two species, each remarkable for the purposes to which it is applied. *A. catechu*, the betel-nut palm, has been described as the most beautiful palm in India. The stem is remarkably straight, and often from 40 to 50 feet high, and generally about 20 inches in circumference. It is cultivated throughout India for the sake of its seeds, which are known as betel, areca, and pinang nuts. The nut is one of the ingredients in the famed masticatory of the East called betel (which see). Charcoal prepared from the nuts, and termed areca-nut charcoal, is used in this country as a tooth powder; but it is doubtful whether it is in any way superior to ordinary charcoal. An extract is made from nuts in the south of India, and constitutes one of the commercial varieties of catechu (which see.) *A.*

*oleraceæ*, the cabbage palm, is a native of Jamaica and other West India islands. The trunk, which is seldom more than six or seven inches in diameter, grows to a height of from 100 to 200 feet. The majestic palm is frequently cut down for the sake of the single terminal bud, called the cabbage, which is eaten either raw or boiled as a vegetable.

AREOLA, *a-re'-o-la*, a term applied medically to the inflamed circle which surrounds a vesicular or pustular elevation, such as that of the vaccine vesicle. Also applied to the colored circle surrounding the female nipple. Generally, not invariably, previous to pregnancy, this areola is light in color, but in the majority of cases, soon after conception it begins to darken, and in some individuals, especially in those of dark complexion, it becomes of a deep brown. The change of color in the areola is, therefore, classed amid the more certain signs of pregnancy, but as it has been known to exist in the virgin, and is not universally developed in the pregnant female, it can never alone be taken as a decisive proof, but only as corroborative, along with other symptoms. (See PREGNANCY.)

ARGENTUM, *ar-jen'-tum*, Lat. for silver. (See SILVER.)

ARGOL, *ar'-gol*, the crude tartar which is deposited by all wines as a crust upon the inside of the casks in which they are stored. Argol is the source from which are obtained tartaric acid and common cream of tartar, which is a tartrate of potash. Argol is dissolved in hot water, which, when cold, deposits the cream of tartar in small oblique rhombic prisms. (See CREAM OF TARTAR.)

ARISÆMA, *ăr-i-se'-ma*, in Botany, a genus of plants belonging to the Nat. order *Araceæ*, the Arum family. The species *A. atrorubeus*, dragon-root, or Indian turnip, is a native of North America. From the tuber a nutritious fecula is obtained. In Medicine, the tuber is also occasionally used, being given internally as a stimulant in rheumatism and bronchial diseases, and being also employed as an application to aphthous affections in children. It is also recommended in flatulence, croup, whooping cough, asthma, bronchitis, colic, etc. Externally it has been used in scrofulous tumors, etc. Dose of powdered root, 10 grains, increased to 20 or 30 grains if necessary, repeated every three or four hours.

ARISTOLOCHIA *ă-ris-to-lo'-ke-a*, in Botany, birthwort, the typical genus of the Nat. order *Aristolochiaceæ*. Several species of this genus have been employed for centuries in Medicine, principally on account of their supposed emmenagogue properties; and hence the name birthwort. The rhizome and root-fibres of *A. serpentaria*, commonly called serpentary, or Virginian snake-root, are officinal, and have a warm, bitter camphoraceous taste, and a strong aromatic camphoraceous odor. Serpentary was originally introduced as an antidote to snake-bites, but it is now known that it has no efficacy in such cases. It is a valuable stimulant, tonic, and diaphoretic, and is especially useful in fevers of a low typhoid character. It makes a valuable gargle in malignant sore throat. It is sometimes employed as a tonic in dyspepsia, and has proved useful in amenorrhœa. It is said by some to be a remedy for intermittent fever or ague, and also to have anthelmintic properties. It is commonly exhibited in the form of an infusion, tincture, or fluid extract. The infusion is made of ¼ ounce of bruised root to 10 fluid ounces of distilled boiling water; dose, 1 to 2 fluid ounces. The tincture is composed of 2½ ounces of root in coarse powder, and 1 pint of proof spirits; dose, ½ to 2 teaspoonfuls; dose of fluid extract, ¼ to ½ teaspoonful.

ARM, *ärm* [Lat. *brachium*], is that part of the upper extremity of the body which extends from the shoulder to the wrist. It consists of two portions—the arm, or *brachium*, properly so called, and the forearm, or *anti-brachium;* the former having one bone—the humerus; the latter two bones—the radius and ulna. (See ANATOMY.)

ARMORACIA, *ar-mo-ra'-se-ą.* in Botany, a genus of plants belonging to the Nat. order *Cruciferæ.* The species *A. rusticana* is cultivated for the sake of the root, which is the common horseradish, so much used as a condiment. The plant is frequently met with, growing wild by the side of ditches and on the banks of rivers; but, from its bearing some resemblance to aconite, the latter has been mistaken for it; and cases of poisoning have occurred in consequence. The roots, however, of horseradish are larger and longer than those of aconite; and when scraped, have a very pungent odor. A volatile oil, resembling oil of mustard, may be obtained from horseradish by distillation, and there can be no doubt that all the valuable properties of the plant depend upon this principle. The odor of the oil is exceedingly powerful, that arising from a single drop being sufficient to fill a whole room. The root is considered to be anti-scorbutic, anti-rheumatic, stimulant, diaphoretic, and diuretic, and is frequently used in Medicine. Applied to the skin, it produces vesication. A syrup made with an infusion of the root and sugar has been used, with success, as a remedy for hoarseness, arising from relaxation. Burnett states that horseradish steeped in milk forms one of the best cosmetics. As a dietetic, it is used scraped, or in the form of a sauce, with roasted meat and fish. When eaten on an empty stomach it is deleterious. It is used as a tonic in debility of digestive organs. Dose of the root grated, 1 to 2 teaspoonfuls, three times a day.

ARM-PIT. (See AXILLA.)

ARNICA, *ar'-ne-ka*, in Botany, the name of a genus of plants belonging to the Nat. order *Compositæ*. The most important species is *A. montana*, known by the names of mountain-tobacco, and German leopard-bane. It is a perennial herbaceous plant, found growing in the meadows of the middle and south of Europe, and also of the western states of North America. The florets are of a yellow color, tinged with brown. The whole plant, when fresh, possesses a strong and disagreeable odor and an acrid, bitter taste. All parts of the plant have striking medicinal properties, but the root constitutes the part generally preferred. The preparation known as tincture of arnica, which is obtained by macerating one ounce of the root with a pint of alcohol, is now largely employed by the public as an external application for bruises and swellings; and notwithstanding the contempt with which its powers have been spoken of by eminent members of the medical profession, it has gradually gained ground among practitioners, and has now obtained a place in the new British Pharmacopœia. The leaves and flowers, though not much used internally, have been occasionally employed as a substitute for Peruvian bark. When taken internally it should be used with caution. It is a very energetic stimulant. In small doses, it accelerates the pulse, promotes perspiration, increases the secretions of the kidneys, etc. In Germany, it is used as a stimulant in typhoid fever and other adynamic febrile diseases, in chronic palsy and amenorrhœa; also as a tonic in rheumatism, and as a tonic and diuretic in the asthenic forms of dropsy. It has proved very useful in intermittent fever, also in nyctalopia and amaurosis, and in that disordered condition of the system which succeeds concussion of the brain from falls and blows. It has been recommended in diarrhœa, dysentery, nephritis, gout, chlorosis and diseases where there is debility, torpor or inactivity of function. Externally, it is used in the form of a fomentation, or diluted tincture or fluid extract to prevent or discuss local inflammation, and to prevent ecchymosis or discoloration of the skin from a bruise. Vegetable acids are recommended to counteract its poisonous effects. Dose fluid extract, 10 to 60 drops, three times a day.

AROMATIC CALISAYA WINE, *ar-o-mat'-ik kal-e-sa'-yą*, an agreeable and general tonic in convalescence for children and feeble persons, and prophylactic against intermittents. Valuable as a tonic during the summer months. Each fluid ounce contains the medicinal virtue of twenty-four grains of bark. Dose, for adults, a wine-glassful, two or three times a day, more or less, as may be necessary; and for children, in proportion to age and constitution.

AROMATIC COMPOUND, *ar-o-mat'-ik kom'-pound*, composed of ginger, cinnamon, cardamom, and other corrigents. Used principally for flavoring extracts, and counteracting the unpleasant taste of medicines. Medicinally, applicable in griping of the bowels, etc. Dose, 1 to 2 teaspoonfuls.

AROMATICS, *ar-o-mat'-iks*, substances as plants, drugs, and medicines, which emit agreeable odors, and are usually characterized by a warm pungent taste. Such are the spices, ginger, cinnamon, pepper, balsams, frankincense, etc. They generally contain a peculiar volatile oil, mixed with resinous substances. The animal kingdom furnishes some aromatics, as ambergris, musk, civet, etc., but they come principally from the vegetable. They are employed in the manufacture of perfumery, and in medicine as antispasmodics, etc.

AROMATIC SPIRITS OF AMMONIA. (See Ammonia.)

AROMATIC SYRUP OF RHUBARB, *ar-o-mat'-ik sir'-up ov roo'-barb.* This is probably the most agreeable form in which rhubarb is administered, especially for children. Dose for children, 1 teaspoonful; adults, 1 tablespoonful. (See Rhubarb.)

ARROWROOT, *ar'-ro-root*, the name given to various kinds of starch used as food by man. True West Indian arrowroot is obtained from rhizomes or root-stocks of the plant *Maranta arundinacea*, and is one of the purest and best known of the amylaceous substances. It forms a very firm jelly with boiling water, and, thus prepared, is a common article of diet for invalids and children, being nutritious and demulcent. The name arrowroot is derived from the fact of the bruised rhizomes of the plant being employed by the native Indians as an application to the poisons inflicted by arrows. East Indian arrowroot is obtained from the rhizomes of *Curcuma angustifolia*, and is sometimes called curcuma starch. The West Indian plant is, however, cultivated to some extent in the East, and supplies of the true arrowroot are brought from Singapore. Tahitian arrowroot is obtained from the plant named *Tacca oceanica*, and the substance called Portland arrowroot is extracted from the *Arum maculatum*, a common hedgeweed in England. In all these cases, the fecula consists of starch-grains, which are produced in great quantities, before the season of rest, in the succulent rhizomes or root-stocks of the plants. These grains are separated from the cellular tissue, and certain acrid juices, by a very simple process, which consists simply in washing the grated root-stocks. The best quality of arrowroot is procured from the West Indies, especially from Bermuda, whence it is imported in soldered tin cases. It is now also imported from East India, and an inferior kind is brought from Tahiti. Arrowroot is subject to much mixture and adulteration, but generally—as with potato-starch, etc., of a harmless character as regards the consumer. The "Lancet" periodical has recently, by means of its "Sanitary Commission," thoroughly investigated the subject of these adulterations. The best arrowroot ought to be pure white, slightly glistening in the mass, and the powder of which it is composed, collected together in small crumbs or lumps, which break down with a slight crackling sensation beneath the finger. Arrowroot is pure starch, and forms a peculiarly stiff jelly. As an article of sick cookery it is invaluable, where mild support is required without stimulation, and in convalescence and chronic disease. There are few stomachs with which it disagrees, and infants both like and do well with it. At the same time, it is proper to caution against the too common error of trusting too much to the nutritive powers of arrowroot alone, especially for children. It may give support indirectly, that is to say, by supplying material for respiration and animal heat, it may save the tissues of the body, or it may even go to build up some of these tissues, but alone it can never make bone or muscle, for the simple reason that it does not contain the elements necessary for these constituents of the frame. A child fed exclusively on arrowroot, water, and sugar, and such has been the case, must become unhealthy, and, without fail, rickety. The case is abundantly altered, when, with arrowroot, milk is combined. In this fluid exists whatever is requisite for the animal frame—nitrogen for its muscle, phosphorus for its nerve, earthy salts for its bone. The combination of arrowroot with milk is one of the best which can be given to a child, or to an adult in the early stages of convalescence from illness. (See FOOD, STARCH, CHILD, COOKERY FOR THE SICK, ETC.)

ARSENIC, *ars'-nik* [Gr. *arsenikos*], the substance which, in commerce, goes by this name is the oxide of the metal arsenic, or arsenious acid. Arsenic was known in different combinations by the ancients, but has only lately been shown to be of metallic origin. It is, however, so unlike a metal in many of its properties, that certain French chemists consider it as belonging to the non-metallic elements. It conducts electricity, and possesses metallic lustre, and is very much allied to phosphorus. Arsenic is prepared in the state of arsenic acid or oxide, by roasting the arsenical sulphide of iron. Metallic arsenic possesses a brilliant gray lustre, which is unmistakably metallic. It may be reduced to powder in a mortar. When heated in close vessels, it sublimes unaltered; but in a current of air, it absorbs oxygen, and burns with a bluish flame, depositing a white mealy powder. A minute quantity of arsenic is added to lead, to diminish its cohesion, during the manufacture of shot. The only important combinations of arsenic are—*arsenious acid*, $AsO_3$, the white arsenic of the shops; *arsenite of copper*, or Scheele's green; the *Schweinfurth green*, which is a double acetate of arsenic and copper; the *bisulphide*, or *realgar*, which is used in pyrotechny; and the *tersulphide*, or *orpiment*, which is the king's yellow of the artist. Arsenic also forms a terhydride with hydrogen, analogous to the ammonia-like compounds formed by antimony and phosphorus. Arsenic forms the connecting link between the non-metallic elements and antimony, which is certainly only a little more metallic than itself.

Arsenic is a powerful irritant poison, causing vomiting, purging, and other distressing symptoms. One or two grains may cause death. Arsenic is perhaps more universally used than any other, for destroying life. Its tastelessness, cheapness, and the culpable facility with which it has hitherto been obtainable have combined to make it familiar. Much controversy has at times taken place respecting the effect of arsenic upon the palate; it is certain, the taste is very faint, but extreme irritation of the portions of the lining mucous membrane of the mouth and other parts, quickly follows its contact. The length of time after arsenic has been swallowed, that symptoms take to show themselves, varies much, depending in all probability upon the state of the stomach as to emptiness, or the reverse. Sometimes they appear in a few minutes, at other times not for hours. Poisoning by arsenic is distinguished by faintness, nausea, intense burning pain at the pit of the stomach, and vomiting of its ordinary contents, followed by that of a turbid brown fluid, and mucus, often streaked with blood; intense burning heat in the throat, and thirst; purging ensues, cold sweats, convulsions, death. The eyes may become inflamed, but this is more general when the case is prolonged, as it may be, in consequence of the small dose, or from other circumstances; in this case an eruption on the skin is not unfrequent. The symptoms of course vary, particularly that of pain, which occasionally has been almost entirely absent. It must, too, be remembered, that the symptoms of bilious cholera and those of arsenical poisoning, very closely resemble one another. When poisoning by arsenic is suspected, of course the first measure is to procure efficient medical aid. In the meantime, it is requisite to get as much of the poison as possible evacuated from the stomach; it is seldom necessary to produce vomiting, that most generally comes on soon; but if it has not done so, 25 grains of white vitriol—sulphate of zinc—if procurable, should be given at once, in a little water; if this is not done, a tablespoonful of mustard in water, or tickling the throat with a feather, should be resorted to; milk, which by its coagulation may envelope the poison, or thick mucilaginous drinks, olive-oil, alone or mixed with lime-water, may, any or all, be given, and with them, magnesia. The great object must be, to clear the stomach of the poison as thoroughly and speedily as possible, for unlike many other poisons, there is no chemical antidote to arsenic which can be relied on. A preparation of iron has been vaunted, but it is of doubtful efficacy; if either this, or the stomach-pump is used, it will be in medical hands. In following the directions already given, the friends or neighbors of the poisoned person will be doing good service. Should the patient survive, and pass on to the second stage of arsenical poisoning, inflammation of the stomach, nervous symptoms, etc., will perhaps end life, or recovery may follow, but these changes must necessarily be attended to under medical guidance. White arsenic is not the only preparation of the metal by which poisoning occurs; the coloring substances known by the name of King's yellow, and Scheele's green, are both compounds of arsenic, and being frequently and culpably used in confectionery, have proved fatal. Similar symptoms occur, and similar treatment is to be followed as after poisoning by white arsenic. Whether in poisoning by arsenic, or by any other agent, the vomited matters should always be carefully preserved in a vessel by themselves, for medical inspection; and if there is any suspicion of foul play, some responsible person should place them under lock and key. Did those who perpetrate the crime of poisoning by arsenic, know beforehand, with what certainty the chemist can separate, for exhibition in a court of justice, the instrument of their wickedness, perhaps from the body of the victim, years after it had been buried; selfish fear, if no other consideration, might stop the deed.

The influence of a minute quantity of arsenic on the human frame is a very curious question. In Styria, it is a common thing for the peasants to take 12 or 13 grains per day of white arsenic, to improve their wind. They begin by taking a single grain per day, increasing the dose until they arrive at their maximum. It appears to do them no harm, so long as they relinquish the use of it gradually when they reach fifty or sixty years of age. If the doses are discontinued suddenly, death, with all the symptoms of arsenical poisoning, is the result.

In medical doses it is alterative, tonic, and antiperiodic; it is also a valuable remedy in diseases of the skin. The principal pharmacopœical preparations of arsenic are:—*Acidum arseniosum*, arsenious acid, or white arsenic, the dose of which is from $\frac{1}{60}$ to $\frac{1}{12}$ of a grain, in solution. *Liquor arsenicalis*, or *liquor potassæ arsenitis*, arsenical solution, or Fowler's solution; dose, from 2 to 8 drops. *Liquor arsenici hydrochloricus*, hydrochloric solution of arsenic; dose, 2 to 8 drops. *Ferri arsenias*, arseniate of iron; dose, $\frac{1}{16}$ to $\frac{1}{8}$ of a grain. *Sodæ arsenias*, arseniate of soda; dose, $\frac{1}{16}$ to $\frac{1}{8}$ of a grain. *Liquor sodæ arseniatis*, solution of arseniate of soda; dose, 5 to 10 drops. Arsenic should not be used as a medicine except under the careful guidance of a physician. (See SOLUTION OF IODIDES OF ARSENIC AND MERCURY, POISONS.)

ARSENIC IN WALL PAPER. The danger arising from paper hangings colored with arsenical green is now sufficiently well-known. It is the flock papers which are most likely to be injurious, and of course, the more confined the room, the more likely the chance of mischief; but nearly all green wall papers contain arsenic. Chemical analysis has determined that as high as 15 grains of arsenic have been found in one square foot of wall paper. Arsenic is very volatile, and the air becomes impregnated with an imperceptible dust, and many people are subject to a slow form of poisoning, causing indigestion, diarrhœa, nausea, irritation of the mucous membrane, sore throat, congestion of the lungs, biliousness, palpitation, prostration of the nervous system, general debility, etc. Arsenic in wall paper often produces such serious conditions, when the cause is not suspected, either by the physician or patient. Another fertile cause of disease in wall paper, is the custom among some, of pasting one wall paper over another, causing rotten paste, bad smells, fungi which often produce fever. People generally are now so well aware of the deleterious effects of articles of dress colored with arsenical green, that danger from such a cause must be wilfully incurred. (See Walls and Wall Papers.)

ARTANTHE ELONGATA, *ar-tan'-the e-lon-ga'-ta* [*Matico*], the dried leaves of the artanthe elongata, a plant belonging to the Nat. order *Piperaceæ*. It is aromatic, tonic, stimulant, and styptic. Its therapeutical agency is highly recommended in hemoptysis, hematemesis, dysentery and hematuria, in doses of 1 dram of the powdered leaves, or 1 teaspoonful of the fluid extract four times a day. Hemorrhage from the nose or uterus has been arrested by the internal administration of matico, after other remedies had completely failed to control the bleeding. As an internal remedy it has also been successfully employed in diseases of the mucous membrane, as gonorrhœa, leucorrhœa, menorrhagia, catarrh of the bladder, hemorrhoids, and epistaxis. The leaves form a superior medicinal styptic for arresting hemorrhage from wounds, leech-bites, etc. The downy part of the leaf is said to be the most active part. Also applied to ulcers. Its essential oil is recommended in the treatment of gonorrhœa. Dose of the fluid extract, ½ to 2 teaspoonfuls; of the infusion, 1 to 2 fluid ounces. (See Infusion.)

ARTEMISIA, *ar-te-mizh'-e-a* [from *Artemis*, one of the names of the goddess Diana], in Botany, a genus of plants belonging to the Nat. order *Compositæ*, and comprehending several interesting and valuable species. *A. absinthium*, the common wormwood, is an indigenous perennial, often met with in waste places and by roadsides. The flowers are arranged in globular heads, and are of a buff or yellowish color, blossoming in August. The principal constituents are a volatile oil, a bitter principle called absinthine, and carbonate of potash. The latter was formerly known as "salt of wormwood;" but it possesses no specific virtue other than belongs to carbonate of potash generally; it is still, however, regarded as a patent remedial agent by the ignorant. The dried herb, or flowering-top, under the name of wormwood, is used as an aromatic bitter tonic, and as an anthelmintic. It is also employed in the preparation of liquors. The anthelmintic known by the names Semen-seriphii and Barbotine, consists of the flower-heads of *A. cœrulescens*, a Mediterranean plant. *A. chinensis*, and other species, are stated by Lindley to yield the Moxa of China. (See MOXA.) The substance sold as wormseed, and known under the names of semen-contra, semen-cinæ, and semen-santonicum, consists of the broken flower-stalks, involucres, and flower-buds of *A. contra*, *pauciflora*, *lercheana*, *sieberi*, and *valiana*.

*A. Abrotanum*, or southernwood, is tonic and antispasmodic, and is employed in intermittents to promote the appetite, and in debilitated conditions of the digestive organs. Dose of fluid extract, 30 to 60 drops; powder, 10 to 20 grains; infusion, 1 to 2 fluid ounces, three times a day.

*A. Absinthium*, or wormwood, is anthelmintic, tonic and narcotic, and is used in intermittent fever or ague, jaundice, and for worms, also to promote the appetite. Externally it is useful in fomentations for bruises and local inflammations. Dose of fluid extract, 5 to 40 drops; solid, 3 to 5 grains; powder, 10 to 20 grains; infusion, 1 to 2 fluid ounces, three times a day.

*A. Vulgaris*, or mugwort, is anthelmintic, tonic, and deobstruent, and is said to be beneficial in epilepsy, hysteria, and amenorrhœa. Used externally in fomentations for bruises and local inflammations. Dose of fluid extract, 20 to 40 drops; powder, 10 to 20 grains; infusion, 1 to 2 fluid ounces, three times a day. (See INFUSION.)

ARTERIAL HEMORRHAGE, *ar-te'-re-al hem'-or-raj*. Arterial hemorrhage may be arrested by compression directly upon the bleeding point, and this should be tried until the surgeon's arrival, but it must be in positions, such as the hand, foot, etc., where pads can be firmly bound over the wound. These pads must be graduated, that is, a small firm one is to be placed directly over the bleeding vessel, over the first pad a larger, and one still larger over that, and the whole to be firmly bound with a bandage or ribbon—or strip of cloth of some kind; at the same time, the site of the wound is to be raised above the level of the body. Above all things, loose wrapping up is to be avoided, the wound had better be exposed to the air than enveloped in a hot poultice of clotted blood, which only causes it to bleed the more. Two cases which recently occurred in the writer's practice will illustrate the above directions:—1. A girl when cutting some bacon, slipped the knife and plunged it into her hand, dividing one of the arteries; it bled fast, and when she was seen by the author some time after, a large quantity of blood had been lost; compresses and a bandage being at once applied, not another drop of blood was lost, the wound was undisturbed for a good many days, and quickly healed. 2. A man when sheep-shearing, had the shears driven into his hand by a plunge of the animal, and the artery which runs between the thumb and forefinger severed; he had to come three miles to the author's house, and must have lost above a quart of blood. In this case the vessel was tied, but in either of the cases, if, instead of the wound being loosely covered, and the hand kept down, some one had been sufficiently informed to tie a firm pad over the wound, until proper assistance was obtained, it could not fail to have saved either of these individuals a considerable amount of blood—and to a poor man, blood is money, he must pay the butcher some hard days' work to make up a pound of the vital fluid. Various styptics to arrest bleeding are recommended, such as alum, matico, fungus, etc., but in arterial hemorrhage, pressure is more to be trusted to. Surgeons arrest hemorrhage from a cut artery by tying the ends with a ligature of silk or firm twine. This might be done in emigrant life under necessity. The bleeding point being distinctly seen, is by one person to be pulled forward, either by a pair of forceps, or by a hook-tenaculum (see INSTRUMENTS) made for the purpose, sufficiently far to allow of another individual tying it securely. The sailor's reef-knot is the proper one for the purpose. The end of the vessel next the heart is to be tied, but should the lower end bleed, as it may do, especially in a few hours after the accident, it must be tied also. The ends of the ligature must not be cut off, and the wound covered with a cloth dipped in simple water, till the surgeon's assistance—as it must be—has been procured. After arterial hemorrhage, a person should always be watched, with light during the night, and a handkerchief which could be tightened at any moment, kept closely round the limb. The application of water, unless it be ice-cold or nearly so, to a bleeding artery, is better avoided; free exposure to the air is preferable. In severe hemorrhage or flooding after delivery, compression of the aorta may be of much avail in preventing further loss of blood until the arrival of the medical man. The hand of an attendant must be firmly pressed into the centre of the abdomen, until the pulsation of the aorta is felt, and felt to be acting against the compression, and not beyond it. The pressure must not be relaxed for an instant. (See ARTERY.)

ARTERIOTOMY, *ar-te-re-ot'-o-me* [Gr. *arteria*, an artery, and *temno*, I cut], is applied to the opening of an artery for the purpose of drawing blood, and is distinguished from phlebotomy, or venesection, which is the opening of a vein. In ordinary cases, the latter is always preferable to the former; but sometimes, when it is necessary to take a large quantity of blood from the system very rapidly, as in apoplexy, arteriotomy is adopted, and then it is generally the temporal artery that is selected. (See BLEEDING OR BLOOD-LETTING.)

ARTERITIS, *ar-te-ri'-tis*, inflammation of an artery.

*Symptoms.*—Tumultuous vascular excitement, palpitations, heat, and throbbing in the course of the principal trunks, succeeded by collapse, and occasionally gangrene of the part affected, or of a limb.

*Treatment.*—Antiphlogistic, with arterial sedatives, as tartar emetic, digitalis, and colchicum. In the chronic form it is often complicated with other inflammations and diseases. This disease can only be treated by medical skill, hence a physician must always be consulted.

ARTERY, *ar'-te-re* [Gr. *aer*, air, and *tereo*, I keep], is literally an air-duct, and was a name applied by the ancients to certain vessels of the human body, which were believed by them to contain air, from their being found empty after death. Arteries are membranous cylindrical tubes, composed of three coats, viz.: the external, which is firm, strong, and elastic; the middle, which is muscular, contractile, and brittle; and the internal, which is brittle, smooth, and transparent, and lined with epithelium on the side washed by the blood. The action of the arteries, called the pulse, corresponds with that of the heart, and is effected by the contraction of their muscular coat and the great elasticity of their outermost one. Besides the arteries which carry the purified blood from the heart to all parts of the body, there is the pulmonary artery, which emerges from the right ventricle of the heart, and carries the impure blood from the heart to the lungs. The other arteries all spring from the aorta. The arteries are distributed to every part of the system, serving to convey nutrition, to compensate for the waste that is constantly taking place. An artery is a vessel which invariably conveys blood away from the heart, the blood, with one exception—in the pulmonary, or artery of the lungs—being bright red, "arterial," and flowing in waves or pulsations, corresponding with the beats of the heart. When red florid blood flows, or is spirted from a wound in jets, an artery is certainly wounded, and the case is most probably serious. Blood from a vein is dark and black-looking, and flows in a continuous stream.

From the aorta, the main artery of the body, directly connected with the heart, various secondary vessels are given off, to supply the head and upper extremities, and the viscera of the chest and abdomen. Low down in the latter cavity, the aorta itself divides or bifurcates into the two large vessels which supply the lower limbs. From the secondary arteries other branches are given off, until, at last, by division and subdivision, the vessels become "capillary," hair-like in their minuteness, forming an intricate net-work, in which the arteries end and the veins begin. Arteries consist of three separate coats, an outer or protective, an inner or lining, and a middle, partly elastic and partly muscular. It is the thickness and firmness of this middle coat which chiefly distinguishes the artery from the vein.

As a general rule, the main arterial trunks run upon the anterior and inner surfaces of the body; some knowledge of their positions, and especially of those points in their course at which they can be most easily felt and compressed, may at times be useful to all. It is no uncommon thing for medical men to be called to accidents in which immense and injurious loss of blood has taken place from a wounded artery, which might have been saved to the sufferer by any one possessed of sufficient knowledge and presence of mind to put his thumb on the main trunk of the vessel. Wherever the finger is placed upon an artery, pulsation is felt.

In wounds of arteries of the head, such as upon the temples, there is the advantage of the bone, against which it is possible directly to compress the bleeding point, and when this can be done, it is the best method, otherwise pressure may be exerted according to the position of the wound, in front of the ear; or just behind the ear; or where the pulsation of an arterial branch may be found, as it winds over the edge of the lower jaw.

In wounds of the large carotid arteries of the neck, pressure is, unfortunately, of little avail; there is no point to press against, it is impossible to compress the artery without at the same time compressing the large vein, and from the size of the vessel and its proximity to the heart, the current of blood has much power. The result may be felt beating on each side of the windpipe.

In wounds of the large arteries about the shoulder or arm-pit, pressure must be made with the thumb, or handle of a moderate-sized key, wrapped in a few folds of handkerchief, upon the large vessel, just behind the middle of the collar-bone, and where it passes over the first rib. In the event of a wounded artery lower down in the arm, the compression may be exerted over any portion of the course just inside the large muscle. At the bend of the arm, the artery divides into two main branches, one of which, the pulse artery, runs towards the thumb; the other, towards the little finger, in which courses both may be felt; from the free intercommunication of the arteries of the hand, pressure is more certain to arrest hemorrhage if exerted upon the single trunk of the arm. In case of arterial bleeding from wounds of the lower extremity, it is most certainly and easily arrested by pressure on the large artery of the thigh, at the point in or just below the groin. In all these cases, pressure may be exerted by means of the thumb, or by some convenient body, such as the key above named. To compress arteries in the limbs, surgeons use the tourniquet, specially adapted for the purpose; but as a temporary substitute, a handkerchief will answer well, tolerably firmly tied round the member, between the body and the wound; if any one has knowledge enough to place a pad—a rolled-up stocking will do—over the course of the main vessel, so much the better.

Arteries are liable to the disease of aneurism, in which one or more of the coats become distended at some particular point, into a sac or pouch filled with blood. The progress of the disease is for this sac to grow larger, whilst its coverings become thinner and thinner, until at last they give way, and the individual dies from loss of blood. In many cases, surgical interference can save life by arresting the disease, and the sooner this is done the better. Aneurism may be suspected, when a tumor is felt, which distinctly pulsates, conveys to the finger a thrilling sensation, and becomes smaller and less tense when the current of blood through the artery leading to it is interrupted. In such a case the surgeon should at once be consulted. It is not, however, every tumor which pulsates that is aneurism, for proximity to a large artery may give the appearance of its doing so. (See ANATOMY, CIRCULATION OF THE BLOOD, ARTERIAL HEMORRHAGE, ANEURISM.)

ARTHRITIS. (See GOUT.)

ARTHRODIC, *ar-throd'-ik* [Gr. *arthrosis*, articulation], in Anatomy, a term applied to a connection of bones, in which the head of one fits into a hollow cavity in another; by which means motion in nearly every direction is admitted of; as, for example, in the joint between the humerus and the scapula.

ARTICULAR, *ar-tik'-u-lar*, belonging to a joint; as, articular cartilages, articular arteries, etc.

ARTICULATION, *ar-tik-u-la'-shun*, [Lat. *articulus*, a joint]. 1. In Physiology, the formation of distinct syllables by the organs of speech. 2. In Anatomy, the natural connection of one bone with another in the skeleton.

ARTICULATION, FALSE. False joint. Where a fractured bone remains ununited, a false joint is produced. Operations have been performed to cause reunion, even after years; they consist in cutting to the bones, destroying the articular surfaces, and establishing a union through the resulting inflammation.

ARTIFICIAL EYE, *ar-te-fish'-al.* It is made of enamel, beautifully colored, and is a shell of less than a hemisphere. It is applied under the eyelids, over the diseased ball. At first it produces considerable irritation, and cannot be worn more than a few hours; but, as the part hardens, it becomes easy, and the patient is capable of imparting a slight motion to the shell.

ARTIFICIAL LIMBS are ingenious mechanical contrivances for supplying substitutes for those limbs, or other organs of the body which accident or misfortune has removed, such as hands, arms, or legs. The skill of the dentist, or the unerring nicety of calculation required by the operator who fixes in an artificial eye, is rather a surgical operation than an anatomical contrivance; but by artificial limbs is generally meant those combinations of steel framework, screws, springs, cork, leather, caoutchouc, and gutta-percha, which imitate the form, and, to some extent, the motion and practical utility of the real limb. This is an art which has now been brought to a high degree of perfection; and artificial limbs are constructed by which, naturally and with ease, many of the movements of natural limbs are effected.

ARTIFICIAL SEA-WATER FOR BATHS. (See BATHS AND BATHING.)

ARTIFICIAL TEETH. (See TEETH.)

ARTIZANS AND THEIR DISEASES, *ar-te-zänz.* The diseases to which workmen are liable in consequence of the nature of, or materials employed in, their respective businesses, always a subject of great interest, is too extensive to admit of being otherwise than very briefly entered into in the present work. Legislation and invention have of late years done much to screen the various classes of artizans from many sources of injury to health to which they were formerly exposed; much more remains to be done, and would perhaps be done more quickly, were it not for the apathy, and sometimes even contradiction, of those who were chiefly to be benefited. It is useless to supply miners with Davy lamps, and fork-grinders with magnetic respirators, when the means of safety are so constantly and carelessly neglected. One immense source of evil—now happily ameliorated—has been exertion too prolonged, especially in the young; nutriment which should have gone to build up the growing frame, is consumed in mere physical exertion, the powers of the brain are used up in the same, and if not deformity of body, at least great weakness, and with it mental inaptitude, are the consequences. Many of those who are liable to disease in consequence of the materials they work in, owe much to their own want of cleanliness; this is the case with regard to the metals, especially lead, and a striking improvement has taken place in the health of workmen who have been compelled to observe certain rules of cleanliness, such as washing the hands before their meals. Workers in quicksilver are liable, in addition to affections of the teeth and gums, to a species of shaking palsy, or tremor of the limbs. Modellers in colored wax, makers of wax-flowers, etc., are in danger of suffering injury from absorption through the skin of the hand, of the poisonous coloring ingredients, and should be extremely careful. Workers in lead, such as plumbers, type-founders or painters who use it in the form of white or carbonate of lead, are apt to suffer from paralysis, more particularly of the muscles ef the forearm; their more usual disease, however, is the "painter's colic," or dry belly-ache (see COLIC.) Copper-smiths, smelters, lucifer-match makers, all have their peculiar affections, that of the latter being a disease of the jaw-bone. Those who are employed in the filing or dry grinding substances which give off a hard dust, are peculiarly liable to chest disease, from the mechanical irritation caused by the particles continually inhaled. So much is this the case in some trades—such as the Sheffield fork-grinders —that most, if not all, their members die before reaching the age of forty. Millers, and those employed among the dust of a softer quality, are not so likely to become consumptive as the former class, but have more tendency to asthma; they also suffer from the consequences of the cutaneous pores and functions being clogged and hindered by the dust. Grocers and bakers who are in the habit of handling flour, sugar, etc., suffer frequently from a disagreeable skin disease affecting the fingers, well-known by the name of "grocers'-itch." Housemaids who kneel at work have their peculiar swelling, which forms, and sometimes suppurates over the knee-cap; this may be prevented by kneeling on a soft substance. Clergymen, actors and public speakers have their peculiar throat affection; in short, there is scarcely a trade or profession which does not expose its follower to some peculiar ailment, but there is scarcely one of these ailments which may not be prevented or much ameliorated by proper care—by cleanliness more especially, but also by attention to the various other prophylactic means which are now so generally known and provided. (See COLIC, CONSUMPTION, LEAD, SKIN, AIR, VENTILATION, ABLUTION, DIET, HEALTH, ETC.)

ARUM, *a'-rum*, in Botany, the typical genus of Nat. order *Araceæ*. The only British species is *A. maculatum*, the common cuckoo-pint, wake-robin, or lords-and-ladies, and probably the long purples of Shakespeare. This curious perennial is found growing in shady places, hedge-banks, rough grounds, and groves. The flowers, which come to perfection in April and May, are monœscious; that is, the sexes are contained in different flowers on the same plant. They are arranged on a succulent axis, terminating in a club-shaped receptacle termed a spadix, of a purple or yellowish-white color, and enclosed in a membranous sheath denominated a spathe. The berries are of a fine scarlet color, and help to adorn hedges in autumn. They are very poisonous, and the whole plant contains acrid and poisonous juices. The tubers, which are filled with starch, are dried, powdered, and used in France as a cosmetic, under the name of cypress powder. The starch, separated from acrid juices, forms Portland arrowroot, which was formerly prepared in large quantities in the island of Portland, where the plant grows in great profusion. In the fresh state, the tubers are stimulant, diaphoretic, and expectorant, and were formerly used in the form of an emulsion in obstinate rheumatism.

The *A. Tryphyllum*, wild turnip or dragon root, a native of all parts of the American continent, is acrid, expectorant, and diaphoretic. It has been advantageously given in asthma, whooping-cough, chronic catarrh, chronic rheumatism, flatulence, croup, stomatitis, chronic laryngitis, bronchitis, low stages of typhus fever, and various diseases connected with a cachectic state of the system. Dose: fluid extract, 10 to 20 drops; infusion, 1 to 2 fluid ounces. (See INFUSION.)

ASAGRÆA, *as-a-gre'-a*, in Botany, a genus of plants belonging to the Nat. order *Melanthaceæ* or *Colchicaceæ*. The most important species is *A. officinalis*, a native of Mexico, and the principal, if not the only source of the *Sabadilla*, *Cevadilla*, or *Cebadilla* of the shops, which consists of the fruits and seeds. The seeds are officinal, and yield the alkaloid veratria, which has been used externally as a rubefacient in rheumatism, gout, and neuralgic affections, and also internally in similar cases, in doses of one-twelfth to one-sixth of a grain. It is a most powerful poison. Sabadilla seeds have been employed as an anthelmintic. They are called *lice-seeds* by the Germans; because, when powdered and employed externally, they destroy vermin.

ASARUM, *as-'a-rum* [Gr. *a*, not, *saron*, feminine], in Botany, a genus of plants belonging to the Nat. order *Aristolochiaceæ*. The species *A. Europæum*, a native of Europe, is a rare plant in the woods of Britain. The root which forms the drug asarabacca contains a camphor-like principle, and a bitter principle called *asarin*, which is combined with gallic acid. It is sometimes called hazelwort or wild nard. It is emetic, cathartic, and errhine. Used principally as an errhine in affections of the brain, eyes, face, and throat, toothache, ophthalmia, and paralysis of the mouth and tongue. Internally it is a stimulant in doses of 10 or 12 grains of the dried leaves, and an emetic in ½ dram doses. It is said to be used in France by drunkards to promote vomiting.

*A. Canadense*, or wild ginger, is a spicy stimulating agent, producing perspiration, promoting expectoration, and having carminative properties. It is used in colic and other painful affections of the bowels and stomach, where no inflammation exists, and in chronic pulmonary affections. It is also used as an errhine. Dose of the powder, ½ dram; tinc-

Asclepias Tuberosa. (Pleurisy Root.)

ture, ½ to 2 teaspoonfuls; fluid extract, 20 to 40 drops, three times a day.

ASCARIDES, *as-kar'-e-deez* [Gr. *askarizo*, I jump], parasite worms which inhabit the intestines of animals. They belong to the genus *Entozoa*, and are ranked in the order of *Numatoidea*. One of the commonest species, the *A. lumbricoides*, which is very like the common earthworm, is found frequently in the intestines of men, and of horses, oxen, etc. They have been observed fifteen inches in length, and they are often the cause of severe disease, which has sometimes proved fatal. The *A. vermicularis*, or threadworm, is very common among young children. It is white, about half an inch long, and infests the lower part of the intestines in great numbers. (See WORMS.)

ASCITES, *as-si'-teez* [Gr. *askites*, from *askos*, a bottle], a term used to denote abdominal dropsy, or dropsy in the belly. (See DROPSY.)

ASCLEPIAS, *as-kle'-pe-as* [Gr. name of *Æsculapius*, the god of medicine], in Botany, a genus of plants, the type of the Nat. order *Asclepiadaceæ*. The common English name for the genus is swallow-wort. The species are mostly American, and many of them possess powerful medicinal qualities, as one might expect from the generic name. *A. curassavica*, the bastard ipecacuanha, is a native of the West Indian islands, where the root is employed by the negroes as an emetic, and is occasionally sent to this country as ipecacuanha. *A. Cornuti*, or common silk-weed, and known as milk-weed in many parts of the country, is tonic, diuretic, alterative, emmenagogue, purgative, and emetic, and given in large doses is stimulant and anthelmintic. It is said to be useful in amenorrhœa, dropsy, retention of urine, asthma, dyspepsia, cough, constipation, worms, scrofulous and rheumatic disorders. The action of the heart is augmented under its use. It may be taken in syrup or ginger, to cover its unpleasant taste. Dose: of fluid extract, 10 to 30 drops; tincture, 10 to 60 drops; decoction, 2 to 4 fluid ounces, three or four times a day; powder, 10 to 20 grains. (See DECOCTION.)

*A. Incarnata*, commonly called white Indian hemp, possesses alterative, diaphoretic, and diuretic properties. Dr. Wm. Hauser, of Georgia, has used it with the happiest results in many forms of fever, but regards it especially as equal to anything now known in the treatment of gonorrhœa and syphilis. He has used it with little regard to the stage of the disease, and with the best success. Prof. Tully recommends it in catarrh, asthma, syphilis, rheumatism, and worms. Reputed by many to be emetic and cathartic. Dr. King regards it as possessing anthelmintic properties, and as useful in chronic mucous diseases of the stomach. Dose: fluid extract, 20 to 40 drops; solid, 3 to 5 grains;

tincture, 10 to 60 drops; decoction, 2 to 4 fluid ounces, three times a day. (See DECOCTION.)

*A. Tuberosa*, known as pleurisy root, is diaphoretic, expectorant, carminative, diuretic, tonic, and antispasmodic. Used in pleurisy, pneumonia, catarrh, febrile diseases, acute rheumatism and dysentery. Useful in indigestion, and in all cases of flatus in adults and children. It is said that a number of cases of prolapsus uteri have been cured under the use of 1 ounce of pleurisy root mixed with ½ an ounce of the root of *aletris farinosa*, and given in dram or teaspoonful doses, three times a day. It is said to have been prescribed with favorable effect in catarrh, bronchitis and other pulmonary complaints, where it was necessary to determine to the skin, and at the same time promote free expectoration. Dr. Parker, of Massachusetts, employed it with great success for twenty years, in dysentery. A pill composed of equal parts of *asclepidin* and *dioscorein*, will be found very beneficial in flatulency, and where persons are subject to flatulent or bilious colic. Dose: fluid extract, ½ to 2 teaspoonfuls; asclepidin, 1 to 5 grains; infusion, 1 to 4 fluid ounces; tincture, 1 to 2 teaspoonfuls three times a day. (See INFUSION.)

ASIATIC CHOLERA. (See CHOLERA.)

ASPARAGUS, *as-par'-a-gus* [probably from Gr. *sparasso*, I tear], in Botany, a genus of plants belonging to the Nat. order *Liliaceæ*, the lily family. The species are herbaceous, or shrubby plants, growing wild in the southern parts of Europe and in Africa. *A. officinalis*, the common asparagus, has long been cultivated for the sake of the young succulent shoots called *turios*, which form a much-esteemed article of food. In the wild state the shoots are slender and tough, but by cultivation they are obtained thick and extremely tender. The ancient Romans were well acquainted with this delicate culinary vegetable, and Pliny mentions a variety which grew near Ravenna, producing shoots so large that three weighed upwards of a pound. It is now cultivated in all the temperate regions of the world, and to a very great extent near London, Paris and Vienna. In no part of Europe is it grown to such perfection as in the market-gardens round London. There are a great many local varieties of asparagus, but they may all be regarded as slight modifications of two well-marked sorts, namely, the red-topped and the green-topped. Asparagus-shoots contain a peculiar crystalline principle, to which the name *asparagin* has been given: this has a specific action on the urinary organs, and its properties have caused asparagus to be properly employed as a lithic. In Medicine, the shoots, roots, and flowering stems of *A. officinalis* are occasionally employed as diuretics. The roasted seeds have been used as a substitute for coffee. Asparagus when young, well boiled, and not overloaded with melted butter, is wholesome and digestible; it gives a peculiar odor to the urine. Its peculiar vegetable principle, asparagin, contains nitrogen.

ASPERULA, *as-pe-ru′-la* (diminutive of Lat. *asper*, rough], in Botany, a genus of plants belonging to the Nat. order *Galiaceæ*, the madder family. The species *A. odocata*, the woodruff, is one of the most fragrant plants found in our woods: it contains the natural perfume to which chemists have given the name of *coumarin*. *A. cynanchicha*, another indigenous species, is commonly called quinsy-wort, on account of its supposed value as a remedy in sore throat.

ASPHALTUM, *as-fal′-tum* [Lat.], a smooth, hard, brittle, black or brown substance, which melts easily when heated, and if pure burns without residue. It is found in a liquid or soft state on the surface of the Dead Sea, and the island of Trinidad. It occurs also as a mineral production in various parts of Europe, Asia and America. The Egyptians used asphaltum in embalming, under the name of mumia. It was used by the Babylonians instead of mortar for cementing bricks. Taken internally asphaltum acts as a stimulant, but it is rarely used unless as an ingredient in some plasters and ointments.

ASPHYXIA, *as-fiks′-e-a* [Gr. *a*, not, and *sphuxis*, pulsation], literally signifies without pulsation, and is used to denote that state of body during life in which the vital functions are suspended from some cause interrupting respiration; and hence, to speak correctly, it should be called *apnœa* [Gr. *a*, not, and *pneo*, I breathe]. In asphyxia, the action of the lungs is suspended, and the blood no longer undergoes that purifying process so necessary to life. Hence the system becomes filled with impure blood, the powers of sensation and voluntary motion are suspended, and if the proper means of restoration are not resorted to, death will speedily ensue. Asphyxia may be produced by various causes; as by whatever prevents the access of air to the lungs, as strangulation, drowning, choking, etc.; or whatever interferes with the action of the nerves that are concerned in respiration, as paralysis, cold, stroke of lightning, etc. It may also be produced by breathing an impure or a too rarefied atmosphere. (See Drowning, Hanging, Suffocation, Accidents, Choking, Cold, Paralysis, etc.)

ASPIDIUM, *as-pid′-e-um* [Gr. *aspidion*, a little buckler], in Botany, the name of a genus of ferns. The fronds of the species *A. fragrans* possess aromatic and slightly bitter properties, and have been used as a substitute for tea. The root of the *A. Filix Mas*, or male fern, is strongly recommended as an anthelmintic. The accounts of its efficacy in the treatment of tape-worm are too numerous to admit of any reasonable doubt on the subject. Dr. Peschier stated that in the course of nine months 150 tape-worms had been expelled by the extract. Dr. Ebers found it completely successful in eight cases. M. Ronsel never found it to fail. Its use should be followed by a purgative. Dose: fluid extract, 1 to 3 teaspoonfuls; oil, 30 to 60 drops; solid extract, 9 to 15 grains; pills, 2 grains, 4 to 7 pills; powder, 1 to 3 drams. (See WORMS.)

ASSAFŒTIDA, OR ASAFŒTIDA, *as-a-fet'-e-da* [Persian, *asa;* Lat. *fœtidus*, fetid], the name of a fetid gum-resin, used in Medicine on account of its antispasmodic and more or less stimulating properties, and extensively employed in Persia and adjacent countries as a condiment, just as garlic and other allied plants are employed in Europe. The umbelliferous plant *Narthex*, or *Ferula assafœtida*, yields the greater part of the assafœtida of commerce; but in all probability, other species of *Ferula*, and also other plants, yield the drug. Royle suggests that *Pranges pabularia* may be one of the sources. The peculiar and offensive odor of assafœtida is attributed to the presence of sulphur in combination with allyle. It is useful in hysterical cases, and in flatulent distension of the bowels; in the latter case, especially, given as a clyster: it is the most efficacious agent we possess. Two teaspoonfuls of the tincture of assafœtida may be added to a simple gruel clyster, or to one of the purgative clysters, if requisite. In nervous affections, convulsions, flatulence, spasmodic asthma, worms, etc., assafœtida is frequently of great service. Dose, from 5 to 20 grains. It is commonly given in the form of tincture or pills. The tincture is formed by macerating 2½ ounces of assafœtida in 1 pint of rectified spirit; dose, from ½ to 1 teaspoonful. The compound pill of *A.* consists of 2 ounces each of assafœtida, galbanum, and myrrh, with 1 ounce by weight of treacle, heated and mixed well together; dose, 5 to 10 grains. The compound *A.* and aloes pill is made by taking 1 ounce each of socotrine aloes in powder, assafœtida, hard soap in powder, and confection of roses, beat together till thoroughly mixed; dose, 5 to 10 grains. It is also used in the form of enema. (See CLYSTER-ENEMA.)

ASSES' MILK, *ass'-ez*, is, on account of its nutritious qualities and lightness of digestion, frequently recommended to consumptive patients and delicate young children. It contains more sugar and less cheesy matter than other milk. It bears a considerable resemblance to human milk, and hence is considered best for a child when the other is not available. It is a most excellent dietetic article, and restorative in all cases of debility. Drank too freely it acts upon the bowels.

ASSIMILATION, *as-sim-e-la'-shun* [Lat. *adsimilatio*, from *ad*, to, and *similis*, like], the act of organized bodies, by which they convert foreign substances into their own proper substance, by which food is converted into nutriment. (See CHYLE, CHYME, DIGESTION, NUTRITION, ETC.)

ASTER PUNICEUS, *as'-tur*, red-stalked aster. This plant, belonging to the Nat. order *Asteraceæ*, grows in swamps and ditches, and along the borders of streams all over the United States and Canada. The fibres of the roots are the part used. It is sometimes known by the name of squaw-weed. It is stimulant and diaphoretic, and, in the shape of infusion, is used in colds, rheumatism, nervous debility, headache, and menstrual irregularities. The *Aster Æstivas*, called also rheumatic weed, resembles the above, and is used for the same purposes. It is said also to possess some virtues as an antidote in the bites of venomous snakes. It is given in doses of 1 to 4 fluid ounces of the infusion. (See INFUSION.)

ASTHENIA, *as-the-ni'-ą* [Gr. *a*, not, and *sthenos*, strength], denotes debility or loss of strength, and is employed in connection with diseases of which this is a characteristic.

ASTHMA, *ast'-mą* [Gr. *asthmazo*, I breathe with difficulty]. This disease consists of paroxysms of difficult respiration coming on at uncertain intervals, usually during the night, accompanied by wheezing respiration, and terminating in copious mucous expectoration. Previously to the occurrence of the paroxysms the patient has warning of what is about to happen from the state of his digestive organs; he begins to lose his appetite, and to suffer from lassitude, weariness, drowsiness, oppression, flatulence, and belching, and he retires to rest with a general feeling of illness. After passing several long and uncomfortable hours, perhaps dozing at intervals, he wakes up about two or three o'clock in the morning with a sense of tightness and constriction in the chest. He sits up, and leaning forward, places his elbows upon his knee; he labors to get his breath, and feeling the absolute necessity of pure air, rushes to the window, which he quickly opens. His extremities are cold, but his body is bathed in perspiration; the face is flushed and turgid, the pulse feeble and irregular. A large quantity of pale limpid urine, like that secreted during the hysterical paroxysm, is passed before and during the fit. This state lasts for an uncertain period, there may be slight remissions, but at last he expectorates a large quantity of mucus, and the asthmatical paroxysm is at an end. During the intervals he enjoys a fair share of health, but is always short-winded.

The air-tubes of the lungs are surrounded by muscular fibres resembling those encircling the bowels, and this disease is essentially due to the abnormal contraction of this tissue, and the consequent narrowing of the passages through which the air has to pass. These fibres surrounding the bronchial tubes have been proved to be muscular by the aid of the microscope, which shows that their intimate structure corresponds with that of organic, or involuntary muscles in various other parts of the body; again, they have been made to contract like muscular fibres under the influence of galvanism, and to materially shorten themselves by the application of this force to the nerve, or nerves, supplying them.

That this disease is of a spasmodic nature may be inferred from the consideration of the following facts: That spasm co-exists in other parts of the body in some cases, that asthmatical patients describe the feeling as that of spasm; again, the way in which the paroxysm comes on, and the capricious manner in which it goes off, both point to spasm as its source, and, finally, the disease is much alleviated and shortened by antispasmodic medicines.

*Causes.*—Asthma is hereditary, being transmitted from father to son, and grandson. It may be due to alterations in the lungs themselves, and to diseased states of the heart and large blood-vessels. It is most common in men, and in the middle period of life. Particular states of the atmosphere may excite a fit of asthma, and other causes may bring it on which are of too subtle a nature for our appreciation; thus many instances are known in which asthmatical patients could never sleep in a certain room of a house without an attack, while he could pass an uninterrupted night's rest in any other sleeping apartment of the same house; or a person is able to sleep in a house on one side of the street, but not in one on the other side. Some individuals cannot breathe an atmosphere containing finely divided particles of ipecacuanha without suffering severely from attacks of cough and difficulty of breathing resembling closely the asthmatical paroxysm as above described.

*Treatment during the paroxysm.*—If the stomach be full, as is almost always the case, an emetic should be promptly administered. 10 grains of ipecac, stirred up in half a tumbler of warm water, or a teaspoonful of mustard in a tumbler of warm water, will answer the purpose. The bowels should be emptied by an enema of soap and water. A hot foot-bath and mustard to the chest, are also indicated. A cup of hot, strong coffee frequently exerts a beneficial influence. Nitre-paper fumes is an old remedy still very much in use. The papers are prepared in the following way: Dissolve in water all the saltpetre it will take up. In this saturated solution dip sheets of ordinary red blotting paper. Roll in the shape of cigars or cones, and when dry, set fire to them, holding them in such a way that the fumes may be inhaled by the distressed patient. Stramonium, commonly called thorn-apple, and in some parts of the country, jimson-weed, is another favorite remedy. Smoking the leaves is said to give very great relief, indeed, in many cases it acts like magic. The *datura tatula*, a species of sea-weed, may be smoked in the same way. Inhaling the fumes of chloroform gives relief, but it is not a safe remedy out of the hands of a physician. Ether is much safer, and just as effectual; a teaspoonful may be placed on a handkerchief and inhaled. Lobelia is another remedy in high repute; 20 or 30 drops of the tincture may be given every half hour, until relief comes, or until nausea or vomiting is produced. Hoffman's anodyne, in doses of 30 drops, may be beneficially combined with the lobelia. Indian hemp, in doses of from 2 to 4 grains of the extract, will frequently relieve the spasm. Opium, combined with sulphuric ether, may be given with good effect as follows:

| | | |
|---|---|---|
| Take of | Laudanum | One teaspoonful. |
| | Compound spirits of ether | Two teaspoonfuls. |
| | Camphor water | Six ounces.—*Mix.* |

Give two tablespoonfuls every two or three hours.

*Preventive treatment.*—The bowels should be kept gently open, the food be light and nourishing, sudden changes of temperature to be avoided, regular and moderate exercise to be taken, and a change of climate or situation to be tried. The best atmosphere on the continent for asthmatic patients, is that of Colorado. This class of patients also derive great benefit and relief by an abode in Minnesota. Alcoholic stimulants must be scrupulously shunned, as they only add fuel to the flame. Iodide of potassium, in doses of 5 grains, three times a day, is a remedy which has recently been very highly extolled for its preventive properties in this disease. The extract of hemlock, either alone, in doses of 1 to 2 grains, three or four times a day, or in combination with the Indian hemp, in $\frac{1}{4}$ or $\frac{1}{2}$ grain doses, is also highly recommended. Sleep is to be procured at night by 6 to 10 grain doses of Dover's powder, or 25 to 40 drops of laudanum. (See CLIMATE, HEALTH RESORTS, DATURA, GRINDELIA ROBUSTA, SPASM.)

ASTRAGALUS, *as-trag'-a-lus* [Gr. *astragalos*, a die], is the ankle-bone or first bone of the foot, upon which the tibia moves. It is so called from being shaped like the die used by the ancients in their games. In Botany, a genus of plants belonging to the Nat. order *Leguminosæ*, suborder *Papilionaceæ.* More than 250 species have been described, and most of them are hardy plants, either shrubby or herbaceous. The best known species are *A. hypoglottis*, the purple milk-vetch, and *A. glycyphyllos*, the liquorice-vetch. The species *A. verus*, *A. gummifer*, *A. creticus*, and some others, furnish gum-tragacanth, or, as it is frequently termed, gum-dragon. Tragacanth exudes naturally from all parts of the above plants, or from wounds made in the stems. It is used by manufacturers for stiffening crape and other light fabrics, and by perfumers for making bandoline. In Medicine it is employed for its demulcent and emollient properties, and as a vehicle for the exhibition of more active substances.

ASTRINGENTS, *as-trin'-jentz* [Lat. *ad*, to, and *stringo*, I tie fast], substances which have the property of contracting or drawing together the muscular fibre or coagulating albuminous fluids. They are employed medicinally for the purpose of obviating relaxation of the fibres and tissues, to check excessive secretions, and to impart tone to the system, and hence are useful in checking fluxes, hemorrhage, and diarrhœa. In cases of relaxation or debility, either external or internal, in increased and injurious secretions from glands or mucous surfaces, astringents are the chief remedy. The amount of astringent action, however, depends greatly upon the mode and circumstances of its application. The astringent principle in the vegetable kingdom, in the form either of tannic or of gallic acid, is very widely diffused. The principal vegetable astringents used in medicine are: Oak-bark, galls, kino, catechu, tormentilla, uva-ursi or bear-berry, logwood, etc. The mineral astringents are the acids, alum, salts of iron, particularly the muriate, sulphates of copper and zinc, and nitrate and oxide of silver, and salts of lead. Cold in any form is astringent.

ASYLUM, *a-si'-lum* [Gr. *a*. not, and *sulao*, I rob], was formerly used to denote a sanctuary or place of refuge to which criminals might fly for safety, and from which it was considered the greatest impiety to take them by force. The term is now commonly applied to certain institutions whose object is to alleviate the condition of the blind, deaf and dumb, lunatic and destitute.

ASYLUMS, LUNATIC. (See INSANE ASYLUMS.)

ATAXIA, *a-taks'-e-a* [Gr. *a*, not, *taxis*, order], want of regularity. Applied to a course or symptoms of disease, or to the functions of the animal body. It has been most generally used by late writers to denote that state of the nervous system which accompanies nervous fever.

ATAXO-ADYNAMIC, *a-taks'-o a-di-nam'-ik*, a term applied by the French to typhus fever.

ATHEROSPERMUM MOSCHATUM, *ath'-e-ro-sper-mum mos-ka'-tum*, a medicine introduced as a remedy in chronic bronchitis, and apparently with some success. Dose of the tincture, a teaspoonful in water every three, four, or six hours, according to circumstances. It is well worthy of a trial in chronic cases which have resisted other methods of treatment, and the writer can speak favorably of its effects from a pretty extensive experience of its use in such cases. If it causes sickness, the dose should be somewhat diminished, and it should not be given so frequently.

ATLANTIC STATES, CLIMATE OF. (See CLIMATE.)

ATLAS, *at'-las*, in Anatomy, is the name of the first vertebra, so called either from the Greek verb *atlao*, I sustain, or from Atlas, who was fabled to support the world upon his shoulders. It differs from the other vertebræ in having its body small and thin, and its forearm very large, being in form somewhat like a ring. It is connected above with the condyles of the occipital bone, and receives the tooth-like process of the second cervical vertebra from below, the former admitting of moving the head up and down.

ATMOSPHERE. (See AIR.)

ATOM, *at'-um* [Gr. *a*, not, and *temno*, to cut]. Synonymous with equivalent. The smallest or ultimate particles of which material bodies are composed, are termed atoms. Larger portions of matter are composed of these, and between them the actions of attraction and repulsion, whereby the condition of bodies is changed, may be supposed to take place.

ATOMIZER, *at'-um-i-zur*, an instrument for the atomization of medicines. There are various modifications of these useful instruments, one of the best being that manufactured by Codman & Shurtleff, of Boston. By its use any medicated liquid may be converted into the finest spray, and in this state may be inhaled into the smallest air-cells. The diseases which have been treated more or less successfully by inhalation of atomized, medicated fluids, are chiefly those of the pharynx, larynx, trachea, bronchia and lungs; croup, diphtheria and whooping-cough have also been successfully treated in this way. Simple bronchial catarrh often improves rapidly treated in this way, while bleeding from the lungs has been many times promptly arrested.

ATONY, *at'-o-ne* [Gr. *a*, not, and *tonos*, tone], is a term used in Medicine to denote deficiency in power or tone, generally applied to muscular power.

ATRESIA, *a-tre'-ze-a* [Gr. *a*, not, *tras*, to perforate], imperforation. Absence of the natural opening of any canal or cavity, owing to congenital malformation or occlusion of the same from disease or injury.

ATROPA BELLADONNA, *at'-ro-pa bel-la-don'-na*, belonging to the Nat. order *Atropaceæ*. This plant is commonly known as the dwale, or deadly nightshade. It is a native of Greece and Italy, and also indigenous to Britain, but not common. It is perennial, and grows in hedges and waste grounds on a calcareous soil, but is only met with in a comparatively few localities. It blossoms from June to August, the flowers being about an inch long, drooping, bell-shaped, and of a lurid purple color. The fruit is a berry of a shining violet black color when ripe, about the size of a small cherry. The berries have a most tempt-ing appearance, and children have frequently been poisoned by them. They are powerfully narcotic; and one of the first symptoms of their deadly action on the human frame is an appearance of the most besotted drunkenness. The dried leaves or an infusion of the leaves, will act in a similar manner. Even a small dose causes an extravagant delirium, which is usually of an agreeable character. The delirium is sometimes accompanied by excessive and uncontrollable laughter, sometimes by excessive talking, but occasionally by a complete loss of voice. The state of mind sometimes resembles somnambulism, as in the case of a tailor, who for fifteen hours, was speechless and insensible to external objects, and yet went through all the operations of his trade with great vivacity, and moved his lips as if in conversation. Dryness of the mouth and throat, difficulty of swallowing, nausea, dimness of vision, giddiness, coma, are among the other effects of this poison, and death is usually preceded by convulsions and paralysis. The best antidote to the virulent effects of this poison is *vinegar*, when promptly administered; but, if practicable, the stomach-pump should be at once used. When death ensues from its effects, the body soon putrefies, and swells in a remarkable manner, being covered with livid spots, and blood sometimes exudes from the mouth, nose and eyes. It is to be feared that it is a common ingredient in specifics for sparkling eyes sold by perfumers. The active principle of the plant is the alkaloid *atropia.*

*Therapeutic Properties of Belladonna.*—Conclusions of M. Dubois: 1. That belladonna is not without efficacy in inflammations, especially in those of the globe of the eye. 2. That it is the best remedy known in the intolerance of light which so frequently accompanies inflammation of the eye. 3. That its power as a preventive in scarlatina or scarlet fever can hardly be contested. 4. That it sometimes cures certain hemorrhages, particularly from the lungs, stomach and womb. 5. That it is a remedy *par excellence* for neuralgia, for whooping-cough, and most of the nervous diseases. 6. That it is a remedy *par excellence* to combat pain, especially when external. 7. That it alleviates, more than any other remedy, the pains of cancer, and cures sometimes, if not cancer, diseases closely resembling it. 8. That it can be advantageously employed in spasmodic contraction and occlusion of the pupil; to produce prolapse of the iris, and to break up adhesions; to prevent the inflammation of the iris so frequent after this operation; to maintain dilatation of the pupil, and to diminish the chances of adhesions after the operation of couching; to prevent secondary cataract; to re-establish vision, temporarily at least, when the lens is opaque in the center, or when there are opacities of the cornea; to assist the diagnosis in some diseases of the eye. 9. That it is of real efficacy in some cases of strangulated rupture.

10. That its property of facilitating labor in spasmodic constriction of the uterine neck is powerful and incontestible. 11. That it produces advantageous results in some cases of fissure of the anus. 12. That its employment may be more or less useful in spasmodic constriction of the bowels, in constipation, in spasmodic contraction of the rectum, of the anus, and of the vulva; in spasmodic stricture of the urethra, retention of urine, strangury, spasmodic stricture of the larynx and œsophagus; in spasm of the eyelid, incontinence of urine, nephritis, colic, piles, etc.

*Antidotes.*—The remedies recommended are, stomach-pump, vinegar, iodine, emetics, purgatives, cold application to the head; in the comatose stages, ammonia internally, with external stimulants.

Dose: fluid extract of belladonna, 3 to 10 drops; solid extract, ¼ to 1 grain; tincture, 5 to 30 drops. (See ATROPIA.)

ATROPHY, *at'-ro-fe* [Gr. *a*, not, and *trophe* nourishment], denotes a wasting, from deficient nutriment, either of a part or of the whole of the body. In order to the maintenance of the healthy state of the body or of any of its organs, a certain supply of nutrition is required to meet the waste that is constantly going on. When, from any cause, the supply of nutrition is not able to meet this waste, the natural dimensions of those parts are reduced. In a healthy condition of body, an exact balance is maintained between the waste and the supply; but in a very morbid condition, this balance is more or less disturbed, in consequence of which the whole body, or certain parts of it, receive too little or too much nourishment. The first state, from whatever cause it arises, is termed *atrophy*, the latter *hypertrophy*. Atrophy may thus arise from a vast variety of causes. It may be occasioned by merely withholding the necessary supply of nutritious food, without any actual disease. Among the diseases capable of producing atrophy, the most common are those of the digestive organs, by which the aliment is taken up and prepared for assimilation. Disease of the organs of assimilation may produce atrophy as affectually as disease in the primary organs of digestion. A frequent instance of this is in consumption, when the lungs become so diseased as not to be able to take in a sufficient quantity of air. Atrophy may result also from a want of activity in an organ, or in the whole body; so that when the nutritive particles are conveyed to them in the blood, they have not power to appropriate a sufficient quantity of them. When the vital activity of an organ is small, the nutritive particles are taken up slowly and languidly; while the affinity existing between them being also weak, they are sooner removed by the process of absorption than in health, and the parts thus circumstanced are rapidly wasted. Hence a due supply of nervous stimulus is necessary to the vital activity of an organ; while the cessation of action in any organ is invariably followed by atrophy. The first change that takes place in an atrophied organ, from whatever cause, is diminution of the quantity of blood sent to it; and next to this, and chiefly owing to it, is greater paleness of color. Subsequently, the organization becomes more completely changed; so that frequently all traces of its original conformation are lost, and in some cases, it at last disappears altogether. In all cases, atrophy arises from the diminution or perversion of the vital energies, generally the former; and hence, by exciting the natural vital energies of an organ, we tend to remove atrophy. In order to its cure, it is necessary to discover in what organ or organs the deficiency or perversion exists, and to adopt the mode of treatment that is considered most adapted thereto. Beyond this, nourishing diet, fresh air, healthful exercise, and, if suitable, cold bathing, are among the means generally adapted to such cases.

Atrophy or wasting may be either general or local. General atrophy is in one sense natural to advanced life, when the powers of nutrition being diminished, the muscles, the brain, the organs generally, shrink. There may be fat, at the same time much atrophy of the other bodily components. Atrophy occurring earlier in life, without *obvious* cause, ought to be regarded suspiciously. When an individual, without departing from ordinary habits, begins to lose flesh, the cause ought to be looked for, and if the change continue, the person should be submitted to a thorough medical examination, and the existence or not of incipient disease, if possible, ascertained. In young children atrophy occurs as a consequence of faulty digestion, most frequently from improper feeding; it also is the result of a diseased condition of the glands of the belly, through which the nutrient portion of the food passes on its way to the general circulation. For this condition, cod-liver oil is *the* remedy, given in teaspoonful doses twice a day, to an infant of six or eight months old, and the same quantity well rubbed into the skin of the abdomen night and morning. Some medicines, such as iodine, have the power of causing local or even general atrophy.

Local atrophy is liable to occur from various causes. Whatever diminishes the supply of blood to a part. will cause it to waste. Pressure on the main artery of the limb, obliteration of the smaller vessels of a part by previous inflammation, disuse of a member from paralysis or any other cause are all followed by diminution in size of the part affected. (See DIET, FOOD, DIGESTION, DYSPEPSIA, CONSUMPTION, AIR, VENTILATION, EXERCISE; AGE, OLD; CHILD, EMACIATION, COD-LIVER OIL, HEALTH, BATHS.)

ATROPIA, OR ATROPINE, *a-tro'-pe-a*, an alkaloid obtained by

Brand in 1819 from the root of the atropa belladonna. It is similar in its properties and actions to belladonna, but is much more powerful. The dose is from $\frac{1}{15}$ to $\frac{1}{60}$ of a grain, but it is rarely used internally. In neuralgia and neuralgic pains, the ointment, made by mixing 10 grains of atropine with $\frac{1}{2}$ an ounce of lard, has been found very beneficial. A piece the size of a pea should be applied thrice daily. Cases of sciatica have been cured by injecting $\frac{1}{30}$ of a grain under the skin with the hypodermic syringe. It is a very powerful remedy, and should never be used except by direction of a physician. (See ATROPA BELLADONNA, ALKALOIDS.)

ATTITUDE, *at'-te-tude*, the different positions which the body is capable of assuming by the action of its muscles, are called attitudes. The attitude of the body in disease, often affords important indications. (See POSITION.)

AUDITORY, *aw'-de-tur-e* [from the Lat. *audio*, to hear], in Anatomy, is a term applied to certain parts of the organ of hearing; as the auditory nerve, meatus auditorius, etc. (See EAR.)

AURA EPILEPTICA, *aw'-rą ep-il-ep'-te-ką*, a sensation which is sometimes felt immediately before a fit of epilepsy. The patient feels as if a stream of cold air were ascending from some distant part of the body toward the head. A similar phenomena is alleged sometimes to occur in hysteria, in which it is called aura hysterica. (See EPILEPSY, HYSTERIA.)

AURANTII CORTEX, *aw'-ran-ti kor'-teks.* Aurantii cortex, or orange peel, is a mild tonic, carminative and stomachic, but is seldom used alone. It is employed to flavor other medicines, to correct their nauseating tendencies, and to assist their stimulant impression on the stomach. It is a very useful addition to bitter infusions, tinctures or decoctions. Dose, fluid extract, $\frac{1}{2}$ to 2 teaspoonfuls. (See ORANGE.)

AURICLES, *aw'-re-klz*, the name given to two of the cavities of the heart. (See HEART.)

AURIST, *aw'-rist* [Lat. *auris*, the ear], is a term applied to one who studies and professes to cure diseases of the ear.

AURUM, *aw'-rum*, Latin for gold. (See GOLD.)

AUSCULTATION, *aws-kul-ta'-shun* [Lat. *auscultare*, to listen], in Medicine, is a term applied to the method of ascertaining the healthy or diseased state of certain organs, by attending to the sounds which they produce, either on being struck, or in the natural performance of their functions. In a stricter sense, the term auscultation is confined to the latter of these cases, the former being termed percussion. Auscultation, then, is the art of distinguishing diseases by listening to internal sounds; and is either immediate or direct, by the unassisted ear, or mediate, by means of instruments. This is one of the most important discoveries of modern medical science; for, though Hippocrates gives directions how, by auscultation, fluids are to be detected in the thorax, yet the subject seems to have attracted no attention for many centuries. In 1761, Leopold Avenbrugger, a physician of Vienna, published a small volume in Latin, entitled, *Inventum novum ex percussione thoracis humani, ut signo, obstrusos interni pectoris morbos detegendi.* The work, however, excited little notice till it was translated into French, in 1808, by Corvisart. Soon after this the practice of percussion became general in France and other parts, and was attended with results far more precise and certain than had been anticipated. In 1816 the subject received an immense impetus from Laennec's invention of the stethoscope. Auscultation is chiefly valuable as throwing light upon the diseases of the organs of circulation and respiration in the chest. By carefully studying the varieties of sound (often extremely slight) produced by the organs in health and disease, the skillful physician is able to judge of the condition of these organs with the greatest accuracy, and thus detect and adopt the best means of arresting incipient disease. (See STETHOSCOPE, PERCUSSION, PNEUMONIA, BRONCHITIS, CONSUMPTION; HEART, DISEASES OF THE.)

AUTOPLASTY, *aw-to-plas'-te,* autoplastic surgery. The restoration of lost parts.

AUTOPSY, *aw'-top-se.* Inspection; personal observation; the dissection of a dead body.

AUTUMNAL COMPLAINTS, *aw-tum'-nal kom-plaints'.* To oppose autumnal complaints, and even cholera, properly so called, there seems no surer or better means than cleanliness, sobriety, and judicious ventilation. Where there is dirt, that is the place for cholera; where windows and doors are kept most jealously shut, there cholera will find easiest entrance; and people who indulge in intemperate diet during the hot days of autumn are actually courting death. To repeat it, cleanliness, sobriety, and free ventilation almost always defy the pestilence; but, in case of attack, immediate recourse should be had to a physician. The faculty say that a large number of lives have been lost, in many seasons, solely from delay in seeking medical assistance. They even assert that, taken early, the cholera is by no means a fatal disorder. The copious use of salt is recommended on very excellent authority. Other autumnal complaints there are, of which diarrhœa is the worst example. They come on with pain, flatulence, sickness, with or without vomiting, followed by loss of appetite, general lassitude, and weakness. If attended to at the first appearance, they may soon be conquered; for which purpose it is necessary to assist nature in throwing off the contents of the bowels, which may be done by means of the following prescription:

Take of Calomel............................Three grains.
Rhubarb ..........................Eight grains.—*Mix.*

Take it in a little honey or jelly, and repeat the dose three times, at intervals of four or five hours. The next purpose to be answered is the defence of the lining membrane of the intestines from their acrid contents, which will be best effected by drinking copiously of linseed tea, or of a drink made by pouring boiling water on quince-seeds, which are of a very mucilaginous nature; or, what is still better, full draughts of whey. If the complaint continue after these means have been employed, some astringent or binding medicine will be required, as the subjoined:

Take of Prepared chalk........................Two drams.
Cinnamon-water........................Seven ounces.
Syrup of poppies......................One ounce.—*Mix.*

Take 3 tablespoonfuls every four hours. Should this fail to complete the cure, ½ oz. of tincture of catechu, or of kino, may be added to it, and then it will seldom fail; or a teaspoonful of the tincture of kino alone, with a little water, every three hours, till the diarrhœa is checked. While any symptoms of derangement are present, particular attention must be paid to the diet, which should be of a soothing, lubricating, and light nature, for instance, chicken broth, which should contain but little salt. Rice, butter and bread puddings, will be generally relished, and be eaten with advantage; but the stomach is too much impaired to digest food of a more solid nature. Indeed, we should give that organ, together with the bowels, as little trouble as possible while they are so incapable of acting in their accustomed manner. Much mischief is frequently produced by the absurd practice of taking tincture of rhubarb, which is almost certain of aggravating that species of disorder which we have now treated; for it is a spirit as strong as brandy, and cannot fail of producing harm upon a surface which is rendered tender by the formation and contact of vitiated bile. Upon the first symptoms appearing, as above described—especially in cholera seasons, medical advice should be obtained at once. (See CHOLERA, DYSENTERY, DIARRHŒA, BILIOUS CHOLERA, SUMMER COMPLAINT.)

AVENA, *av-e'-nạ*, in Botany, the oat, a genus of grasses; Nat. order *Graminaceæ*. *A. sativa* is the botanical name for the common oat. Oats are extensively used as food for man and domestic animals. When deprived of the husks, and coarsely ground, they form oatmeal. When merely divested of their integuments, they are called groats; and these when crushed constitute embden and prepared groats. The oat is a much hardier plant than either wheat or barley, and ripens in colder latitudes. Oatmeal is well adapted for human food, and is usually eaten in the form of cakes or porridge. It is, however, better suited for those who have active exercise in the open air than for persons in sedentary employments, being less easily digested than the preparations of wheat. Oats are also employed for the production of alcohol. The experiments of Professor Buckman, of the Royal Agricultural College, England, show that the cultivated varieties of the oat are derived from the wild oat, *A. fatua.* This parent species attains the height of from three to five feet, and is a mischievous weed in wheat-fields. The seeds are covered with stiff bristles of a brown color, and each is furnished with a long bent awn. Professor Buckman collected some of these seeds, and in the following spring commenced the cultivation of the wild oat in the experimental plots of the Royal Agricultural College. Year by year the seeds were saved, and the interesting transformation of a weed into a productive cereal grass was traced through all its successive stages. In the first year, a lighter colored fruit was obtained; in the second, the fruit exhibited a less degree of hairiness; in the third, a greenish, straight, and slender awn took the place of the black rigid one, bent at right angles, which characterizes the wild plant; in the fourth, the fruits were much more plump, owing to the greater development of grain; in the fifth year, the ripe fruit separated from the floral envelope less readily than in the case of *A. fatua.* These changes were reported in 1855, and the professor was encouraged to continue his experiments for a few more seasons. Accordingly, in the spring of 1856, seed, the produce of the preceding year, was sown in a prepared bed, and the result was a large admixture of two forms or types of crop-oats, one with the flowers all round the stem,—the potato oat form of the farmers, and the other with the flowers all drooping to one side,—the so-called Tartarian oat. Since then Professor Buckman has grown the two sorts so derived in the field, and with a gradual improvement in point of productiveness and weight per bushel. The same acute observer has lately watched the production of wild oats as a gradual degeneration from cultivated ones. The hairy seeds of the wild oat are sometimes used by anglers instead of artificial flies. (See OATMEAL.)

AVENS ROOT. (See GEUM RIVALE.)

AVOIRDUPOIS. (See WEIGHTS AND MEASURES.)

AXIL, AXILLARY, *aks'-il ak'-zil-la-re* [Lat. *axilla*, arm-pit], in Botany, the upper angle formed by the leaf with the stem is called the axil, and everything arising at that point is said to be axillary. Buds are usually axillary. Anything springing from the stem, either above or below the axil, is extra-axillary; if above, it may be described as supra-axillary; if below, as infra-axillary.

AXILLA, *aks-il'-la* [Lat.], is applied in Anatomy, to that cavity under the upper part of the arm called the arm-pit. Hence the term axillary is applied to the arteries, veins, glands, etc., of this part. The arm-pit is an important region of the body, on account of the large blood-vessels and nerves which occupy its space. A wound of the large artery in this situation, unless efficient means are speedily adopted to control the bleeding, must be quickly fatal. When from the copious flow of florid blood from a wound in or near the arm-pit, such an accident is supposed to have occurred, a bystander should with all speed exert pressure by means of his thumb upon the artery as it passed over the first rib, just behind the middle of the collar-bone, until the effusion of blood ceases. This pressure of course must be kept up, but as to do so with the thumb simply, would be too fatiguing, some solid body—the handle of a moderate-sized key is generally recommended—must be wrapped in a few folds of handkerchief and used for the purpose. While this is done, if medical assistance be many hours distant, as an additional safeguard, firm graduated pads should be tightly fixed into the hollow of the axilla, and firmly retained by a handkerchief or small shawl crossed over the opposite shoulder, but this must be a supplementary aid, until the artery is properly secured by the surgeon. The pressure behind the collar-bone cannot be relaxed for one moment without risk to life. (See ARTERY, ARTERIAL HEMORRHAGE.)

AXIS, *aks'-is* [Lat]. 1. This term is applied, in the general language of science, to a right line passing through, or supposed to occupy, the centre of a body. 2. The second cervical vertebra, or dentata.

AXUNGE, *aks'-unje*, Latin for hog's lard. *Axungia*, the lard or fat of an animal; *A. anserino*, goose fat; *A. castoris*, the fluid of the oil bags of the castor fiber; *A. curata*, *A. preparata*, purified hogs lard; *A. de mumia*, marrow; *A. porcina*, hog's lard. (See LARD.)

AZORES, CLIMATE OF THE, *a-zorze'*. The climate is mild, moist, and equable.

AZOTE, *äz'-ote* [Gr. *a*, not, *zoe*, life], the old name for nitrogen. Nitrogen was so called from being destructive to life; but as numerous other gases have the same properties, the word has been almost given up by chemists, except in such words as *azotized*, *azobenzole*, etc. The French, however, still use *azote*, *azotique*, *azotate*, etc., for nitrogen, nitric acid, and nitrate.

AZYGOS, *az'-e-gos* [Gr. *a*, not, and *zagos*, a yoke], in Anatomy, is applied to certain parts of the human body that have no yoke or fellow —that, in other words, are single.

# B.

BABE, CARE OF. (See Child.)

BACK, *bak* [Ang.-Sax.], is that portion of the human body which extends from the neck to the loins, and includes the dorsal vertebræ, the posterior portions of the ribs, and the muscles and skin pertaining thereto. Pains in the back may proceed from a variety of causes; as rheumatism, an affection of the spine, inflammation of the muscles, disease of the kidneys, or to sympathy with disorder in some distant organ—in females, in the uterus. In each case the treatment will depend upon the nature or seat of the disease. Pain in the lumbar region, or small of the back, frequently proceeds from lumbago. (See Lumbago, Spine; Kidney, Diseases of the; Rheumatism, Sciatica.)

BACON, *ba'-kn* [Sax. *bacan*, to bake, or Ger. *bache*, a wild sow], salted and dried pork, made from the sides and belly of a pig. The process of curing is effected by impregnating the flesh with salt, and allowing it to remain in the brine for some time. It is then taken out, dried, and smoked. Bacon-hams are the cured hind-legs. Pork or bacon, is undoubtedly a relishing, convenient, and in some degree nutritious, addition to the general fare; at the same time, it is a question, whether it does not in many districts form too large a proportion of the ordinary nutriment consumed, and whether an advantageous exchange might not be made, in part at least, for a more farinaceous diet. Owing to the great proportion of fat in bacon, there is comparatively little of those elements of food which go to build up the constituent tissues of the animal body, and which are contained so abundantly in the grains and pulses. Where the choice lies between bacon and bread, or bread and milk, or oatmeal and milk, there is no question that much more real nourishment will be obtained from the vegetable grain and milk, which contain whatever is requisite for every portion of the frame, than from that of which simple fat forms so large a share, and which cannot do more than afford respiratory food, or at the best, add fat to the body. To full-grown men this may be of comparatively little importance, but to growing children and youths, it must of necessity be a consideration, whether, in consuming the amount of nutriment circumstances permit, they consume that which really will afford them strength and substance, or not. Bacon used as a dietetic, with breakfast, is often of much service in cases of biliary disorder. It is the fat alone, broiled, or toasted in slices before the fire, which must be eaten—the lean is hurtful, and must be discarded by the bilious dyspeptic. When used in this way, a slight aperient action is certainly exerted, and it is to this, gently but regularly carrying off its daily proportion of bile, that the undoubted beneficial effect is most probably to be attributed. (See FOOD.)

BAD SMELLS. (See DISINFECTANTS.)

BAEL, OR BELA, *ba'-el*, is the name given to the dried half-ripe fruit of the *Ægle Marmelos*, a native of Malabar and Coromandel. The fruit is roundish, about the size of a large orange, with a hard woody rind, and is usually imported in dried slices or fragments. This medicine has only lately been introduced into this country, and is strongly recommended as an astringent in chronic dysentery, diarrhœa, and bilious cholera. It is given in the form of liquid extract, in doses of from 1 to 2 teaspoonfuls.

BAKING. (See ROASTING.)

BAKING SODA, OR BICARBONATE OF SODA. (See SODA.)

BALDNESS, ALOPECIA, *bawld'-nes.* Baldness arises from different, and often from very opposite causes. It is not confined to any period of life, for though it is far more general in old age, it is not unfrequently to be met with in youth and middle age. The chief causes which give rise to baldness are severe sickness, fevers especially, too much restriction, and too much relaxation of the skin of the head. Want of cleanliness also will cause baldness, and so will the exclusion of air from the head by the constant wearing of a hat. Constriction of the skin of the head is frequently the result of fever, or violent cold. Relaxation is the result of weakness, when a patient perspires on the most trivial exertion; relaxation of the skin takes place, the hair falls off, and frequently permanent baldness ensues. Baldness which occurs in the decline of life is, of course, the most natural, for then the bulbs of the hair have lost their vitality, and, as with plants when the roots decay, the hair withers and falls off. Baldness, especially in early life, is not necessarily permanent. Without putting our faith in nostrums which profess to make hair grow upon an old trunk, we may resort to remedies in some cases of baldness, with very great hope of success. If the scalp, when rubbed with the palm of the hand soon becomes red, it is almost certain that the baldness is not of a permanent character; while on the other hand, there is little hope of effecting any good if the color of the skin remains unaltered under friction. As remedies for baldness, any of the more stimulating hair washes may be used; but a decoction of box-wood is said to be the most successful. It is to be made as follows: Take 4 large handfuls of common box (*buxus sempervirens*), boil it in 3 pints of water in a closely covered dish for fifteen minutes, empty it into an earthenware jar, and let it stand for ten hours or more, and then strain it and add 1½ ounces of lavender water. Wash the bald part of the head with this lotion once or twice a day. The lotion will keep in a well-corked bottle for some time. But the most convenient, and perhaps the most reliable remedy for baldness, is pure vaseline, a highly concentrated essence of petroleum; it is quite odorless, and melts at 93°. When melted, perfume may be added, making it an elegant pomade. It is generally sold in the drug stores of this country. Before using the vaseline, or in fact any preparation, rub the scalp for some time briskly with a good hair-brush. That which may be found efficacious in one will frequently not prove so in another; but pure vaseline is probably the most effective preventative, as well as remedy. All means that tend to increase the circulation in the scalp to greater activity, will aid in the prevention as well as cure of baldness, hence, rubbing with a hard towel or hard brush, and the use of Spanish-fly ointments are recommended. Several recipes for pomatums and washes to strengthen the growth of the hair, and prevent it from falling off, will be found in the following paragraphs. Any of these may be tried, always preceding the application with brisk rubbing of the scalp with a hair-brush. The undermentioned recipes have frequently proved very beneficial:

Take of Castor-oil............................Four ounces.
Jamaica rum.... .....................Eight ounces.
Oil of lavender.................... ...Thirty drops.—*Mix.*

Put these in a bottle. Shake the mixture well before using it, which should be done by daubing the part with it three times a week and leaving it to dry.

When baldness is commencing, use the following pomade:—Macerate 1 dram of powdered cantharides in 1 ounce of spirits of wine; shake it well during a fortnight, and then filter. Take 10 parts of this tincture, and rub it with 90 parts of cold lard, and a little essence of bergamot, or any other scent; rub this pomade well into the head night and morning. In ninety-nine cases out of a hundred, this application, if commenced in time and continued, will restore the hair.

Another remedy for baldness is the following:

Take of Honey (finest quality)..........Four ounces.
Sand (well washed and dried)...Seven and a half ounces.—*Mix.*

Place the mixture in a retort, and subject it to distillation, carefully keeping the heat below the point sufficient to scorch the contents. This once much-esteemed mixture is called "Honey-water for the Hair."

The celebrated Dr. Dauvergne recommends 1 part of tar, 10 parts of lard, together with a plentiful supply of fragrant substances to get rid of the smell of the tar, as one of the best remedies for baldness.

A very useful oil for baldness or to prevent the falling off of the hair may be made as follows:

| | |
|---|---|
| Take of Oil of olives or almonds | Half pint. |
| Oil of origanum | Two drams. |
| Oil of rosemary | One dram. |
| English lavender | Forty drops.—*Mix.* |

Frequent shaving of the head, or the temporary use of a wig, will often remove or prevent baldness. Cajeput oil being stimulating and aromatic, has been highly recommended in the case of premature baldness as an external application. It should be rubbed into the part or parts affected, with a piece of lint, night and morning, and if the effect is too irritating, it may be discontinued for a time and begun again. The following are also excellent hair-washes:

| | |
|---|---|
| Take of Tincture of cantharides | One dram. |
| Spirit of rosemary | One ounce. |
| Elder-flower water | One pint.—*Mix.* |

This wash may be freely applied night and morning to the roots of the hair, by means of a piece of lint or sponge. Or,

| | |
|---|---|
| Take of Eau de cologne | Two ounces. |
| Tincture of cantharides | Two drams. |
| Oil of lavender and rosemary, of each | Ten drops.—*Mix.* |

This may be applied once or twice a day, but if the scalp becomes sore, it must be discontinued for a time.

It may be stated as a rule, that all the vaunted specifics of advertising quacks fail in producing the results said to be obtained, and generally consist merely of some irritating or stimulating application, while many of them are positively injurious. Some cases of baldness, depending upon local disease, can only be cured by treatment directed to the removal of the morbid affection. (See HAIR, SCALP.)

BALM. (See MELISSA.)

BALM OF GILEAD. (See BALSAMODENDRON.)

BALMONY. (See CHELONE GLABRA.)

BALSAM, *bawl'-sum* [Lat. *Balsamum*]. The term is derived from two Hebrew words, signifying the "prince of oils." It was formerly applied to many more substances than it is at present. The balsams of Peru and Tolu, and of Copaiba, are the most generally known medicinally. The two former are used popularly as external applications. Tolu balsam is used to impart a pleasant flavor to lozenges, cough mixtures, etc.; at the same time, it undoubtedly exerts a beneficial expectorant action. Quarter of an ounce of gum acacia powder, 1 ounce of Tolu syrup, 1½ to 2 drams of ipecacuanha wine, and water sufficient to make up 6 fluid ounces, forms a pleasant and good cough mixture for children, to be given in from teaspoonful to tablespoonful doses, according to age. When fever is absent, and the cough getting loose, a dram of tincture of squill may be added with advantage to the above. (See BALSAM OF COPAIBA, MYROSPERMUM.)

BALSAM OF COPAIBA, *bawl'-sum co-pá-ba*, acts decidedly upon the mucous surfaces of the body, and is employed in bronchitis, and in irritation of the urinary passages. It is extremely nauseous, and liable to disagree with the stomach. These properties are endeavored to be overcome by enclosing the medicine in gelatine capsules, and by preparing it in various ways, as by covering the taste with aromatics, such as cinnamon or peppermint-water. In the disease of females called the whites, it is considered one of the best medicines in use. It also ranks among the most effectual remedies for gonorrhœa. A good method of administering it in this disease is to take 2 teaspoonfuls of the balsam of Copaiba, 1 teaspoonful of the spirits of red lavender, 1 teaspoonful of the sweet spirit of nitre, 1 teaspoonful of laudanum, 2 ounces of gum arabic, and a gill or ¼ pint of water, and mix them together. Of this mixture take a tablespoonful morning, noon and night. Taken in this way, it will effect a cure in a few days. But to obtain prompt operation of the medicine, the patient must honestly abstain from every stimulating article of diet or drink, and impose upon himself a comparative state of rest. When active inflammatory or febrile action is present, Copaiba must not be used. The ordinary dose of the balsam of Copaiba is 10 to 40 drops, three times a day. The usual way of administering Copaiba is in capsules, thereby avoiding the unpleasant taste. (See COPAIFERA, GONORRHŒA.)

BALSAMODENDRON, *bal-sam-o-den'-drun*, in Botany, an important genus of plants, belonging to the Nat. order *Amyridaceæ*. The species are natives of the East, and are remarkable for the odoriferous gum-resins which exude from their trunks. *B. myrrha*, a small tree growing in the north-eastern parts of Africa, and in the adjoining parts of Arabia, is believed to be the principal, if not the only source of the fragrant gum-resin known in commerce under the name of myrrh. It is at first soft, oily, and of a yellowish-white color; on exposure to the air, it soon acquires the consistence of butter, and in time becomes much harder, and changes to a reddish hue. Medicinally, myrrh is regarded as a tonic, stimulant, expectorant, and antispasmodic, when taken internally; as an external application, it is astringent and stimulant. It is usually given in the form of tincture, of 2½ ounces to 1 pint of rectified spirits, in doses of ½ to 1 teaspoonful. It is frequently given also in combination with other substances, tonic or purgative, as iron, aloes, assafœtida, rhubarb, etc.; and is an ingredient of the incense burnt in Roman Catholic chapels, and of some kinds of pastiles which are used for fumigation. The substance called balm of Gilead, or balm of Mecca, and which is supposed to be the balm of the Old Testament, is said to be procured from *B. gileadense;* some authors, however, name *B. opobalsamum* as its source. The tincture of myrrh forms one of the most agreeable washes in affections of the mouth, in the proportion of ½ ounce of tincture to ½ pint of water, and a few drops upon the tooth-brush is a most excellent habitual application in cleansing the teeth, especially if the gums are weak or spongy.

BALSAM OF PERU. (See Myrospermum, Balsam.)

BALSAM OF TOLU. (See Myrospermum, Balsam.)

BANDAGES, *band'-aje-ez*, are strips of calico, linen, flannel, or of any other convenient material, employed to envelope in rolls any portion of the body requiring artificial support, or upon which it is requisite to produce pressure, or to retain dressing. The art of applying a bandage well, that is, both neatly and efficiently, requires some practice and attention, but it is often a most usefnl accomplishment; for a bandage if required at all, must be properly applied, otherwise it is worse than useless; if, therefore, none but the surgeon can undertake the task, it necessitates a much more frequent attendance on his part than might otherwise be requisite. In general, the first few applications of a bandage will be made by the medical attendant himself, and ought to be in the presence of the individual to whom the duty may be afterwards deputed. By careful attention on the one hand, and kind explanation on the other, much may be learned and taught, but not all, as the inexperienced bandager will discover on the first attempt; by all means, therefore, let the first beginnings be made on some one in health, before the call is made to the invalid. Attention to the following directions will facilitate the application of the previous practical lesson, or in some measure supply its place, if from circumstances it has been wanting. Whatever the material, the width of the bandage or roller must be proportioned in some degree to the size of the part to which it is to be applied; if too narrow, it is apt to be stringy, and to cut; if too broad, it does not adapt itself readily to the inequalities, and the pressure is unequal. For an ordinary-sized adult male leg, a bandage of two and a half inches broad is a good proportion; for the arm of the same person, one of two inches ought to be sufficiently well adapted. The material for bandages must neither be too strong nor too weak, ordinary "shirting calico" is a very convenient texture. The length, of course, must vary according to what is required, but rollers are usually put up in six or eight-yard lengths; they are better torn in one continuous strip, free from joinings, and without selvidge edge. The strip, when prepared for use, must be rolled up as firmly as possible, either into a single or double head—the former is much the most generally employed. If the bandage is a new one, of calico or linen, the loose threads of the roll at each end must be roved off, otherwise they are troublesome when the roller is applied. Bandages may be applied in simple circles, in spiral, etc., or in reverses. They are also applied in various other forms to suit the different portions of the body. In applying a bandage, the rolled-up strip being held in the right hand, the end which is commenced with is secured by the first turn. If it be the simple circular bandage, round the trunk of the body, or round a limb of nearly equal girth throughout, either naturally, or from swelling, the roller is carried round and round each succeeding turn, slightly overlapping the one before it; if the spiral bandage be required, the rolls are carried up very obliquely; but if, as most likely, it is the reversed bandage, then, wherever the inequality of the parts prevents its being laid on flatly and evenly, the band must be turned upon itself, so as to become reversed, the surface of the cloth which was next the skin being turned outwards, and *vice versa*. It is difficult to describe the manœuvre, and it is a little difficult at first to execute it neatly and well, but when practised it becomes perfectly simple. This is by far the most useful form of bandage, and a person who can put it on well, will have but little difficulty in accomplishing the other varieties.

For the purpose of retaining dressings upon the head, nothing answers better than a close-fitting calico cap; a handkerchief will often serve every purpose, or the split cloth may be used; the upper tails being brought beneath the under ones, and fastened under the chin, the under tails being carried to the back of the head. When it is desirable to retain the head in one position, it may be done by bands attached to a cap, and fastened as required to a band going round the chest. When for this purpose, or to fix a broken rib, such a band is required, it ought to be from eight to ten inches wide, made of tolerably strong double calico, and sewed firmly round the body.

To retain a pad or poultice on the arm-pit, a good-sized handkerchief answers better than any bandage, the middle being placed at the arm-pit, the ends are crossed at the side of the neck opposite, carried under the corresponding arm-pit, crossed and brought and tied on the shoulder. Slinging the arm, a very simple business, is often very badly done—in almost every case the fore-arm should be supported throughout its entire length, and it is generally well to include the hand, especially in children. The simple sling handkerchief may be put on, but a much more confining sling is made by enveloping the elbow in the long side of a triangular handkerchief, fastened up into a little pouch at the centre, and the point, including the hand, being fastened up to one of the ends going round the neck.

Upon the trunk of the body, dressings, blisters, etc., may be retained by means of a broad band of any convenient material, fastened round and prevented from slipping down by braces over the shoulders.

For bandaging the abdomen, a broad band, of whatever material is suitable, is generally made, the ends split for convenience of fastening either before or behind, and a triangular piece cut out of either edge at the centre, and the edges joined, in order to fit the shape of the region. In order to retain poultices, etc., at or near the groin, a piece of cloth is to be shaped to fit the region, a band long enough to go round the body, cross and fasten in front, is to be sewed to one end, and to the opposite point another small band is attached, which, passing between the legs, is brought up to the band behind. To retain dressings, etc., between the legs or nates, the double T bandage is used. For the groin and parts adjacent, the spica or figure of 8 bandage is also used. A roller eight yards long is taken, the end secured by one or two turns round the pelvis, and then the bandage is brought down across the front of the thigh, carried evenly between the legs, and again brought up and carried round the pelvis, these being repeated at each turn till the roller is exhausted.

For the extremities, the simple roller applied in reversed turns is generally used. Bandaging from above downward may be required, but generally it is upwards. There are various methods of commencing the application of the roller at the foot. The heel is covered by laying the end on the inner ankle, bringing the roller under the heel, then round the ankle so as to secure the end, from thence going down to the toes, and carrying the bandage up from that point round the foot and leg, reversing where required. The arm is to be bandaged—with the requisite modifications—by the reverse, like the leg. As a general rule, leg bandages, habitually worn, ought to be put on before the individual gets out of bed in the morning. A bandage which gives pain after its application, without obvious cause, ought to be taken off, and re-applied. If there is reason to suspect inflammatory swelling beneath, it will be well to try the use of cold water before disturbing matters. There is some little management required in taking off a roller as well as putting it on: as each successive turn is unrolled, it should be gathered in a bunch in the hand, and not, as is often done, three or four yards of bandage at full length pulled round the limb every time. A many-tailed bandage is used to bandage the leg where it is an object to avoid the slightest movement. It is formed of a number of short strips of bandage, long enough each to go once and a half round the limb. They are placed obliquely, and overlapping one another; they may, or may not, be joined by a central strip. Upon these arranged strips the limb is laid, and each strip in succession is brought round the limb, every succeeding securing the previous one. The advantage of the many-tailed bandage is, that it can be changed, either partly or entirely, if soiled, without the slightest disturbance. It is only necessary to attach a fresh strip to that which is to be removed, and pull the one way, and the other into its place. When, from movement, a bandage is liable to become displaced, the inconvenience is in a great measure prevented, by brushing a weak solution of starch or gum over the turns as soon as applied. This is different from the starch bandage which is so useful in many cases—fractures, etc. For this bandage, the roller is thoroughly saturated, as it is put on, with strong starch or flour paste, and, if requisite, brown paper pasted on the top of the first bandage, and another dry one put over all. In thinly-settled countries, where it might be requisite to move a person soon after a fracture, the foregoing application would prove simple, safe, and efficacious. It must not, however, be put on till inflammation has subsided. In many cases, in which bandages used formerly to be applied, they have been superseded by elastic materials, of which stockings and belts of all kinds are fabricated: elastic rollers are also manufactured. The flannel bandage unites at the same time support and protection to the surface—it is useful in rheumatic cases, and also when applied over the abdomen in diseases of that cavity. A much cheaper and thinner calico than that known as "shirting," may often be used, bleached or unbleached. Where there is much tenderness over a part, or inflammation of the skin, even of an erysipelatous kind, it is well to use cotton wadding freely beneath any bandage it may be requisite to apply. When a bandage has been rolled round any part to its full length, it requires to be fastened—this may be done by one or two pins, or by stitching, or more readily still, by simply splitting the end, returning the two ends thus made in opposite directions round the limb, and tying them.

In bandaging the hand, the bandage may be from one and a half to two inches broad, according to circumstances; for the finger of an ordinary-sized man, it may be three-quarters of an inch. When the hand is bandaged, it is often well to fill in the hollows, of the palm especially, with tow or cotton wool. In bandaging a finger the band may first be carried round the wrist, crossed over the back of the hand to the root of the finger, round which it is carried, both up and down again, in spiral coils, it is then brought back to the wrist and fastened by splitting the end so as to make two strings. (See DISLOCATIONS, FRACTURES, WOUNDS.)

BANDOLINE, OR FIXATURE, *ban'-do-leen*, a preparation sold by perfumers, and much used by ladies for stiffening and fixing the hair. It is merely a thick mucilage, obtained either from Carrageen moss or gum-tragacanth, scented with eau de Cologne or other perfumed spirit. A very delicate bandoline may be prepared by soaking quince-seeds in cold water for a day or two, and then straining the mucilage.

BANEBERRY, *bane'-ber-re*, in Botany, a name given to a species of *Actæa*, the root of which is sometimes used medicinally, on account of its antispasmodic, expectorant, and astringent properties. It is a perennial, herbaceous plant, from one to two feet high, with triternate leaves, the leaflets of which are deeply cut and serrated. The flowers are in racemes: the berries are black and poisonous. This plant, *A. spicata*, is also known by the name of Herb Christopher. It belongs to the Nat. order *Ranunculaceæ*.

BANTING SYSTEM. (See Corpulence.)

BAPTISIA TINCTORIA, *bap-te'-zhe-ą tingkt-to'-re-ą*, commonly called wild indigo. A plant belonging to the Nat. order *Fabaceæ*, and found in many parts of the United States. Its antiseptic properties give it a medicinal character, though it is in addition, sub-astringent, cathartic, and emetic. It acts powerfully on the glandular and nervous system, increasing all the glandular secretions, and arousing the liver especially to a normal action. It is useful in scarlatina, typhus fever, and in that state of the system attending gangrene, or mortification. In threatened or existing mortification, it is extremely useful as an internal or external remedy. The decoction is an excellent application as a wash or gargle to malignant ulcerous sore mouth and throat, mercurial sore mouth, scrofulous or syphilitic ophthalmia, erysipelatous ulcers, gangrenous ulcers, sore nipples, etc. The baptisin, combined with leptandrin, podophyllin, quinia, or cimicifugin, in diseases where these agents are indicated, will be found valuable in typhus and typhoid fevers, and all diseases of the typhoid character, when administered internally. Dose: fluid extract, $\frac{1}{4}$ to $\frac{1}{2}$ teaspoonful; baptisin (the active principle), $\frac{1}{4}$ to $\frac{1}{2}$ grain; decoction, 1 to 4 tablespoonfuls three or four times a day. (See Decoction.)

BARBADOES LEG. (See Elephantiasis.)

BARBERRY, OR BERBERRY. (See Berberis Vulgaris.)

BARBER'S ITCH, *bar'-burz* [from Lat. *barba*, the beard], a contagious disease occurring on the bearded part of the face. The whole face sometimes becomes swollen with it, and the hair wholly or partially destroyed.

*Treatment.*—The hair must be kept closely cut, and the parts be frequently washed with castile soap and warm soft water. Tar ointment is an excellent local application, and when that fails, the following persistently applied, will almost invariably effect a cure.

| | | |
|---|---|---|
| Take of | Carbolic acid | One dram. |
| | Pure glycerine | One ounce. |
| | Pure soft water | Three ounces.—*Mix.* |

Apply with a soft linen cloth three or four times a day.

An occasional dose of mild cathartic medicine, such as Rochelle or Epsom salts, will serve to expedite the cure.

BARBIERS. (See BERIBERI.)

BARILLA, *ba-ril'-la* [Sp.], the commercial name applied to the impure soda-ash procured by calcining various species of *Salsola*, *Salicornia*, *Chenopodium*, and *Atriplex.* The plants grow near the sea, in salt marshes, and are extensively cultivated in Spain, Sicily, and the Canary Islands. The seed is sown at the end of the year, and the plants are gathered towards the end of autumn, dried, and burned. Barilla is a gray semi-fused mass of ashes, and contains about 30 per cent. of carbonate of soda. (See SODA.)

BARIUM, *ba'-re-um*, atomic weight 68.5, symbol Ba, in Chemistry, the metallic base of the alkaline earth *baryta.* This metal was discovered by Davy in 1809, and was named *barium*, from the Greek word *barus*, heavy, on account of the excessive density of its compounds. Its specific gravity is above 2. It is a white, slightly malleable metal, decomposing water at ordinary temperatures. It quickly tarnishes in the air, from the absorption of oxygen. When moderately heated, it burns with a deep-red flame. It forms two oxides—the protoxide acid, $BaO$, and the peroxide, $BaO_2$; the former only forms salts.

BARIUM, CHLORIDE OF, in Chemistry, made by dissolving carbonate of baryta in hydrochloric acid, evaporating and crystallizing. It is a colorless salt, crystallizing in flat four-sided tables, and dissolving in 3 parts of cold and 2 parts of hot water. Its solution forms the usual test for sulphuric acid, which it indicates by forming a white precipitate insoluble in nitric acid. In Medicine it is used both externally and internally as an irritant stimulant, and deobstruent in scrofula, glandular swellings and skin diseases. Internally it is generally given in the form of solution, 1 ounce of the chloride to 10 fluid ounces of distilled water, in doses of 8 to 10 drops. In large doses this is an active irritant poison, the best antidote for which is sulphate of soda or sulphate of magnesia.

BARK, *bark* [Dan.], in Botany, the external coating of an exogenous or dicotyledonous stem and its branches. It presents three distinct layers, independently of the epidermis which is common to it, with other external parts of the plant. These three layers, proceeding from within outwards, are known as the liber, or inner bark; the cellular envelope, or green layer; and the suberous, or corky layer. Some botanists apply to these three layers, respectively, the Greek terms, *endophlœum*, *mesophlœum*, and *epiphlœum*. The bark is connected organically with the wood by means of the medullary rays and cambium-layer. It develops in an opposite direction to that of the wood; for while the latter increases by additions to the outer surface, the bark increases by additions to the inner. There are several kinds of bark which are largely used for medicines. These will be found noticed in separate articles, under the botanical names of the genera which include the plants producing them. For oak-bark (see QUERCUS); Peruvian bark (see CINCHONA); cabbage-bark, Surinam bark (see ANDIRA); Cascarilla bark (see CROTON); wild-cherry bark (see CERASUS).

The spring of the year, just as soon as it will peel, is the best time for gathering barks. The moss should be carefully removed from the bark.

BARLEY, *bar'-le* [Lat. *hordei semina*], when prepared as pearl-barley, is one of the most useful additions to sick cookery; its decoction, "barley-water," being a pleasant and extremely beneficial demulcent in all affections of the mucous membranes, and forming a grateful and nutritious beverage in fever; it ought, however, to be made considerably thicker in the former case than in the latter. A compound and very pleasant drink is made by adding to a quart of simple barley-water, figs sliced, and raisins stoned, of each 2½ ounces, licorice-root sliced 5 drams, and a pint of water, the whole to be boiled down to a quart and strained. This compound decoction is not so well adapted for a fever drink as the simpler form.

In irritation of the urinary passages from gravel, or after the application of a blister, or from any other cause, barley-water is most valuable; its soothing properties are still further increased by the addition of an ounce of gum arabic to each pint of liquor. In catarrh, and irritable cough, or simply as an article of mild unstimulating nourishment, it is serviceable. The late Dr. A. T. Thomson—an English physician—recommended equal parts of barley-water and milk, sweetened with a little refined sugar, as a good food for infants brought up by hand. It may act upon the bowels. (See BARLEY-WATER, FOOD, HORDEUM.)

BARLEY-WATER. Ingredients: 2 ounce of pearl barley, 2 quarts of boiling water, and 1 pint of cold water. Mode: Wash the barley in cold water, drain it, then put it into a saucepan with 1 pint of cold water, and boil for a quarter of an hour; strain off the water and add 2 quarts of fresh boiling water. Boil it until the liquid is reduced to half; strain it and flavor it with lemon-juice for use. The nourishment of barley-water may be much increased by adding ½ to 1 ounce of gum-arabic, and boiling it with the barley. (See BARLEY.)

BAROMETER, *ba-rom'-e-tur* [Gr. *baros*, weight, *metron*, a measure], an instrument for measuring the weight or pressure of the atmosphere. It may be said to be the invention of Torricelli, who first demonstrated the existence of the atmospheric pressure by means of a column of mercury contained in a glass tube, but the practical application of this, as the means of determining the weight of the atmosphere, is more particularly owing to Pascal. The principle of the barometer is very simple. It consists of a glass tube about 34 inches in length, sealed at one end, and filled with mercury. This is inverted in a cistern containing the same fluid, when the mercury in the tube falls so as to correspond with the amount of atmospheric pressure on the metal in the cistern, and rises or falls in proportion to the degree of this pressure. The siphon barometer has in place of the cistern the open end of the tube bent upwards and exposed to atmospheric pressure. For indicating good and bad weather, the wheel barometer, invented by Hook, has long been used, but it is a very imperfect instrument It is merely a siphon barometer connected with a needle, which moves round a graduated circle. In the shorter leg of the siphon a float is placed, which rises and falls with the mercury. A string attached to this float passes round a pulley, to which the needle is fixed, and at the other end there is a small weight, somewhat lighter than the float. When the pressure varies, the float sinks or rises, and moves the needle round to the corresponding points on the scale. The words *rain*, *fine*, *variable*, etc., generally appear on the graduated circle; but they do not always afford reliable indications of the weather.

The rising of the mercury in the upright barometer foretells fair weather, and its falling, rain, wind, snow, and storms. In hot summer, if the mercury falls, we may expect thunder. In winter, a rising indicates frost, and falling, thaw. In bad weather, if the mercury rises, notwithstanding the weather does not alter, a continuance of fair weather may be expected as soon as the change comes. In fair weather, when the same occurs, unsettled weather may be expected. If the mercury is unsettled, the weather will be so also. A steady barometer indicates that the weather at the time will last. In the upright barometer, to which these directions apply, it is useful to notice that the top of the column of mercury is sometimes flat, sometimes convex, and at other times concave. When it is flat or level, a continuance of the same weather is indicated; when it is convex, the mercury is rising; and when concave, it is falling—and the weather may, of course, be expected to correspond. The connection between the variations of the weather and the pressure of the atmosphere is, however, a subject very ill understood. For determining altitude, the barometer is an invaluable instrument. In ascending mountains, the mercury is found to sink about a tenth of an inch in 90 feet; so that, if the mercury fall an inch, we have ascended near 900 feet; but this is subject to variations from change of temperature and other causes, which render various corrections necessary. There are many forms of the mercurial barometer, but they are all modifications of the siphon or the cistern. The *aneroid barometer* is an instrument used for determining the variations of atmospheric pressure, without the aid of a liquid, as in ordinary barometers. Its action depends upon the principle, that if a very thin metallic tube be coiled, any internal pressure on its sides tends to uncoil it, and any external pressure to coil it still more. The instrument essentially consists of a thin metallic tube, curved so as to form about seven-eighths of a circle. This tube, being exhausted of air and hermetically closed, is fixed by its middle, so that whenever the atmospheric pressure diminishes, it uncoils; and, on the other hand, whenever the pressure increases, it contracts.

BAROSMA, *bar-os'-ma* [*Buchu*], in Botany, a genus of plants belonging to the Nat. order *Rutaceæ*. The leaves of several species, such as *B. betulina*, *crenata*, *crenulata*, and *serratifolia*, are used in medicine for their aromatic, stimulant, antispasmodic, tonic, and diuretic properties. They seem also to have a specific influence over the urinary organs. The plants yielding them are natives of the Cape of Good Hope. In commerce they are known as Buchu leaves, and are thus named in the British Pharmacopœia. They contain a peculiar bitter principle called *Diosmin* or *Barosmin*, and a powerfully-scented volatile oil. Buchu is useful in all diseases of the urinary organs attended with increased uric acid; in irritation of the bladder and urethra attending in gravel, catarrh of the urinary bladder, and incontinence of urine connected with diseased prostate, in dyspepsia, dropsy, cutaneous affections and chronic rheumatism. By many physicians it is regarded as valuable in all diseases of the sexual organs, even of long standing; in constitutional debility, incident to secret habits of the young. Buchu is pleasant in its taste, efficient in its action, and can be used in all cases with perfect safety. It is a moderate excitant, diuretic and tonic, and is said to have afforded essential service in chronic cases of rheumatism and gout. Acting on the urinary secretion, the urine is separated in larger quantities, and exhales an aromatic odor. The infusion of Buchu leaves, made from ½ ounce of the bruised leaves, and 10 fluid ounces of distilled boiling water, is given in doses of 1 to 4 fluid ounces, three or four times a day; the tincture, 2½ ounces of these leaves to 1 pint of rectified spirit, in doses of 1 to 2 teaspoonfuls. Dose of fluid extract, ¼ to 2 teaspoonfuls.

BARRENNESS. (See STERILITY.)

BARYTA, OR BARYTES, *ba-ri'-ta* [Gr. *barus*, heavy], in Chemistry, one of the alkaline earths, discovered by Scheele in 1774. It is met with, combined with sulphuric acid, in cawk or heavy spar, and combined with carbonic acid in witherite. It may be formed by decomposing the nitrate by a red heat; and is very similar in its properties to caustic lime. It is grayish-white; becomes hot when moistened with water, falling to a fine white powder forming the hydrate. Its specific gravity is 5.4. It has an extremely acrid, caustic taste. The carbonate and all the soluble salts are powerful acrid poisons. The best antidote is sulphate of soda or magnesia. (See BARIUM.)

BASE, *base* [Lat. *basis*, a foundation], in Chemistry, a term applied to those bodies which unite with acids or halogens to form salts or bodies analogous thereto. The basic property of an element is not absolute, but only relative; as the same body may act as a base or an acid with a different element. Thus we find chromium acting as a base in the form of sesquioxide, but as an acid in the form of teroxide or chromic acid.

BASILIC VEIN, *ba-sil'-ik vane* [Lat. *Basilica vena*], the large vein that runs in the inner side of the arm, and terminates in the axillary vein. The branch which crosses at the bend of the arm, from the long median vein to join the basilic is called the *median* basilic. Either of them may be opened in the operation of blood-letting.

BASILICON, *ba-sil'-e-kun* [Gr. *basilikos*, royal, or of great virtue], in Pharmacy, the name sometimes given to an ointment, composed of 2 parts resin, 4 parts of simple ointment, and 1 part yellow wax. It is much used as a stimulant dressing to foul or indolent ulcers, with a view to keep up the discharge; and as a vehicle for other stimulating substances, such as savin and Spanish flies. It is called *Unguentum Resinæ* or *Ceratum Resinæ*, in the pharmacopœia. Formerly basilicon was prepared with yellow wax, pitch, resin, and olive-oil, and was hence named *Unguentum Tetrapharmacum*, "the ointment with four drugs."

BASSORA GUM, *bas'-sor-a*, a whitish or yellowish substance brought from the neighborhood of Bassora. It differs from most gums in being nearly soluble in water. The plant yielding it is believed to be a species of *Mimosa*. It contains a peculiar principle, called *Bassorin*, which also exists in gum-tragacanth.

BASTARD, OR FALSE CROUP. (See CROUP, FALSE.)

BATHS AND BATHING, *bathz*, *bathe'-ing*. Applications to the surface of the body, either general or partial, in the form of liquid, vapor, or gas, are now comprehended under the term bath.

Water-baths may be simple or medicated.

As regards temperature, they may be cold, tepid, and hot.

As regards application, they may be general or partial, shower, cold affusion, douche, sponge, wet sheet.

Vapor and hot air are both used as baths.

The extreme vascularity, the nervous sensibility and sympathies of the skin, and its important functions as an excreting organ, all render it a most important medium through which to impress and act upon the system generally. The subject, till of late years, has been strangely neglected and overlooked by medical men; brought prominently forward under the name of "Hydropathy, or the Water-cure," by Preissnitz and his followers, it has unfortunately been carried far beyond its legitimate lengths, and become associated, in name, with quackery and undue pretensions. That much good is to be done by the use and application of water, simply, in the treatment of disease and disorder, there can be no question; neither can it be doubted, that much and serious evil has resulted from the indiscriminate and ignorant employment of this powerful agency. With the medical profession it rests to place the subject upon its legitimate basis, by taking it into their own hands, and employing it rationally and scientifically.

The Cold Bath.—The cold bath may be of any temperature up to 80° or 85° Fahr., the effect upon the system varying, of course, according to the temperature, the length of time it is endured, and the amount of muscular movement exerted during that time. A single plunge into ice-cold water may depress less than a longer continued bath of a higher temperature. As a rule, individuals of weak, nervous and circulatory powers, do not bear well the effects of cold bathing, it robs them of an amount of animal heat, which they cannot readily again make up; it produces nervous exhaustion, unrelieved by reaction to the surface.

*When an individual, after the cold bath, in any form, remains chilled*, the fingers and lips blue, the countenance pale, and when languor and drowsiness succeed, he may be certain that more harm than benefit is being derived from the custom, and that it must be modified or given up.

In such a case, if the bath has been usually taken before breakfast, the hour should be altered to a couple of hours after that meal, this with some will be quite sufficient to make the difference between agreeing or not; indeed, it requires a person of very good vital power to derive real benefit and comfort from bathing before breakfast. If the change in hour does not alter the effects of the cold bath, something may be due to its low temperature; or the bather, especially if he be not a swimmer, may expose himself too long to the depressing influence, he may be in the habit of going into the water after his powers have been exhausted by much exercise, or when he is in too chilled a condition. All these points require consideration, before, either the undoubted good effects, or the comfort of bathing are given up as unattainable. The last point mentioned is one on which particular caution is required; many persons in dread of going in to bathe too hot, run to the other extreme, and allow themselves to become so chilled, that reaction will not come on. After coming out of a cold bath, the skin ought to be well rubbed with a rough towel, till a glow is felt; or the hair-glove, now so well known, may be used. The above remarks apply to the application of cold water generally, to the skin, in whatever form. Few old people can take cold baths with advantage, and the perseverance in their use may lay the foundation of rheumatic, urinary, or other disease. Those who are liable to head affection, should not take the general cold bath; for them the shower bath is preferable. Females should not bathe in cold water during the menstrual period. Some persons who cannot bathe in fresh-water, can do so in the sea; the saline ingredients producing a more stimulant effect upon the skin; sometimes, however, the stimulation goes so far as to produce a painful rash, which forces the person to give up the custom. The restorative and tonic effects of cold bathing are undoubted in many cases, if the mode of taking it be properly regulated. As a *general rule*, five or six minutes immersion is sufficiently long. The cold bath is beneficially employed in spasmodic asthma, the chronic stages of whooping-cough, in nervous diseases, unconnected with disease of the brain, and in paralysis consequent on severe inflammatory attacks of the brain and spinal column. In short, from whatever cause it may arise (disease of the internal viscera excepted), when great relaxation and debility exist, the cold bath, properly employed, will be found a very valuable remedial agent. The cold bath is inadmissible when there is a tendency to apoplexy, heart disease, inflammations of the internal structures of the body, and cutaneous diseases.

The Tepid Bath.—The tepid bath, of a temperature varying from 85° to 94° may be used—about 88° is an agreeable and convenient standard. Of course the tepid bath involves the use of a receptacle for the water. It does not produce the shock to the system like the cold, and the person may remain in it from a quarter of an hour to twenty minutes. The tepid bath relaxes and purifies the skin, and promotes the insensible perspiration. For the purposes of cleanliness and comfort it is most generally applicable. After fatigue from traveling, hunting, shooting, &c.; in irritable states of the system, with dry or chafed skin, the tepid bath is at once grateful to the feeling, and salutary. Neither the tepid bath, nor any other, is well if taken soon after a full meal.

THE WARM OR HOT BATH.—The warm, or hot bath is, or ought to be, a remedial agent only, not one for general use. Its temperature ranges from 95° to 102° Fahr —96° is the most general standard. The warm bath is used to promote reaction, to allay pain, spasmodic or inflammatory, to soothe convulsive action, or carried to its fullest extent, to cause faintness. The time for remaining in the warm bath is generally from twenty to five-and-twenty minutes, but this must be regulated, somewhat, by the effect required. The hot bath of a temperature of 100° is a powerful stimulant agent, to be used cautiously, and rarely without medical advice; in disease characterized by extreme depression, coldness, etc., it is useful. In the employment of the baths generally, persons who are the subjects of any organic disease, or have a tendency to acute attacks of functional disorder, such as determination of blood to the head, etc., must be very cautious, and ought if possible to have medical advice. The regulation of the temperature of baths ought never to be left to the sensations, the thermometer is the only trustworthy guide, and, indeed, is an article which no house ought to be without; the price of the instrument is now extremely low, and whether for the bath, the temperature of the room, or the instruction of a child, it is equally useful.

The hot and tepid baths must be used with great caution by persons of great obesity, or where there is a tendency to apoplexy, heart disease, or hemorrhage, and in febrile diseases where there is a dry, hot skin, and an acute circulation, also during the menstrual period and later stages of pregnancy. It has proved signally useful in the inflammatory attacks of children, remittent fevers, insanity, infantile convulsions, Bright's disease, diabetes, tetanus, painter's colic, and inflammatory affections of the kidney, bladder and womb, and also in the passage of either renal or biliary calculi.

THE SHOWER BATH.—The shower bath, whether of fresh or salt water, whether quite cold or tepid, is a valuable agent in the treatment of many nervous affections; it will suit some whom the general bath will not. It is well for persons of weak habit, or who suffer from the head, to have a thin layer of warm water put in the bottom of the shower bath before getting in. In its operation and effects it is very similar to the cold bath, but the shock it communicates is much more violent, particularly if the quantity of water is great, the temperature low, and the fall considerable. It is employed with success in congestive and hysterical headaches; in mania, chorea, or St. Vitus' dance, epilepsy, hypochondria and nervous prostration, its use is contra-indicated in the same class of cases as the cold bath.

The Douche Bath.—The douche bath consists of a compact stream of water, either warm or cold, allowed to impinge forcibly upon any portion of the body. In some bathing establishments, the douche stream is of great force and bulk. Domestically, the most familiar douche instrument is the pump, and a most efficient one it is to strengthen a limb which remains weak after an accident, such as fracture or sprain,—it must be used till aching is produced. The most convenient domestic douche is a watering can without a nozzle, but a jug will do; in short, whatever will send a stream of water upon the part required. Additional force is obtained by the person administering the douche standing upon a chair. It is a very powerful agent and requires to be used with much caution. Infantile convulsions are very much relieved by a thin stream of cold water directed on the head, from an elevation of 2 or 3 feet. The same treatment has been found to quiet the wildest maniacs. In syncope or fainting, the cold douche suddenly applied to the spine, has often an instantaneous effect in restoring consciousness; directed on the thighs and pubes, it is said to relieve the spasm in spasmodic stricture of the urethra, and in stiffness of joints after injuries, or resulting from rheumatism, the use of the cold douche has often an excellent effect.

The Sponge Bath.—Sponging the skin with water is used in lieu of a bath, for purposes of cleanliness and comfort. It may produce depression if employed before breakfast. Partial sponging, sponging with tepid water, changing the hour, or having a cup of coffee on rising early obviate the effect. Rough friction is to be employed after.

The Wet-Sheet Bath.—The wet-sheet bath is sometimes, by misnomer, called the cold wet-sheet. It is, in fact, a warm bath, or rather a large warm poultice, kept warm by the animal heat. It is formed by enveloping the person in a sheet, wrung out of cold or tepid water, and covering or packing him up with layers of blankets; very free perspiration is the result. It is a most useful remedy and might with advantage be more generally used. Sponging with cold water after the use of this bath is occasionally practised.

The Vapor Bath.—The vapor bath produces free perspiration, and may be used whenever that is required, as in incipient cold. It is very relaxing. Many different forms of vapor bath have been invented. A small kettle to place on the fire, with tubing to convey the steam underneath the blanket or oilcase in which the person is enveloped, forms a good vapor bath. A simple extempore vapor bath may be made by placing a vessel of boiling water underneath the coverings of the patient, and keeping up the steam by means of hot stones or metal.

*The hot-air bath* is used for the same purposes as the vapor bath, but is more stimulating. Apparatus of various kinds for this bath may be had at the manufacturers.

A very powerful and convenient vapor bath may be extemporized thus—procure three or four new porous bricks, boil them in water for an hour and half, till perfectly saturated, then place them on the floor; seat the patient on a chair—of open cane-work, if possible—over the bricks, and pin a blanket round the neck or waist, as the case may be, so as to surround the person, and confine the steam, which rises abundantly. This form of bath is far more available in the houses of the poor than a hot water bath, and is more efficient—for sciatica and rheumatism of the lower limbs it is of much value. It is very useful in cases of bronchitis, pleurisy, catarrh, rheumatism, skin diseases.

Hip and Foot-Baths.—Hip-baths and foot-baths are used where a full bath is unnecessary. The former, either cold, tepid, or warm, is extremely useful in affections of the loins, hips, etc. The foot-bath, generally used as a derivative, ought to be as high a temperature as can be borne, and ought to redden the skin after the immersion. If a stronger effect is requisite, an ounce of mustard, and a couple of handfuls of salt may be put in the water. To reap the full benefit of the foot-bath, the extremities should either be clothed in woolen stockings, or wrapped in flannel immediately on coming out of the water. The fact must always be kept in mind, in using the foot-bath in cases of insensibility, that it may be so hot as to scald, and that it cannot be complained of. The best mode is to use the thermometer, and not to raise the heat above 110°.

The foot-bath is beneficial in colds, headaches, coughs and slight fevers.

The hip-bath in sciatica, rheumatism and irritable conditions of the bladder.

Sea-Bathing.—Sea-bathing, when properly employed, is a stimulant, in the first instance to the skin, and further to the body generally. The stimulant action upon the skin, indeed, even proceeds so far as to cause eruptions, somewhat resembling scarlatina; in some cases the smarting from these eruptions is so severe, after each immersion, that the practice has to be discontinued, at least for a time.

*Persons who are unaccustomed to sea-bathing* may sometimes find it of service to take two or three tepid sea-baths, before going to the open sea. There is, however, no necessity, as some suppose, for a course of medicine beforehand, unless the individual is decidedly out of health, and then sea-bathing should not be engaged in before consultation with a medical man, who may give medicine for the existing ailment, but certainly persons in good health have no occasion for preparatory medicine. Individuals who are very plethoric, who are the subjects of any organic disease, or who have any tendency to fulness about the head, also aged persons, should not bathe without medical sanction.

*If a person is in a state of body to benefit by bathing*, and if the good effects are not counteracted by too long immersion in the water, the bath should be followed by reaction, which conveys a sensation of increased strength and spirits, a glow of warmth on the skin, and increased appetite; if, on the other hand, the reaction is tardy, if the skin continues cold and blue-looking, if the fingers and toes become what is called "dead," if there is bodily and mental depression, with languor and sleepiness, it is certain the bathing does not agree from some cause or other.

*When cold sea-bathing does not agree*, or is too depressing, the tepid sea-bath is often of much service, and does not relax like fresh water tepid bathing.

THE SULPHUR BATH is a valuable means for the external application of that remedy. The apparatus consists of a frame large enough to enclose the whole body, covered with some impervious material, such as wax-cloth, with an aperture at the apex with a loose frill attached, so as to tie around the patient's neck. The sulphur is placed on a heated plate on the ground, within the apparatus, and the body is exposed to the fumes for fifteen or twenty minutes, or longer. It proves exceedingly useful in cutaneous and rheumatic diseases, and in lead colic.

ALKALINE BATH.—This is very useful in scaly skin diseases, in gout, rheumatism, and affections of the urinary organs. It may be made by dissolving 1 pound of carbonate of soda in 25 gallons of soft water, or 4 ounces of carbonate of potash to same amount of water.

NITRO-MURIATIC ACID BATH is made by adding to 30 gallons of warm water, in a wooden bath-tub, 1½ ounces of nitric acid, and 3 ounces of muriatic acid. It should be repeated frequently, the patient remaining in the bath fifteen or twenty minutes each time. Useful in torpidity of the liver, and in various other hepatic affections.

IODINE VAPOR BATH.—Much used in old scrofulous cases, is made by adding 1 dram of iodine, ½ an ounce of iodide of potassium, and 2 ounces of solution of potash, to 30 gallons of water.

CARBOLIC ACID BATH.—Add 2 drams of carbolic acid, and 2 ounces of pure glycerine, to 30 gallons of water. Useful in skin diseases characterized by a scaly eruption.

THE TURKISH BATH.—There are few subjects perhaps upon which less accurate information is possessed by the public than upon Turkish baths. The Turkish or oriental bath has been known from antiquity, and used more or less by all Eastern nations, though at present it is chiefly patronized by the disciples of Mahomet. How much of the effeminacy and sensuality of that race may be attributed to its use or abuse, it is not easy to say. The ancient Greeks and Romans were also acquainted with the use of baths of a similar kind; and we can trace mention of them up to the time of Hippocrates, the Father of Medicine, himself. They were undoubtedly introduced into England and into France with the Roman conquest, and were extensively made use of for centuries.

*The great principle of the Turkish bath* is that of a chamber supplied with heated air, not dry, but with a little fluid—just enough to moisten or soften the skin, and allow of the free escape of its secretions, which takes place to a remarkable extent, thus relieving congestion or obstruction of internal organs, and favoring the circulation of blood through the fine capillary vessels of the skin itself. Exhalation from the lungs is also favored, so that the body gets rid of impurities by both channels. Of course the building in which the bath is so administered must be one adapted and intended for the purpose, with all the appropriate chambers, the tepidarium, calidarium, etc., and skilful attendants must also be provided, who, remarkable to say, are not found to suffer in health from their residence there. We would advise people not to be too anxious to have an enormous quantity of cuticle or scurf rubbed off their skin by the attendant whose duty this is. Some persons are apt, from having read the exaggerations that have been circulated on this subject, to measure the benefit they are likely to derive from the bath by the amount of the matter which is removed by the hair-glove. Finally, let it be clearly understood that the Turkish bath is a very useless remedy in some, if not in most of the cases for which its help is sought by the ignorant, and that in many cases it is likely to prove hurtful and dangerous, so that there can be no greater folly than its use by an invalid without the advice of a properly qualified medical practitioner, who will always be ready to point out the case (and there are many such) likely to receive benefit from its proper and discriminate application. Some people are so stupid they cannot see that it does not follow that because A. derived advantage from the use of a Turkish bath, B. must necessarily do so, because his case seems to them to resemble A's. They forget that there may be many other circumstances connected with B's case which might make the use of a bath hurtful to him. We, therefore, hope to hear less for the future of the reckless gratuitous advice tendered by the public to their friends on this subject;

and still less of the public being so silly as to follow the advice of those who are interested in the use of baths for pecuniary considerations.

*Amongst the number of cases likely to be benefited* (due attention being paid to the precautions aforesaid) may be mentioned chronic rheumatism, and gout, especially those cases followed by deposits in the joints, and scaly eruptions upon the skin; certain cases of sciatica and tic douloureux, as also certain chronic diseases of the lungs, stomach, and liver. It has been known to act as a charm in removing local dropsies, as of the feet and legs, when not depending upon any serious organic disease. We hope to see a wider application of the Turkish bath as a means of treating disease upon scientific principles, as a preventive of disease, as a promoter of cleanliness and of health, and this is only to be effected by its moderate and judicious employment, since nothing will be more calculated to drive it into the regions of obscurity and neglect than the intemperate and ill-advised encomiums of those who are neither capable of understanding its action nor of judging of its effects, but who are disturbed by an uneasy desire to try anything and everything that is new.

THE SWIMMING BATH.—This form of bath, which is now—thanks to the liberality and enterprise of our town corporations, or of public companies—to be met with in almost every city, must be looked upon as an important means of improving public health, as well as affording an opportunity of learning the art of swimming to many who, from being resident in inland towns, would otherwise remain ignorant of it. It is generally resorted to as a pleasure and luxury, or for the purposes of ablution, or healthful and most useful exercise. The bath should be spacious, and its temperature should be maintained at a pitch which will render its use agreeable as well as safe even for the comparative invalid who cannot remain any length of time in perfectly cold water. Salt water should also be added in sufficient quantity, if possible, as by this means its action is rendered more salutary.

HAND SHOWER BATH FOR CHILDREN.—A very useful article has been invented of this kind, consisting of a bell-shaped tin vessel, the bottom of which is pierced with holes, and from the top of which rises a hollow tube. To use it, the bell must be immersed in a basin of water, and then the thumb or finger must be placed over the aperture of the tube, which serves as a handle. If the thumb be kept firmly pressed over the aperture, the atmospheric pressure will keep the bell quite full of water while it is raised over the head or any part of the person to whom the shower is to be applied. By raising the thumb, the water is suddenly discharged in a shower. This bath is invaluable as a means of applying all the benefits of a shower bath to children, without any of its terrifying accompaniments. It is peculiarly valuable, and has been much used by the writer in cases of nervous disease among children, such as chronic St. Vitus' dance, etc. The intensity of the shock may be varied according to the height at which the instrument is held; and, of course, the temperature of the water may be varied to suit the individual cases of diseases. As a rule, the use of the shower-bath should not be persisted in with children to whom it continues to be very irritating and disagreeable, after the first few applications. When administered as above, many children become exceedingly fond of using it.

ARTIFICIAL SEA-WATER FOR BATHS may be made as follows:

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|---|---|
| Take of Common salt | Four pounds. |
| Iodide of potash | Four drams. |
| Lime-water | Three ounces. |
| Sulphate of magnesia | Six ounces. |
| Water | Sixty gallons.—*Mix.* |

It may be used at any degree of temperature. This is so exact an imitation of sea-water, that sea-plants, and even salt-water fish, are said to live and thrive in it. (See ABLUTION, AFFUSION, CRAMP, HEALTH, HEALTH RESORTS, CATARRH OR COMMON COLD.)

BATTLEY'S SOLUTION OF OPIUM, *bat'-tlee's.* Battley's sedative solution, *Liquor opii sedativus*, is a preparation of opium introduced by Mr. Battley, and long esteemed as an opiate more certain and less disagreeable in its effects than most others. It is merely a strong aqueous solution of opium resembling the *Extractum opii liquidum* of the British Pharmacopœia. The dose is from 5 to 20 drops.

BAYBERRY. (See MYRICA CERIFERA.)

BAY-SALT, *ba'-sawlt*, coarse salt obtained by the evaporation of sea-water in large tanks, or bays, as they are technically termed.

BEAN, *bene* [Ang.-Sax.] The various species of bean are most nutritious to those whose stomachs can digest them ; they are used either young and fresh gathered, or old. The nutriment they afford, as shown in the case of the miners of South America, who live almost exclusively upon them, is calculated to sustain a high condition of muscular development and vigor. Garden-beans as brought to table in this country, must be avoided by those of weak digestion. They are less likely to disagree if deprived of their skins.

BEAR-BERRY. (See UVA URSI.)

BEARD, *beerd* [Ang.-Sax.], the hair growing upon the chin, and other adjoining parts of the face, in man ; and sometimes, though very rarely, in women. It is thicker than the hair of the head, and longer, when suffered to grow, than the hair on the other parts of the body. It is usually of the same color as the hair of the head, but always the same as that of the eyebrows. The beard is most abundant among those of the Caucasian race, and many persons, natives of Africa, America, and Australia, have little or no beard. The beard was held in great estimation among the Jews, as it is until the present day among the Arabians. "By the beard of Aaron," or "by the beard of the Prophet," is looked on as the most solemn oath of a Jew or a Mahomedan. Nearly all the eastern peoples prided themselves upon the fashion and form of their beards; and we have it expressly on record, that the Assyrians and Persians indulged in very long beards. Among the Greeks, and especially among the Greek philosophers, this ornament was held in high estimation. Athenæus tells us that the Greeks wore the beard until the time of Alexander the Great, who ordered his Macedonian soldiery to shave it off, lest the growth of it might give a ready handle to their enemies in battle. Philosophers have nearly always affected the beard as a mark of gravity, and even venerableness; and Strabo tells us that the Gymnosophists of India wore it long. The Romans wore the beard until the 5th century A. U. C., when Publius Ticinus Mena brought over a colony of barbers from Sicily to exercise their profession on the Roman chins. Augustus, and the Roman emperors, till Hadrian, shaved their beards; and Plutarch says that Hadrian allowed his to grow to hide the scars on his face. All the imperial personages after Hadrian grew their beards. The Lombards (or *Longbeards*), the early French, the ancient Britons, and the Anglo-Saxons, after they conquered Britain, all nourished the growth of their beards with peculiar care. When Duke William conquered England, he insisted rigorously upon carrying out the Norman custom of shaving; and he thus constrained many of the high-spirited Britons rather to abandon their country than their whiskers. But, by-and-by, they got the advantage of their ruthless conquerors; and the higher classes indulged in the moustache, or the entire beard, from the reign of Edward III., down to the time of Charles II. In the reign of Charles II., the entire face was often shaven; sometimes a slight moustache was tolerated, and sometimes the whiskers or hair on the cheeks was grown. During the last fifty years, growing the whole beard has become very common in Europe and America. First, the practice began in Bonaparte's army, then it extended to Italy, then to Germany, then to Spain and Russia, and, lastly, to England and America, where the beard is now very common. Whatever opinion may be entertained as to the advantages or disadvantages of the beard, there can be no doubt that it forms a most valuable protection to the throat and lungs, and should be cultivated by all in whom these organs are delicate or susceptible. To stone-masons, and others who are much in an atmosphere charged with dust or particles of foreign matter, the moustache serves to prevent these from getting access to the lungs.

To beautify and promote the growth of the beard, use the following: Mix ½ a pound of olive oil with ½ a dram of oil of origanum, and ¾ of a dram of oil of rosemary. This will promote growth and have a tendency to make it curl. (See HAIR, BARBER'S ITCH.)

BEAR'S-GREASE, *bārz'-grese*, a commodity which, as its name implies, is made from the fat of bears, and is one of the most nourishing things it is possible to obtain for the hair. It is so scarce, however, that most of those pomades which are so tastefully done up for sale by perfumers and others, consist mostly of beef marrow, hog's lard, or calves' fat, nitric ether, essence of ambergris, etc. The fictitious bear's grease is thus composed, according to the best recipes: —Washed hog's lard, 1 lb.; flowers of benzoin, ½ oz.; and balsam of Peru, ¼ oz. Melt together, pour off the clear portion, and stir until nearly cold.

BEBERINE, or BEBERIA, *be-ber-ené*, an alkaloid, discovered by Dr. Rodie, of Demerara, in 1834, in the bark of the bebeeru tree (*Nectandra Rodiæi*). When dry, it is a white, amorphous inodorous powder, very soluble in alcohol, less so in ether, and very sparingly in water. It is commonly administered in the form of the sulphate, which very much resembles the sulphate of quinine in its action and uses, and has been recommended as a cheap substitute for it, but it is less powerful. It is tonic, antiperiodic, and febrifuge; and is given in doses of from 1 to 10 grains.

BED, BED-ROOM, *bed, bed'-room* [Ang.-Sax.] IN HEALTH AND IN SICKNESS.—The fact that civilized people spend on an average, about one-third of their lives in their bed-rooms, is quite conclusive as to the importance of their salubrity being a first consideration with every one. Whatever the public rooms, bed-rooms should be as spacious, lofty, and well-aired, as circumstances will permit. Unfortunately the reverse of this is the general rule, and we have close, small sleeping-apartments, crowded and ill-ventilated nurseries, and bad health. Good ventilation will do much, but it will do far more if aided by plenty of space. During the day-time, there is much less danger of persons generally, suffering from want of fresh air, than during the night, when in sleep, they are many hours confined to one place. Every respiration of the sleeper contaminates a certain amount of air, and as a matter of course, the smaller the space around, the sooner will the contamination of the whole body of air contained in that space be completed, and become loaded with an amount of carbonic acid, injurious to health. The room must be sufficiently large—and this is rarely the case in modern houses—to supply pure air for respiration during six or eight hours, or some means must be provided for carrying off the impure atmosphere. This, certainly, is not to be effected by closed doors and windows, and blocked-up chimneys, assisted in their injurious operations by closely-drawn curtains, which might be contrived for the special purpose of enveloping sleepers in their own exhalations, rendering sleep unrefreshing, and waking a painful, rather than a pleasurable operation; it cannot be otherwise, after the poison of carbonic acid has been regularly inhaled for the last few hours.

*If the door of a sleeping-apartment must be locked*, the upper panels ought to be perforated for the admission of air, but the purpose is much better answered by the door being left ajar, while it may be rendered equally secure by means of a chain-bolt. There is an advantage in admitting the fresh air by this channel, for it must be warmed in some degree in its passage through the house.

*Air may be admitted directly from without*, through the window, left slightly open at the top, or better, by means of barred glass or perforated zinc. Some zinc plates are made so that the perforations may be opened or closed at pleasure.

*It is not sufficient to let in pure air*, the impure must have some means of escape, and for this, the chimney—and no sleeping-room either for rich or poor should be without one—is the most ready channel, and perhaps the best, if under proper arrangements. In former times, when fire-places were ample and lofty, the chimneys were of themselves sufficient to carry off bad air; but since, by change of fashion, the openings have been lowered and contracted, they cannot do this. The air, warmed by respiration, ascends to the top of the room, where it must remain till it becomes cooler, but not more wholesome, it descends to be rebreathed, and reaches the level of the breather's nostrils before it can pass up an ordinary chimney. Thus, a bed-room to be healthy, must have a sufficient entrance for good air; must have a proper exit for that which has been rendered impure, and should have space if possible; the greater the number of sleepers, the more requisite the fulfilment of these conditions. It must also be borne in mind, that a light, and especially a gas-light, equally with the lungs contaminates the air. It is advisable when a light is burned in a sleeping-room, to place it so that the fumes may pass up the chimney; if a gas-light, it ought to be provided with a special tube to carry off its fumes; without this it must be a source of evil, with it, of good, for in the latter case it increases the current of air through the room generally.

*Fires in bed-rooms* are frequent sources of impure air, uncomfortable sleep, and morning headaches. During the first hours of night, when burning briskly, the fire promotes ventilation; but when, as often occurs, towards morning, it smoulders down, and becomes choked with ashes, it has not sufficient power to create a draught; the current of air is reversed, instead of passing up the chimney, it passes down, carrying with it into the room a very deteriorated atmosphere, perhaps loaded with sulphurous gases. None who regard health will have curtained beds; it is difficult to conceive what other purpose the huge masses of drapery around a bed can serve, than to collect dust, and when drawn, to confine impure air around the sleepers.

*For the young and middle-aged*, hair, or where these cannot be afforded, firm wool mattresses should always be used; feather-beds never. The cotton mattress requires more frequent dressing and cleaning than the hair. For the aged, who are deficient in natural warmth, a feather-bed is quite admissible. However perfect the provision for ventilation of a bed-room during the night may be, it must require additional purification in the morning. As a rule, the window should be opened as soon as the occupant is about to leave the room, or even before in summer, and the bed-clothes turned down over the end of the bedstead, or thrown entirely off, for at least an hour before the bed is made up for the day; in this way, perspiration, and emanations which take place from every animal body, are evaporated and got rid of. Turn-up beds, box-beds, and all enclosures of the kind, are perfect abominations. Slops of all kinds should be removed from sleeping-rooms as early as possible. Children even more than adults require fresh pure air during sleep, yet how often are nurseries crowded and shut close up during the night; the beds made as soon as left vacant; and the little creatures confined to the room in which they have slept, for a great part of the day. This ought not to be, nor would it be, but for the generally prevailing ignorance upon all points connected with health, and the rules for its preservation. There are few parents but would make sacrifices to give their children a change of room were they sufficiently aware of the importance of so doing; even self-interest would dictate the course, could they know how often the first cause of illness, and all its expenses, has originated in the badly-aired nursery.

It is much to be regretted that in the houses of the poor, crowding at night is so frequently compelled by circumstances; if it must be so, its evils ought to be counteracted by the means of ventilation already pointed out, and by strict cleanliness; at the same time, floors should not be washed in damp weather, and when they are washed, it should be done early enough in the day to permit of their being thoroughly dry before the room window is closed for the night. Rooms which are at all crowded at night, ought to be whitewashed at least twice a year.

*The chamber of sickness* requires all the provisions for health to be attended to with increased care, more especially if the illness be of an infectious character. In this case, as free ventilation with cool pure air as the case will admit—the window, if possible, being open during the day—must be continually preserved; and all superfluous furniture or clothing, of cotton or wool especially, and bed-hangings, removed; no counterpanes or quilts should be used, as they are too heavy for the patient, blankets should take their place; dirty linen must be taken away at once, and excretions—kept, as they should be, for the inspection of the medical attendant—removed to an unoccupied room, or out of doors. The zeal for cleanliness, however, must never, either in infectious disorders or not, go so far as to dictate washing the floor of an apartment occupied by the sick; a gentle sweeping with tea-leaves to prevent dust, is all that is allowable. Cooking of any kind is out of the question. If it is possible to have a second bed into which the sick person can be moved occasionally, it is a valuable resource. A thermometer to regulate the temperature of a sick-room is at all times a safer guide than the sensations of individuals, and the best average temperature to be maintained is from 55° to 65° Fahr. All sources of unpleasant or teasing noise, creaking hinges or shoes, the ticking of a clock, etc., are to be obviated; if there is a mirror into which the invalid can gaze, it should be removed. Vessels, whether for food or medicine, should be carefully cleansed each time of using. The medicines ought to be kept in some sort of order in a place by themselves, never, as is frequently done, placed in the window, where they are liable to be decomposed by the action of light, or by the heat of the sun's rays. All external applications should be unmistakably marked.

*Even in diseases of an infectious character*, if proper ventilation and cleanliness be observed, the attendants upon the sick have comparatively little to fear, though at the same time, every additional precautionary measure is to be adopted. Fumigations of tobacco, burning nitre, etc., are worse than useless; they give no real protection, and only deteriorate the air, or irritate the patient. Chlorine is one of the most effectual disinfectants to be employed, and by far the best preparation for the purpose is Collins' patent disinfecting powder, which requires no trouble, and maintains a continued, sufficiently effective, and not unpleasant chlorinated atmosphere in the apartment. Carbolic acid, 1 ounce to a gallon of water, and the bromo-chloralum manufactured by Tilden, are excellent disinfectants for this purpose. Vinegar, sprinkled or burned, has no power of protecting against, or of destroying the power of morbid emanations; but it is sometimes grateful to the patient, and pleasant to the attendants. Darkening a sick-room is too often resorted to, and should not be done except by order of the medical attendant, for some special reason. Bed and body linen of course require to be frequently changed, in fevers, etc., once in twenty-four hours if possible, that is, if it can be done without exhausting the patient.

*Those in attendance upon the sick*, especially of an infectious disorder, should live sufficiently well, and, if accustomed to it, take a moderate proportion of wine or malt liquor; but not, as many do, have recourse to extra potations of brandy, which can afford no power of resistance, but only render the body more susceptible of noxious influence, when the depression which follows excess supervenes. A sitter-up should have tea or coffee during the night, and those who have to go about a fever-patient in the morning, ought previously to take a cup of one or other of those beverages. The breath and exhalations generally of any one laboring under an infectious disorder are to be avoided; and as much as can be done, any continued position, towards which a draught of air may be directed from the patient. With these precautions, those whose duty calls them to attend upon the sick, ought never to shrink from that duty, but face it with cheerfulness and trustful reliance upon Providence.

There are now so many inventions for promoting the comfort and convenience of the sick, that it would be impossible to enumerate them here, but a few of the most useful requisites may be suggested. A measure, marked for spoonfuls, to be used instead of metal spoons, which vary in size and are apt to be stained. A drop or minim measure; a piece of water-proof sheeting, either of gutta-percha or some one of the numerous materials now manufactured; a fan; a night-light, either simple or made to keep water hot; an air or water-cushion, of water-proof material; either as a cushion or as a bed-rest, adapted to any elevation. A "sick-feeder" or half-covered cup, with a spout and handle, is most useful for giving either liquid aliment or medicine in severe illness, when it is desirable that a patient's head should not be elevated. After illness of any kind, the chamber which has been used ought to undergo a thorough cleansing; after fever or other infectious disorder, everything should be individually cleaned. The room itself ought to be papered, painted, or whitewashed afresh, the bed-frame taken down, scoured, and with other furniture exposed to the open air for some days; feather-beds and hair mattresses taken to pieces, their coverings washed, their contents re-baked or fumigated; whatever can be washed, should be. Expose articles which have been about the sick freely to the action of air or water, and they will speedily get rid of the noxious particles,—"fomites," as they are called. Shut them up, or bundle them together, and they will retain the power of propagating disease for months, it may be for years.

The crowded rooms of the poor have been mentioned—bad enough in health, they become ten times worse in sickness, and this is chiefly felt in country districts. In towns, a person seized with an infectious disorder, if accommodation and means at home are insufficient, has the hospital as a resource, in the country he has not; the consequence is, that to their own detriment and that of others, the sick are compelled to be lodged in the crowded family dwelling, with every chance of the disease spreading through the house or village—the case is continually occurring. It might easily be prevented, by providing some isolated cottage in a healthy situation, properly *laid out* and furnished for the reception of the sick, with accommodation for a wife or a mother when nursing the invalid. Such a small village hospital, whether for the reception of those afflicted with infectious disease, or indeed any severe disease, would be most invaluable to all, and might be maintained for the use of a small surrounding district at trifling expense. (See Air, Ventilation, Disinfectants, Sick-Room, Houses, Beds, Sanitary Science, Health, Damp, Sleep, Hospitals.)

BEDFELLOW. (See Acquired Diseases.)

BEDS, *bedz*, spring beds are a decided improvement upon those of feathers, hair, etc., inasmuch as when the body is moved they at once regain their position, and do not allow the same extent of the accumulation of the secretions of the body, of heat and moisture. They also save a great deal of hard work to domestic servants, as they do not require to be shaken up and tumbled about every morning, but always retain the same elasticity.

The invalid bed lift is very valuable in some severe cases, where it is impossible to change the patient's bed without great pain and trouble.

Iron beds, without curtains of any kind, are by far the most healthy for general use, and for public institutions no other kind will do.

In cases where there is great difficulty of breathing, so that the patient is forced to sit up in bed, a bed-rest will be found of great value. One should be obtained that can be moved or inclined at different angles according to the wish of the patient, so as to cause as little inconvenience as possible in changing his posture. Bedsteads for invalids can be obtained with a part of the sacking made to rise at the head so as to support the back. This may be elevated to any desirable angle by means of two upright pieces with holes and pins through the bed-frame. While in this position the feet of the patient should always be supported by a foot-board, to prevent him slipping down in bed.

All who have waited much upon the sick must be painfully aware, that with even the greatest precaution, it is sometimes impossible to prevent the formation of bed-sores. To obviate this, air-beds, water-beds, water-pillows, vulcanized India-rubber beds, etc., have been invented. (See AIR-BEDS).

BED-SORES, *bed'-sōrz*, are sores which form on different parts of the body of a person when long confined to bed, particularly if unable to shift his posture occasionally. They are especially apt to occur during fevers and other diseases in which the patient is much debilitated. The parts first appear red and inflamed, then rapidly ulcerate or slough. In order to prevent this, means should be taken to ease the parts most likely to be affected, by means of small pillows, cushions, and the like, and to shift the patient frequently. The hydrostatic or water-bed, now much recommended for invalids, serves to prevent the weight of the body from pressing too much on any one part. A simple dressing of ointment of resin is the best application to the sores. Bed-sores may be prevented by frequently washing the parts with a strong decoction of white oak bark, or what is still better, sponging them several times a day with tincture of Tolu. (See BED, BEDS.)

BED-WETTING, *bed'-wet-ing.* A common trouble among children is their inability to retain their water during sleep. It arises from a diversity of causes, sometimes from disease of the urinary organs, but often from too free use of liquids during the evening, from exposure to cold, and from not voiding the urine the last thing at night. The presence of worms is also a frequent cause of this troublesome affection. The common-sense treatment consists in guarding against the above causes. The following prescription will also be found useful in many cases:

Take of Tincture of nux vomica.... ........Thirty drops.
Essence of ginger....................Thirty drops.
Syrup and water, of each............One ounce.—*Mix.*

Give 1 teaspoonful at night. This is for a child from five to ten years of age. (See URINE.)

BEEF, *beef*, the most strongly nutritious animal flesh in use, is not quite so digestible and light as mutton for those of weak digestion; but this depends in some degree upon the part selected. A slice from a coarse-grained shoulder of mutton may be much more difficult of digestion than one from the under side of a sirloin. As a general rule, however, mutton is preferable for the dyspeptic and the convalescent. (See BEEF-TEA, FOOD.)

BEEF'S GALL OR BILE. (See OX-GALL.)

BEEF-TEA. Take 2 pounds of very fresh beef, remove every bit of fat, and cut it up into small pieces about the size of the top of the finger, scoring it to let out all the gravy; place it in a jar with ½ a saltspoonful of salt, ½ a clove, 4 peppercorns, and 1½ pints of cold water. Tie over the top of the jar, and immerse it in a saucepan of water, allowing it to boil gently for two hours and a half. Strain, and in order to remove any particle of fat that may be on the surface, pass silver paper, or a piece of stale crumb of bread, over it. If preferred, boiled rice or tapioca may be added.

We also give below Prof. Liebig's method: This celebrated chemist directs a pound of lean beef, freed from fat and bone, to be chopped small, as for mince meat, and to be "uniformly mixed with its own weight of cold water, slowly heated to boiling, and the liquid, after boiling briskly for a minute or two," to be "strained through a towel." A little salt, or any allowable seasoning may be added. Beef-tea is a most important article in sick cookery, but is very often badly made, and much too weak for the purposes for which it is ordered. In diseases of exhaustion, or in the last stage of fever, strong beef-tea is perhaps the form of nourishment most easily assimilated, which is adapted to afford powerful support to the system (See BEEF, FOOD, COOKERY FOR THE SICK, OSMAZOME.)

BEER. (See ALE, PORTER.)

BEES' STINGS. (See BITES AND STINGS.)

BEESWAX, *beez'-waks.* This substance has been investigated by numerous chemists. It appears, from the researches of Brodie, that wax is a true animal secretion; for bees fed on sugar only continue to deposit it in large quantities. At ordinary temperatures, beeswax is a tough, solid, yellow substance, having a specific gravity of 0.96, and fusing at about 145°. Wax consists chemically of myricine, insoluble in boiling alcohol; cerine, a crystalline substance, dissolved by boiling alcohol; and ceroleine, which is dissolved in cold alcohol. (See CERA.)

BEET, *beet,* [Lat. *beta*]. Beet-root contains so large a quantity of sugar, as to make its extraction an object of commerce. The sweetening powers are less than those of cane-sugar. The root itself, when boiled, is easy of digestion. Its beautiful coloring matter might often be substituted for more deleterious substances.

BEGGAR TICK. (See BIDENS BIPINNATA.)

BELA. (See BAEL.)

BELLADONNA. (See ATROPA BELLADONNA.)

BELLY OR ABDOMEN. (See ABDOMEN.)

BENGAL QUINCE. (See ÆGLE MARMELOS.)

BENJAMIN-BUSH. (See BENZOIN ODORIFERUM.)

BENJAMIN, GUM. (See BENZOIN.)

BENZINE. (See BENZOLE.)

BENZOIC ACID, *ben-zo'-ik,* ($C_{14}H_5O_3HO$).—An acid obtained from gum-benzoin. It is also found in balsams of Tolu and Peru, in storax, and in the urine of herbivorous animals. It is easily prepared by sublimation. Benzoic acid forms white glistening needles, having an agreeable aromatic odor, and a hot, bitter taste. It melts at 248°, sublimes at 293°, and boils at 462°. Its vapor may be kindled, burning with a smoky flame. It dissolves in 200 parts of cold water and 25 of hot. It is readily soluble in ether and alcohol. It combines with the alkalies, earths, and metallic oxides, forming benzoates. It forms sulpho-, nitro-, and chloro-benzoic acids, by the substitution of atoms of sulphuric acid, peroxide of nitrogen, and chlorine, for atoms of hydrogen. Its other compounds are too numerous and unimportant for mention here. Benzoic acid is stimulant and expectorant, and occasionally given for coughs and shortness of breath, in doses of 10 to 15 grains, but is chiefly used as an ingredient in paregoric (*Tinctura camphoræ composita.*) The other preparations in which it exists are *Ammoniæ benzoas*, and *Tinctura opii ammoniata.*

BENZOIN ODORIFERUM, *ben-zoin' o-dur-if'-e-rum*, commonly called spice-wood, fever-bush, wild allspice, and Benjamin-bush. It belongs to the Nat. order *Lauraceæ*, and is a shrub growing from 5 to 12 feet high. It grows in shady places in the United States and Canada. Its properties are aromatic, tonic, and stimulant; it has been very successfully employed in the treatment of ague, and the typhoid form of fever, and is useful as a refrigerant, for allaying excessive heat and uneasiness. It is used warm to produce diaphoresis. Dose of fluid extract, ¼ to 1 teaspoonful. The decoction may be drunk freely. (See DECOCTION.)

BENZOIN, OR GUM-BENJAMIN, *ben-zoin'*, a fragrant balsam obtained from the Benjamin-tree. (See STYRAX.) It exudes from incisions in the bark, and soon hardens by exposure to the air. Two kinds are distinguished in commerce by the names of *Siam* and *Sumatra benzoin.* The former is most esteemed in this country. Benzoin is used in medicine as a stimulant expectorant. It is, however, principally employed for the preparation of *benzoic acid*, and as an ingredient in the incense used in the Greek and Roman Catholic churches. It is also an ingredient in fumigating pastiles and court plaster. The agreeable odor produced by burning benzoin is due to the evolution of the vapor of benzoic acid. (See BENZOIC ACID.)

BENZOLE, *ben'-zole* ($C_{12}H_6$.) A hypocarbon of considerable importance, derived from coal-tar. It was first obtained by Faraday from a liquid produced by compressing oil-gas, and was called by him *bicarburetted hydrogen.* Mitscherlich afterwards obtained it from benzoic acid; and, latterly, Mansfield has procured it in large quantities from coal-naphtha and gas-liquor. It is a limpid, volatile, colorless, and mobile liquid, with a peculiar odor, having a specific gravity of 0.85, and boiling at 177°. Exposed to a temperature of 32°, it condenses into crystalline masses, which melt at 40°. It is insoluble in water, but dissolves freely in alcohol, ether, and oil of turpentine. It is greatly used in the arts, being an excellent solvent for India-rubber, gutta-percha, wax, camphor, and fats. The property of dissolving fats and oils, added to its great volatility, renders it very useful for removing grease-stains from articles of dress. It is sold for this purpose under the name of "benzine collas," at about three or four times its real value. Benzole is also known as *benzine* and *phene*.

BERBERIS, *ber'-be-ris*, in Botany, the typical genus of the Nat. order *Berberidaceæ*, consisting of numerous species, found in temperate climates in most parts, except Australia. These are shrubs, often spiny, with yellow flowers and acid berries. The three whorls of organs in the flower are each made up of six parts: thus, there are six sepals in the calyx, six petals in the corolla, and six stamens. The latter are remarkable for their irritability; for if touched at the base by an insect, or even with the point of a pin, they start up from their natural reclining position, and close upon the pistil. The most interesting species is *B. vulgaris*, the common barberry, which is usually a bush from four to six feet high, but which in Italy sometimes becomes as large as a plum-tree. It is a very ornamental plant, especially when covered with fruit. The berries are of an oval shape, and, when ripe, generally of a bright red color, but sometimes whitish, yellow, or almost black. They are very acid, and not fit to be eaten raw; but when boiled with sugar, they form a most refreshing preserve. The bark and stem are very astringent, and yield a bright yellow dye. Of the numerous species of *Berberis* which are cultivated as ornamental shrubs, the finest is undoubtedly *B. aristata*, the bristle-leaved barberry. This is a hardy evergreen, producing excellent fruit. It is a native of Nepaul, and was introduced into this country about fifty years ago. (See BERBERIS VULGARIS, BERBERIS AQUIFOLIUM.)

BERBERIS AQUIFOLIUM, *ber'-be-ris ak-we-fo'-le-um*. This species is found in California. Dr. Bundy, of that State, first discovered the properties of the drug, which he described in the "Medical Journal." He says, "Berberis aquifolium appears to be a powerful alterative, with strong tonic properties, a combination rendering it a sovereign remedy in syphilitic and scrofulous diseases, cancers, tubercular affections, rheumatism, etc." Dr. Bundy relates several cures of syphilis and salt rheum, and gives his opinion of the effects of the drug as follows: "Its power as an alterative is certainly marvellous, and not only as an alterative, but as a tonic also. The root is the part used. As a general tonic, I know of nothing that can excel it, and I find it also to be an effective anti-periodic. Combining, as it does, its great alterative properties with its fine tonic power, its great value as an alterative is increased, for where an alterative is desirable, a tonic is always needed. Since learning of this drug's great anti-syphilitic power, I prescribe but a very little of the iodides, from the fact of this so far outdoing them in syphilis. I do not care what the disordered state of the blood may be, requiring an alterative or tonic, you will find in this the power of renovation and innervation, that will give perfect satisfaction, and it will bring the answer faithfully." Dose of the fluid extract, 15 to 30 drops, three or four times daily.

BERBERIS VULGARIS, *ber'-be-ris vul-ga'-ris*, commonly called barberry or berberry, is tonic and laxative. It is used in cases where tonics are indicated, as in jaundice, dysentery, chronic diarrhœa, and cholera infantum. It is serviceable as a wash or gargle in aphthous sore mouth, and in ophthalmia. It is said to act like rhubarb, and with equal promptness and activity. Dose of the fluid extract, ¼ to 1 teaspoonful.

BERBERRY, OR BARBERRY. (See BERBERIS, BERBERIS VULGARIS.)

BERGAMOT, OIL OR ESSENCE OF, *ber'-ga-mot*, a fragrant essential oil, obtained by expression or distillation from the rind of the Bergamot orange. It is extensively employed in perfumery for scenting pomades, and as an ingredient in most compound essences, such as eau de Cologne, eau de millefleurs, and Jockey-club bouquet.

BERIBERI, *ber'-e-ber-e*, a disease common in many parts of Ceylon and other parts of the East Indies, characterized by difficulty in breathing, weakness, stiffness, and a sensation of numbness in the lower limbs, a bloated appearance of the face, and dropsical swelling of the whole body. The disease commonly comes on slowly, and terminates in the course of three or four weeks; but sometimes it attacks suddenly, and destroys the patient in from six to thirty hours. The causes of this disease are not well understood. It is generally supposed to arise from exposure to cold, damp air, and the want of stimulating and nourishing diet. Great difference also exists as to the best mode of treating this disease: some regard it as a disease of debility, and consequently have recourse to stimulants; others consider it to arise from increased internal action, and resort to blood-letting, purgatives, diuretics, etc. This latter mode appears to be that most generally recommended. The chronic paralytic affection termed *barbiers*, also common in India, was, until recently, confounded with this disease. Barbiers is a disease of nervous debility, and therefore to be treated with tonics, cordials, and nutritive diet. It commences with weakness, trembling, and a pricking sensation of the legs, thighs, and arms. Loss of appetite, indigestion, and emaciation soon follow, and at length, if the disease continues, the muscles become paralytic.

BETEL, *bé-tl*, the name usually given to a narcotic masticatory, used by the Malays and other Eastern races. It is prepared by rolling up long pieces of the betel-nut (see ARECA) in the leaves of the betel-pepper, previously dusted on one side with the quicklime of calcined shells. When chewed, the betel promotes the flow of saliva, and lessens the perspiration from the skin. It stains the mouth, teeth, and lips red, an effect which is considered ornamental by the natives. It imparts an agreeable odor to the breath, and is supposed to fasten the teeth, cleanse the gums, and cool the mouth. The juice is generally swallowed. To one not accustomed to betel-chewing, the nut is powerfully astringent in the mouth and throat, while the quicklime often removes the skin and deadens the sense of taste. After a while it causes great giddiness. On those accustomed to use it, however, the betel produces weak, but continuous and sustained, exhilarating effects; and that these are of a most agreeable kind may be inferred from the very extended area over which the practice of betel-chewing prevails. Prof. Johnston estimates that betel is chewed by probably not less than fifty millions of men.

BETHROOT. (See TRILLIUM PENDULUM.)

BETULA, *bet'-u-lą*, in Botany, the birch, a genus of trees or shrubs belonging to the Nat. order *Betulaceæ*. With the exception of *B. antarctica*, an evergreen shrub found in Terra del Fuego, all the species flourish beyond the tropic in the northern hemisphere. *B. alba*, the commmon birch, is one of the most beautiful of our forest trees, and is found in most of the northern parts of America, Europe, and Asia. The leaves are small, of an ovate-triangular shape, and doubly serrated. The bark is smooth and silvery white, and the outer layers are thrown off as the trunk increases in diameter. This tree yields useful timber for turnery, etc., and the bark is valuable as a dye-stuff. The outer layer yields an oil which is much prized by the tanner; it is this which gives Russia leather its peculiar odor. In the spring the sap of the birch contains much sugar, and forms, when fresh, an agreeable beverage; when fermented, it constitutes what is called birch wine, a liquor employed medicinally in domestic practice for stone and gravel.

BEVERAGE, *bev'-ur-aj* [Ital. *beveraggio*], a term applied to all liquids which are used either to quench the thirst, stimulate the stomach, or cause a healthy internal action. There are various kinds of beverages, such as cooling, refreshing, tonic, stimulating, etc.

BI, *bi* [Lat. *bis*, twice], a syllable signifying twice or double, and used as a prefix in certain compound names; as *biceps*, two-headed;

*bicuspis*, two-pointed; *bicarbonate*, a carbonate with two equivalents of carbonate to one of base.

BICARBONATE OF POTASH. (See Potash.)

BICARBONATE OF SODA. (See Soda.)

BICUSPIDS, OR BICUSPIDATI, *bi-cus'-pidz* [Lat. *bis*, and *cuspis*, a spear], in Anatomy, is applied to the two first pairs of molar teeth in each jaw, from their having two spearlike tubercles.

BIDENS BIPINNATA, *bī'-denz bi-pin-na'-ta*, Spanish Needles, an annual plant belonging to the Nat. order *Asteraceæ*, found growing from one to four feet high, on dry soils, throughout the Middle States. There are two other varieties, *B. Frondosa*, or beggar tick, and *B. Connata*, or swamp beggar tick. It is an emmenagogue and expectorant, and has been successfully used in amenorrhœa, dysmenorrhœa, and other uterine derangements. An infusion of the *B. Frondosa* has been successfully used in croup. It is used also as a syrup, made with honey, and given in doses of 1 tablespoonful every ten or fifteen minutes, until vomiting ensues.

BILBERRY. (See Vaccinium.)

BILE, *bile* [Lat. *bilis*, said to be from *bis* twice and *lis* strife, from the idea that strife or contentiousness was owing to a superabundance of bile], is a peculiar oily fluid secreted from the venous blood by the liver. It is separated from the blood of the portal vein by the primary cells of the liver, and these discharge it into small ducts which unite to form larger ones, terminating in the ductus communis choledochus, whence it is conveyed into the duodenum. It then mixes with the digested food, and performs the important office of fitting it for absorption into the system. The bile thus mixed with the elements of nutrition becomes in part also absorbed; the excrementitious portion passing out of the body with the other indigestible materials, and imparting their peculiar color to them. When digestion is not going on the bile ascends through the cystic duct to the gall-bladder, where it is stored for future use. The principal use of the bile is to separate the chyle from the chyme. It also aids in exciting the peristaltic motion of the intestines, thus causing them to evacuate their contents sooner than they would otherwise do, and hence when there is a deficiency of bile the bowels are usually very torpid. Bile differs to some extent in nature and chemical composition in different animals. Human bile is a viscid and ropy fluid, of a greenish or brownish yellow color, a disagreeable odor, and a bitter nauseous taste. When poured into water it sinks to the bottom, and does not mingle readily with it unless agitated or stirred, and then it becomes frothy like a solution of soap. According to Berzelius, its constituents are in 1,000, water 904.4, biline (with fat and coloring principles) 80, mucus (chiefly from the gall-bladder) 3, salts 12.6. The able researches of Strecker have shown that bile is principally a combination of two peculiar resinous acids with sodium. One of these is termed cholic or glycocholic acid, a compound of cholalic or cholic acid and glycoline; the other choleic or tauro-cholic acid, a compound of cholalic acid with taurin. Cholesterin is also a constituent of healthy bile, although the proportion does not exceed 1 in 10,000, according to Berzelius. Small quantities of various fatty bodies, chlorides, phosphate, iron, and manganese also occur. Besides these substances a peculiar coloring matter is found in combination with an alkaline base, the composition of which is not settled. The bile, like the other normal secretions, is liable to alteration in its constituents in disease. The solid constituents of the bile are commonly increased in abdominal and heart diseases when the motion of the blood in the larger veins is impeded; in severe inflammatory affections again it is commonly found to be poor in solid constituents. When, owing to some functional derangement, the bile is absorbed into the blood, and carried through the system, it imparts a yellow tint to the skin, producing the disease known as jaundice (which see). When from a torpid or diseased state of the liver the process of secretion is imperfectly carried on the person is said to be bilious. The secretion of bile is increased by rich, abundant, good diet, alcoholic liquor, heat, indolence, mercury, rhubarb, taraxacum, etc.; and is diminished by light spare diet, active exercise, early rising, temperate atmosphere, etc. (See Liver, Biliousness; Bile, Pettenkofer's Test for; Biliary Disorders, Bilious Cholera, Bilious Headache.)

BILE, PETTENKOFER'S TEST FOR, *bile pet-ten-ko'-furz.* The suspected fluid, or an alcoholic solution of the solid is placed in a test tube, and ⅔ the volume of pure sulphuric acid added by drops. When the mixture is cold, 2 or 3 drops of pure syrup is added, when, if choleic acid be present, the mixture assumes a violet red color. (See Bile.)

BILIARY CALCULI, *bil'-ya-re kal'-ku-li* [Lat. *calculus*, a small stone]. These are sometimes called gall-stones, and are often found in the human gall-bladder in large quantities. They are either semi-transparent and crystalline, or strongly colored with the bile. They mostly consist of cholesterin deposited on a nucleus of phosphate of lime. (See Calculus, Gall-Stones.)

BILIARY DISORDERS. Biliary derangement is so frequent an ailment in civilized life, its history is so intimately connected with the general principles of health, and the prevention, or at least alleviation, of the disorder is so much under individual control, that it has special claims upon our attention.

In ordinary health there must be a certain balance maintained, between the secretion and ultimate destination of the bile, the assimilation of food, and the functions of respiration; in the excreted bile, the blood is freed from certain principles—containing a large amount of carbon—which could not be retained in it without injury to health; further, the bile, after being separated from the blood by the liver, and thrown out into the general tract of the alimentary canal, performs an important part in the function of assimilation, and lastly, a considerable proportion of the bile—without the coloring matter—is re-absorbed into the system, with the nutriment, in such a state as to fit it—or rather its carbon—for union with the oxygen which enters by the lungs, so that while heat is generated, the carbon, by taking the form of carbonic acid, is fitted for excretion by the lungs or skin. Upon these facts, hinge the causes of one at least of the most prevalent biliary disorders, that which depends upon the introduction into the system of a proportion of carbon aliment too great to be removed by the oxygen obtainable through the lungs, and which has its ordinary termination in the attacks which are termed, "bilious attacks," "sick headaches," "bowel complaints," "bilious cholera," according to the manner in which the patient is affected.

The second form of biliary disorder depends upon torpidity or inactivity of the liver itself. The third form is the reverse of the first: the gland itself may be sufficiently active, but the blood does not afford sufficient material for it to work upon, and bile is deficient. This is most frequent in children.

In addition to those affections, there is jaundice, which will be treated of in its proper place.

The first form of biliary disorder, that dependent upon the accumulation of carbon, or of the elements of bile in the blood, must evidently be owing to one of the following causes, or a combination of them: either too much food, especially of a highly carbonized character, such as fats, oils, sugars, etc., is habitually consumed, or the habits are too physically inactive to keep the functions of respiration, animal heat, and motor change, and circulation, in healthy action; or the external atmosphere is so temporarily or permanently rarefied by heat, that the individual cannot obtain the full supply of oxygen in respiration; lastly, the excretory functions of the skin may be impeded. Now, although it is unquestionable that some individuals have a much greater tendency to biliary disorders than others, it is also unquestionable, that all have it in their power, in a great degree, if not entirely, to control or obviate that tendency, by attention to, and practical application of the above principles. In those who suffer habitually from sick headaches—which depend generally upon the presence of the bile in the stomach—and from other forms of biliary disorder common to this country, there is generally traceable great error in diet; fats, melted butter, pastry, meat, malt liquors or wine, and other highly carbonized articles of diet, are taken too freely, or at least, are too regularly indulged in, whilst at the same time very little active exercise is taken; the blood becomes overloaded with carbon; languor, sleepiness, headaches, giddiness, loss of appetite, furred tongue, depression of spirits, are the consequences, and continue, until at last the system is relieved, wholly or partially, by an excessive excretion of vitiated bile, which passes off either by vomiting or purging.

That deficient exercise has much to do with the formation of such a state of system, is evident from the greater prevalence of such attacks among females, who take little exercise, than among men; and, indeed, they would be still more prevalent among the former, were it not for the monthly relief. Habitual neglect of the skin, also, by impeding the excretion of carbonic acid from its extensive surface, undoubtedly assists the evil. Again, we have bilious attacks, more especially those known by the name of bilious cholera, prevalent among the community generally —but at particular periods of the year—that is, in summer or autumn, during or immediately succeeding a prevailing high temperature, and to this high temperature must we look for the cause; for whilst as a general rule, habits have not been changed, people have been—in consequence of the rarefied atmosphere—inhaling a less proportion of oxygen than usual. Liebig calculates the difference at one-eighth between winter and summer in Germany. Here we have another traceable and universally acting cause, permitting the accumulation of carbon in the blood, and one which is likewise found to operate upon Americans and Europeans especially, who, in tropical climates, adhere too nearly to the habits of comparatively full living, admissible in colder climates.

*Prevention.*—From what has now been said, it is evident how much the avoidance of biliary disorder is under individual control; the question is in reality not one of medicine, but of diet and regimen; medicine certainly may be required, but not by any means to the extent it is often used. Those who are habitually liable to biliary disorder ought most strictly to regulate the diet; fats of all kinds—except, in some cases,—must be avoided; butter either entirely avoided, or used in very small proportion, and never when melted; animal food may be taken in moderation, but should never be consumed at night; much sugar, strong tea or coffee, malt liquor, and the heavier wines, such as port, or sweet wines, are all bad. In addition to plain meat, bread, well-boiled vegetables, farinaceous preparations, and fruits, ripe or cooked, are the best articles of diet. Exercise regularly in the open air *must* be taken, and the skin kept clear and in an active state. If the bowels are confined, a pint of warm water, used as an injection, will be a most suitable aperient, or 1 or 2 of the compound rhubarb and blue pills may be taken; it is much better, however, not to trust to medicine. When from any cause, the languor, sleepiness, furred tongue, etc., give notice of an impending bilious attack, 5 or 6 grains of blue pill should be taken, or ¼ of a grain of podophyllin, and followed by a black draught, or dose of infusion of senna, or of castor-oil, in the morning. Having thus cleared the system, it is better to trust to diet and regimen, than to a repetition of the dose as a corrective of indulgence. (See AIR, EXERCISE, DIET, HEALTH, BATHS, ABLUTION, MINERAL WATERS, BILIOUS CHOLERA, BILIOUS HEADACHE, BILE, BILIOUSNESS, JAUNDICE, BLUE PILL, MERCURY, PODOPHYLLUM PELTATUM.)

BILIARY DUCTS, in Anatomy, are those ducts or canals which convey the bile from the liver to the duodenum. (See LIVER.)

BILIOUS CHOLERA, OR CHOLERA MORBUS, *bil'-yus kol'-e-rą.* When, during prevailing high temperature, an individual is threatened with an attack of bilious cholera, or, as it is frequently called, when unattended with vomiting, "bowel complaint," there is for some time previously, much languor and sleepiness, especially after meals, headache, pain between the shoulders, furred tongue, loss of appetite, fullness in the region of the stomach, and high-colored urine. The complexion, perhaps, is dusky. When such symptoms show themselves, one or two doses of calomel or blue pill—4 grains of the former, 6 or 8 of the latter—is nearly all that is required for their removal.

Podophyllin is perhaps more efficient than even the mercurials, in relieving the symptoms of overloaded liver. The ordinary dose for an adult is from ¼ to ⅓ of a grain. 2 grains of compound rhubarb pill, 1 grain of extract of henbane, and ¼ of a grain of podophyllin, form a pill that may be taken with advantage by most persons.

The mercurial may be followed or not, as required, by a dose of senna-tea, or castor-oil. The diet of course ought to be restricted. If there is any tendency to heat or feverishness, 10 grains of carbonate of potash, along with a teaspoonful of sweet spirit of nitre, taken in a wine-glassful of water, or of infusion of dandelion, twice a day, will relieve.

If the symptoms above-mentioned are neglected, the acute bilious attack, usually known as bilious cholera, is the winding up; it is ushered in by a sensation of chilliness, giddiness or headache, bitter taste in the mouth, and nausea in most cases, quickly succeeded by vomiting of bile, and griping and purging. An attack of this kind may pass off lightly, leaving the patient better than for some time previously, or it may be so severe as to threaten life. In the latter case, the vomiting is incessant, the purging profuse, painful, and exhausting, and the motions, which were at first feculent and bilious, become light-colored, like thin gruel; there is much thirst, cold and blue skin, covered with cold perspiration, cramps, much depression, the pulse imperceptible or nearly so, and perhaps the secretion of urine suppressed. In short, it is difficult to distinguish the attack from one of the malignant Asiatic cholera. Between the severe form and the mildest, the disease occurs in every degree of severity; if severe, the attack is always painful and alarming, and may be dangerous; and in the country, or at a distance from medical aid, requires to be quickly dealt with. The first thing to be kept in mind is, that the manifestations are not the disease; that the actual outbreak is only an effort of nature to free the system of morbid matter; that we may guide, control, and stop, if matters go too fast, but must not thwart. A mild attack of bilious cholera is better left alone, as far as medicine is concerned, diluent drinks, such as barley or rice-water, etc., being given to dilute the bile, which is generally acrid, and to assist its passage from the system. In a severer attack, when pain, purging, and other symptoms become urgent, it is time to interfere. The patient, if not in bed—which, however, frequently happens, from the attacks coming on in the night—should go there at once, and hot applications, bran and such like, used to the bowels to relieve the pain; or more extensively to the limbs, back, etc., if there is much coldness or cramp. A mustard plaster, the size of the hand, to the pit of the stomach will sometimes abate the sickness—general friction is serviceable. 20 to 25 drops of laudanum should be given to allay pain, and moderate purging, and repeated two or three, or even more times in succession every half-hour till some effect is produced—if the first dose comes up, the second should be given at once; if that does not stay, then the third. If the stomach will not retain liquid of any kind, if it is to be procured, the powder of opium should be given in a 1 grain pill; and if it remains, the dose repeated, if required, in an hour, or a half-dose given. Sometimes the vomiting is so obstinate that no ordinary means will stop it. Many families in the country now keep creosote for toothache; in such a case as the above, a single drop rubbed up with a little gum or thick barley-water might be tried, and repeated once: or 4 to 8 drops of chloroform in a little sugar and water, or brandy and water, might have the desired effect. Two tablespoonful doses of the ordinary chalk mixture, either with or without the laudanum, or ½ dram doses of aromatic confection will be useful when purging continues. In addition to these means, diluent demulcent drinks, barley and rice-water, with isinglass or gelatine dissolved in them, are to be freely taken. In case of extreme depression, stimulants, hot brandy and water, etc., are to be administered. The attack of bilious cholera is so sudden and its course so rapid, that if there is any great distance to send for medical assistance, there will be full time for the employment of the above means, not only to the relief, but also to the safety of the patient. After the attack has somewhat subsided, keeping in mind that the tendency of it is to clear the system, the bowels must not be allowed to get confined, but kept slightly relaxed; if requisite, 1 dessert-spoonful of castor-oil, with 6 drops of laudanum, or a small dose of rhubarb and magnesia, with or without laudanum, may be given. The diet should be chiefly of a diluent character for a short time, but nourishing. Should any of the symptoms which preceded the attack, such as languor, fullness about the region of the liver, pain between the shoulders, furred tongue, etc., continue, a few doses of the compound rhubarb and blue pill will be advisable; if the stomach remains weak, from 5 to 10 grains of carbonate of potash in a wine-glassful of infusion of calumba or gentian will be found useful, and if the tongue is perfectly clean and there is debility, 1 grain of quinine in ½ glass of sherry twice a day. (See BILE, BILIARY DISORDERS, BILIOUSNESS, AUTUMNAL COMPLAINTS; CHOLERA, ASIATIC; BLUE PILL, MERCURY, PODOPHYLLUM PELTATUM.)

BILIOUS COLIC. (See COLIC.)

BILIOUS FEVER. (See REMITTENT FEVER.)

BILIOUS HEADACHE. That form of headache to which the term bilious headache is applied, though often connected with alteration of the hepatic function, is also frequently dependent on disorder of the stomach. It is characterized by a dull, heavy feeling, rather than of acute pain, in the head, chiefly in the forehead, over the eyes, and in the eyes themselves. These organs, if pressed upon or turned upwards, are found to be very painful. There is often giddiness, always great languor and depression, and a tendency to drowsiness and sleep, which, though deep, is not refreshing. The conjunctivæ, or white portions of the eyes, are sometimes slightly jaundiced. There is very generally nausea and sickness; and after continuing for a longer or shorter time, the attack is not uncommonly terminated by vomiting of green bile, often in considerable quantity. The bowels, in such circumstances, have most probably been irregular for some days previously, perhaps obstinately confined.

Many persons suffer from frequently recurring attacks of bilious headache; while others, by a careful attention to diet and regimen, contrive to ward them off. Those who are apt to be thus affected should exercise great caution in the matter of food. All rich articles should be avoided—such are by no means badly named bilious; nor should less care be exercised in regard to what is chosen for drink. Bilious subjects must learn to avoid highly dressed meat—stews and such like, pastry, and malt liquors. Plainly dressed and well-cooked meat, and not much of it; and farinaceous food should constitute the diet. As to tea and coffee, they sometimes disagree with such persons, and if so, milk or cocoa may be substituted. The bowels must be carefully regulated. It is surprising how much may be done in this way without having recourse to medicine. By due attention to diet and regimen, the healthy action of the alimentary canal may often be maintained.

For the relief of the headache, however, a dose of laxative medicine will generally be found indispensable; let it be of salts, or salts with senna, or of compound rhubarb (Dr. Gregory's) powder, or a dessert-spoonful of effervescent citrate of magnesia; let cold be applied over the forehead; and, while the headache lasts in a severe form, let the patient practice abstinence. From 15 to 30 grains of powdered guarana, or from 1 to 3 teaspoonfuls of the elixir of guarana, will frequently give prompt relief. When the headache has departed, if appetite speedily returns, as it sometimes does in a keen degree, let there be indulgence to a limited extent, and, for a time, only in what is simple and of easy digestion. (See Biliary Disorders, Biliousness, Bile, Exercise, Diet, Baths, Mineral Waters, Health, Air.)

BILIOUSNESS, *bil'-yus-nes*, a state of biliary disorder, generally connected with stomach derangement, which is not always the consequence of excess of aliment, but may even arise from the reverse, and which requires the aid of medicine for its removal; the liver is torpid, the blood is insufficiently freed from its superfluous carbon, and in addition to impaired digestion, the individual suffers from the train of symptoms previously enumerated as attendant upon the first form of biliary disorder, mental and physical depression being the most prominent. (See Biliary Disorders.) The bowels are confined, and the motions inclined to be light or chalky, at other times almost black. There is pain between the shoulders, and sensation of fullness in the stomach. When such a train of symptoms occurs, it is better to take proper medical advice; if this cannot be done, in order to relieve, a few grains of blue pill, or gray powder, or $\frac{1}{4}$ of a grain of podophyllin, may be given every night, or every other night, each to be followed by a moderate dose of castor-oil, or infusion of senna in the morning. At first, the infusion of taraxacum, with from 5 to 10 grains of carbonate of potash, and, if the stomach is weak, a teaspoonful of tincture of calumba, taken twice a day, will be of much service. The diet should be nourishing and easy of digestion—such as plain meat, potato and light puddings—but pastry, cheese, and oily preparations of all kinds should be avoided. In cases of debility, wine, malt liquor, or a little weak brandy or whisky and water, whichever generally agrees best, may be taken medicinally in moderation. Daily exercise to the extent of slight fatigue, relaxation from business, cheerful company, early hours, and attention to the state of the skin by means of the tepid bath or sponging, are all assistant means, and will, even of themselves, be sufficient to remove slight attacks. Where the bowels are obstinate, injections of tepid water are especially useful, and preferable to the continual use of purgatives, which weaken the digestive power of the stomach. When the tongue is tolerably clear, and debility of the stomach, or of the system generally, remains, 20 drops of dilute nitric acid may be taken with advantage twice a day, either in water or in infusion of taraxacum, with or without the addition of a tonic bitter.

It is important to have a clear distinction in the mind between the two conditions treated of under the article Biliary Disorder. In the former, that which precedes the attack of bilious cholera, the liver fails because there is more given it to perform than it can do, even in its most healthy state; in the latter, the liver itself is incapable of doing the work it ought, to maintain a healthy condition of body. In the former case, reduction of diet is evidently the most common-sense prevention and cure; in the latter, the organ must be brought up to its work; and made, if possible, to do its part in the assimilation of sufficient nutriment for health. The diet is to be regulated, not diminished, the general functions kept active, and especially the nervous system, by moderate, exhilarating exercise, both of mind and body, is to be maintained in such a state of regular tonicity, as will enable it to impart that due stimulation—which is so much wanted in these cases—to every function connected with assimilation. When cases of chronic biliary disorder present feverish symptoms, the mercurial at night, and the aperient in the morning are still to be used, and also the potash and taraxacum, but without the bitter; animal food and stimulants are to be strictly forbidden, and milk and farinaceous diet substituted; the tepid bath should be used, and also injections.

Although such general directions as will be found useful in the treatment of chronic biliary disorder have been given, it is not recommended that home medicine should be resorted to when medical assistance is within reach. Much certainly may be done by judicious management, but it is probable that efficient medical advice will save both time and suffering.

In children, particularly those of fair complexion, deficiency of biliary secretion is frequently evidenced by the irregular action of the bowels, and light-colored chalky motions. It is of course desirable to correct this, but it must not be attempted by the "gray powders," so usually resorted to. They will, undoubtedly, for a time improve the appearance of the motions by causing an increased flow of bile, but this is obtained at the expense of the system, which does not appear able to furnish sufficient material for the secretion—in a few days the motions are as deficient in bile as ever. Such a condition can only be permanently corrected by a good allowance of animal food, and general tonic treatment, iron being especially requisite; a few grains of gray powder, however, being given once or twice a week. (See EXERCISE, AIR, DIET, BATHS, HEALTH, BILIARY DISORDERS, BILE, BILIOUS HEADACHE, MERCURY, BLUE PILL, PODOPHYLLUM PELTATUM, MINERAL WATERS.)

BILIOUS TEMPERAMENT. (See TEMPERAMENT.)

BILLS OF MORTALITY. (See MORTALITY.)

BINDER, *bind'-ur*, the bandage which is put round the abdomen of the mother in childbirth, and which forms a most important requisite, both as regards the comfort and safety of the patient. Many forms of binder are used, but none are so generally applicable, or so efficient, as a light, small table-cloth, or shawl, or square of calico, folded broad like a cravat, so that it will embrace the whole of the lower portion of the abdomen, and can be tied in a double knot at the back outside the bed-dress, where it is under the control of the attendant. The binder ought always to be put on at the commencement of labor, and tied so as just to give comfortable and moderate support to the abdomen—as the process of parturition progresses, it must be gradually tightened, and as soon as the child is born, as much so as will afford comfortable support—lastly, after the separation of the after-birth, it must be tightened again. In all these changes, the best guide is the feeling of the patient; comfortable, efficient support being all that is requisite; if tied too tightly, the binder will do mischief. The greatest benefit which results from the early application of the binder, is the prevention of faintness. The sudden emptying of the abdominal cavity which takes place when the child is expelled, is quite as frequently a cause of the above symptom, as loss of blood, the effect being in a great measure purely mechanical, and similar to what occurs when fluid is drawn from the belly in dropsy. This mechanical support given by the binder, moreover, exerts regular and regulated pressure, which must give some assistance to the efforts of the womb, and lastly, after the concluding processes of labor are over, it is no slight advantage to have a firm efficient binder in its place, instead of having to disturb the patient by its adjustment. In cases of hemorrhage or flooding, such an arrangement may be of the very highest importance. In the course of an hour or two after labor is concluded, the form of binder which has been recommended above, can be exchanged for the ordinary broad band, fastened round the abdomen by pins, or buckles, or for one of the numerous forms of binder, shaped to fit the abdomen. One of the best forms is made of double calico, and about ten inches wide in the centre; one of the ends being rather broader than the other, so as to admit of the latter running through the slit, and both being sufficiently long to be brought round and fastened in front. (See CHILDBED.)

BINDWEED. (See CONVOLVULUS.)

BIOLOGY, *bi-ol'-o-je* [Gr. *bios*, life, and *logos*, a discourse], is the science of life. In its widest sense, it includes life in all its forms on earth, and thus comprehends within its sphere all living organized beings. In a more restricted sense, it regards man only, and in this view it may be said to correspond with Physiology. (See PHYSIOLOGY.)

BIPED, *bi'-ped* [Lat. *bis*, twice, and *pes*, *pedis*, a foot], an animal having two feet; as man, bird.

BIRCH. (See BETULA.)

BIRD-NESTS, EDIBLE, *burd'-nests ed'-e-bl*, the nests of a small Indian swallow, which are considered a delicacy, and are frequently mixed among soups. On the sea-coasts of China and in Java, at certain seasons of the year, vast numbers of these birds are seen. They construct their nests out of a substance which they find upon the shore. This gelatinous matter is supposed by Kempfer to be mollusca or sea-worms; according to M. le Poivre it is fish-spawn; and according to Linnæus a kind of medusa or jelly-fish, called by fishermen blubbers or jellies. The nests are of a hemispherical shape, and about the size of a goose's egg; and in substance bear a strong resemblance to ichthyocolla or isinglass. They are gathered by the Chinese, and sent to all parts of the world, and are esteemed a great luxury.

BIRTH. (See CHILDBED, PARTURITION.)

BIRTHWORT. (See ARISTOLOCHIA.)

BISCUITS, HOT, *bis'-kits*. Hot biscuits should be avoided by those of weak digestive powers.

BISMUTH, *biz'-muth* [Ger. *bismut*], in Chemistry, symbol Bi; atomic weight 213; specific gravity 9.8—a metal of grayish-white color, with a strong characteristic tinge of red. It is hard, brittle, and but slightly malleable. It fuses at 507°, and is obtained in fine cubical crystals by slow cooling. The peculiar property it possesses of expanding as it cools, renders its alloys of great use to the type-founder and die-sinker. It also increases the fusibility of other metals with which it is united. The remarkable alloy known as "fusible metal," contains one equivalent of bismuth, one of lead, and two of tin; it fuses below 212°, and, by a certain admixture of cadmium, can be melted at a still lower temperature. Bismuth is also occasionally used in cupellation, and some of its compounds are used as pigments, the hydrated oxychloride being used as a cosmetic under the name of pearl-white. Bismuth occurs in nature principally in the metallic form in the clay-slate and gneiss formations, its principal source being Schneeberg, in Saxony; it is also found in Cumberland and Cornwall, England, in California, Texas, and Utah. Bismuth is extracted from the ore by heating it in inclined cast-iron tubes with cups attached. The tubes are brought to a white heat, and the bismuth flows into the cups, which are at the lowest part of the incline. Bismuth forms two oxides—the teroxide, $BiO_3$, and an acid oxide, $BiO_5$, or bismuthic acid. Nitrate of bismuth is prepared by dissolving the metal in dilute nitric acid with the aid of heat, which gives rise to four-sided prisms, which are decomposed by water into an acid nitrate, which remains in solution, and a basic nitrate, the trisnitrate of bismuth, falls as a precipitate. This salt was formerly called magistery of bismuth. Bismuth occurs in nature associated with cobalt, silver, tin, and arsenic; also as an oxide in bismuth ochre; as a sulphide in bismuthine or bismuth glance; as an arsenide, a carbonate, and a silicate, in bismuth-blende. It is employed medicinally as an antispasmodic, sedative, and astringent in irritable conditions of the mucous membrane of the stomach, as in gastrodynia, chronic sickness and vomiting, diarrhœa, etc. It is also used externally as an ointment mildly stimulant in certain chronic diseases of the skin. Bismuth is purified by taking 10 ounces of the metal and 1 ounce of nitrate of potash in powder, and fusing them in a crucible, constantly stirring the mass for fifteen minutes, or until the salt has solidified into a clay over the metal; then remove the salt, add another ounce of the nitrate of potash, and repeat the process; then pour the metal into a suitable mould, and allow it to cool.

BISTOURY, *bis'-tur-e* [Fr. *bistoire*], in Surgery, is any small knife used for opening abscesses, and other surgical purposes. It may be straight or curved, convex or concave, sharp-pointed or probe-pointed, etc.

BITES AND STINGS, *bites and stingz.* Bites and stings may be divided into three kinds:—1. Those of insects. 2. Those of snakes. 3. Those of dogs and other animals.

1. *The bites and stings of insects*, such as gnats, bees, wasps, etc., need cause very little alarm, and are, generally speaking, easily cured. They are very serious, however, when they take place on some delicate part of the body, such as near the eye, or in the throat. The treatment is very simple in most cases, and consists in taking out the sting, if it is left behind, with a needle, and applying to the part a liniment made of finely-scraped chalk and olive-oil, mixed together to about the thickness

of cream. Bathing the part bitten with warm turpentine or warm vinegar is also of great use. Soda is employed; but ammonia or hartshorn—the weaker solution—is the best form of alkaline preparation; it may be used alone, or mingled with oil. If the person feels faint, he should lie quietly on his back, and take a little brandy or whiskey and water, or sal-volatile and water. When the inside of the throat is the part stung, there is great danger of violent inflammation taking place. In this case, from 8 to 12 leeches should be immediately put to the outside of the throat, and when they drop off, the part to which they have been applied should be well fomented with warm water. The inside of the throat is to be constantly gargled with salt and water. Bits of ice are to be sucked. Rubbing the face and hands well over with plain olive-oil before going to bed, will often keep gnats and mosquitoes from biting during the night. Strong scent, such as eau de Cologne, will have the same effect.

2. *Bites of snakes or serpents.*—The bite of venomous serpents is always followed by pain in the parts wounded, which extends over the limb or body; a hard swelling ensues, pale at first, soon becoming red, livid, and gangrenous. Vomiting, fainting, small and irregular pulse, convulsions, difficult breathing, a failure of the sight and intellectual powers, and cold sweats follow. Inflammation, suppuration, and gangrene in the wound, sometimes occur before death.

*Treatment of the part bitten.*—The great thing is to prevent the poison getting into the blood; and, if possible, to remove the whole of it at once from the body. A pocket handkerchief, a piece of tape or cord, or, in fact, of anything that is at hand, should be tied tightly round the part of the body bitten; if it be the leg or arm, immediately above the bite, and between it and the heart. The bite should then be sucked several times by any one who is near. There is no danger in this, provided the person who does it has not got the skin taken off any part of his mouth. What has been sucked into the mouth should be immediately spitted out again. But if those who are near have sufficient nerve for the operation, and a suitable instrument, they should cut out the central part bitten, and then bathe the wound for some time with warm water, to make it bleed freely. The wound should afterwards be rubbed with a stick of lunar caustic, or caustic potash, or a red-hot iron should be applied, or nitric acid, or lye boiled down to consistency of molasses should be applied, or a solution of 60 grains of lunar caustic dissolved in 1 ounce of water, should be dropped into it. The handkerchief or band should be kept on the part during the whole of the time that these means are being adopted. The wound should afterwards be covered with lint dipped in cold water. The best plan, however, to be adopted, if it can be managed, is the following: Take a common wine-glass, and holding it upside down, put a lighted candle or spirit-lamp into it for a minute or two. This will take out the air. Then clap the glass suddenly over the bitten part, and it will become attached, and hold on to the flesh. The glass being nearly empty of air, the blood containing the poison will, in consequence, flow into it from the wound of its own accord. This process should be repeated three or four times, and the wound sucked or washed with warm water before each application of the glass. As a matter of course, when the glass is removed, all the blood should be washed out of it before it is applied again.

We would again urge the importance of instantly cutting out a portion of the skin and flesh around the bite, if it can be done. If powerful caustics are not at hand, lye may be made by pouring water over wood ashes, then boil to consistency of molasses, and apply freely to the wound with a smooth stick.

*Constitutional treatment.*—As soon as possible, and while persevering in the foregoing treatment, administer spirituous liquor of some kind in very large quantities, and continue it till inebriation sets in, which will be an indication that the poison is being overcome; after inebriation is fairly set in, gradually diminish the doses of liquor. It must be remembered that while the poison is in the ascendency, it will require very large draughts of liquor to produce the desired effect, as much as half a tumbler at a time is often given, and repeated many times before inebriation ensues. Alcoholic liquor is not an antidote for serpent bites when the person has been accustomed to use liquors freely. The spirit of hartshorn or sal-volatile has been somewhat extensively tried as an antidote to the poison of venomous serpents. It is applied to the wound, and taken internally in doses of 1 teaspoonful every five or ten minutes in a wine-glassful of water, till reaction is thoroughly established. Cases have been reported in which it was given with success when the system was under the full influence of the venom. Many who are acquainted with the virtues of this medicine, and are exposed to these reptiles, are in the habit of always carrying it with them. So well aware are the intelligent natives of India of the efficacy of the spirits of hartshorn in these bites, that they commence with it on the instant, not waiting for superior advice. Inflammation, fever, debility, etc. (which see) arising from these bites, must be treated upon the general principles of treating these affections. In all cases of bites from venomous snakes, send for a surgeon as quickly as possible, and act according to the above directions until he arrives.

3. *Bites of rabid dogs.*—When an individual has been bitten by an animal, respecting which the slightest suspicion of hydrophobia exists,

the one remedy cannot be too quickly resorted to, complete excision of the bitten part. Some persons have possessed sufficient nerve to do this for themselves; few perhaps could, but it has often been effected by unprofessional persons for others; indeed, there might be more danger in waiting many hours for a surgeon, than in submitting to unprofessional operation. The method of excision most to be trusted is the insertion of a skewer of wood, made to fit into the wound caused by the tooth, and carrying the incision so far round, that the entire hollow or cone of flesh is cut out along with the piece of wood. This might be done with safety in the thick part of the calves of the legs, or on the back parts of the thighs or buttocks. Where excision is not resorted to, the free application of nitric acid, caustic potash, or lye boiled down to consistency of molasses, whichever may be most readily procured, must not be neglected,—lunar caustic is not sufficiently strong to be reliable; or in lieu of these, a piece of iron, heated to whiteness, may be inserted into the wound, so as thoroughly to destroy the surface which may have been poisoned. These may seem severe measures, but they are light compared to the unceasing anxiety of mind which must haunt a person who, after having been bitten, feels that due precaution has not been taken; and light indeed compared with liability to the disease itself. In the event of none of the above measures being submitted to, or available, the wound may be thoroughly washed for hours, by means of a stream of warm water poured upon it from a height; a cupping-glass being applied at intervals. These measures are of course only provisional, until the attendance of a surgeon can be procured.

As might be imagined, the preventive medicines for hydrophobia are very numerous; some have been thought highly of by medical men, but for the most part they are secret, quack remedies, and perfectly worthless. It is absolute folly to trust to them, to the exclusion of the only certain preventive—excision or destruction of the wounded tissues.

When, from the peculiar symptoms, and taken in connection with the circumstances altogether they can scarcely be overlooked, an individual is thought to be attacked with hydrophobia, if the hope of saving life is small, much may be done to alleviate so terrible an affliction by proper medical care, which must be sought for at once; in the meantime, whilst all those sights and sounds which aggravate suffering are carefully avoided, laudanum may be given in 30 drop doses, and repeated as circumstances seem to dictate. If ice can be taken, it is said to afford relief, put into the mouth in small morsels; it has also been found of service applied to the back of the neck. If, on the arrival of a medical man, he likes to try any of the various remedies which have been proposed in this disease, he of course can do so, but the above-mentioned will be sufficient for lay interference.

Some recommend immediate salivation with mercury in addition to the foregoing treatment, as one of the most reliable means of neutralizing the poison in the blood before it affects the system. Mere scratches are considered by some more dangerous than deep wounds. The free use of caustic potash, nitric acid, or lye boiled down to consistency of molasses, are considered by some physicians to be efficacious, even if applied within two or three days after the bite occurs. Lye may be prepared impromptu by pouring boiling water over wood ashes, then strain out the lye, boil it down to consistency of molasses, and apply with a smooth stick. The majority of writers on the subject are in favor of keeping the wounds open as long as possible. This may be done by putting a few raw beans on it, and then by applying a large linseed-meal poultice over them.

*Is a man who has been bitten by a mad dog, and in whose case no precautions have been taken, a doomed man?* Will he be sure to have the disease, and therefore to die of it? By no means. But few, upon the whole, of those who are so bitten become affected with hydrophobia. This frequent immunity from the disease in persons who have been bitten, has tended to confer reputation upon many vaunted methods of prevention. Ignorant and knavish persons have not failed to take advantage of this. They announce that they are in possession of some secret remedy which will prevent the virus from operating; they persuade the friends of those who die that the remedy was not rightly employed, or not resorted to sufficiently early; and they persuade those who escape, that they escape by virtue of the preventive remedy. If the plunder they reap from the foolish and the frightened were all, this would be of less consequence, but unfortunately the hope of security without undergoing a painful operation leads many to neglect the only sure mode of obtaining safety.

A still more anxious inquiry next arises. Whoever has been bitten by a rabid or suspected animal must be considered, and will generally consider himself, as being in more or less danger of hydrophobia. This dread is not entirely removed, even by the adoption of the best means of prevention. Now, how long does this state of hazard continue? When is the peril fairly over? After what period may the person who has received the injury lay aside all apprehension of the disease? To this inquiry, no satisfactory reply can be given. In a vast majority of instances, indeed, the disorder has broken out within two months from the infliction of the bite. But the exceptions of this rule are too numerous to permit us to put firm trust in the unanimity afforded by that interval.

Mr. Youatt describes cases in which there had been no symptoms of rabies observed in the dog at the time the injury was inflicted, though soon afterwards the animal was decidedly rabid. It is much to be regretted that the dog is so often destroyed. When a person has been bitten by a dog or cat suspected to be rabid, the beast ought by no means to be killed, but to be secured and kept under surveillance, and suffered, if it should so happen, to die of the disease. If he do not die, in other words, if he be really not rabid, that will soon appear, and the mind of the patient will then be relieved from a very painful state of suspense and uncertainty, which might otherwise have haunted him for months or years. Should the dog die mad, the injured person will be no worse off than if the animal had been killed in the first instance; nay, in one respect, he will be better off, inasmuch as certainty of evil is preferable to perpetual and uneasy doubt.

In this article we have merely given preventive treatment. Hydrophobia will be treated in its proper place. (See Hydrophobia.)

BITTER ALMOND. (See Amygdalus.)

BITTERN, *bit'-turn*, the mother-liquor left after the extraction of salt from sea-water by crystallization. It contains sulphate of magnesia, or Epsom salts, in large quantities, and is one of the principal sources of that salt.

BITTER ROOT. (See Apocynaceæ.)

BITTERS, *bit'-turz* [Ang.-Sax.], the common name for an infusion of bitter herbs, which is consumed in large quantities as a stomachic. Water will extract the virtues of most bitter substances as well as spirituous liquors; but on account of the disposition of spirituous solutions to keep for a long time, it may sometimes be desirable to use rum, brandy, wine, whiskey, or alcohol, in which to dissolve or steep the bitter substances; but this is not at all necessary to secure the full effect of the bitters. The best bitters are quinine, Peruvian bark, colombo, gentian, quassia, cascarilla bark, chamomile flowers, the inner bark of the wild cherry-tree, and wormwood. Several barks may be combined, or one substance only may be used. Cinnamon, nutmeg, coriander, cardamom, and sugar or simple syrup may be used to flavor. When aperient and diuretic properties, in addition to the tonic, are desired, a small quantity of Turkey rhubarb and juniper berries may be added, the former being aperient and the latter diuretic. Quassia bitters are preferable for those having a tendency to constipation, as quassia possesses no astringent properties. (See Stomachic, Tonics, Dyspepsia.)

BITTER SWEET. (See Solanum Dulcamara.)

BITTER WEED. (See Ambrosia.)

BITUMEN, *be-tu'-men* [Lat.] This term includes a number of inflammable mineral substances. The fluid are naphtha, petroleum, mineral tar, mineral pitch. The solid are asphaltum, elastic bitumen, or mineral caoutchouc, mineral adipocire, retinasphaltum, pit coal, jet mellilite or honey-stone, and amber. Of these substances, asphaltum and amber have been used in medicine. (See ASPHALTUM, AMBER.)

BLACK ALDER. (See PRINOS VERTICILLATUS.)

BLACK ASH, *blak ash*, impure soda, contaminated with sulphide of calcium, charcoal, and other impurities, formed in the manufacture of soda from sea-salt. By lixiviation, filtration, and evaporation, the ordinary soda of commerce is produced. (See SODA.)

BLACKBERRY. (See RUBUS.)

BLACKBERRY, SYRUP OF. (See SYRUPS.)

BLACK COHOSH, *blak ko'-hosh* [*Actea Racemosa*], a perennial plant belonging to the Nat. order *Ranunculaceæ.* It grows in all parts of the United States and Canada, and is known by the common names of black snake-root, rattle-root, rich-weed, and squaw-weed. The root is the part used, and its activity is due to a resinous principle called *Cimicifugin.* This is an active, powerful and useful remedy, and appears to fulfil a great number of indications. It possesses an undoubted influence over the nervous system, and has been successfully used in chorea, periodical convulsions, epilepsy, nervous excitability, asthma, whooping-cough, delirium tremens, and many spasmodic affections; in consumption, cough, acute rheumatism, neuralgia, milk leg, amenorrhœa, dysmenorrhœa, leucorrhœa, and other uterine affections. Its tonic and antiperiodic virtues are well marked in remittent and intermittent fevers. The infusion is made by putting 1 ounce of the root into 1 pint of boiling water. Dose: of fluid extract, ½ to 2 teaspoonfuls; compound fluid extract, ½ to 1 teaspoonful; tincture, 1 to 2 teaspoonfuls; decoction or infusion, 2 to 4 fluid ounces, three or four times a day. (See DECOCTION.)

BLACK DEATH, *blak deth.* Black death is the name given to a most destructive pestilence, which, towards the middle of the fourteenth century, extended itself over all parts of the known world. It took its name from the black spots which appeared on the skin. It was an intense form of the oriental plague, and, like it, was characterized by buboes and carbuncles. It is said to have taken its rise in China, and to have thence traveled westward to Europe, where it made its appearance in 1348. Some accounts state that the impure air was actually visible as it approached with its burden of death. Historians of that time give a most horrible picture of the sufferings and deaths that were occasioned by it. In Europe alone, during the three years that it prevailed, it is said to have carried off 25,000,000 persons, London having

Black Cohosh. (Actea Racemosa.)

lost over 100,000. It was looked upon as a judgment of heaven; and many thought to save themselves by giving their goods to the church, or by personal chastisements. The Jews were also looked upon as the cause of it; and, in consequence, great numbers of them suffered death. In the city of Mayence alone 12,000 of them were cruelly murdered. The black death has several times made its appearance in Europe since that time, but never with the same virulence. Boccaccio, in the introduction to his "Decameron," has given a lively description of its physical and moral effects in Florence.

BLACK DRAUGHT, *blak draft*, is an active, saline purgative frequently employed when a speedy evacuation of the bowels is desired. It is composed of an infusion of senna and Epsom salts, with ginger, or some other aromatic to counteract its griping tendency. (See CASSIA.)

BLACK-DROP, *blak'-drop*, is a preparation of opium, formerly secret. It is, essentially, a preparation of acetate of morphia, and is devoid of some of the stimulating properties of crude opium. Black-drop is estimated at three times the strength of ordinary laudanum. Dose, 12 drops; for a child two years old, 2 drops.

BLACK EYES. (See BRUISES.)

BLACK HAW. (See VIBURNUM PRUNIFOLIUM.)

BLACK HELLEBORE. (See HELLEBORUS NIGER.)

BLACK LARCH. (See LARIX AMERICANA.)

BLACK OAK. (See QUERCUS.)

BLACK PEPPER. (See PIPER NIGRUM.)

BLACK SNAKE ROOT. (See BLACK COHOSH.)

BLACK VOMIT. (See YELLOW FEVER.)

BLADDER, *blad'-dur* [Sax. *blader*, from *blawan*, to blow], *vesica urinaria* in Anatomy, is a thin membraneous bag which serves as a receptacle for the urine secreted by the kidneys, until it is voided through the urethra. It is situated in the pelvis, and is kept in its place by ligaments, which are usually divided into true and false, the latter being formed of folds of the peritoneum. It is composed of three coats or membranes—the external or fibrous membrane, the middle or muscular membrane, and the internal or mucous membrane. The muscular membrane is composed of bands of muscular fibres running in different directions, and commonly distinguished into two layers, an external or longitudinal, and an internal transverse or circular. Its figure is nearly that of a short oval. It is broader on the fore and back than on the lateral parts; rounder above than below, when empty; and broader below than above, when full. It is divided by anatomists into the summit or superior fundus, the body, the base or inferior fundus, and the neck—that portion which is constricted by a sphincter muscle, and communicates with the urethra. On each side, rather below its middle, it receives the two ducts called ureters, which convey the urine from the kidneys into the bladder. (See BLADDER, DISEASES OF THE.)

BLADDER, BLEEDING FROM THE. (See URINE.)

BLADDER, DISEASES OF THE. The bladder, like every other organ of the body, is liable to certain diseases, one of the most common of which is inflammation, or cystitis. It chiefly affects the mucous coat of the bladder; but all the other coats may be implicated; and it is either chronic or acute. The acute form is known by great pain in the region of the bladder, attended with fever and hard pulse, and a frequent and painful discharge of urine, or a retention. The disease runs its course with rapidity, and subsides or carries off the patient in a few days. The treatment to be adopted is that which is followed in inflammatory diseases generally. Hot fomentations, opiates, mild aperients (as castor-oil), a light diet, and mucilaginous drinks, are the means to be employed. If there is retention of urine, a catheter should be frequently used, but not otherwise. The chronic form of this disease is not uncommon, and arises from various causes—from an abnormal condition of the urine, from a diseased state of the bladder, or of some of the neighboring parts, or from the presence of some foreign substance in the bladder, as calculus. (See CALCULUS.) In such cases it is of importance to ascertain the true cause. In general, the treatment is by opiates, and sedatives with nourishing diet and tonics. Infusion of Buchu or of Bearberry is also recommended; and sometimes a belladonna plaster to the part will be of service. Irritability may exist in the bladder, unaccompanied by inflammation, and may arise from over-distention or from nervousness. It is to be treated by the administration of tonics, with the avoidance of all stimulating drinks. The bladder may be affected with paralysis, resulting either from accident, or from disease of the nervous centres, or from over-distention. It gives rise to incontinence of urine, which, however, is to be distinguished from that which sometimes arises from irritability, inasmuch as in this case the bladder is full, and has no power to evacuate; so that it must be drawn off by the catheter. Retention of urine may be caused by mechanical obstacles to its exit, by paralysis, or by a want of power over the muscles.

Many of the diseases and disorders of the bladder are brought on by carelessness, neglect, or too great subservience to the conventional restraints of society; those persons especially, who habitually or necessarily are frequently compelled to restrain the desire, and forego for a time the relief of emptying a distended bladder, are liable to affections of the organ. In early childhood, but sometimes even beyond puberty, the bladder habitually empties itself during sleep; night after night this occurs, and proves a serious annoyance, and expense too, from the consequent destruction of bedding. The habit or disorder is sometimes extremely difficult, if not quite impossible, to eradicate. The regular use of the cold hip-bath every morning is one of the most efficient remedies, and the tincture of muriate of iron, or "tincture of steel," as it is frequently called, given twice a day, in 10 drop doses, in water, is often useful. Benzoic acid, and nitrate of potash are both said to have proved successful. Without being purged, the bowels are to be kept lax. In such cases, fluid is to be taken in small quantity only, in the evening. Malt liquor always increases the evil. Where the habit is inveterate, it is better to use one of the india-rubber urinals attached to the person, than to allow the patient to be a nuisance to himself and others. (See BED-WETTING.)

*Rupture of the bladder* is almost invariably fatal. It is generally caused by blows or falls when the viscus is full of urine, but sometimes without violence, simply from over-distention. In the former case, intoxication is in most instances the first cause of the accident; the individual sits drinking till the bladder is quite full, staggers out to relieve himself, and either falls or stumbles against some object, the urine is effused into the cavity of the abdomen or surrounding tissues; agonizing pain, and extreme vital depression are the immediate consequences, and the patient speedily dies. In the latter case, when the bladder is ruptured from over-distension without violence, it is generally caused by long retention of urine, from obstruction to its discharge. In this case, the first sensation of rupture is rather one of relief than otherwise, the rent being at the lower part of the organ; the fluid is diffused into the loose tissues of the scrotum and surrounding parts, giving rise to severe inflammation and mortification. The bladder is sometimes ruptured by extreme violence, such as that of the passage of a cart over its region. In all these cases, the attendance of a surgeon is absolutely requisite, if possible. Death is all but inevitable, but if life cannot be saved, much relief may be afforded by the moderate use of stimulants, and the free use of large doses of opium.

*Strangury.*—During the prime of life, the bladder is not generally liable to suffer from chronic disorder, except in persons of dissipated or intemperate habits, but one acute and very painful affection, strangury—generally caused by the application of a blister—is not uncommon. The affection is characterized by burning pain, extending through the urinary passages up to the neck of the bladder, accompanied with constant and distressing desire, and straining effort to pass urine, which will only come away in very small quantities, often mixed with blood.

While it lasts, the condition is a painful and most distressing one. The means of relief are warm hip-baths, demulcent drinks copiously taken, such as barley-water with gum arabic, linseed tea, etc. Warm injections, consisting of ½ pint of gruel containing 20 or 30 drops of laudanum, give much relief; 20 drops of laudanum, or 10 or 15 drops of the sedative solution, may be given by the mouth, and repeated if requisite. When the patient is not in the bath, hot bran poultices are to be used over the lower part of the abdomen.

*Stoppage of urine.*—With declining years, the bladder becomes more subject to disorder and disease; perhaps the most frequent affection is sudden inability of the organ to expel the urine. This may arise from its having been allowed to become over-distended, from cold, from drinking hard malt liquor—or sometimes from external violence. The case is one of much distress and alarm, and being not devoid of danger, cannot be too soon placed under proper medical treatment. In the meanwhile, the person should be got into a hip-bath, temperature 96°, and kept in for at least half an hour, a warm bed being ready to receive him on coming out; hot bran poultices must be ready to be applied as soon as he is placed in it; just before entering the bath, 1 tablespoonful of castor-oil with 10 or 15 drops of laudanum should be administered. It is not improbable that relief may be obtained by these means; but all efforts of straining must be avoided as useless and hurtful. Of course fluid must be eschewed as long as the stoppage continues. Whilst the above measures are being carried out, medical assistance ought to be procured; for should other means fail, the introduction of the catheter must be resorted to, to save life. Nevertheless, the prosecution of the mode of treatment recommended, if it does not prevent such a necessity, will certainly facilitate a sometimes difficult operation.

*Weakness of the bladder*, and inability perfectly to retain the urine, is a frequent disorder of advanced age; it often commences with, and is accompanied by imperfect emptying of the organ, either through carelessness or weakness. Sponging the lower parts of the abdomen, etc., with vinegar and water, or salt-water, may be of service. Dr. Day recommends the use of tincture of ergot of rye in these cases; but as a general rule they should be placed under regular medical superintendence. The same may be said of that very troublesome complaint of old age, catarrh of the bladder, in which large quantities of thick mucus are discharged.

Stone in the bladder may be suspected when the urine is liable to become bloody after exercise, when there is pain in the bladder and surrounding parts, in the back and down the thighs, and when the stream of urine is apt to stop suddenly during the act of passing. Under such circumstances, proper advice cannot be too soon obtained. (See KIDNEY, DISEASES OF THE; URINE, BLISTER, CALCULUS.)

BLADDER FUCUS. (See FUCUS VESICULOSUS.)

BLANCMANGE, OR BLANCMANGER, *blä-monj'* [Fr. white food], a preparation of milk, cream, sugar, and isinglass, which are boiled together. After being flavored, the fluid is run into a mould and allowed to stiffen.

BLEEDING, OR BLOOD-LETTING, *bleed'-ing* [Sax. *bledan*, to bleed], in Surgery, is the removing of blood from the body, with a view to the prevention or cure of disease. It is divided into general and local; venesection and arteriotomy are instances of the former; scarification, cupping, and the application of leeches, of the latter. General bleeding is had recourse to when the object is to lessen the whole mass of the circulating fluid; local, when the object is to lessen the quantity in some particular part of the body. Venesection is the mode usually had recourse to in general bleeding, and the veins most commonly selected for the purpose are those at the bend of the elbow. In proceeding to open a vein, a bandage is first placed moderately tight round the arm, above the elbow, to obstruct the return of the venous blood; and when the veins begin to swell, the operator selects one, and pressing the thumb of his left hand upon it, at a short distance below the spot where the opening is to be made, presses the lancet into the vein, and gives a slight cut upwards in withdrawing it, so as to make the opening sufficiently large to allow the blood to flow out in a thin stream. When a sufficient quantity of blood has been abstracted, the operator's thumb should be placed on the cut in the vein and the bandage removed, when a folded piece of lint, placed over the wound and secured by a figure of 8 bandage, will be sufficient to prevent the bleeding, and the wound will speedily heal. It should be borne in mind, however, that bleeding is always a dangerous operation, even apart from the evils that may be produced from the abstraction of too much blood, and should never be performed, except in very urgent cases, by any but a skilful surgeon. For local bleeding, leeches are always the safest, and are most generally had recourse to. In dealing with leeches, it is well to remember that they are cold-blooded animals, and that heat is highly injurious to them, and unfits them for the performance of their office. Hence, when there is a difficulty in making them fix readily, the part should be cooled with a cloth dipped in cold water, or moistened with cream or milk, or a single drop of porter, and the leeches confined in the proper situation under a small glass. In former times, bleeding was much more practised than it is at present. It was resorted to in almost every disease, particularly such as were inflammatory, or were thought to be so; and even where no disease existed, it was regarded as an excellent precautionary measure to have a vein opened once or twice a year. Some contend that this mode of proceeding was then necessary, and that, since that time, a great change has taken place in the physical constitution of the people. There may, perhaps, be some truth in this; but we cannot believe that the constitution of the people ever was such as to justify the wholesale bleeding that was at one time practised. (See CUPPING, LEECH, ARTERIOTOMY, ETC.)

BLEEDING, OR HEMORRHAGE. (See HEMORRHAGE.)

BLEEDING FROM THE BLADDER. (See URINE.)

BLEEDING FROM THE LUNGS. (See HEMORRHAGE.)

BLEEDING FROM THE NOSE. (See HEMORRHAGE.)

BLEEDING PILES. (See PILES.)

BLENNORRHŒA, *blen-nor-rē'-ą* [Gr. *blenna*, mucus; *rheo*, I flow], is a term used in Medicine to denote an unusual discharge of mucus from any of the mucous membranes.

BLINDNESS, *blīnd'-nes*, is a more or less complete deprivation of vision, in consequence of a diseased state of the organs of sight. Some of the blind retain a slight perception of light, or are able to distinguish the general outlines of bodies, or very bright colors, while others are entirely deprived of the faculty. Some are blind from birth; others become so in consequence of disease. In those that are born blind, the eyelids are sometimes united to each other, or to the eye-ball itself; sometimes a membrane or film covers the eye; sometimes the pupil is closed, or adheres to the cornea; and sometimes the opening of the pupil is not in the right place, so that the rays of light do not fall in the middle of the eye. It may also arise from some defect of the optic nerve, or of the brain in connection with it. Blindness may result from disease of the optic nerve, or of the brain; or from an abnormal condition of the humors or coats of the eye, intercepting the passage of the light to the optic nerve. Among the diseases of the brain that may produce blindness are hydrocephalus, inflammation, congestion, softening or wasting of that organ. The eye itself may be injured by inflammation, congestion, suppuration, or cancer; spots, films, or tumors may form on the cornea, and so destroy its transparency; the humors of the eye may become thick and turbid; or the opening of the pupil may be destroyed. Blindness often arises from debility of the optic nerve, occasioned frequently by long-continued overstraining of the sight. It is in this way that certain kinds of occupations are so injurious to the sight, and often cause blindness. Hence it is, too, that in the northern regions, where the country is long covered with snow, which reflects the sun's rays, and in the sandy deserts of Africa, blindness is common. In old age blindness is usually occasioned by a drying up of the humors of the eye, a thickening of the cornea, or crystalline lens, or atrophy of the optic nerve. Day blindness is an inability to see during the day in a bright light. Those who have been long immured in dark cells are often affected in this way. Night blindness is that state in which blindness comes on towards evening. This may continue for some time; but at length the eyes become weak during the day also, and it terminates in amaurosis. Proceeding, as blindness does, from such a variety of causes, it is impossible to say anything here regarding its treatment, which will be found noticed in other parts of the work. There is not one of the senses that affords such an endless variety of perceptions, such a fund of materials for the mind, the imagination, to work upon, as that of sight. When one considers the infinitely greater amount of information that is received by the eye than by the ear, he is naturally led to the conclusion that the blind must be in a much more helpless and pitiable condition than the deaf. In reality, however, this is found not to be the case, and various attempts have been made to account for it. The blind, as a class, are lively and cheerful; the deaf, shy and melancholy, often morose and suspicious. "Take," says Dr. Wilson, "a boy, it may be, of nine or ten years of age, who has never seen the light, and you will find him conversable, and ready to give long narratives of past occurrences, etc. Place by his side a boy of the same age who has had the misfortune to be born deaf, and observe the contrast. The latter is insensible to all you say; he smiles, perhaps, and his countenance is brightened by the beams of 'holy light;' he enjoys the face of nature, nay, reads with attention your features, and, by sympathy, reflects your smile or frown. But he remains mute; he gives no account of past experience or of future hope. You attempt to draw something of this sort from him; he tries to understand, and to make himself understood; but he cannot. He becomes embarrassed; you feel for him, and turn away from a scene too trying, under the impression that, of these two children of misfortune, the comparison is greatly in favor of the blind, who appears by his language to enter into all your feelings and conceptions, while the unfortunate deaf mute can hardly be regarded as a rational being; yet he possesses all the advantages of visual information as direct sensation." The cause is not that the blind possess a greater, or anything like an equal stock of materials for mental operations, but that "they possess an invaluable engine for forwarding these operations, however scanty the materials to operate upon—artificial language," which is the medium of thinking; and "its value to a man is nearly equivalent to that of his

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reasoning faculties." The truth is, that the deaf are far more isolated all their lives from those that hear than the blind are from those that see. The blind are able to make up, in great measure, for their want of sight by the greater development of their other senses. By assiduous application and attention, the senses of touch and hearing become much more delicate and acute. It has even been said that some have been able to distinguish colors by means of touch; but this seems very doubtful. By accurately distinguishing the various kinds and modifications of sound, they are able to form correct ideas on many subjects. Much, too, depends upon the memory, which, from exercise, becomes much more retentive than in ordinary cases. It is estimated that there are no fewer than three million of blind persons in the world at the present time. Of this vast number, thirty-seven thousand are in France, about forty-five thousand in Germany, upwards of seventy thousand in Russia, about three thousand in Holland, five thousand seven hundred in Sweden, upwards of two thousand in Norway, about twenty-nine thousand in the British Isles, and upwards of twenty thousand in the United States. (See EYE, VISION; EYE, DISEASES OF THE; AMAUROSIS, OPHTHALMIA, ETC.)

BLINDNESS, COLOR. (See COLOR BLINDNESS.)

BLISTER, *blis'-tur* [Ang.-Sax.], is a bladder or vesicle on the skin, caused by the accumulation of serous fluid under the cuticle, and may be occasioned by a burn, by hard friction, or by disease. There are certain substances also that possess the property of raising blisters. (See BLISTERS.) In puncturing a blister, in order to allow the serous fluid to escape, care should be taken not to ruffle or displace the cuticle, particularly if the skin be very tender underneath.

BLISTERED HANDS OR FEET, *blis'-turd.* When the hands are blistered from rowing, or the feet from walking or other causes, be careful not to allow the blisters to break, if possible. Some persons are in the habit, by means of a needle and piece of worsted, of placing a seton into blisters to draw off the water; but in our opinion this is a great mistake, and retards the healing. Bathe the blisters frequently in warm water, or, if they are very severe, make a salve of tallow, dropped from a lighted candle into a little gin, and worked up to a proper consistence, and on going to bed cover the blisters with this salve, and place a piece of clean soft rag over them.

BLISTER FLIES. (See CANTHARIDES, POTATO FLY.)

BLISTERS, OR VESICANTS, *blis'-turz.* Blisters, or vesicants, are medical agents which, when applied to the skin, irritate it, and cause a secretion of serous fluid, which collects under the cuticle, and forms a blister. Many medicinal agents possess this property, but that most commonly employed in this country is the Spanish, or blistering fly, or cantharis. It is usually employed in the form of a plaster, composed of 1 part of cantharides, in powder, to 2 parts of a mixture of yellow wax, suet, lard, and resin. Sometimes it is of advantage to employ it in a liquid form. The blistering liquid of the pharmacopœia is composed of 8 ounces of cantharides, in powder, 4 fluid ounces of acetic acid, and a sufficient quantity of ether to form 20 fluid ounces. There is also a blistering paper, *charta epispastica*, sometimes used. Tincture of cantharides, croton oil, strong liquid ammonia, and mustard, are applications of the same kind, but milder in their operation, Boiling water is a speedy and powerful vesicant. Blisters are employed as counter-irritants, to draw away inflammatory action from a part to which direct remedies cannot be applied. They also stimulate the absorbents, and thus promote the removal of effused fluids. Blisters should never be employed at the beginning of an inflammation, nor during its acute stages, but only after it has subsided. They should not be kept on too long, but removed, and the part dressed with soft warm poultices. Usually from six to ten or twelve hours is the time allowed for a blister, but sometimes three or four hours may be quite sufficient. Sores which have taken an unhealthy action have often been produced by keeping blisters too long upon children. A piece of very thin paper, oiled, is often laid between the blister and the skin when it is applied to children or very thin-skinned people. Blisters of cantharides particularly, when kept on for too long a time, sometimes produce strangury and other distressing affections of the bladder. (See CANTHARIDES, CANTHARIDAL COLLODION.)

BLOOD, *blud* [Sax. *blod;* Germ. *blut;* Lat. *sanguis*], a red fluid circulating through the heart, arteries, and veins, of animal bodies, serving for the nourishment of all their parts, and the support of life. This nutritive fluid, called scientifically the *Liquor Sanguinis*, consists, firstly, of water, holding, in a dissolved condition, fibrine, albumen, potassium, and sodium, together with phosphoric acid and other substances; secondly, of corpuscles, or globules, which float in the *liquor sanguinis.* When drawn from the body, the blood undergoes a remarkable change. By degrees it gelatinizes, and forms spontaneously coagulum and serum. Coagulum consists of the fibrine and the corpuscles; serum, of water, albumen, and the various saline matters. The corpuscles are of two kinds—red and white, the red being the more numerous. In man, a red corpuscle varies in size from $\frac{1}{4000}$ to $\frac{1}{2800}$ of an inch. The discovery of the globules of the blood is due to Leuwenhoeck and Malpighi, whose researches were made soon after the microscope was invented. Blood is termed arterial or venous, according to the vessel in which it circulates. Arterial blood is a florid red, with a stronger odor and less specific gravity than the venous fluid. Venous blood is of a dark purple. The scarlet, or arterial blood, which is one degree warmer than venous blood, owes it color to its undergoing contact with atmospheric air in the lungs; it circulates in the pulmonary veins, the left cavities of the heart, and the arteries by which it is distributed to the different organs throughout the body. The dark purple blood circulates in the veins, in the right cavities of the heart, the pulmonary artery, and the lungs. (See CIRCULATION OF THE BLOOD.)

There is, again, a difference between arterial and venous blood in respect to the gases which they contain; the first holds a supply of oxygen; the second is rendered impure by the carbonic acid with which it is loaded. Blood is the production of the elaboration of chyle, and acquires its nutritive and life-giving qualities in respiration. By means of the arterial vessels it penetrates to all the organs, distributing nutrition to every organic tissue. It is, moreover, the principal source of animal heat; from it, also, the secretive organs derive their various products, such as saliva, bile, urine, etc. The average quantity of blood in an adult man has been calculated at 28 ℔ or pints. It has been shown that the composition of the blood undergoes a change in various diseases: and, after repeated bleedings, the number of corpuscles becomes permanently diminished. The color, as well as the composition of the blood, varies in different sections of the animal kingdom: red in the vertebrates and annelides, white and transparent as water in insects and crustaceans, bluish-white in mollusca, yellowish in holothurians, and some other invertebrates. This difference in color arises from the corpuscles, which are in some cases red, and in others white or straw-colored, or bluish-white. The chemical constituents of blood, when in a healthy condition, are—albumen, fibrine, hæmatin or coloring matter, oleic, stearic, lactic, phosphoric, sulphuric, and hydrochloric acids, in combination with soda, potash, ammonia, lime, magnesia, and a small portion of phosphorized fat. The blood also contains oxygen, nitrogen, and carbonic acid. In considering the chemical constitution of the blood, it may be regarded as consisting of two parts—the *liquor sanguinis*, and the blood corpuscles floating therein. The *liquor sanguinis* is composed of serum, holding a very small quantity of fibrine in solution. The following table of the composition of these two parts of the blood is based on the analysis of Schmidt and Lehmann, and is a modification of that quoted in Miller's "Elements of Chemistry":

SPECIFIC GRAVITY OF BLOOD CORPUSCLES, 1.0885.

*Composition of Blood Corpuscles.*

| | | | |
|---|---|---|---|
| Water | .688 | Sulphuric acid | 0.066 |
| SOLID CONSTITUENTS: | | Phosphoric acid | 1.134 |
| Hæmatin (with iron) | 16.75 | Potassium | 3.328 |
| Globuline and cell membrane | 282.22 | Sodium | 1.052 |
| Fat | 2.31 | Oxygen | 0.667 |
| Extractive matter | 2.60 | Phosphate of lime | 0.114 |
| Chlorine | 1.686 | Phosphate of magnesia | 0.073 |

SPECIFIC GRAVITY OF LIQUOR SANGUINIS, 1.028.

*Composition of Liquor Sanguinis.*

| | | | |
|---|---|---|---|
| Water | 902.90 | Phosphoric acid | 0.191 |
| Fibrine | 4.05 | Potassium | 0.323 |
| Albumen | 78.84 | Sodium | 3.341 |
| Fat | 1.72 | Oxygen | 0.403 |
| Extractive matters | 3.94 | Phosphate of lime | 0.311 |
| Chlorine | 3.644 | Phosphate of magnesia | 0.222 |
| Sulphuric acid | 0.115 | | |

Taking the blood as a whole, Liebig gives its component parts as follows:

| | | | |
|---|---|---|---|
| Water | 80 | Solid matter | 20 |

The solid matter, on being incinerated, gives $1\frac{1}{4}$ to $1\frac{1}{2}$ per cent. of ash, which consists of one-half sea-salt, one-tenth of peroxide of iron, and the rest of lime, magnesia, potash, soda, phosphoric acid, and carbonic acid. (See RESPIRATION, CIRCULATION OF THE BLOOD, AIR, AERATION, FOOD, DIGESTION.)

BLOOD-POISONING. (See PYEMIA.)

BLOODROOT. (See SANGUINARIA CANADENSIS.)

BLOOD, SPITTING OR VOMITING OF. (See HEMORRHAGE.)

BLOODY FLUX. (See DYSENTERY.)

BLOODY URINE. (See URINE.)

BLOWS, *bloze*, may be serious either from the violence used in their infliction, or from the site of the injury. A blow on the head may cause merely bruising of the scalp—if more severe, concussion or injury to the brain, or fracture of the skull. The latter accident is most likely to happen at the side of the temple, where the bone is thin: but severe injury to the brain frequently occurs from blows at the under and back parts of the head. A severe blow on the spine may cause paralysis of the lower limbs, with or without fracturing the vertebræ. When a blow, even comparatively slight, is inflicted upon a spot immediately over a collection of nerves, most distressing effects, and sometimes immediate death may result; such is the case from blows on the neck, on the pit of the stomach, or over the region of the heart. The deadly faintness which ensues should instantly be combated by the first stimulant—

ammonia, ether, or spirit of any kind—which can be procured. Cold water should be suddenly dashed over the surface, or down the spine; if this is unsuccessful, the patient is to be put into a warm bed, and artificial respiration employed along with external heat, mustard-plasters to the spine and pit of the stomach, and stimulant injections. (See Brain, Bruises, Concussion, Concussion of the Brain, Shock.)

BLUEBERRY. (See Blue Cohosh.)

BLUE COHOSH, *blu ko'-hosh* [*Caulophyllum Thalictroides*], a perennial plant belonging to the Nat. order *Berberidaceæ.* It grows in low moist grounds all over the United States and Canada. In different parts of the country it is known as pappoose berry, blueberry, and squaw-root. The root is the part used in medicine. Blue cohosh is possessed of emmenagogue, parturient, and antispasmodic properties. While it is a valuable agent in all chronic uterine diseases appearing to exert an especial influence on the uterus, it has also been successfully employed in rheumatism, dropsy, colic, cramps, hiccough, epilepsy, hysteria, etc. The extract of blue cohosh is preferable to ergot for expediting delivery, in all those cases where the delay is owing to debility, or want of uterine nervous energy, or is the result of fatigue. It is used as a wash for the aphthous sore mouth and throat, combined with equal parts of *hydrastis canadensis.* Dose: fluid extract, 15 to 40 drops; solid extract, 1 to 5 grains; pills, 2 grains, 1 to 3 pills; decoction or infusion, 2 to 4 ounces, three or four times a day. (See Decoction, Infusion.)

BLUE COPPERAS, *blu kop'-pur-as*, sulphate of copper, so called to distinguish it from green copperas, which is sulphate of iron. (See Copper.) It is also called blue vitriol and blue-stone.

BLUE DISEASE, *blu diz-eez'* [*Cyanosis*], a condition dating from birth, in which, from malformation of the heart, the blood is only partially arterialized in the lungs. Few subjects of the disease survive infancy, but there are instances of their attaining mature age. The disease is characterized by the purple appearance of parts which are usually red, by languor of all the functions, and by great susceptibility to cold. The disease must not be confounded with the leaden blue color of the skin, brought on by long-continued internal use of nitrate of silver.

BLUE FLAG. (See Iris Versicolor.)

BLUE OINTMENT. (See Mercurial Ointment.)

BLUE PILL, *blu pil* [*mercurial pill*, Lat. *Pilula Hydrargyri*], is formed by rubbing 2 ounces of mercury with 2 ounces of confection of roses until metallic globules are no longer visible, then adding 1 ounce of liquorice-root in fine powder, and mixing the whole well together.

Dose, from 3 to 8 grains—3 grains of the pill containing 1 grain of mercury. This is one of the best forms of administering mercury internally. To induce salivation, 5 grains may be given night and morning, combined with a little opium, to prevent its passing off by the bowels. In larger doses it acts as a purgative. Blue pill is very serviceable in many forms of bilious derangement, but the frequent or indiscriminate use of this medicine is justly condemned as productive of many evils. (See MERCURY.)

BLUE VITRIOL. (See BLUE COPPERAS.)

BLUNT-LEAVED DOCK. (See RUMEX.)

BLUSHING, *blush'-ing* [Dan. *blussen*, to blaze or glisten], is a sudden suffusing or reddening of the face, excited by a sense of shame, confusion, or surprise. It is produced by an increased flow of blood into the capillary vessels of the face and neck; and, besides reddening, it creates a sensation of heat in those parts. It is occasioned by the mental shock acting upon the brain, and withdrawing the nervous energy which ordinarily contracts the muscular coats of the blood-vessels of these parts, whence the blood is permitted to flow with greater violence through the vessels. In order to cure the habit of blushing, which is often troublesome, persistent efforts should be made to maintain a calm and self-possessed frame of mind under exciting circumstances.

BOARDING-SCHOOL. (See SCHOOL.)

BOIL, *boil*, called also *furunculus*, from the Latin *furo*, I rage, on account of the violent heat and inflammation attending it, is a hard, painful tumor of the skin and the subjacent cellular tissue. It makes its appearance as a small, hard, inflamed spot on the skin, and gradually enlarges into a painful tumor, having a white conical centre, surrounded by a hard inflamed base, and varying in size from the bulk of a pea to that of a pigeon's egg. It proceeds to suppuration and discharges a few drops of purulent matter, commonly mixed with blood, and a central mass, called the core. This last often lies deep, and causes considerable pain before coming away; but, without its removal, the abscess will not heal. Boils, though generally very troublesome, are not attended with danger. They occur mostly in young and vigorous persons; but they also occasionally break out upon the weak and delicate. They sometimes follow each other in rapid succession, and are most common in the spring.

*Treatment.*—They all take their rise in some disordered state of the digestive organs; and hence it is necessary that the bowels be at first freely opened, and then regulated by gentle, unirritating laxatives. The diet should be plain and simple. In delicate constitutions, a course of sarsaparilla will be found of great use; quinine is also recommended in some cases. In dealing with the boil itself, suppuration is to be hastened and perfected by means of linseed-meal poultices; and as soon as the prominent part of the swelling becomes soft, a free opening should be made into it with a lancet, and as much matter as can be pressed out of it by tolerably firm pressure should be removed, together with the core; or the poultice should be continued until the core is drawn out, when the wound will speedily heal. Persons who are compelled to go about their occupations during the progress of a severe boil, will find a small piece of lint dipped in olive-oil, and retained in its place by a disk of adhesive plaster, a very soothing and convenient application. Boils are apt to recur in succession, for the reason, probably, that they depend upon some derangement of the system which requires attention. If the person be of full habit, the diet should be reduced, all fat and rich things eschewed, meat partially or entirely given up for a time, and stimulants avoided. A succession of boils is very apt, in some constitutions, to follow the application of a blister. In constitutions which show evident signs of debility, it may be advisable to increase the amount of animal food taken, and to allow good wine in moderation. When the bowels are clear, and the tongue tolerably clean, but the boils still continue to appear, dilute nitro-hydrochloric acid (British Pharmacopœia) should be given in doses of 20 drops in a wine-glassful of water thrice daily, or in a wine-glassful of infusion of bark. In some cases iron is required. A grain of quinine may be taken with each dose of the mineral acid, instead of bark.

Boils are popularly said to be "healthy," and in one sense they may be so; that is, if the deranged state of the system relieves itself by their eruption; but they are also to be regarded as warnings that some change in habits, or that medicine is required. A series of neglected boils may wind up with a carbuncle. Carbuncle is of the same nature as a boil, but more severe and dangerous. (See Carbuncle.)

BOILING, *boil'-ing.* Boiling is the process in cookery by which food is submitted to the action of water at the boiling point of 212° Fahr. Theoretically, this is the case, but in the cooking of meat especially, boiling, that is ebullition, should not be permitted. A temperature—according to Liebig—50 or 60 degrees lower, being sufficient, if proper time be given to cook meat thoroughly, whilst it is rendered much more tender, and easier of digestion than when the process is carried more quickly, and by a greater degree of heat. In fact, meat to be properly cooked in this way, ought rather to be stewed than boiled. Somewhat, however, must depend upon the end in view in cooking the meat. If it is desired to be simply a piece of well-cooked meat, not only as regards taste, but as to nutritive powers, the method recommended by Liebig should be followed; that is, the water in which the meat is to be cooked should be made to boil briskly at the time the latter is put into it, and for a few minutes after, and then sufficient cold water is to be thrown into the pot to reduce the temperature of the whole to 150°, at about which point it should be maintained until the meat is thoroughly cooked, that is, till all appearance of redness has disappeared. The principle of the process is, that by the sudden immersion of the meat in boiling water, the most external of the constituents of the flesh, but more particularly the albumen, become quickly hardened and coagulated, so as to form a kind of case around the interior portions. Of course, if the high temperature is preserved, this process of hardening will go on throughout the whole mass, which is thus—and too often it is the case—made hard and indigestible. But in consequence of the reduction of temperature produced by the addition of cold water, this is prevented, the meat is cooked by a heat which cannot harden it, and its nutritive soluble principles are kept from exuding by the case-hardening of the first few minutes' boil. The reverse of the above must, in some degree, be the case, when meat is boiled for the sake of the soup; it must then be put into the water whilst it is cold, and the temperature gradually raised to near the boiling point. In this way there is no outer hardening to interfere with the water dissolving out the soluble nutrient principles of the whole mass; the latter, of course, losing proportionally. As meat cannot be cooked in water without a certain portion of its nutrient matters being dissolved out, the water should never be thrown away; if the saving is unimportant to those who cook the meat, there are plenty of poor to receive the unused liquor; but if it is a consideration that nothing be lost, then may the soup be turned to account by being consumed along with the meat. Of course the cooking may be so managed as to make both palatable.

Vegetables require thorough boiling, and often disagree for want of it. (See Food, Broiling, Roasting.)

BOLDO LEAVES, *bole'-do*, the new South American tonic. It has been used effectually in chronic torpidity of the liver, and in atony of various organs, where quinine could not be tolerated. Dr. Zaremba recommends it in gonorrhœa, rheumatism, and dyspepsia. Dose, of the fluid extract, 1 to 5 drops, gradually increased.

BONEBLACK. (See Carbo Animalis.)

BONE, BONES, *bone.* Bone, in Anatomy, is a hard complex structure, forming the framework or skeleton of the body in man and the higher animals. It is confined to vertebrate animals; and even in the lowest order of this class, the cartilaginous fishes, it is entirely wanting. The bones form a framework for the moulding and adequate support of the soft parts of the body; cavities for the lodgement and protection of delicate organs; joints for locomotion; and levers for the action of the muscles. They are always in the interior of the body, and even when they approach the surface are covered by some soft membrane, muscle, skin, etc. The first development of bone is commonly—though not always, as in the bones of the head—preceded by the formation of a cartilaginous structure, occupying the place which the bone is afterwards to take. It has commonly been said that the bone is formed by the ossification of the cartilage; but this, for various reasons, is thought not to be the case. The process of bone-formation always commences in the immediate neighborhood of blood-vessels, which pass down into canals excavated in the substance of the cartilage, and lined by a continuation of its investing membrane. Hence the spots where these vascular canals are especially developed, are termed centres of ossification. One of these is usually found in the centre of the shaft of a bone, and one at each end, with an additional one for any considerable projection or process. In the flat bones there is generally one in the middle of the surface, and one in each of the principal processes. Until the bone attains its full dimensions, the parts which contain distinct centres are not connected by osseous union, but only by cartilage, so as to allow an increase in the size of the bone by the growth of cartilage between its detached portions, which gives place to bony structure when there is no further need of increase. There exists a close correspondence as to the number of ossific centres in the early condition of the skeleton of all vertebrated animals. Bones are so constituted that a constant process of deposition and absorption is carried on in them, as in the softer tissues, modelling the shaft into its requisite proportions during the successive stages of growth. It is much more actively carried on in youth than in middle life, and is greater in the vigor of manhood than in old age. Bones increase in length not so much by interstitial deposit, as by addition to their ends; that is, by progressive ossification of the layers of cartilage which intervene between the ends of the shaft and the epiphyses. Bones are largely supplied with blood-vessels. The solid osseous texture which forms the cylindrical shafts of the long bones, and the thick external plates of the denser flat bones, are penetrated by a series of large canals, termed Haversian (after their discoverer), which form a network in its interior, and serve for the transmission of blood-vessels into the interior. These canals, in the long bones, run for the most part in a direction parallel to the central cavity, and communicate with this, with the external surface, and with each other, by frequent transverse branches. They vary in diameter from $\frac{1}{200}$ to $\frac{1}{2000}$ of an inch, averaging about $\frac{1}{500}$; and are smallest near the outer surface, where the bone is most compact; but becomes gradually larger towards the interior. In the long bones of man, and of most mammalia, there is a central cavity, which is filled with the fatty substance known as marrow; and the space in which the marrow lies is called the medullary canal. This cavity does not exist in the bone in its early state, but is formed by the removal of the cancellated osseous tissue first developed in its interior. Among birds, however, the central cavity, instead of being occupied by marrow, is filled with air, and communicates with the lungs; so that the membrane lining it becomes an auxiliary organ of respiration; while the lightening of the bones thus produced diminishes their specific gravity. Bones are covered externally by a strong fibrous membrane, termed the periosteum, which serves to protect the blood-vessels entering them. The medullary canal is also lined by an extremely delicate membrane, termed the medullary membrane, which supports the marrow, and provides a stratum for the subdivisions of the medullary artery before they penetrate the contiguous osseous substance. The Haversian canals are also lined by a similar membrane. Though bones possess little sensibility in health, yet, when diseased, they become highly sensitive, a manifest indication that they are supplied with nerves. These may, indeed, be traced into some of the minute foramina on the shaft of a long bone, but more easily in the articular ends. A nerve also enters the medullary canal with the nutrient artery of the medulla, and divides, like the artery, into an ascending and a descending branch. Bone is composed of a basis of animal matter, impregnated with "bone-earth," or phosphate of lime. The first ingredient makes it tenacious and elastic, the second gives it the requisite hardness. These may be separated from each other; the latter may be entirely dissolved away, by soaking the bone in dilute muriatic or nitric acid, when a substance of cartilaginous appearance is left; the former, by subjecting the bone to heat sufficient to decompose the animal matter, when we obtain the whole calcareous substance *in situ*. The animal portion of a bone forms about one-third, the earthy about two-thirds; and the relative proportion of the two elements is said to differ little in different classes of animals. The following are the analyses of ox-femur and the human fore-arm by Heintz:

| | *Ox-femur.* | *Human fore-arm.* |
|---|---|---|
| Animal matter | 30.58 | 31.11 |
| Phosphate of lime | 57.67 | 59.14 |
| Carbonate of lime | 6.99 | 6.32 |
| Phosphate of magnesia | 2.07 | 1.20 |
| Fluoride of calcium | 2.69 | 2.23 |
| | 100.00 | 100.00 |

Bones are liable to various kinds of disease, like other parts of the system. Inflammation may attack them, and produce the same changes that it does in the soft parts, suppuration, softening, ulceration, and mortification. In slighter cases it may cause softening and swelling. Aperient and cooling medicines, with leeches and fomentations, should be employed at first, and as soon as matter appears to be formed, a free opening should be made. (See CARIES, NECROSIS, EXOSTOSIS, RICKETS.) Sometimes atrophy, or wasting of the substance of the bone, takes place, in consequence of disease, or the supply of arterial blood being interrupted, or simply from disuse. Again, bones sometimes lose their earthy constituents, and become soft and brittle, breaking often from the slightest cause. It is most frequently met with in elderly females. The cause of this disease is unknown, and little is known of its treatment, beyond endeavoring to strengthen the system. (For broken bones, see FRACTURES.)

BONESET OR THOROUGHWORT. (See EUPATORIUM PERFOLIATUM.)

BOOTS, TIGHT-FITTING. (See FOOT, CORNS.)

BORACIC ACID, *bo-ras'-ik* [from Arab. *baurac*, a species of nitre], (BO .)—This acid, which may be regarded as a teroxide of boron, is the only known compound of oxygen and boron. It occurs in nature in certain volcanic districts, where it issues from the earth in jets mixed with steam. In Tuscany, these jets, or *fumerolles* as they are called, are conducted into artificial basins or small ponds. The boracic acid remains dissolved in the water, which is periodically removed, and evaporated in shallow leaden pans, which are heated by other *fumerolles* in the neighborhood. During the evaporation, great quantities of sulphate of lime are deposited, which require removal from time to time. About seven hundred and fifty tons of crude boracic acid are annually exported from Tuscany. The crude acid is contaminated with 25 per cent. of sulphate of ammonia and alumina, and other saline impurities. Boracic acid is used principally for making borax, or biborate of soda. (See BORAX.) Boracic acid, on being strongly heated, becomes anhydrous; and at a red heat it fuses into a transparent glass, which remains clear as it cools; but it soon crumbles to pieces by absorbing water from the air. Boracic acid communicates to its compounds the property of fusibility; hence the use of many borates, more especially the biborate of soda, as fluxes. It dissolves in three times its weight of boiling water, but is very insoluble in cold. The solution is remarkable for possessing the properties of an alkali when tested with turmeric-paper, which it changes to a dark brown. Boracic acid dissolves in alcohol, and burns with a characteristic green flame, with the exception of biborate of soda.

BORAX, *bo'-raks* [Arab. *baurac*, a species of nitre], a compound containing boracic acid (which see) and soda. It was formerly imported from the East in the crude state, under the name of *tincal*, which contained borax in combination with various substances of a saponaceous nature. It was purified by being heated with lime or soda until the whole of the soapy matter and other impurities were separated. Borax is now mostly prepared by fusing two parts of boracic acid with one part of soda ash. It crystallizes in rectangular hexagonal prisms, containing 10 equivalents of water. Great pains are taken to crystallize the solution in regular crystals of a large size, as such only are marketable. Borax has a feebly alkaline taste and reaction; and in medicine is sub-astringent, detergent, diuretic, and emmenagogue. It is recommended in certain uterine affections, and as a solvent for uric or lithic calculi. Dose, 5 to 40 grains. The glycerine of borax, composed of 1 ounce of the latter and 4 fluid ounces of the former, is an excellent application to aphthæ and ulcers of the inside of the mouth, sore nipples, eruptions, etc. Of similar use is the honey of borax, composed of 64 grains of borax to 1 ounce of clarified honey.

BOTANY, *bot'-a-ne* [Gr. *botane*, an herb], that part of natural history which relates to the vegetable kingdom. In its widest sense, botany comprehends all that is known of plants, and, therefore, forms a boundless field of inquiry. The student has to consider the external configuration of plants,—their structure, the functions which they perform, the relations which they bear to each other, and the uses to which they are subservient. Many are deterred from studying botany by a misconception of its nature and scope. Imagining that its sole object is to name and classify the various vegetable productions of the globe, they conclude that the study is confined to the acquisition of certain dry details and a vocabulary of hard words. "The standing objection to botany," wrote Gilbert White of Selborne, England, "has always been, that it is a pursuit that amuses the fancy and exercises the memory, without improving the mind or advancing any real knowledge. * * * But the botanist * * * should be by no means content with a list of names; he should study plants philosophically, should investigate the laws of vegetation, should examine the powers and virtues of efficacious herbs, should promote their cultivation, and graft the gardener, the planter, and the husbandman on the phytologist. Not that system is by any means to be thrown aside,—without system, the field of Nature would be a pathless wilderness,—but system should be subservient to, not the main object of, pursuit." To facilitate investigation, Botany has been divided into several departments, which may be regarded as separate sciences. The objects and scope of each of these sub-sciences will now be explained.

1. Structural Botany, or Organography, includes everything relating to the organization of plants. It describes the different kinds of tissue which enter into the composition of plants, it explains the structure of every organ; and it also teaches the relation that one organ bears to another. That branch of structural botany which has reference to the elementary tissues, is sometimes distinguished as Vegetable Histology. The microscope has shown that the various tissues of plants are composed of little membranous sacs or vesicles, varying in form and size, and united in different ways. (See Cells.) The study of these elementary organs cannot be prosecuted without the aid of costly instruments, but much may be learned from the clear descriptions and excellent illustrations given in modern botanical works, particularly those of Gray, Lindley, Balfour, and Bentley. Some plants consist of simple cells only, which continue throughout life to produce new cells, and to perform all the vital functions. A flowering plant, however, although originally cellular, produces organs composed of cells and vessels, variously modified and arranged, and covered by an epidermis. These compound organs may be divided into nutritive, or those concerned in the nourishment of the plant, and reproductive, or those which are employed in the production of new individuals. The former are the stem, root, and leaf; the latter, the flowers and fruit. Leaves occupy various positions on the stem and branches, and their arrangement forms a subject for special study. The arrangement of flowers on the floral axis and its ramifications, has also to be considered. The term Morphology has been applied to that portion of Organography which treats of the abnormal modifications of the different organs. The researches which have been made in this department during the last forty years, have confirmed the doctrine advanced by the German poet Goethe, namely, that all those parts familiarly known as leaves, flowers, and fruit, are constructed on a simple uniform plan, out of one kind of organ in different states of modification and combination; and that there is no other difference between the flower of a rose and that of a nettle, than what arises from modifications and combinations of this typical organ, which is the leaf. Morphology is a most attractive subject for study, but less important in a practical point of view than that part of Organography which has reference to the ordinary forms of organs, and the manner in which they are arranged. No systematic arrangement can be understood without a knowledge of the laws upon which the symmetry of plants depends, and a practical acquaintance with the structure of every kind of organ.

2. Physiological Botany treats of plants in a living or active state, and of the manner in which their functions are performed; it explains

how they are influenced by the several agencies of light, heat, air, and moisture; and it describes their various secretions and the nutriment afforded by the soil. Plants, not being endowed with voluntary motion, derive their food either from the soil in which they are fixed, or from the atmosphere by which they are surrounded. The nutriment, consisting of water, generally holding salts in solution, is absorbed, by the aid of endosmose, by the extremities of the root. It then passes from cell to cell, and ascends the stem, dissolving, in its course, some of the organic matter stored up in the vegetable tissue. Arrived at the green shoots and surfaces of the leaves, which are covered with minute openings, or *stomata*, the sap is exposed to the influence of light, heat, and air. About two-thirds of the moisture taken up is now evaporated and exhaled; the remainder, which, of course, becomes thickened, undergoes certain chemical changes, and then begins to descend by the undersurface of the leaf, and along the bark. It takes either a direct or a circuitous course downwards, communicating with the centre of the stem by the medullary rays, depositing various secretions, more especially in the bark, and giving origin to substances which are destined to nourish and form new tissues. Finally it reaches the extremity of the root, where absorption had commenced; a small portion is there excreted, while the remainder mixes with the newly absorbed fluids, and again circulates in the sap. The circulation of the sap has been adduced as an example of the vital processes elucidated by physiology, because it is due to the combined action of all the organs of nutrition, and may therefore serve instead of several illustrations. The study of the special functions of the various organs necessarily precedes that of the general physiological phenomena, such as circulation, assimilation, respiration, fertilization, and germination. Under the names of the different organs of nutrition and reproduction, the reader will find particulars respecting their functions.

3. Systematic Botany, or Taxonomy.—This department includes the principles of classification, which are based on the observations which have been made on the structure and physiology of plants. It cannot, therefore, be prosecuted successfully until the student has acquired a complete knowledge of Organography. The object of systematic botany is to name, describe, and arrange plants in such a manner that the botanist may readily ascertain the name of any specimen, and, at the same time, get an insight into its true nature and general properties. When it is considered that there are some 120,000 known species of plants, it is obvious that there must be a definite nomenclature and classification, were it only to facilitate reference and communication. Before plants can be classified, their peculiarities of structure must be

clearly defined; hence the necessity of the technical language which is employed in descriptive botany. This language ought not to deter the lover of nature from studying the principles of classification; for, in acquiring a knowledge of the numerous technical terms, he will, at the same time fix in his mind the ideas which they represent, and thus, in reality, become acquainted with important elementary facts. "The technicalities of science," says Mr. Page, "often so ignorantly inveighed against, are, in fact, the instruments by which it effects its progress. New objects require new names, and new facts new phrases to express their relations; and the sooner the student can make himself familiar with those terms and their applications, the more rapid and pleasant will be his onward progress." The principles of classification constitute what is properly called *Taxonomy*, though this term is often applied to the whole department. There have been two great plans proposed for the classification of plants, one denominated artificial, and the other natural. The first is founded on characters taken from certain parts of plants only, without reference to others; while the second takes into account all the parts of plants, and involves the idea of affinity in essential organs. In both artificial and natural systems, the lower divisions—namely, the genera and species—are the same, the great difference between them consisting in the manner in which the genera are grouped into orders, and the orders into classes. The plants in one of the higher divisions of an artificial system, such as that of Linnæus, have no necessary affinity, and are connected only by certain characters, more or less superficial, which have been selected as the signs of that division. In a natural order, on the contrary, all the genera will be found to have a true family likeness; for their association is the result of a careful consideration of the structure of every organ. The classes in the natural system have been formed upon the same principle, by uniting orders which possess many important characters in common. The Linnæan system leads to little more than a knowledge of names, and can only be looked upon as an index to the genera. Though superior to every artificial scheme previously promulgated, its day has gone by, and the more philosophical system has taken its place. Linnæus himself never intended it to be anything more than a provisional arrangement, and distinctly stated that a natural method was the great object of scientific inquiry. The general principles of the Linnæan, or Sexual system, may be explained in a few words. Twenty-four classes are founded on the number, position, relative lengths, and connection of the stamens; while the orders in these classes depend on the number of styles, the nature of the fruit, the number of the stamens in the classes where this character is not used for distinguishing them, and the perfection of the flowers. The twenty-fourth class includes plants having inconspicuous flowers, and in it the orders are formed according to natural affinities. Under these classes and orders, all the known genera and species are arranged. Even as an artificial method for discovering the names of plants, the Linnæan system has many imperfections. Being based upon the more obvious characters of the reproductive organs, it cannot be of the least use when the plants are not in full flower, with all the stamens and styles perfect. The different flowers on the same plant often vary as regards the number of the stamens. Again, if the classification were carried out rigidly, it would separate, in many instances, the species of the same genus; but so sensible was Linnæus of the importance of maintaining the natural character of his genera, that he sacrificed the symmetry of his scheme for the sake of keeping all the species together.

The natural system of classification is based upon the real characters and affinities of plants, and necessarily takes into account all the organs. Though not perfect, it has already reached a very high point of development; and a great number of the orders which have been determined are quite as natural as the orders in the animal kingdom. In this way a knowledge of one species is to a great extent the knowledge of many; for an individual, if well selected, will exhibit the most important characters of all the other plants in the same natural group. Thus, by studying the common radish or mustard the botanist may obtain a general knowledge of about 1,600 species which constitute the order *Cruciferæ*, and which are all formed, as it were, on the same type. The properties of plants accord in a very remarkable manner with their structure; and, as a general rule, the position of a plant in the natural arrangement indicates its properties. For example, if a botanist, on examining a plant, finds all the structural peculiarities of the order just mentioned, he may feel confident that it is not poisonous, but most likely antiscorbutic or pungent. If, however, he should meet with one of the *Atropaceæ*, he might safely set it down as a plant possessing poisonous narcotic properties. It will thus be seen that the natural system is much more than a mere index to the names of plants. It reveals to a certain extent the plan of creation, and is at once an aid to research and a record of discovery. Several schemes based upon the natural affinities of plants have been devised, but they agree in nearly all their grand divisions. The characters by which the primary groups have been determined are furnished by the elementary tissues, and the most important organs of vegetation and reproduction. Regarding only the elementary structure, plants may be arranged under the heads of *Cellular* and *Vascular*, according to the absence or presence of regular vessels. A more satisfactory arrangement results from a consideration of the different modes by which plants are propagated. Some spring from true seeds, containing the rudimentary organs called coytledons; while others are developed from spores, in which no distinct organs can be traced. The former are said to be *cotyledonous*, and the latter *acotyledonous* (*i.e.* without cotyledons). As the number of cotyledons forms a natural distinctive character, the first group of plants is subdivided into *monocotyledonous*, having one cotyledon, and *dicotyledonous*, having two cotyledons. The mode in which the root is produced affords characters which confirm this arrangement. The young root of an acotyledon is *heterorhizal*, that of a monocotyledon is *endorhizal*, and that of a dicotyledon is *exorhizal*. (See EMBRYO.) The three groups are further characterized by the stems; those of the first being *acrogenous*, those of the second *endogenous*, and those of the third *exogenous*. Stemless plants are said to be *thallogenous*, and form a distinct section of the acotyledonous group. The venation of the leaves establishes the same great natural divisions; and similar results are obtained from a consideration of the flowers; monocotyledons and dicotyledons being *phanerogamous*, or flowering, and acotyledons *cryptogamous*, or flowerless. The following table exhibits the relation of the different characters:

| *Embryo.* | *Radicle.* | *Stem.* | *Flower.* |
|---|---|---|---|
| Acotyledonous. | Heterorhizal. | Acrogenous. | Cryptogamous. |
| Monocotyledonous. | Endorhizal. | Endogenous. | Phanerogamous. |
| Dicotyledonous. | Exorhizal. | Exogenous. | |

4. GEOGRAPHICAL BOTANY treats of the manner in which plants are affected by climate and station, and endeavors to determine the conditions under which particular families or species of plants are confined to certain zones of latitude and altitude. It is a study of great interest, and one which cannot be successfully prosecuted without an intimate acquaintance with physical geography.

5. FOSSIL BOTANY investigates the nature of the plants found in a fossil state in the various geological formations. It is therefore at once a branch of botany and of geology.

The practical bearings of botany are most important, and are sometimes treated separately in manuals of the science, under the head of "Economic Botany." (See various plants under proper headings.)

BOTTLE NURSING. (See CHILD.)

BOUGIE, *boo'-zhe* [Fr.], a surgical instrument, used for overcoming stricture or other obstruction in any of the passages of the body; as the urethra, rectum, œsophagus, etc. It is long and slender in form, solid or hollow, stiff or flexible, according to its particular use, usually varying from one-fourth to one-sixteenth of an inch in diameter. It is made of various substances, as silver, or steel-plated, caoutchouc, gutta-percha, etc. One kind is also made by dipping a fine cord or thread of flax or silk in melted wax until it has acquired a sufficient thickness, when it is rolled smooth and firm on a marble slab. Bougies require to be employed with skill and caution, as there is always a considerable degree of danger attending their use. If used at all by inexperienced hands, the utmost caution should be observed, as much injury may arise from any hasty or violent efforts to remove the resistance that may present itself: it is rather to be overcome gradually, and by repeated attempts, so as not to excite much pain or irritation. The bougie should be allowed to remain for a few minutes in the passage, and the operation be repeated after an interval of three or more days, gradually increasing the size of the instrument till the canal is restored to its natural calibre.

BOWEL COMPLAINTS. (See AUTUMNAL COMPLAINTS, BILIOUS CHOLERA, DIARRHŒA, DYSENTERY, SUMMER COMPLAINT.)

BOWELS. (See INTESTINES.)

BOWELS, CONSTIPATION OF THE. (See COSTIVENESS.)

BOWELS, INFLAMMATION OF THE. (See ENTERITIS, PERITONITIS.)

BOX. (See BUXUS.)

BOXWOOD. (See CORNUS FLORIDA.)

BOYHOOD. (See AGE.)

BRACHIUM. (See ARM.)

BRAIN, *brane* [Ang.-Sax. *brægen*], is the name given to a soft pulpy substance, which in man and the higher orders of animals constitutes one of the great central masses of the nervous system (which see). As was to be expected, it is found most perfectly developed in man, in whom, with its membranes, vessels, and nerves, it constitutes the whole of the matter enclosed within the bones of the skull, and is hence termed the *encephalon*. In males, the average weight of the full-grown human brain is about 49 or 50 ounces; in females, 44. It varies, however, considerably in different individuals, from about 65 to 34 ounces in the male, to 56 to 31 in the female. The brain of the naturalist Cuvier is said to have weighed upwards of 64 ounces, and of that of the late Dr. Abercrombie, 63 ounces avoirdupois. Anatomists differ in opinion as to the size or weight of the brain at different periods of life. Some believe that it attains its full size as early as the third year; others about the seventh or eighth; while not a few are of opinion that it continues to grow until the fortieth year. From a series of observations, however, "it appears that in general the weight of the brain increases rapidly up to the seventh year, then more slowly to between sixteen and twenty, and then more slowly to between thirty-one and forty, at which time it reaches its maximum point. Beyond that period there appears a slow but progressive diminution in weight of about 1 ounce during each subsequent decennial period."

The brain is divided by anatomists into the cerebrum, or brain proper; the cerebellum, or little brain; the *pons Varolii*, and *medulla oblongata*. The *cerebrum* occupies the whole of the superior portion of the cavity of the cranium, or skull, and is by much the largest portion of the brain, averaging, in the male, nearly 44, and in the female, about 38¾ ounces. The *cerebellum* occupies the lower and back part of the cranium, and is next in size to the cerebrum, weighing, in the male, about 5¼, and in the female, 4¾ ounces. The *pons Varolii* and *medulla oblongata* occupy the base of the brain, and together average about 1 ounce in weight, being rather larger in the female than in the male. The former occupies a central position on the under surface of the brain, and is connected with the cerebrum by two cords or peduncles, termed *crura cerebri*, with the cerebellum by two similar cords, termed *crura cerebelli*, and is also in contact with the medulla oblongata. This last is that portion of the encephalon which connects it with the spinal cord. It is of a pyramidal form, having its broad extremity turned upwards, and connected with the pons Varolii, while its under portion is united with the spinal cord. The brain is covered by three membranes, the outermost of which, from being of a firmer texture than the others, is termed the *dura mater*, and encloses the brain with its appendages, lining also the whole internal surface of the cranium. Its outer surface, which adheres to the bones of the cranium, as the periosteum does to

THE BRAIN.*

* The above figure has been introduced to show the manner of supplying the brain with arterial blood by the *vertebral* arteries. It will doubtless be recollected by the critical student, that in the lateral arms of the vertebræ of the neck, there were round holes, from one bone to the other. Through those holes an artery creeps securely into the skull, unexposed to the thousand accidents to which the carotid arteries are liable. If, for example, an operation requires that the carotids should be tied, so that no blood can pass in them, a supply for the brain is secured by these vertebrals. When they have arrived within the skull, at the under side of the brain, the two marked *b*, *b*, unite into one, which is *c*, and then branches off among the convolutions of the brain, indicated by the various letters; *g*, is the little brain or *cerebellum*; *f*, the middle lobe of the brain, or *cerebrum*; *e*, the anterior lobe of the *cerebrum*; and *a*, the *optic nerves*, or nerves of vision. This is no fanciful distribution of the arteries of this organ, but a perfectly true representation.

the other bones, is rather rough and irregular; but the inner surface is smooth and shining, and is lubricated by a fluid which is secreted by it. This membrane is the densest and strongest of the whole body, its component fibres interlacing each other in all directions. It sends off several folds or processes, which descend between certain portions of the brain. The principal of these is the superior longitudinal process, or *falx cerebri*, as it is termed, from its supposed resemblance to a sickle or scythe, which extends from the fore to the back part of the skull, and, descending into the substance of the brain, divides it into two portions, called the right and left hemispheres. Where it terminates behind, there is a large lateral expansion of the same membrane, extending across the back part of the skull, and separating the cerebrum from the cerebellum; it is called the *tentorium cerebelli.* From the middle of the tentorium another membranous expansion takes its rise, and descending downwards between the lobes of the cerebellum, terminates at the edge of the foramen magnum, or great occipital hole. It is termed the *falx cerebelli.* The second, or middle, of the three membranes is an extremely thin and delicate substance, and from its fancied resemblance to a spider's web, it receives the name of *arachnoid.* It is transparent and colorless, and is spread uniformly over the surface of the brain. The third investing membrane, the *pia mater*, is also very delicate and tender, but differs from the arachnoid in its abounding in blood-vessels, whereas no blood-vessels have yet been discovered in the latter. The blood-vessels with which every part of this delicate membrane is covered are the nutrient arteries of the brain. They subdivide and ramify to an extreme degree upon the surface of this membrane, so that the blood may enter the surface of the brain only in very minute quantities. As the pia matter contains and supports the nutrient vessels of the brain, it is not only, like the others, spread over its entire surface, but it also penetrates between all its convolutions, and lines every cavity which it contains.

The nervous matter of the brain is composed of two distinct substances, differing from each other both in color and consistence. One of these is the *gray* or *cineritious substance*, termed also, where it forms the outer covering, as in the cerebrum and cerebellum, the *cortical* substance, from its surrounding the inner part like the bark of a tree. It is of a softer consistence than the other, and is composed almost entirely of blood-vessels, connected and sustained by exceedingly fine cellular membrane. It forms an outer covering to the entire surface of the cerebrum of generally about one-tenth of an inch in thickness. The *white* or *medullary substance*, which constitutes the internal portion of the cerebrum and cerebellum, is of firmer consistence, and is composed of microscopic fibres arranged into laminæ and bundles, between which intervening vessels ramify. In the cerebrum these fibres run, in general, in such a direction as to converge towards the base of the brain. The brain proper is divided into two lateral halves, termed hemispheres, separated from each other through a great portion of their extent by the great longitudinal fissure, into which is inserted the falx cerebri. This fissure, both before and behind, passes quite through to the base of the cerebrum; but in the middle it is interrupted by a transverse portion of white substance, termed the *corpus callosum*, which connects together the two hemispheres. Each hemisphere is subdivided into an anterior, middle, and posterior lobe, but it is only on the under surface of the brain that these lobes are properly marked off. The anterior and middle lobes are separated from each other by a deep fissure, named the *fissura sylvia*, which extends obliquely backwards to a considerable depth. The middle and posterior lobes are not so distinctly marked off, but anatomists regard as the posterior lobe that portion of the cerebrum which lies over the cerebellum. The surface of the cerebral hemispheres presents numerous tortuous eminences, named convolutions, or *gyri*, which are separated from each other by deep grooves or furrows, termed *sulci*. These are generally about an inch in depth, but they vary considerably in different brains, and even in different parts of the same brain; and, indeed, those of one side frequently differ from those of the other. The convolutions are more marked as the brain is better developed, and are more numerous and manifest in man than in the lower animals. As the cortical substance of the brain is continuous over the whole surface of the hemispheres, in the fissures as well as upon the convolutions, it follows that the greater the number and depth of these, the greater is the superficial extent of the gray matter which is generally regarded as the seat of all the nervous manifestations, as sensation, volition, etc. The *corpus callosum* is formed by the converging fibres of the two hemispheres, whence it has been termed the *commissura magna*, or the great commissure of the brain. Under the corpus callosum are the two great cavities termed the *lateral ventricles*, distinguished into right and left. They are very irregular in shape, and are described as each consisting of a body and three horns, or *cornua*,—the anterior, posterior, and middle. They are separated from each other by the septum lucidum, which descends from the lower surface of the corpus callosum, and consists of two laminæ, between which is the very small cavity of the septum lucidum. It rests upon the *fornix*, a triangular medullary body, having its apex directed forwards, and its base backwards. Posteriorly it is connected with the corpus callosum, and it divides laterally into a posterior cornu on each side, which terminates in, or rather is continuous with, the *tænia hippocampi*, and the *hippocampus major* and *minor.* The sides of the fornix slightly overlap the optic thalami, while its inferior surface covers the third ventricle, from which it is partly separated by the *velum interpositum.* The third ventricle is a small narrow cavity lying between the *optic thalami.* These last are two large, firm, oblong bodies, nearly an inch and a half long, by three-fourths of an inch wide and deep. Anteriorly the optic thalami are continuous with the corpora striata, and posteriorly they are connected by small peduncles with the pineal gland, and with the nates. The *corpora striata* are two gray pear-shaped bodies, but internally they are streaked with white matter,—whence their name. The *pineal gland* is a small portion of gray matter about the size of a small pea. It was supposed by Descartes to be the seat of the soul. The *corpora quadrigemina* are four small white round bodies, intimately connected with each other, of which the anterior aud superior pair are called the *nares*, the posterior and inferior being named the *testes.* The anterior commissure is a medullary band uniting the corpora striata; the middle commissure is composed of gray matter, and connects together the two optic thalami, as does also posteriorly the posterior commissure, which is a rounded white cord. The *crura cerebri* are two short, thick, rounded cords, connecting the optic thalami with the pons Varolii. They are composed principally of medullary matter, but in their interior is a semilunar mass of dark gray matter.

The *cerebellum*, or little brain, consists of a body and three pairs of crura or peduncles, by which it is connected with the rest of the encephalon. It is not covered with convolutions like the cerebrum, but appears to be formed of a number of lamellæ, or plates, with sulci between them. When cut across, the gray and white matter are seen to be arranged somewhat in the form of a tree, the white substance forming the stalks, and the gray the leaves; and hence, it has been termed *arbor vitæ.* The two peduncles of the cerebellum connect it with the testes of the cerebrum, and are known as the *processus e cerebello ad testes;* the inferior peduncles—*processus e cerebello ad medullam*—pass downwards to the back part of the medulla oblongata, and correspond with the restiform bodies; the middle two are the crura cerebelli, which pass from the middle of the cerebellum, round the outer side of the crura cerebri, and meet in front in the pons Varolii, constituting its transverse fibres. The space between the cerebellum behind, and the medulla oblongata in front, is named the *fourth ventricle* of the brain, or the ventricle of the cerebellum. The *pons Varolii*, or annular protuberance, is a comparatively small portion of the brain, and occupies a central position on its under surface, above and in front of the medulla oblongata, with which it is continuous. It consists of transverse and longitudinal white fibres, interspersed with a quantity of diffused gray matter. The transverse fibres, with few exceptions, communicate with the cerebellum by means of the middle crura; while the longitudinal fibres are those which ascend from the medulla oblongata into the crura cerebri. The *medulla oblongata* is that part of the encephalon which is immediately connected with the upper end of the spinal cord, and has an inclination obliquely downwards and backwards towards the foramen magnum. It is pyramidal in form, tapering towards its connection with the spinal cord. It is marked longitudinally by an anterior and posterior fissure, which are continuous with those of the spinal cord, and by which it is partially divided, like the cord, into two lateral and symmetrical halves. On the upper part, however, a new arrangement takes place; for, on each side of the median line, the lateral fissures disappear, and the surface of each half of the medulla presents four eminences or columns, which, commencing at the anterior fissure, and proceeding backwards each way to the posterior fissure, are met with in the following order: the anterior pyramids, the olivary bodies, the restiform bodies, and the posterior pyramids. From the under part of the brain issue a number of nerves, known as the cranial, and pass through foramina in the base of the skull. They are usually reckoned as forming nine pairs. (See NERVOUS SYSTEM.) The following are the proportions of the different substances that compose the gray and white matter of the brain:

| | *Gray.* | *White.* |
|---|---|---|
| Water | 85.2 | 73.0 |
| Albuminous matter | 7.5 | 9.9 |
| Colorless fat | 1.0 | 13.9 |
| Red fat | 3.7 | 0.9 |
| Osmazome and lactates | 1.4 | 1.0 |
| Phosphates | 1.2 | 1.3 |
| | 100.0 | 100.0 |

(See BRAIN, DISEASES OF THE; BRAIN IN OLD AGE, CONCUSSION OF THE BRAIN, WATER ON THE BRAIN, SOFTENING OF THE BRAIN, FRACTURES, ETC.)

BRAIN, DISEASES OF THE. The brain, which is the most delicate and exquisitely formed of all the organs of the human body, is subject to a great variety of disorders, most of which will be treated of under their proper heads, but some it will be necessary to notice here. Inflammation is one of the most common diseases to which the brain is subject, and may result from a number of causes—from external injuries, as blows or falls, the symptoms of which may not manifest themselves for many days; from the improper use of narcotics or stimulants, exposure to the cold or the action of the sun's rays, protracted study, excessive joy, or other mental emotion; as well as less directly from diseases of the digestive or other organs of the body. It is characterized by more or less violent pain of the head, suffusion or prominence of the eyes, the countenance generally tumid or flushed, and delirium or stupor, with, usually, nausea and vomiting. In the treatment of this disease, general and local bleeding are usually had recourse to; the latter by means of leeches applied about the head, or by cupping. A cooling and sedative medicine should also be employed, and the bowels kept freely open by purgatives. The head is also usually shaved, and kept cool by rags wet with cold or iced water. Frequently, in children, inflammation leads to a form of disease known as water in the head, or hydrocephalus (which see). Softening of the brain is caused by the want of a proper supply of nourishment to the cerebral substance, and may arise from various causes. It is characterized by lowness of spirits, headaches, giddiness, the loss of memory, and at length imbecility and paralysis. Unfortunately, this is a disease which little can be done to remedy, especially when it results from a disordered state of the nutrient organs themselves, as from disease or obstruction in the arteries which convey the blood to the cerebral substance. Frequently it is occasioned by over-anxiety or excessive study; in which case everything is to be done to get rid of the predisposing cause. Every thought, every mental effort, destroys a certain portion of the cerebral matter; and hence, if destruction takes place more rapidly than renewal, a wasting or softening of the brain is the result. The blood-vessels, particularly in the aged, are also liable to be ruptured. (See Apoplexy, Coma, Convulsions, Epilepsy, Insanity, Delirium Tremens, Paralysis, Concussion of the Brain, Water on the Brain, Brain in Old Age, Fractures, Brain, Softening of the Brain.)

BRAIN FEVER, OR INFLAMMATION OF THE BRAIN. (See Brain, Diseases of the.)

BRAIN IN OLD AGE. In the aged the brain becomes more liable to disease than heretofore. Congestion of blood from various causes, more especially in consequence of disease of the heart, is frequent, but quite as often, headache, giddiness, slowness of intellect, or paralysis, arise from deficiency of blood in the brain. The distinction is important, as in the latter case lowering measures are certain to be followed by an aggravation of the disorder. Softening of the brain, so frequent a disease of advanced life, has many symptoms similar to those consequent upon deficiency of blood, but in an aggravated degree; the mental functions are more regularly and permanently impaired, paralysis is more certain. Although cerebral softening is incurable, if its threatenings are early detected, it may be retarded by the use of tonics and abundant nutriment. The arteries of the aged brain lose their elasticity, become brittle and liable to rupture if unduly distended, a fact which renders all excitements, whether of the passions or otherwise, so dangerous to those advanced in life. The other affections of the brain, such as apoplexy, paralysis, delirium tremens, will be found under their respective heads. (See Brain, Diseases of the.)

BRAN, *bran*, is the broken-up testa or skin of the grain of wheat, which is separated from the flour after grinding. When heated, it is one of the most useful adjuncts we possess in the alleviation of disease and pain, and particularly in a domestic point of view. It is generally to be procured, is soon made hot, and retains the heat well; it is at the same time soft and adaptable.

Heated bran is best applied in a flannel bag, which should be made ample in size, compared with the part affected: it may be either a dry or a moist application, but the latter is in most cases preferable. The best method of heating, is in the frying-pan, sprinkling with hot water during the process, so as to give just perceptible moisture, and turning over and over until the substance is thoroughly hot throughout; it is to be quickly transferred to the bag, and the latter fastened by pins or thread. When moist, if covered after it is applied to the skin, by a piece of oiled silk, oiled calico, or any other waterproof material, the heat will not only be better retained, but the vapor also, and no dampness will be communicated to the clothes. Sometimes, the bran is put into the bag dry, and the bag and all dipped into boiling water, but in this way too much moisture is absorbed.

Dry, hot bran may produce perspiration, but frequently it causes only feverish dry heat, and if it does not do harm, does little good, compared with the soothing heat and vapor of the moist preparation, which is in fact a continued local vapor-bath, causing free perspiration from the skin over the affected part, and often relieving to an extent sufficient to render the use of leeches or cupping—which would otherwise have been required—uncalled for.

In severe pain, whether spasmodic or inflammatory, the bag of hot moist bran efficiently used, is one of the best, softest, and most certain alleviators we possess; and, greater advantage than all, may be used in most cases of pain with the most perfect safety. In many acute inflammatory affections, such as those of the chest or abdomen, its use is very often preferable, both as regards the comfort and real good of the patient, to either blister or mustard plaster. In the inflammatory affections of childhood, and in threatened croup, it is invaluable from its easy application, soothing, and at the same time, most beneficial effect. When weight is an objection, of course the bag must be more lightly filled. The bran may be heated in a dry state, and the effects of moisture procured by laying underneath it a double fold of flannel wrung out of hot water. Again it is repeated; the hot bran bag to be efficient, must be sufficiently ample and well filled to retain the heat so long that frequent changing is not required. It must be thoroughly hot, slightly moist, but not wet, and is better covered after it is put to the part by some material which will prevent evaporation.

BRANDY, *bran'-de*, a spiritous liquor, separated from wine by distillation. The word is derived from *brantwein*, a German word signifying *burnt wine*. It is prepared from wine in most wine-growing countries; but France, and, most notably, the town of Cognac, in the Charente, has always been considered the great brandy-producing locality. Cognac brandy is esteemed from the absence of a certain fiery flavor found in other brandies, which is caused by a very small quantity of an acrid oil contained in the skin of the grape. The catawba brandy, made from the lees of catawba wine in Ohio, is a very good brandy, though it has the peculiar flavor of this wine. The wines of California yield brandy abundantly and of good quality. Brandy, when newly distilled is as clear and as colorless as water; but, on being put into oak casks, it acquires a yellowish-brown color, from dissolving a portion of the tannin contained in the wood. This color is generally simulated in inferior kinds by the addition of a small quantity of caramel, or burnt sugar. British brandy, which has been the subject of numerous patents, is an attempt to produce, by factitious means, a spiritous liquor bearing a close resemblance to foreign brandy. The best malt spirit is flavored and colored by various substances, ranging from French plums to oak shavings, each manufacturer having his favourite recipe. The quantity of brandy annually made in France is about twenty million gallons, of which about three million are imported by England. Chemically speaking, brandy consists of spirit of wine colored by tannin or burnt sugar, and flavored by a small quantity of volatile oil that passes over during distillation.

Brandy, like every other ardent spirit, ought not to be freely or regularly used, either diluted or otherwise. Neither should spirit in any form be used, except as a medicine. As an addition to our stimulant medicines, and as a dietetic, it is valuable. In great debility or depression, in advanced stages of fever and the like, brandy is of service. As a medicine, it does not, perhaps, possess any particular advantage over pure spirit of any kind; but in England, it is preferred by most to either whiskey or gin, and it is generally the first procurable stimulant in most cases. In this country good imported liquors being so high-priced, whiskey or American brandies are usually the most reliable, and most easily procured, but care should be taken to procure them from a reliable dealer. As a dietetic, dyspeptics, and the aged, who require stimulant, and yet cannot take it in other forms, can sometimes use medicinally with benefit a measured quantity of spirit in a little cold water, with their meals, once, or twice a day. But for most people, other stimulants are much preferable, and the habit of some people of resorting to alcoholic liquor for every little ailment, cannot be too much condemned. Spirit in any form should only be used when other stimulants will not produce the desired effect, or when others that will, are not procurable. Alcoholic liquors, like many other curative agents, are poisonous in very large doses. (See ALCOHOL; STIMULANTS, ALCOHOLIC.)

BRASSICA, *bras'-se-kạ* [from *bresic*, the Celtic name of the cabbage], in Botany, a genus of plants belonging to the Nat. order *Cruciferæ*, and containing several species, which are commonly cultivated as food for man and cattle. *B. rapa* is the common turnip. The species *B. campestris* is regarded by some as the source of the Swedish turnip; but others consider this vegetable to be a hybrid between *B. campestris* and *B. rapa*, or *napus*. The species *B. oleracea* is supposed to be the common origin of all the different kinds of cabbage, cauliflower, broccoli, and kohl-rabi, the different varieties having been produced by the art of the gardener. Broccoli and cauliflowers are deformed inflorescences; the kohl-rabi is produced by the stem enlarging above the ground into a fleshy knob, resembling a turnip. On comparing the original plant, as found on our shores, with wavy green leaves, no appearance of head, and flowering like wild mustard or charlock, say with the red cabbage or the cauliflower, the difference is astonishing.

BRAYERA, *bra-e'-rạ*, in Botany, a genus of plants belonging to the Nat. order *Rosaceæ*, sub-order *Roseæ*. The only interesting species is *B. anthelmintica*, a native of Abyssinia, the flowers of which constitute the drug known as Kousso or Cusso, which has been employed with considerable success for expelling tapeworm. The flowers are apetalous and diœcious, and are imported in a dry state. The mode of administering the Kousso is peculiar. About half an ounce is infused in a glass of warm water, and taken thus, flowers and water together, on an empty stomach.

BREAD, *bred*. The term as usually applied in this country, means the leavened, raised, or fermented loaf of wheaten flour, but may also be appropriate to any of the other forms in which flour or meal is made up, either from wheat or other bread grains. The flour of wheat consists of three ingredients; the gluten which approaches animal matter in composition, starch, and mucilage. Wheat flour, simply made into a cake with water, and baked, like the "damper" of Australia, will undoubtedly yield nourishment equally as well as leavened bread, to those whose digestion is equal to the task; but for the general purposes of civilized life, leavened bread is much to be preferred for the greater ease with which it is dissolved in the stomach. "The careful mixture with the saliva during the mastication of bread, is a condition essential to the rapid digestion of the starch. Hence the increase of digestibility obtained in bread by the porous form given to it. This porosity and lightness is produced in the dough by a process of fermentation. Yeast is added to the dough, which brings into fermentation the sugar formed by the action of the gluten on the starch; and the open porous texture of the mass is the result of the carbonic acid thus formed in every part of it. Many chemists are of opinion that the flour by the fermentation in the dough, loses somewhat of its nutritious constituents, from a decomposition of the gluten; and it has been proposed to render the dough porous without fermentation, by means of substances, which, when brought into contact, yield carbonic acid." Baron Liebig, from whose "Letters" the above extract is taken, says "this view appears to have little foundation."

Various kinds of "digestive bread," raised without fermentation, are however now used. Carbonate of ammonia has been employed for this purpose; but carbonate of soda, with the addition of some acid—butter-milk will do—to disengage the carbonic acid, is the most general agent. The following method is a good one: 2 drams of carbonate of soda in fine powder, are to be well mixed with 1½ pounds of flour; to rather less than 1 pint of water, there is to be added 2½ drams of muriatic acid, and the water and acid together are to be added to and mixed up with the flour. A rather liquid dough, which must be baked immediately, is formed, and if properly managed, is well and lightly raised by the disengagement of the carbonic acid from the soda, the latter being at the same time converted into common salt by union with the muriatic acid. These various kinds of unfermented bread have been extolled as particularly digestible, it is a question whether they are more so than the ordinary bread which has undergone fermentation. To be thoroughly wholesome, bread must be well raised, well baked, and at least twenty-four hours old before it is used. The finer descriptions of bread made with fine flour, are apt to constipate, and the coarser, which contain much coarse bran, are too irritating for many stomachs. As bread is at present made in this country, that made with seconds flour is quite the most generally wholesome. It is a matter of much importance as regards the nutritive properties of bread, "the staff of life," in what manner the flour from which it is made, is prepared. Generally, in consequence of the very large separation of bran effected in grinding, in this country at least, a great proportion of the real nutriment is abstracted, and the fine flour which remains has much too large a preponderance of starch, which does not afford real nutriment. This fact was well exemplified by the experiment of Magendie, who fed two dogs on wheaten bread exclusively, but to one he gave that made of fine flour, deprived of bran, to the other the coarse brown bread made of bran and flour together. The former died in forty days, whilst the latter was perfectly healthy at the end of the period. The first dog was in fact starved, in the same way that he would have been if fed upon arrowroot, or sugar alone. The experiment indicates very significantly how much real nutriment is lost by the copious separation of the bran in preparing fine flour. It is not necessary for bran to be coarse: by more thoroughly grinding it into the flour, not only would bread made from the flour be much more nutritious and wholesome, but the actual amount of bread food supplied to the people would be considerably increased. Moreover, the mechanical aperient action of the bran upon the bowels could not fail to be useful in a country where constipation is a general disorder, as it is in this. No one who is liable to habitual constipation should regularly consume fine bread.

Brown bread is made from wheat meal in which the husks have been ground up with the rest of the grain. Sometimes the wheat meal is mixed with rye, barley or oatmeal. Brown bread is considered to be much more nutritious and wholesome than ordinary white bread.

In times of scarcity, bread is liable to adulteration with flour from potatoes, beans, or with rice and other cheap grains. So far as the health of the consumer is concerned, such adulterations cannot be very injurious, and the deleterious additions to flour of plaster-of-Paris, chalk, etc., are now scarcely ever heard of. During times of plenty—like the present—almost the only adulteration of bread, and that chiefly of the lighter and finer kinds, is with alum, indeed, the "'Lancet' Sanitary Commission," in England, recently found this to be the only adulteration practised at the present time by those bakers whose bread they examined. The addition cannot be looked upon as harmless, if for no other reason than the constipating effects it must exert upon the consumers. A certain proportion of bread should form an addition to every meal, with those whose digestion is at all weak. It must not be new; fatal accidents have occurred from the distention of the stomach by an excessive meal of newly-baked bread. Sour bread is, of course, most unwholesome. A great mistake is often made in feeding young infants upon bread in various forms; it always occasions disorder, griping, and flatulence. If circumstances render it necessary that bread must be given, it should, at all events, be slowly toasted or re-baked hard, throughout, and then well soaked. (See FLOUR, COOKERY FOR THE SICK, FOOD, STARCH; BREAD, AERATED; DIET.)

BREAD, AERATED, *bred, a'-e-ra-ted.* There exist in most of our large towns manufactories for the production of this form of bread. Being very light, it is in many respects a wholesome and agreeable article of diet, and is found to agree better with some persons than bread made in the ordinary way. The chief objection brought against it is a tendency to become disagreeably dry.

The process for aerated bread, which was first proposed by Dr. Dauglish, consists in preparing the dough with water which has been fully impregnated with carbonic acid gas. This is done under pressure in air-tight receptacles, and when the pressure is removed, of course, the gas expands the dough which it has been the means of forming; in fact, the dough effervesces, and the "sponge," as the dough is called, in this case is formed instantaneously, instead of, as under the old mode, by the slow extrication of carbonic acid gas, formed at the expense of a portion of the flour, which was thus altogether lost.

Bread made in the usual way, with yeast or leaven, has the first principles of fermentation, decomposition, and putrescence commenced in it, and when taken into a stomach in which, from disease or the weakness of infancy, the gastric juices are not sufficiently powerful to arrest the fermentive process, it becomes a source of discomfort, flatulence, diarrhœa, etc. On the contrary, the aerated bread, being vesiculated or lightened by the mechanical action of the fixed air or carbonic acid gas, has none of the putrefactive elements in its composition. It is therefore easily digested and assimilated, and may even be eaten quite new by the dyspeptic without his feeling any of the discomfort which new leavened bread generally produces on all but the most vigorous stomachs.

The aerated bread has a like salutary effect on infants when they are obliged to be brought up wholly or partially by hand. The aerated bread forms a soft, jelly-like compound, when mixed with milk and water, which is easily sucked through the tube of a common feeding-bottle, and with a little fine sugar makes a food of which infants grow very fond.

It may be stated that it is more economical to bake bread at home, provided the flour can be obtained of the best quality, and the baking arrangements are such as to secure the production of good bread on every occasion.

Brown bread, now so largely used, especially by those of a costive habit of body, is made of wheat flour ground coarsely, and wholly or partially left dressed, or of a mixture of this with rye, barley or oatmeal. (See BREAD, FOOD.)

BREAD, BROWN. (See Bread; Bread, Aerated.)

BREAD POULTICE, *bred pōl'-tis*, is thus directed to be made: Put ½ pint of water into a basin, add as much crumb of bread as the water will cover, then place a plate over the basin and let it remain for about ten minutes. Stir the bread about in the water, or if necessary, chop it a little with a knife, and drain off the water by holding the knife on the top of the basin, but do not press the bread; then take it out lightly and spread it about a third of an inch thick on some linen, and lay it on the part. It is an excellent application to burns, scalds, excoriations, ulcers, abscesses, etc. (See Poultice.)

BREAKFAST, *brek'-fast*, the first morning meal, is to the strong and healthy a most enjoyable one, and it may always be taken as one of the best signs of health when a man can eat and digest a good breakfast, especially after exercise. The circumstance that the strong and healthy can enjoy with impunity a full breakfast, has given an erroneous idea as to the advisability of invalids making it a hearty meal, and still worse, of prefacing it by exercise. With very many, perhaps the majority of people in this country, especially in towns, the interval between rising and breakfast is not one of great vigor; the powers both of body and mind are undoubtedly recruited if there has been due rest, but they are not in full action, and if, injudiciously, too long an interval is permitted to elapse before food is taken, they become exhausted, and still more so if physical exertion is engaged in. Instead of, as is too frequently supposed, the exertion improving the digestive power, it weakens it; appetite there may be, but digestion will, in a weak individual, be sadly deficient; the nervous power which should aid the process, has been used up. The very same deficiency of nervous power renders a full breakfast, under any circumstances, inadmissible for those of weak digestion; instead of giving strength, it causes discomfort and inaptitude for business for the first hours of the forenoon. Thus it is, why it speaks well for the health and constitution of the individual who can make the first meal of the morning a hearty one.

It would, perhaps, be difficult to find a custom more suited to the present state of civilized life, than warm tea, coffee, or cocoa to breakfast, taken along with bread, and if it agrees, with the addition of meat, fish, or egg; it just affords the gentle stimulation which the system requires. The amount and nature of the nourishment taken at breakfast must vary, of course, with the habits and powers of the individual; if digestion is weak, it is better to be content with little, and wait for an early luncheon. Some dyspeptics can scarcely take any kind of food at the morning meal without its disagreeing; such will sometimes find it of advantage, when it can be done, to have a small cup of hot coffee, or of some warm fluid, brought to them just before rising; with others, a very light supper, just before going to bed, a soda biscuit or piece of toast, and where much debility exists, a little wine and water with soda biscuit before retiring, will relieve the weakness in the morning. Above all, it should be kept in mind by those with whom breakfast is apt to disagree, that exhaustion of any kind before the meal, such as walking, gardening, bathing, or even cold sponging, are almost certainly injurious. As a breakfast for children, bread and milk is better than the stimulants, tea and coffee; for strong children, nothing is better than oatmeal porridge, as used in Scotland and northern England. (See DIGESTION, DYSPEPSIA, FOOD, REGIMEN, DIET, COOKERY FOR THE SICK, MEALS, LUNCHEON, DINNER, SUPPER.)

BREAST, *brest* [Sax. *breost*], in Anatomy, is a term applied to the whole of the anterior part of the thorax. In a more restricted sense it is applied to the two globular fleshy protuberances adhering to the anterior and internal regions of the thorax of females, and containing the mammary or lacteal glands. On the middle of each breast is a projecting portion termed the *papilla* or nipple, in which the excretory ducts of the glands terminate, and around which is a colored orb or disc called the *areola*. The use of the breasts is to secrete milk for the nourishment of the newly-born infant. They are composed of common integuments and adipose tissue, in which are lodged numerous ducts radiating from the nipple, and afterwards dividing and subdividing into branches and twigs until they terminate in very minute vessels. The enlargement of the breast is one of the signs of womanhood. Their fullest development commences in the earlier stages of pregnancy, and they continue to increase in size until about the time of delivery, when they are filled with the lacteal fluid, which passes readily on suction into the mouth of the child.

*Diseases.*—The breasts of females are subject to a variety of disorders, one of the most common of which is inflammation. It may be produced by various causes, as a blow, exposure to cold or wet, great mental excitement, excessive accumulation of milk, or undue pressure on the parts. It occurs most frequently within the first three months after parturition, and is characterized by great heat, pain, redness, and swelling of the breasts. The pain is intense, and of a throbbing nature, and often extends to the axillary glands. The breasts become tense, heavy, and painful to the touch; and there is high inflammatory fever.

*Treatment.*—The treatment consists in the application of leeches and warm fomentations to the part, and the administration of purgatives. If the inflammation do not subside in a few days, suppuration may be expected. In general, the abscess may be left to nature; but when it occasions much pain, it is advisable to get rid of it by a free incision. Chronic inflammation sometimes seats in the breast, in which case stimulant applications will be found useful. Where this is attended with abscess, it should be opened, so as to give free exit to the pus, and pressure applied to the part. The breast is also subject to various kinds of tumors, some of which may be got rid of by simple pressure, and attendance to the general health. When large or painful, a few leeches may be applied, or a belladonna plaster. Cinchona bark, with iodide of potassium, is useful in restoring the general health. Some of these tumors very much resemble cancer, and, doubtless, many of the cures of cancer that we see advertised by quacks are simply tumors of this class. In general it is not necessary, and may be highly injudicious, to extirpate these tumors. In many cases they remain stationary after reaching a certain stage; in others, they, after a time, disappear. Sometimes some of the lactiferous ducts are blocked up, producing an enlargement termed lacteal tumor. It is to be remedied by puncturing the duct, and keeping it open for some time. Occasionally great pain and uneasiness are felt in the breast from sympathy with other parts of the system. There is no inflammation, swelling, or external alteration of the breast, and yet the pain is sometimes excessive, usually intermittent. In this case the general health is chiefly to be looked after. Women are frequently subject to sore nipples after childbirth, occasioning great pain. In such cases care is to be taken to keep the nipples as dry as possible, and an application of glycerine is generally found useful. Nipple-shields of ivory or glass, with india-rubber teats, should also be used when the nipples are too tender to bear the application of the child's mouth. For cancer of the breast, refer to CANCER. (See NIPPLES.)

BREAST-BONE. (See STERNUM.)

BREAST PANG, OR ANGINA PECTORIS. (See ANGINA PECTORIS.)

BREATH, *breth* [Sax. *breath*], is the air which is inhaled and expelled in respiration. (See RESPIRATION.) Much can be gathered by the skilful physician as to the condition of the internal organs from the manner of breathing—if it be short and rapid, slow and labored, painful, etc. Fetid, or offensive breath, to which some people are subject, may arise from a variety of causes, and is to be treated in as many different ways. Sometimes it is owing to a deranged state of the digestive organs, and in this case purgatives and tonics are to be administered. Occasionally it arises from a diseased condition of parts about the mouth and nose, as decayed teeth, or morbid secretions about the tonsils. In such cases, the teeth should be frequently cleaned, and the mouth should be washed with a weak solution of chloride of lime, or soda, or what is better, a solution of chlorate of potash, 1 ounce to a pint of water. Inhalation of steam from hot water, into which some creosote has been dropped, is recommended in cases in which the cause resides in the nose and respiratory passages. The injection of a lotion of sulphate of zinc or copper, by means of a syringe, into the nostrils will frequently be of use when the disorder has its seat there. (See OZÆNA.) Fetid breath may also arise from a diseased state of the lungs. Where it cannot be remedied, it will be well for the patient to chew a little cinnamon occasionally, or take some of the aromatic pills prepared for the purpose. (See DYSPEPSIA, TEETH.)

BRIGHT'S DISEASE, OR GRANULAR DISEASE OF THE KIDNEYS, *brites diz-eez'* [*Albuminuria*]. Bright's disease, or granular disease of the kidneys, is a particular disease of the kidneys, named after the late Dr. Bright, who first pointed out its nature and character in 1837.

*Causes.*—This disease may be occasioned by severe cold, repressed perspiration, or immoderate use of ardent spirits; and it not uncommonly follows scarlet fever. It may likewise be hereditary.

*Symptoms.*—It is characterized by gradually increasing debility, with shortness of breath, headache, drowsiness, pallor, and usually puffiness of the face, a frequent disposition to make water, dyspepsia, flatulent distension, with attacks of nausea and vomiting. There is also a remarkable tendency in this disease to an inflammatory or congestive state of other important organs; and hence bronchitis, phthisis, coma, convulsions or apoplexy, not unfrequently occur during its progress. The heart, too, may become implicated, and dropsy almost always occurs sooner or later. It essentially consists in a degeneration of the tissues of the kidneys into fat, by which their secreting powers are impaired, and the urea which should be separated from the blood is retained, while the albumen, which is the great agent of nutrition in the system, passes off in the urine. Hence, the existence of albumen in the urine is the distinguishing characteristic of this disease, and is readily detected by its coagulating on the application of heat. Healthy urine contains no albumen; hence, the blood in this disease is poor, thin, and watery, containing much less albumen and fewer red corpuscles than in health. Indeed, there is no disease that so closely approaches hæmorrhage in its powers of impoverishing the blood, and exhausting its red corpuscles. Hence arises that peculiar aspect which so strongly characterizes this complaint. Besides this impoverishment of the blood from the impaired action of the kidneys, it retains more or less of its urinous excrement, and at length the body is poisoned by the retention of its own excrement.

*Treatment.*—In the treatment of this disease the diet should be well regulated, and intoxicating drinks, sugar, starch, and fatty substances, abstained from. The secretive action of the skin should be promoted by means of the warm bath, warm clothing, warm atmosphere, and diaphoretics, as Dover's powder. Flannel should be worn next the skin, and exercise, change of air, and sea voyages, are recommended. Cupping over the loins and warm fomentations are useful in counteracting the more acute forms of this disease. It is necessary also to stimulate the action of the kidneys by diuretics, the most valuable of which is said to be the bitartrate of potass, or cream of tartar. The bowels should be kept in a relaxed state by the frequent administration of aperients. (See MICROSCOPE.)

BRIMSTONE. (See SULPHUR.)

BROCCOLI, *brok'-o-le* [Ital., sprouts], the name given to one of the many cultivated varieties of the *Brassica aleracea.* It is a common garden vegetable, and differs from the cauliflower only in having colored instead of white heads. (See BRASSICA.)

BROILING, *broil'-ing*, is, perhaps, the most primitive method of cooking; the savage puts his piece of flesh or his fish upon the burning coals and broils it. In civilized life, the gridiron is made the medium for the process. The principle involved in broiling is, that by sudden exposure to the fire, the outer portions of the meat are so hardened that they retain the juices of the inner, during the process of cooking. This is still more fully effected, by brushing over the surface of the meat with white of egg before putting on the fire. Broiling is not so well adapted for weak stomachs as either roasting or boiling; but meat cooked in this way is very nutritious. (See BOILING, ROASTING.)

BROKEN BONES. (See FRACTURES.)

BROMIC ACID, *bro'-mik*, symbol $BrO_5$, equivalent 120, the only known compound of bromine and oxygen. It corresponds in composition to chloric acid, but has never been obtained in an anhydrous condition. In combination with water it forms a colorless liquid, which first reddens and then bleaches litmus. With bases it forms bromates, which are similar in their properties to chlorates.

BROMIDE OF POTASSIUM. (See POTASSIUM.)

BROMINE, *bro'-mine* [Gr. *bromos*, a stench], symbol Br, equivalent 80, specific gravity 2.966. Bromine is an elementary substance, consisting of a heavy mobile fluid of a deep brownish-red color. It was discovered in 1826, by Balard, in minute quantities in sea-water, in which it exists as bromide of magnesium. It also occurs in a native bromide of silver found in Chili, and in union with various alkalies in certain mineral waters. When exposed to the air, it volatilizes rapidly, and boils at 145° Fahr. Its smell is disagreeably pungent, giving rise to a painful spasm of the glottis, if breathed. It acts energetically on the skin, producing a sore immediately on contact. At 7° Fahr. it solidifies into a yellowish-brown crystalline mass. Bromine is the only element that is liquid at ordinary temperatures, except mercury. The properties of bromine resemble those of chlorine; but they are somewhat less strongly developed. It bleaches vegetable color, and is a non-supporter of combustion. It is slightly soluble in water, giving to it a yellow color. It combines with water and forms a hydrate, which crystallizes at 32° Fahr. The principle compounds of bromine are hydrobromic acid, a compound of one equivalent each of hydrogen and bromine. With oxygen, bromine forms only one compound, bromic acid. With chlorine, bromine forms a chloride, a reddish-yellow volatile liquid, soluble in water, and possessing bleaching properties. Bromide of potassium is used in medicine, being similar in its action to iodide of potassium. It is given in enlargement of the spleen and liver, and swellings of the lymphatic glands. It is also said to possess peculiar narcotic and anæsthetic powers, and is used in hysteria, epilepsy, etc. Dose, 5 to 30 grains, three times a day.

BROMO-CHLORALUM, *bro'-mo-klo'-ra-lum*, is a concentrated solution of aluminium chloride and bromide, is inodorous and nonpoisonous, a deodorizer and disinfectant, and is entirely harmless and safe. In contact with fermented, decomposed or fœtid matter, it promptly absorbs and decomposes all ammoniacal and noxious gases, and renders the atmosphere and surrounding objects sweet and wholesome.

A striking merit of bromo-chloralum is that it operates by removal and not by creating an odor greater than the one sought to be removed, and can be applied in the most simple manner, diluting it according to the object or locality to be purified. Indeed, one great element of its successful operation is the capacity of free diffusion, causing it to affect and purify the air as well as the walls, ceilings and floors.

In small-pox, patients feel much comfort from the use of a dilution of 1 part to 12 or 16 of water as a wash; it seems to lessen the itching, and cools them nicely by neutralizing the poison. Cloths well moistened and hung in the room and around the patient, absorb all the odor present in such cases, and prevent contagion. Attendants should wash themselves with a dilution, and also use a similar dilution as a wash for the mouth and throat.

In typhoid and scarlet fever, and all contagious diseases, use 1 part to 6 or 10 of water as a wash to neutralize fever poison. Saturate cloths and suspend in the room; use freely on all bedding and in the chamber utensils.

For diphtheria and sore throat, use as a gargle, 1 part to 10 of water, or stronger according to circumstances. For hospital use, also, it has been proven very useful for various purposes, among others, as a wash for offensive sores and ulcers, sloughing gangrene, cancers and offensive discharges of all kinds; also for disinfecting clothes and bed clothing, bedding, and for general deodorant and disinfecting purposes. In the sick chamber it can be used with perfect safety—when the air is impregnated with the unwholesome odors which the patient is obliged to repeatedly inhale, cloths wet with a dilution of 1 part to 8, should be suspended in the room to absorb the noxious odors. A small quantity should be placed in all chamber utensils, before use, diluted 1 part to 8 of water. It will deodorize and disinfect instantly and completely—thus preventing all danger of contagion therefrom. It has also proven effective in preserving a corpse beyond the time they can ordinarily be kept, even in cool weather. Two or three folds of cloth laid over the face, or any part of the body, and kept moist, will prevent any noticeable change for several days, and preserve the features in a remarkable manner. By injecting it undiluted, immediately after death, in the various orifices of the body and then closing them with cotton, it will act as a thorough antiseptic, rendering the use of ice to preserve the body until burial unnecessary.

For all sanitary purposes, whether in private families or for hygienic public uses, it is unsurpassed in efficacy. The great advantage it has over other preparations designed for the same purposes is, that while its efficacy is greater, the objections to it are less, on account of its non-irritating, non-corrosive, and odorless qualities. Bromo-chloralum works by diffusion and contact; the dilution should in all cases be 1 part to 6 of water. (See DISINFECTANTS.)

BRONCHI, *bron'-ki* [Gr. *bronchos*, the windpipe], the name given to the subdivisions of the trachea, or windpipe, which proceed to the lungs. The trachea divides into the two bronchi opposite the third dorsal vertebra. The right bronchus is larger than the left, and is shorter, reaching the lung on a line with the fourth dorsal vertebra. The left bronchus passes under the arch of the aorta. The structure of the bronchi is similar to that of the trachea, being round and cartilaginous in front, and fat, with muscular and fibrous tissue, behind. On entering the substance of a lung, the bronchi divide and subdivide into numerous branches, till they terminate in very minute air-cells.

BRONCHITIS, ACUTE, *bron-ki'-tis.* Bronchitis is inflammation of the membrane lining the air tubes, or bronchi. It is one of the most common diseases of this climate. Like all the inflammatory affections of the mucous membrane of the air passages, the disease is very easily excited in most persons; while there are certain individuals who manifest an unusual, some an extreme susceptibility, to become affected by it. The periods of life most obnoxious to bronchitis are childhood, adolescence, and old age, and though it does occur at all ages, the constitutional vigor of adult life appears, from time to time, to act in enabling the individual to resist the invasion of the disease. No disease varies more in its degrees of severity than bronchitis; it may assume a very simple and easily manageable form, and on the other hand, it may appear as a very formidable ailment, showing little amenability to treatment; in early and very advanced life it is most apt to assume this severe character.

*Causes.*—Acute bronchitis may be brought on by the action of cold, by the inhalation of chemical and mechanical irritants, by the obstruction offered to the circulation by disease of the heart, and it occurs in many cases in which there is some morbid condition of the blood, as in the course of Bright's disease, typhus and typhoid fevers, measles, scarlatina, and small-pox. It is very fatal to old people and young children.

*Symptoms.*—It usually affects both lungs and their lower parts, it is attended with chilliness, sore throat, hoarseness, shivering, constriction and tightness across the chest, harassing cough with expectoration in the earlier stage of a thin, frothy, serous fluid, and in the latter of a more opaque, yellow, viscid, puriform secretion, which is generally more or less streaked with blood. The breathing is short, difficult, and laborious, the skin is hot, the pulse quick, and there is headache, and a general feeling of lassitude; this disease, although much more serious in its nature than catarrh, runs through exactly the same phases as that affection is described as doing. The aid of a medical man should be sought early in this disease, as it often runs a very rapid course, and he will be able by his stethoscope and a well-trained ear, to diagnose the exact stage at which the disease has arrived, and to prescribe remedies accordingly.

*Treatment.*—The rapid progress which this disease sometimes makes, from its commencement to a fatal termination, renders the sending for medical assistance as quickly as possible, an imperative duty; but the same reason renders it important that those around should be aware of the best method of treatment. Confinement to bed is a matter of course; but foot-baths, hot bran poultices to the chest, and warm diluent drinks, are all serviceable. In a person of full habit, from eight to twelve leeches may be applied to the chest, or five or six ounces of blood taken from between the shoulders by cupping; but the chief dependence is to be placed upon nauseant medicines, and ipecacuanha is the best and safest; 4 grains should be given in a little water every twenty minutes, till free vomiting is produced. The skin and mucous membrane of the affected tubes should be acted upon as soon as possible, and this may be accomplished by the following:

| | |
|---|---|
| Take of Tartar emetic | Two grains. |
| Nitrate of potash | Half a dram. |
| Bicarbonate of potash | One dram. |
| Pure water | Eight ounces.—*Mix.* |

Give 2 tablespoonfuls every three or four hours.

After the action of the emetic, the bowels should be relieved by the administration of a large tablespoonful of castor-oil. In the event of symptoms of collapse, or sinking coming on before the arrival of medical assistance, it will be necessary to stop the nauseating treatment, and to give stimulants, such as 5 grains of carbonate of ammonia, in 3 tablespoonfuls of water, every half hour or hour; or 1 teaspoonful of salvolatile may be given instead, in the same quantity of water, and at the same intervals. If these stimuli are not to be procured, the most readily obtainable alcoholic stimulant must be substituted; but ammonia is always preferable; the strength must at the same time be sustained by tablespoonfuls of strong meat broth frequently given. When the urgency of the attack has yielded under the use of the nauseant and emetic systems, the severity of the treatment may be relaxed, and the following substituted:

| | |
|---|---|
| Take of Powdered ipecac | Five grains. |
| Spirit of mindererus | One and a half ounces. |
| Carbonate of potash | One dram. |
| Pure water | Six and a half ounces.—*Mix.* |

Give 2 tablespoonfuls every four hours.

When there is much accumulation of secretion in the lungs, and the breathing is very laborious, an emetic of sulphate of zinc will be found useful:

| | |
|---|---|
| Take of Sulphate of zinc | Twenty grains. |
| Water | Two ounces.—*Mix.* |

Stimulants in the form of brandy and wine will be necessary, and the patient's strength must be nurtured by strong beef-tea, given every hour or two.

When the disease is still further advanced, and the patient is bathed in profuse perspiration, and the viscid secretion is discharged in large quantities, the following will be found useful:

| | |
|---|---|
| Take of Sulphate of iron | Fifteen grains. |
| Sulphate of quinine | Twenty grains. |
| Dilute sulphuric acid | One and a half drams. |
| Pure water | Half a pint.—*Mix.* |

Give 2 tablespoonfuls every four hours.

Opium must be given with great caution in this disease, for in severe cases respiration is but imperfectly performed, and the patient is partially narcotized by the retention of carbonic acid in the system, and by the addition to this of the soporific influence of the drug, he may be sent into a deep sleep from which he may never awake. When the lips and cheeks are blue, on account of the circulation of improperly oxygenized blood, it ought on no account to be given.

The acute bronchitis of children is not usually so rapid and strongly marked a disease as that just described; it often begins with the irritation of the membrane of the nose and eyes, and extends itself into the chest. Languor, succeeded by fever, oppressed and quickened respiration, and cough, are the usual symptoms. If these set in severely, from one to four leeches, according to the age of the child, may in an early stage of the disease be applied to the chest; but here, as in the adult, the chief dependence must be on ipecacuanha, ½ a grain to 1 grain, or more; or syrup of ipecac, ½ to 1 teaspoonful doses, frequently repeated so as to cause occasional vomiting. Bran poultices ought to be used to the chest. The warm bath may be useful in the first stage of depression; but when fever is high, it is not advisable. If the child is unweaned, it must not be allowed to suck, either from the breast or bottle, during a severe attack of bronchitis, but ought to be fed with the breast milk, or its usual food, by means of a spoon. The bowels, of course, will require attention. It is of the greatest importance to attend to the atmosphere surrounding either child or adult suffering from bronchitis; the chamber should be well ventilated, and the temperature not suffered to fall below 55° Fahr. In the latter stages of infantile bronchitis, a small blister about the size of half a dollar, applied for a few hours to the fore part of the chest, may give relief. Bronchitis in children is so hazardous, and frequently fatal a disease, that its domestic treatment ought never to be undertaken, except under necessity. Its exciting cause is almost invariably cold and moisture, particularly during the prevalence of east wind in the spring months; whilst careless and insufficient clothing amongst the poor, and absurd modes of dressing amid the higher classes, render children more susceptible of these injurious influences.

The bronchitic attacks of the aged are always to be regarded with serious attention; what in youth might be but a slight cold, may now be a fatal disease; this arises partly from the viscid nature of the secreted mucus, but more especially from the inability of persons advanced in life to expectorate it; accumulation of phlegm takes place in the bronchial tubes, the oxygenation of the blood is interfered with, torpidity of the vital functions ensues, and adds to the already existing inability to free the lungs, and death quickly takes place, often unexpectedly sudden.

For the above reasons, colds in old people must always be watched; all lowering measures must be avoided, the diet kept nourishing, and the medicines be stimulant expectorants. Opium should not be ventured on without medical sanction; the compound squill pill in doses of 5 grains every six hours, is useful. Camphor, in the form of julep, carbonate of ammonia, in 5 grain doses, and sal-volatile, in ½ teaspoonful doses, are frequently required. The inhalation of steam will assist the expectoration of viscid mucus. (See BRONCHITIS, CHRONIC; CATARRH OR COMMON COLD, STETHOSCOPE, BRAN, CUPPING, IPECACUANHA, ETC.)

BRONCHITIS, CHRONIC. Chronic inflammation of the bronchial tubes is very common in persons advanced in years, it is often a sequel of the acute form, but seldom follows the first attack, the patient having in all probability had attacks of cough and catarrh during several preceding winters. In the summer time he is, comparatively speaking, well, suffering only from shortness of breath. It is accompanied by habitual cough, difficult respiration, and expectoration of a scanty, viscid, gray, frothy secretion, sometimes streaked with blood, or it may be viscid, yellow, opaque, and purulent.

*Causes.*—It is often the result of exposure to cold, intemperate habits, and unhealthy employment, such as manufacturing needles, pottery, and cutlery, which give rise to the diffusion of dust and grit through the air, which being brought into contact with the mucous membrane give rise to inflammation, and all the above detailed symptoms of chronic bronchitis. In some few cases it is the result of disease in the organs of circulation.

*Treatment.*—Chronic bronchitis must be treated by stimulating expectorants.

Take of Carbonate of ammonia...........Sixteen grains.
Decoction of senegal.............Eight ounces.—*Mix.*

Let 2 tablespoonfuls be taken three times a day. Or,

Take of Compound tincture of benzoin....Three drams.
Carbonate of ammonia............Eighteen grains.
Mucilage of gum Arabic..........Six ounces.—*Mix.*

Let 2 tablespoonfuls be taken every six hours.

In some cases in which the patient is much debilitated, tonics are needed.

Take of Ammonia-citrate of iron..........One dram.
Compound spirits of ammonia....One and a half drams.
Pure water.......................Eight ounces.—*Mix.*

Let 2 tablespoonfuls be taken three times a day.

If the secretion from the inflamed tubes be profuse, sulphate of iron with dilute sulphuric acid should be given.

| | |
|---|---|
| Take of Sulphate of iron | Fifteen grains. |
| Sulphate of quinine | Twelve grains. |
| Dilute sulphuric acid | One dram. |
| Distilled water | Half a pint.—*Mix* |

Let 2 tablespoonfuls be taken three times a day.

His diet must be liberal, and if much depression be present wine and brandy should be freely given. Urgent symptoms may be relieved by the application of mustard poultices, turpentine fomentations, blisters, or dry cupping to the chest.

*Preventive treatment.*—This consists in protection of the skin generally, particularly that of the chest; flannel worn next it, being the most important. The feet are to be well protected from damp and cold by thick, cork-soled shoes; warming the air before its reception into the lungs, by means of one of the various respirators now in use, is a very wise precaution on the part of those in whom the tendency is toward this form of disease. The slightest cold should be promptly attended to, as many a serious and fatal case of bronchitis has had its origin in that trivial thing, a "cold in the head." A damp atmosphere, night air, easterly winds, indigestible food, and costive bowels, are the natural enemies of the person disposed to bronchitis. People with this tendency, whose occupation leads them where they necessarily inhale dust or hot irritating gases, if they wish to prolong their days, should at once change their mode of living, or if this is not possible, guard against trouble by constantly wearing a respirator. (See BRONCHITIS, ACUTE; CUPPING, CATARRH OR COMMON COLD, RESPIRATION.)

BRONCHOCELE. (See GOITRE.)

BRONCHOPHONY, *bron-kof'-o-ne.* The sound of the voice as heard by applying the stethoscope over a large bronchial tube. (See AUSCULTATION.)

BRONCHOTOMY. (See TRACHEOTOMY.)

BRONZED SKIN. (See ADDISON'S DISEASE.)

BROOM. (See CYTISUS SCOPARIUS.)

BROTH, *brawth*, is the decoction obtained from animal substances, and, when made for the sick, must, of course, be varied in strength, according to the state of the patient. It is best made by putting the article from which it is to be formed into the quantity of cold water requisite, and keeping the whole at a heat somewhat short of boiling, for many hours; it should then be allowed to become cold and the fat skimmed off. In cases of diarrhœa, broth, in quantity, is apt to increase the tendency, but it is at the same time extremely beneficial, if properly managed; in such cases, it is best made from veal or fowl, and thickened with rice—which may be strained off—and gelatine; and it must be given in small quantities only at a time. In Scotland, by broth is meant the decoction from meat, boiled with pearl barley, and a good proportion of vegetables; it is a much used and wholesome article of diet, and might, with advantage, form an addition to the fare of Americans. To be wholesome it must be thoroughly boiled. (See BEEF, BEEF-TEA, MUTTON, VEAL, POULTRY, ETC.)

BROW AGUE. (See HEMICRANIA.)

BRUCIA, OR BRUCINE, *broo'-she-a*, an alkaloid occurring in large quantities in conjunction with strychnia in the *strychnos nux vomica*. It is less marked in its properties than strychnia, which it closely resembles. It crystallizes in colorless, transparent, rhombic prisms, which are insoluble in ether. Its poisonous properties are less active than those of strychnia. (See STRYCHNIA, STRYCHNOS NUX VOMICA.)

BRUCINE. (See BRUCIA.)

BRUISES AND CONTUSIONS, *brooz'-ez and kon-tu'-zhunz*, are the effects of external violence applied to the body, and may be simple, or complicated with wounds of the skin. The effects of bruises depend of course, greatly, upon their situation, and the possibility of the violence which produced them having injured important parts, this being more likely to happen when the contusion affects the head, neck, or trunk. The first effect of a bruise, is to cause effusion of blood, more or less, within the textures injured; on the head this is very evident from the large tumor which will often rise immediately after a blow;—a black eye renders the effused blood visible. Blood effused, as the result of a bruise, does not remain in one spot, but diffuses itself through the loose surrounding textures, and causes discolorations to appear at a distance from the bruise, days after the receipt of the injury. The changes in color, from black or blue to greenish yellow, etc., which take place during the recovery after a bruise, and which are probably caused by the mode of absorption of the effused blood, are too well known to require description. After bruises of the abdomen, particular attention should be directed to detect the occurrence of blood, either in the stools or urine; if a medical man is called in, it is highly important for him to have information on these points. In bruises of the surface generally, the best and most agreeable application is lint soaked in cold water, or in a cold lotion made with ½ an ounce of tincture of arnica to the pint of water. After the lapse of five or six hours, hot applications—poultices—will be most required. If heat be used too soon, it may tend to increase the effusion of blood, which the cold checks. The same treatment may be followed, whether the bruise is simple, or complicated with a wound. It is a frequent error, popularly, to apply leeches immediately after a bruise, when they cannot possibly be of service, they cannot remove the blood which is effused, and are only useful in the event of inflammation succeeding the injury. After pain and inflammation, in a bruise, have subsided, simple water-dressing may be substituted for the poultices for a few days, and after that, should discolored swelling remain, friction with soap-liniment will hasten its removal. A severe bruise may run on to the formation of an abscess, or end in mortification of the part. In either case, the effect is known by the supervention of the usual symptoms attendant on these processes, and must be treated accordingly. Severe bruise of a bone is liable to be followed by death and separation of the injured part. For a slight bruise, as a black eye, the application of a little whiskey, brandy, or spirits of wine, will often prevent the effusion of blood or discoloration. (See Abscess, Concussion, Mortification, Wounds, Accidents.)

BRYONIA, *bri-o'-ne-a* [Gr. *bruo*, I sprout], in Botany, a genus of plants belonging to the Nat. order *Cucurbitaceæ.* The most interesting species is *B. dioca*, the red-berried bryony, or wild vine, a perennial, growing in hedges and thickets, and blossoming during the month of May. The flowers are yellowish-white, with green streaks, and are diœcious; that is, the male and female flowers are borne by distinct plants. The stems are put forth annually, and climb by means of tendrils. The root is large, white, and is sold by herbalists under the name of white bryony and mandrake-root. The root contains a peculiar bitter principle, termed *Bryonin.* It is a violent emetic and purgative, and is highly poisonous, giving rise to symptoms much resembling those of cholera. It is stated to be frequently used by quack doctors, and is employed as a topical application to bruises.

BUBO, *bu-bo* [Gr. *boubon*, the groin]. A venereal swelling of one of the external glands of the body, generally in the groins, or under the arms.

*Cause.*—The absorption of the poison of syphilitic ulcers.

*Symptoms.*—Begins with pain and soreness, succeeded by a hard swelling, at first not larger than a bean, but becoming as large as a goose-egg. A bubo sometimes subsides without suppuration, but generally the swelling becomes red, marked by acute, throbbing pain, and the formation of matter. Care must be taken not to mistake it for a rupture, aneurism, or lumbar abscess.

*Treatment.*—The first object is to try and disperse the swelling. This may sometimes be accomplished by the application of four or five leeches, followed by a saturated solution of lead-water. 1 tablespoonful of sugar of lead to 1 pint of soft-water, and a dose of salts daily, for three or four days. A piece of mercurial ointment the size of a bean should be rubbed into the swelling every night until it disappears, or a coppery taste is found in the mouth, when it should be discontinued. If the bubo fails to be dispersed in this way, poultices of bread and milk, or flax-seed, should be applied warm, and as soon as matter forms it should be evacuated with the lancet. In scrofulous constitutions the ulcers remaining are sometimes difficult to heal. They should be washed twice a day with carbolic acid and glycerine washes, 1 dram of the acid to 1 ounce of glycerine, in ½ pint of water; a decoction of wild indigo root sometimes answers better. At the same time the system must be supported by a nourishing diet, and the administration of 2 or 3 grains of quinine three times a day. (See SYPHILIS.)

BUBONOCELE. (See RUPTURE.)

BUCHU. (See BAROSMA.)

BUCHU COMPOUND, *bu'-ku kom'-pound.* This combination of buchu, juniper berries, uva ursi, and cubebs, has been employed with decided success in diseases of the urinary organs to which it has a peculiar and specific direction. It may be used in cases when buchu alone would be used to arrest excessive discharges from the urethra; in the treatment of gonorrhœa and gleet, in chronic bronchial inflammation, in ulcerations of the kidneys, bladder, and urinary passages, forming an agreeable and safe remedy in these complaints. Dose, fluid extract, buchu compound, ¼ to 2 teaspoonfuls, to be taken three or four times a day. (See BAROSMA.)

BUCK-BEAN, *buk'-bene,* is one of the most beautiful of our marsh plants. It bears a trefoil leaf, and flowers in June. The blossoms are white and feathery-looking, with a tinge of pink. The leaves of the buck-bean are powerfully bitter, and might, perhaps, be more generally used as a tonic than they are at present. The infusion may be made with 1 ounce of dried leaves to 1 pint of water. Dose, 1 to 2 ounces, three times a day.

BUCKEYE BARK, *buk'-i* [*Æsculus Glabra*], used in congestion of the liver and womb, piles and habitual constipation. Dose, of the fluid extract, from ½ to 1 teaspoonful.

BUCK-THORN. (See RHAMNUS CATHARTICUS.)

BUCKWHEAT. (See FAGOPYRUM.)

BUFF, OR BUFFY COAT, *buf,* in Medicine, is a light yellow, or buff-colored viscid substance, which is formed on the surface of blood drawn in certain states of disease. Its presence has been frequently regarded as a sign of existing inflammation, but this is very far from being correct, as it may result from an opposite condition. It merely indicates that there is an alteration in the relative proportions of the fibrin and the red particles, an excess of the former, which may be owing to a decrease of the latter, as well as to an increase of the other.

BUGLE WEED. (See LYCOPUS VIRGINICUS.)

BUILDING, CHOICE OF SITE. (See HOUSES.)

BULLÆ. (See SKIN, DISEASES OF THE.)

BUNION, *bun'-yun* [Gr. *bounos*, an eminence], is a painful inflammatory swelling of the foot, most commonly about the root of the great toe. The pressure of tight shoes is usually the exciting cause; and, in order to remedy it, all such pressure upon the part should be avoided. Bleeding by leeches, warm fomentations, or poultices, should also be resorted to, in order to remove the inflammation. The swelling may sometimes be considerably reduced by an application of caustic. It should be kept covered with Burgundy pitch, or soap plaster, spread upon soft leather, or a circular piece of the fungus called German tinder.

BURDOCK. (See LAPPA MINOR.)

BURGUNDY PITCH, *bur'-gun-de*, a resinous substance used for making plasters. It is prepared from the resin of the spruce fir (*Abies excelsa*,) by melting it in hot water immediately after it has been scraped from the tree, and then straining it through a cloth.

BURIAL OF DEAD. (See DEATH.)

BURIAL, PREMATURE. (See DEATH.)

BURNETT'S DISINFECTING FLUID, *bur'-nets*, Burnett's solution, or, as it is sometimes called, Sir Wm. Burnett's disinfecting fluid, is one of the cheapest and best liquid disinfectants. It is composed of a solution of chloride of zinc, and, from its cheapness, has been much used in the army and navy. When diluted with water, it may be used to cleanse night-chairs, water-closets, chamber utensils, etc., and is especially useful for this purpose in cases of gastric or enteric, or, as it is often called, typhoid fever, in which the stools are not only offensive, but are the means of conveying to others the contagious poison peculiar to the disease. The solution is so cheap that it may be freely used for the above and for similar purposes. It is not so good for washing the hands as some other disinfecting solutions (Condy's for example,) as it does not form a good lather with soap. It may be used as a stimulant, disinfecting and deodorizing dressing to foul-smelling ulcers and sores, but for such purposes it must be freely diluted, according to the directions which are furnished for its use in the different ways recommended. (See ZINC, DISINFECTANTS.)

BURNS AND SCALDS, *burnz*, are injuries done to the body through excessive heat; burns being produced by fire or heated solids, scalds by heated fluids. Scalds seldom penetrate deeper than the cutis; burns, on the contrary, may penetrate to any depth. Burns are more fatal in the young and old than in those of middle life, and are more dangerous on the head or trunk than on the extremities. A burn affecting an extensive surface is more to be dreaded than one which penetrates deeper without extending over much surface. In the case of burns, the following may be laid down as at once the simplest and the best, as well as the most readily applicable, and the least painful and troublesome method of treatment. Suppose a person, whose clothes have been set on fire, to be badly burned. The clothes should at once be cut off and removed. The patient must, however, be kept warm, as he invariably suffers much from cold and depression soon after a burn. The burned surface should next be smeared over with a feather with some oily substance, it does not much matter what, provided it be fresh. Carron oil is good, if it can be had (*i. e.*, equal parts of olive oil or linseed oil and lime-water.) Next, linen or muslin is to be steeped in this oily substance, and laid over the burned parts. Those parts which are much burned ought to be well protected with this, and finally a layer of cotton wool should be put on and secured by some light turns of bandage. Unless in the case of a slight scald, in spite of all that has been said or written to the contrary, nothing can be more cruel or absurd than to cover burns over with cotton wool, as it sticks to the surface firmly, and becomes saturated with discharge, which adds to the misery and pain of the patient by its unpleasant smell. All attempts to remove the cotton wool, too, cause great pain to the patient, whereas, if the oily dressing recommended above be first applied, both it and the wool may be removed at pleasure, and the dressing changed and renewed as often as may be necessary, or fresh dressings of another kind, or poultices, may be applied, according to the nature and demands of the case.

*In the case of slight burns, and of scalds* generally, quite the best application is the cotton wadding in sheets; it should be at once used to envelope the injured parts, double if possible, and bound or bandaged on with moderate firmness. If this mode of treatment be resorted to within the first twenty minutes after the injury, nothing more need be done; the cotton may be allowed to remain on from twenty-four hours to three or four days, according to the severity of the accident. Under its use blistering rarely occurs, and if it has commenced before the application, it subsides quickly, and painlessly. For the first ten minutes after the cotton dressing is put on, the pain of the injured parts seems increased, but ere long, it diminishes, and the inflamed skin appears to relieve itself by gentle perspiration. In the case above named, when cotton is to be procured—and no house in the country ought to be without one or two sheets of it—it is perfectly unnecessary to use any other measures.

*Spirits, whiskey or brandy, turpentine and other stimulants*, all have their advocates, but the milder methods are preferable, at least domestically. A mixture of oil and lime-water is good, but disagreeable and dirty. A lotion made with 1½ ounces of vinegar to 1 pint of water, may with advantage be kept constantly applied to a burn if it be not extensive—cold water is perhaps the most directly grateful application to a burnt or scalded surface, and if continued sufficiently long, will undoubtedly restore the usual condition of the part, but it must be persevered with for many hours, and when a burn or scald is extensive, this is a serious objection, in consequence of the extreme constitutional depression which so often follows the accident, especially in the young; and here the opportunity is taken, of warning parents of the necessity of watching closely the effects of even slight injuries of this kind upon children, particularly when the chest or abdomen are the seat of the accident; extreme depression—requiring the use of stimulants—may unexpectedly come on, and death, from an apparently very slight cause, be the result. Recently, a solution of the bicarbonate of soda, or common baking soda, has been used with great success in the treatment of burns and scalds. Soft linen cloths saturated with the solution, made by dissolving 1 teaspoonful of the soda in ½ a pint of soft water, are kept constantly applied to the burnt surface, and the relief is said to be almost instantaneous. Kerosene is another article which has been successfully used in the treatment of these accidents. It may be applied freely. Flour dredged over the surface is an admirable remedy, even in slight burns, but is more useful still in those severe effects of heat in which the tissues are deeply destroyed by the action of fire; in such cases, flour applied at once, and repeated again and again for days together, wherever slight moisture seems oozing through the caked covering it forms, is the most generally applicable, pleasant, and safest remedy; a little fresh sweet oil, applied to the surface in the first instance, will make the flour adhere. Whatever application is used in the treatment of a burn, should be calculated to exclude the action of the external air; it ought to be one, also, which does not require frequent changing; indeed, the more extensive the surface involved in the accident, the greater care should be taken not to expose it to atmospheric influence, which, in the first place, increases pain, and in the second, adds to constitutional depression. This depression must always be carefully watched, and combated by the use of ammonia, wine, or spirit, sufficient to support without stimulating. When pain is excessive, and irritating the nervous system, a gentle opiate is required; but in some of the severest burns, the sensation, not only in the injured part, but generally, is either wholly or partially abolished, in consequence of the shock to the nervous system at large. The symptom is of most serious, and indeed fatal import. In the less severe forms of injury from heat, if the cotton, the flour, or cold water, have been properly used, little after-treatment is necessary; but when a burn has been neglected or badly treated, the blisters broken, and when the true skin beneath is inflamed, and secreting matter, a simple tepid bread and water poultice should, in the first place, be applied for six or eight hours, and after it an ointment composed of 1 dram of liquor of lead or goulard water, rubbed up with an ounce of perfectly fresh lard. This ointment spread on linen, quickly relieves the very painful condition of the injured surface, and is often preferable to the lead lotion sometimes used.

In cases of deep burns, with destruction of the tissues, after the flour has been applied some days, it begins to be pushed off by the matter formed underneath, at this time poultices are to be continued until the caked flour is separated, and the surface below exposed, after which the simple dressing with tepid water will generally be the best and safest application, or in a later stage, if healing is slow, the lead ointment above recommended will be found useful.

*During the cure of burns involving contiguous parts*, such as the fingers, care must always be taken to keep the surfaces asunder by the interposed dressings, otherwise they may become united. After extensive burns or scalds, the constitution requires attention; the stimulating treatment of the first few hours or days must be dropped when feverish symptoms come on, and mild and cooling diet, gentle aperients, and cooling saline medicines administered; opium being given if requisite to allay pain or nervous irritation. This system will again require to be changed for one of stronger nourishment; meat soups, meat and wine, or other stimuli, if there is continued discharge. The use of stimulating diet, however, requires caution, on account of the tendency to inflammation of the lining membrane of the stomach and bowels, which exists during convalescence from injury to the skin by heat.

*The frequent occurrence of accidents from burns or scalds*, renders it desirable that all should be aware of the best methods of managing these painful injuries, which, when slight, may be well attended to without the aid of the surgeon; but which, when severe and extensive, and when, in children, the chest and abdomen are involved, ought, without delay to be put under professional care; accidents and symptoms may arise which educated skill alone can foresee or counteract. Scalds of the throat are not unusual accidents to children in consequence of their attempting to drink from the spout of a kettle of boiling water. The injury is imminently dangerous, and when it has occurred, whether alarming symptoms come on at once or not, a surgeon should be summoned; it may probably become necessary very speedily to open the windpipe to save from death by suffocation; and the operation may be resorted to with good hope of success. In the interval, before the arrival of medical aid, leeches, from 2 to 6, according to the age of the child, should be applied to the throat externally, and 2 teaspoonfuls of castor-oil administered at once. If ice is to be procured, it should be constantly put into the mouth in small fragments.

*In managing burns or scalds immediately after their occurrence*, the following should be remembered: To protect from the action of the atmosphere—and the greater the extent injured the more necessary the precaution—to give stimulants or opium cautiously. The remedies—cotton—flour—oil and lime-water—vinegar and water—cold water—bicarbonate of soda—kerosene. (See SKIN; LIME, BURNS FROM; ACCIDENTS.)

BUSINESS, WHEN TO RETIRE FROM. (See OCCUPATION.)

BUTTER, *but'-tur* [Lat. *butyrum*, from Gr. *bous*, a cow, and *turos*, coagulum]. Butter is the fatty part of the milk of animals, separated by the process of churning. Cows' milk is composed of three ingredients, —the cheesy portion, or curd; the whey, or watery part; and the butter. Milk, when examined by the microscope, is found to consist of a number of fatty globules, floating in the whey. These globules, which are little sacs, containing the butter, are broken during the process of churning, which allows the liberated fatty matter to aggregate in small masses, and float on the top of the whey. These are generally united by pressure against the bottom of the churn, and the remaining butter-milk is given as a drink to pigs. The butter is afterwards spread out in a thin layer in a shallow pan, and washed with clear spring water, to free it from any butter-milk that may remain in its pores. It is then salted and formed into rolls, or packed in crocks, if intended to be sold as fresh, but if it is to be kept for any length of time, it is packed in tubs or firkins, for the market. The quality and quantity of butter contained in cows' milk depend materially on the nature of the pasture. Rich natural meadows afford the best food for cows intended to produce butter. Poor pastures are objectionable, not only from the quantity of butter contained in the milk being diminished, but from its receiving an unpleasant taste from certain plants or weeds growing on all unfertile or marshy soil. Butter is adulterated with water, salt, lard, etc. The first may be detected by the wetness of the butter when squeezed, and the last two by small white particles being visible in the newly cut surface of the butter. When fresh, that is, free from rancidity, butter forms a nutritious, it might almost be said instinctive, addition to farinaceous diet. Much has been said, in writings upon diet, respecting the unwholesomeness of butter, and, undoubtedly, in certain states of the system and of the digestive organs, it is so, but for healthy individuals it is the reverse. Butter in some persons, and if immoderately used in all, gives rise to biliary derangement, partly, doubtless, from its furnishing an excess of biliary material, but also from its presence in the stomach, as observed by Dr. Beaumont, causing a flow, or regurgitation of bile into that organ. The above remarks apply to simple butter unspoiled by cookery. When butter is exposed to gentle heat it melts; and under this condition, has obtained a reputation for indigestibility which is due rather to the quantity consumed than to its being merely put in that state which it assumes when it is exposed to the heat of the stomach. The case is very different, however, when butter has been exposed, whether alone, or combined with farinaceous articles, to a high temperature, such as that of an oven; it now becomes altered in character—empyreumatized—and is rendered very indigestible and irritating to the weak stomach. It is for this reason that baked pastry is so much more indigestible than boiled, from the greater heat to which the former is exposed. Butter, when it becomes rancid, contains various acids, which are so unwholesome that they may almost be ranked as poisons. (See FOOD.)

BUTTERCUP. (See RANUNCULUS.)

BUTTER-MILK, *but'-tur-milk*, the milk which is left after the butter has been separated by means of churning or other processes. It is ordinarily procured from milk after it has been kept some time, and has become more or less acid; but it may be procured from new milk when it is not acid, and only differs from milk by the absence of its oily parts. In this state it is still tolerably nourishing, and, being easy of digestion, is recommended in many stomach complaints, in consumption, diabetes, etc., being preferable to either the entire milk, or the watery parts of it in a more acid state. The acid of butter-milk does not increase the acidity of the stomach, or occasion the flatulency usually generated by vegetable acids.

BUTTERNUT. (See JUGLANS CINEREA.)

BUTTER OF ANTIMONY. (See ANTIMONY.)

BUTTER OF ZINC, OR CHLORIDE OF ZINC. (See ZINC.)

BUTTON SNAKE ROOT. (See LIATRIS SPICATA.)

BUXUS, *buks'-us* [supposed to be from Gr. *puknos*, dense, in reference to the wood], the box, a genus of plants belonging to the Nat. order *Euphorbiaceæ*, and consisting of evergreen shrubs or small trees with opposite leaves, entire at the margins, and easily split into two plates.

The flowers, which are very small, grow in little axillary clusters, the male and female flowers being distinct, but borne on the same plants. There are only two species known; namely, *B. sempervirens* and *B. balearica.* The former, which is the common box, is a native of Europe and Asia, and seldom attains a height of more than twenty to twenty-five feet. Many varieties are known in the European gardens, the most remarkable of which is the dwarf-box, so much used for the edgings of walks. The wood of the arborescent *B. sempervirens* is heavier than that of any other European tree, and will sink when placed in water. The leaves of the common box are purgative, and have been employed medicinally. An empyreumatic oil obtained from boxwood has been used successfully for the relief of toothache. A decoction of boxwood applied to the scalp, is said to be useful in baldness. (See CORNUS FLORIDA, BALDNESS.)

# C.

CABBAGE, *kab'-baj*, as an article of diet, is not only wholesome, but extremely nutritious; it is, however, only suited for persons of good digestive powers. From the extreme liability of cabbage to pass into a state of putrefaction, it should always be used as fresh as possible. (See BRASSICA.)

CABBAGE BARK TREE. (See ANDIRA.)

CACHEXIA, *ka-kek'-se-a* [Gr. *kakos*, bad, *hexis*, habit], is a term used to denote a bad condition or habit of body, arising from whatever cause, in which the functions are imperfectly performed, and the complexion unhealthy. It is employed by Cullen to denote a peculiar class of diseases in which the general habit is affected, and a change of complexion, with emaciation or morbid enlargement, are characteristic symptoms; as jaundice, dropsy, etc.

CACHINNATION, *kak-in-na'-shun*, immoderate laughter, a symptom which occurs in hysteria, mania, and other affections.

CACTUS GRANDIFLORUS, *kak'-tus*, Night-blooming Cereus. A new remedy prepared from the fresh flowers is highly recommended in cardiac affections, angina pectoris, rheumatism and dropsy. Dose of fluid extract, 2 to 5 drops, three times a day.

CADMIUM, *kad'-me-um*, symbol Cd., equivalent 56.74, spec. grav. 8.6.—Cadmium was first discovered in 1818, by Stromeyer, in small quantities in certain zinc ores, in consequence of the behavior of their solutions with sulphuretted hydrogen. It is soft, malleable, and ductile, of a white color, and when bent emits a creaking sound like tin. It is easily fused, and distils at a high temperature. It only forms one oxide, CdO, which is formed when cadmium is heated in air. It is yellow, brown, or black, according to the temperature to which it has been exposed. The chloride is formed by dissolving the metal in hydrochloric acid. It crystallizes in four-sided prisms. The sulphide, which is obtained by heating a mixture of oxide of cadmium and sulphur, is much used as a pigment. It is of a bright yellow color, but becomes temporarily red on being heated. The only other important salt is the iodide, which may be formed by direct combination of iodine and cadmium in the presence of water. It is alterative and astringent, but is seldom used internally. In large quantities it is emetic and poisonous. It is used in the form of ointment, 62 grains of the iodide of cadmium to 1 ounce of simple ointment, to reduce scrofulous swellings and enlarged joints.

CÆCUM, *se'-kum* [Lat. *cæcus*, blind], is the name given to a large blind-pouch, or *cul-de-sac*, extending downwards from the commencement of the large intestine. (See INTESTINES.)

CÆSAREAN OPERATION, *se-za'-re-an* [Lat. *cæsus*, from *cædo*, I cut], in Surgery, is the extraction of a child from the womb by an incision through the walls of the abdomen and the uterus. It is also called *hysterotomy*, from *hystera*, the womb, and *tome*, a section. This operation has been practised from very ancient times, and persons so extracted were termed, *cæsones*. Julius Cæsar is said to have received his name from his having been brought into the world in this way. The ancients, however, only had recourse to this operation when the mother was dead and the child alive; but it is now frequently performed on the living mother. There are three cases in which this operation may be necessary: 1. When the fœtus is alive and the mother dead, either in labor or in the last two months of pregnancy. 2. When the fœtus is dead, but cannot be delivered in the usual way, on account of the deformity of the mother, or the disproportionate size of the child. 3. When both mother and child are alive, but delivery cannot take place, from any of the above causes. The operation consists in carefully opening the walls of the abdomen in front of the uterus, which is also opened, and the child is then directly taken from the womb. When it is necessary, the best time for performing it is at the commencement of labor, when the strength of the mother is unimpaired, and there is less risk of inflammation. The operation is always one of considerable danger.

CAFFEINE, OR THEINE, *kaf-fe'-in* ($C_{16}H_{10}N_4O_4$), a crystalline alkaloid found in tea, coffee, Paraguay tea, and in *guarana*, a species of chocolate prepared from the fruit of the *Paullinia sorbites.* Tea contains from two to four per cent. of caffeine, coffee but one per cent. It is easily obtained from tea by making a strong infusion of the leaves, mixing it with subacetate of lead, which precipitates the tannin, and transmitting a current of sulphuretted hydrogen through the liquid to precipitate the excess of lead. On evaporating the solution, and allowing it to cool, the caffeine crystallizes out in long silky needles. It has a weak, bitter taste, and fuses at 453°. Water and alcohol dissolve but a small quantity in cold, but it is very soluble in boiling water and ether. The fact that caffeine forms the essential principle of three substances used by widely different nations is a very curious one, and shows that the craving which it satisfies is as natural as it is universal. The use of tea or coffee as an article of diet seems to exercise a very important influence in retarding the waste in the tissues of the body. Its effect on the human system has, however, yet to be fully studied. (See COFFEE, TEA.)

CAHINCA. (See CHIOCOCCA RACEMOSA.)

CAJEPUT. (See MELALEUCA.)

CAKES AND SWEETMEATS. (See CONFECTIONERY.)

CALAMINE, *kal'-a-mine* [Lat. *calamus*, a reed]. Calamine is a carbonate of zinc employed in medicine in the form of a gray powder; it is chiefly used to sprinkle upon excoriations, chaps, etc.; but there are so many better applications that it might be altogether dispensed with. Mixed with wax and olive-oil, it forms the ointment known as "Turner's Cerate." The proportions are, calamine and wax, of each ½ a pound, olive-oil 16 fluid ounces. The wax and oil are melted together, and the powdered calamine is stirred in during the process of cooking.

CALAMUS, *kal'-a-mus*, a genus of palms consisting of numerous species, all having very slender stems, which are found climbing over the trees in the forests of the hotter parts of the East Indies. The fruit of *C. Draco* is the chief source of the astringent resinous substance known in commerce as dragon's blood. This completely covers the fruit, and is melted or scraped off, and then formed into small cakes.

CALCAREOUS WATERS, *kal-ka'-re-us wa'-turz* [Lat. *calx*, *calcis*, lime]. Carbonate of lime dissolves in pure water to the extent of two or three grains to the gallon; but when carbonic acid is present, it is much more freely taken up. If, however, the temperature be raised, the carbonic acid escapes, leaving behind a crystalline deposit of carbonate of lime. In nature, enormous crystalline concretions of this kind are formed by water charged with carbonic acid percolating calcareous strata. The stalactite caverns of Derbyshire, England, and of the Mammoth Cave, Kentucky, are instances of this. Most spring water contains carbonate of lime held in solution, which is deposited on the sides of the vessel when the carbonic acid is expelled by heat. In steam boilers this becomes a great inconvenience, and is obviated by adding sal-ammoniac to the water. Chloride of calcium is formed, which remains dissolved, while the carbonate of ammonia is volatilized with steam. Water containing carbonate of lime in solution, or hard water, as it is popularly termed, is therefore softened by means of boiling. Hard water precipitates soap as stearate and margarate of lime, forming the well-known curdy precipitate. Until the whole of the lime is thrown down, no lather can be formed; hard water is, therefore, very uneconomical for washing purposes. Dr. T. Clark has devised a very ingenious method of softening hard water, by adding milk of lime. The carbonic acid unites with the lime, setting free the carbonate originally dissolved, and the whole falls to the bottom as a precipitate of carbonate of lime.

CALCINE, *kal-sine'* [Lat. *calx*, lime], a chemical term, signifying the separation of the more volatile portions of a solid body by means of heat. Thus lime is formed from chalk or limestone by calcination. The older chemists applied the term to the oxidation of metals by heat, thinking it was an analogous process to that just mentioned; they therefore called all oxides produced by heat, calx, or calces of the metal; thus, calx of tin is what is now called oxide of tin.

CALCIUM, *kal'-se-um* (symbol Ca., equivalent 20, specific gravity 1.55), the metallic base of the alkaline earth lime. Calcium belongs to the second group of metals, and has for its analogues barium, strontium, and magnesium. It is one of the most abundant substances in nature, forming a very large portion of the crust of the earth. It occurs in nature in combination with fluorine as fluor spar, with oxygen and carbonic acid as chalk, limestone, and marble, and with oxygen and sulphuric acid, as gypsum, which is hydrated sulphate of lime. Calcium was first obtained by Sir Humphrey Davy by electrolysis, in 1808; but little was known of its properties until Dr. Matthiessen formed it by the electrolytic decomposition of a mixture of the chlorides of calcium and strontium. It is a light-yellow metal, of the color of gold alloyed with silver; it is rather harder than lead. It melts at a red heat, and is very malleable. It tarnishes in a day or two even in dry air, and in moister air it becomes slowly oxidized. The best-known compound of calcium is its oxide, or lime, which may be obtained in a state of perfect purity by heating pure carbonate of lime to redness. In practice, lime is made by burning common limestone with alternate layers of coal in a kiln. Lime is a white, porous, opaque, inodorous, infusible substance, with strong alkaline and caustic properties. It is much used in the arts, for mortar, cement, manure, dyeing, soap-making, leather-dressing, etc. When water is thrown on it, an equivalent is absorbed, and heat evolved, hydrate of lime ($CaOHO$) being the result. Hydrate of lime is commonly called *slaked* or *slacked lime*, to distinguish it from anhydrous oxide, which is known by the name of *quicklime*, from its powerful caustic properties. According to the British Pharmacopœia to form slaked lime, *calcis hydras*, take 2 ℔. of lime and 1 pint of distilled water, place the lime in a metal pot, pour the water upon it, and when vapor ceases to be disengaged cover the pot with its lid and set it aside to cool. When the temperature has fallen to that of the atmosphere, put the lime on an iron-wire sieve, and by gentle agitation cause the fine powder to pass through the sieve, rejecting the rest. Then put the powder in a well-stoppered bottle and keep it excluded as much as possible from the air. Hydrate of lime or slaked lime is used in the purification of gas, in the preparation of ammonia and bleaching-powder, in candle-making, soap-boiling, cotton-printing, tanning, and sugar-refining. In the laboratory, hydrate of lime is extremely useful in preparing caustic alkalies, and in absorbing carbonic acid, for which it possesses a very strong affinity. Cold water dissolves about $\frac{1}{700}$th of its weight of hydrate of lime, forming lime-water. Contrary to the usual rule of solutions, hot water only dissolves about half that quantity. In fact, when lime-water, prepared in the cold, is heated, it deposits crystals, which redissolve as the solution cools. Lime-water is alkaline to the taste, and turns vegetable yellows brown, and blues green. Exposed to air, it gradually absorbs carbonic acid, and deposits carbonate of lime. In medicine, lime-water is used as an antacid, and to afford a supply of lime to the bones of rickety children who have not the power of assimilating sufficient lime from their ordinary food to give the necessary compactness to their bones. Lime-water, *liquor calcis*, is made by taking 2 ounces of slaked lime and 1 gallon of distilled or rain water, and shaking the two together for two or three minutes in a stoppered bottle. After twelve hours the excess of lime will have subsided, and the clear solution may be drawn off for use. It should be kept in a green glass bottle, with a tightly ground stopper. Dose, 1 to 4 fluid ounces. *Milk of lime* is hydrate of lime mixed with water until a milky fluid is obtained. The principal oxysalts of calcium are the following: *Carbonate of lime* ($CaOCO_2$).—This substance enters largely into the composition of rocks and minerals, the bones of animals, the egg-shells of birds, the scales of fishes, and the shells of mollusks. The precipitated carbonate of lime is composed of 5 ounces of chloride of calcium, and 13 ounces of carbonate of soda, dissolved in sufficient quantity of boiling water. Dose, 10 to 60 grains. When burnt with access of air, limestone forms ordinary lime; if, however, the air be excluded, and the heat raised to a considerable height, it fuses without undergoing decomposition, and, on cooling, forms a crystalline mass resembling marble. *Chloride of lime* is the name given to bleaching-powder, which is prepared by passing a current of chlorine through milk of lime, by which means it is obtained in solution; or by passing chlorine over hydrate of lime, which produces it in the form of a moist powder. By exposure to the air, hypochlorous acid is continually evolved by the action of the carbonic acid. If an excess of any acid is added, chlorine is produced. The former property is taken advantage of to destroy the gaseous poisons with which the air of sick-rooms and other localities is contaminated. By the action of the carbonic acid of the air, or by the addition of small portions of dilute sulphuric acid, hypochlorous acid is evolved, which *oxidizes* and destroys the miasmata. *Phosphates of lime.*—There are several phosphates of lime, the most important of which is that obtained from the burning of bones, which may be regarded as a triphosphate of lime. *Superphosphate of lime*, much used as a manure, is prepared by gradually mixing bone-dust with oil of vitriol, and adding an equal quantity of water between each addition of acid. The mass is allowed to lie in a heap until it is dry, and is then used under the name of *superphosphate of lime.* Its real composition is found to be a mixture of phosphate and sulphate of lime with the animal matter of bones. *Sulphate of lime* occurs in nature as *gypsum*, *selenite*, and *anhydrate.* Gypsum, on being burnt, yields a white powder, commonly known as *plaster of Paris*, from the best gypsum-beds being found near that city. Plaster of Paris, which is anhydrous sulphate of lime, possesses the property of solidifying when mixed with water. *Sulphate of lime* is prepared by passing sulphurous acid through water containing chalk or hydrate of lime in a fine state of division. It is used as a convenient source of sulphurous acid. The various preparations of lime have all more or less of the same medicinal properties. Quicklime, like the fixed alkalies, is a powerful caustic and irritant. It is also used as a masticatory in India, with betel. Lime-water applied to suppurating or mucous surfaces checks or stops secretion, and produces dryness of the part. Administered internally it neutralizes acidity of the stomach, diminishes the secretion of the gastric juice, and occasions thirst and constipation. It is hence used as an antacid in dyspepsia, particularly when attended with nausea and vomiting, and as an astringent in diarrhœa, when the inflammatory symptoms have subsided. After absorption it increases the secretion of the urine, and diminishes the excessive formation or deposition of uric acid and the urates. Lime-water and milk is recommended as an antidote in poisoning by the common mineral and oxalic acids. In large doses lime acts as a poison, producing thirst, a burning sensation in the mouth and stomach, constipation, and death. A solution of chloride of lime is recommended as a wash in certain diseases of the skin, and is said to be very successful as a cure for itch, and also for ring-worm. A weak solution is also of great benefit in ophthalmia.

CALCIUM, COMPOUND ELIXIR IODO-BROMIDE OF. Component parts, bromine, iodine, chlorine, calcium, magnesium, iron, sodium and potassium (which see). Medically used in scrofula, scrofulous abscesses and swellings, and all diseases of the blood traceable to a scrofulous diathesis; in syphilis, cancer and cancerous tumors, caries or diseased bone; pulmonary degeneration, erysipelas, salt rheum, scald head, and cutaneous affections; in neuralgia and rheumatism, and particularly as an anti-bilious remedy to combat what is commonly called "liver complaint." Dose, 1 teaspoonful in ½ a wine-glass of water, three times a day—an hour before each meal. After three days, double the dose.

CALCIUM, IODIDE OF. This preparation possesses alterative and tonic properties. It is very valuable in cases in which the iodide of potassium is inadmissible. It does not occasion iodism, or resorption of the healthy tissues; it does not excite the circulation, nor irritate the stomach and bladder, by passing off too rapidly by the kidneys. Its solution in milk is perfectly tasteless. It is particularly useful in scaly diseases of the skin, and chronic and metallic poisoning by mercury, lead and copper. Dose, ¼ of a grain in solution, three times daily. (See CALCIUM.)

CALCULUS, *kal'-ku-lus* [Lat. dim. from *calx*, a limestone], is a hard inorganic concretion formed in various parts of the human body, and bearing a general resemblance in form and composition to stone. It receives various names, from the parts in which it exists; as, salivary in the salivary glands and ducts, pulmonary in the lungs, intestinal in the stomach or intestinal canal, biliary in the gall-bladder, urinary in the kidneys or bladder, gouty in the joints of gouty persons. The most familiar instance of the formation of calculus is the tartar which is deposited from the saliva and mucus of the mouth upon the teeth. The term calculus is, however, most frequently applied to those concretions which are formed in the gall-bladder or biliary ducts, and those formed in the kidneys or bladder. *Biliary calculi*, or *gall-stones*, are composed almost entirely of cholesterine, with some coloring matter. They vary greatly in size and number, amounting sometimes to hundreds, and even, it is said, to thousands; but so long as they remain in the gall-bladder they do not usually cause much uneasiness. It is when they pass into the canal by which the bile is conveyed to the duodenum, that they occasion great pain and derangement of the system. The pain occurs in paroxysms, and is generally attended with shivering and vomiting. If the bile be wholly obstructed, jaundice comes on, and rapid emaciation succeeds. The disorder sometimes proves fatal, but generally the stones find their way, sooner or later, into the intestines, and the disturbance subsides. The best remedies are opium and hot applications over the seat of pain, or a warm bath. *Urinary calculi, gravel, or stone in the bladder*, are concretions formed and existing in the urinary passages. They generally originate in the kidneys, and afterwards pass down into the bladder, where they frequently attain a very large size; some have been found to attain the weight of 14 to 16 ounces, and even more. While in the kidneys they are termed *renal calculi*, and they sometimes remain there permanently, and may even attain a considerable size without causing much inconvenience; but they may also produce inflammation and abscess, and ultimately cause death. Generally, however, while yet of small size, they pass down the ureters into the bladder. Sometimes the passing is attended with symptoms similar to those occasioned by the passing of a gall-stone, and similar remedies are to be had recourse to. The calculus having passed into the bladder, is then termed a *vesical calculus*. At first it is attended with comparatively little pain; but unless removed or evacuated, it is sure to enlarge, and to give rise to one of the most dreadful diseases that can afflict humanity. In the earlier stages much may be done to check the progress of this dangerous malady; but when the calculus is once formed, the only means by which it can be got rid of is by an operation. The stone must either be withdrawn through the urethra by an instrument, or it must be broken into fragments small enough to be voided with the urine, or it must be extracted by an incision.

The different varieties of urinary calculus are thus classed by Dr. Wollaston, in the order of their frequency: 1. Uric acid. 2, oxalate of lime, called the mulberry calculus, from its dark color and rough surface; 3, ammoniaco-magnesian phosphate, called also the triple phosphate; 4, phosphate of lime, or bone-earth calculus; 5, fusible calculus—a combination of the last two species, and so called from its fusibility under the blowpipe; 6, the mixed calculus, composed of several of the other kinds confusedly mixed; 7, urate of ammonia; 8, carbonate of lime; 9, cystic oxide; 10, xanthic oxide. The last three are extremely rare. Many of the calculi, and, indeed, most of them, are not of one uniform composition, but consist of strata of two or three varieties, one forming a nucleus for the other deposits, and calculi thus formed receive the name of alternating. Uric acid is more common as a nucleus than any other substance. Urinary calculus is more frequent in some districts than others, and locality likewise influences the species of the stone. In some families it appears to be hereditary, and especially in those who are also subject to attacks of gout. It is much more common among males than females; and soldiers and sailors are particularly free from it. The predisposing causes of it, however, are still very imperfectly understood.

*Treatment.*—The treatment should be directed to prevent the formation of calculus, or to retard its progress; to facilitate its expulsion when formed, and to relieve the sufferings of the patient. Particular attention should be paid to the general health. The diet should be nutritious, but not stimulating or rich; the digestion promoted and strengthened by tonics, active exercise encouraged, and the secretions by the skin encouraged by warm clothing, warm baths, and the flesh brush. When the calculus is composed of uric or lithic acid, or when acid predominates in the urine, the alkaline bicarbonates, as the bicarbonate of soda, in 10 grain doses, three or four times a day, should be administered. On the other hand, should the urine exhibit an alkaline state, acids will be found useful. The Vichy water, a solution of bicarbonate of soda saturated with carbonic acid, is strongly recommended in both cases, as by virtue of its carbonic acid, it counteracts alkaline formations, and by virtue of its alkalies, acid formations; while it also disintegrates the animal matter which cements them together. (See Lithotomy, Lithotrity.)

CALEFACIENT, *kal-e-fa'-shent*, substances are so called which excite a degree of warmth in the parts to which they are applied, as mustard, pepper, etc. They belong to the class of stimulants.

CALENDULA, *ka-len'-du-la*, in Botany, the marigold, a genus of plants belonging to the Nat. order *Compositæ*, sub-order *Tubifloræ*. The species *C. officinalis* is the common marigold. Formerly, many medicinal virtues were ascribed to this plant, and its flowers were usually added to soups to color them, and also to act as "comforters of the heart and spirits." Saffron is frequently adulterated with the yellow florets of the marigold.

CALF'S-FOOT JELLY, *käfs'-fut jel'-le*, is made by extracting the gelatinous portions from the tendinous structures of the feet and knee-joints of the calf, by long boiling. Sugar, wine, or oil and spices, are added to the jelly thus obtained. This forms a palatable and easily digested article of food for convalescents, and may be taken either cold or dissolved in warm water.

CALIFORNIA, CLIMATE OF. (See Climate.)

CALISAYA. (See Cinchona.)

CALISAYA, ELIXIR OF, *kal-e-sa'-ya, e-lik'-sur:* Calisaya constitutes the active agent of this elegant aromatic preparation. It is an agreeable and general tonic in convalescence from disease in children and feeble persons, and preventive against intermittents. Its tonic, anti-intermittent and sedative properties render it highly useful in a great variety of diseases, and while it possesses the distinctive quality of subduing fever, it can be used in most cases where tonics are prescribed. It is advised in gangrenous affections, in typhoid fevers with extreme prostration, in passive hemorrhages accompanied with great feebleness, etc. It is useful in the treatment of gout, chronic rheumatism, scrofula, and scurvy. It will be found of great advantage in dyspepsia, attended with irritation of the stomach; in severe diarrhœas and those that have been chronic; in long-continued inflammations of the mucous membranes, better treated with tonics than in any other way; in cases of convalescence, when the system is recovering from prostration; and generally in weak and prostrated states of the system, particularly during summer months. Each fluid ounce contains forty grains of true calisaya bark. Dose, 1 to 2 teaspoonfuls. (See CINCHONA, AROMATIC CALISAYA WINE.)

CALISTHENICS, *kal-is-then'-iks.* [Gr. *kalos*, beautiful, *sthenos*, strength], the science or practice of exercising the limbs and body for the purpose of strengthening the muscles and acquiring a more graceful carriage. (See GYMNASTICS, EXERCISE.)

CALLITRICHE VERNA, OR WATER STARWORT, *kal-li'-tri-ke ver'-na*, commonly called water chickweed. It is a small annual that floats in the water. It is common in all parts of the United States, and flowers from April to September. All parts of the plant are used. It is valuable as a diuretic. It is used in the form of a decoction, and may be drunk freely. (See DECOCTION.)

CALLOSITY, *kal-los'-i-te* [Lat. *callositas*], is an induration or hardness of the skin; as that of the hands through hard labor.

CALLUS, *kal'-lus*, is the bony matter which is deposited between the fractured ends of broken bones, and serves to reunite them. (See FRACTURES.)

CALMNESS OF MIND. (See PASSIONS.)

CALOMEL. (See MERCURY.)

CALORIC. (See HEAT.)

CALOTROPIS, *ka-lot'-ro-pis* [Gr. *kalos*, beautiful, *tropis*, keel, in allusion to the keel of the flower], in Botany, a genus of tropical plants belonging to the Nat. order *Asclepiadaceæ*. The species *C. gigantea* or *procera* yields the medicinal bark known as mudar bark, which has been much employed in India for the treatment of cutaneous affections. It is emetic, purgative, and diaphoretic, and is occasionally used as a substitute for ipecacuanha. It contains a peculiar principle called *mudarine*. The bark of the root *C. Hamiltonii* has similar properties, and is said to yield the fibres termed *Yercum*.

CALUMBA, COLOMBO, COLUMBA, OR COLUMBIA, *ka-lum'-ba*, the name given to a root very extensively used in medicine. It takes its name from Colombo, in Ceylon, whence it was first brought. Calumba root is bitter, aromatic, stomachic, and anti-emetic. It has been advised in dysentery, in serous diarrhœas, and bilious fevers. Combined with opium in a small quantity, it is useful in the treatment of obstinate colics, and as an anti-emetic for combating the nausea and vomiting which so often accompany the first periods of pregnancy. Used in dyspepsia, chronic diarrhœa, and dysentery; in convalescence from febrile and inflammatory diseases, hectic fever, and in the muscular debility of young children. Like other strong bitters, it occasionally checks the remittent and intermittent fevers of hot climates. The absence of irritating properties renders it also an appropriate tonic in the hectic fever of consumption, and other kindred affections. It is frequently administered in combination with other tonics, aromatics, mild cathartics, and antacids. In dyspepsia and vomiting it may be advantageously combined with bicarbonate of soda, as well as in debility with acidity of the stomach. Calumba is one of the best pure bitter tonics we possess, it is free from astringency, and exerts a sedative action. Calumba may be given in powder, in infusion, fluid extract, or tincture, but never in decoction. The dose of the powder is from 10 grains to 40; of the infusion, from 1 tablespoonful to 1 wine-glassful; of the tincture, 1 to 2 teaspoonfuls in water. The powder of calumba may be taken in water, simple or aromatic: 8 parts of calumba powder, 8 parts of carbonate of soda, and 2 parts of ginger, form a most excellent stomachic in dyspepsia, of which ½ a teaspoonful may be taken in a wine-glassful of water. Dose: of fluid extract, 20 to 60 drops; tincture, ½ to 2 teaspoonfuls; solid extract, 4 to 10 grains; pills, 2 grains each, 2 to 5 pills. (See INFUSION.)

CAMBOGE. (See GAMBOGIA.)

CAMOMILE. (See ANTHEMIS.)

CAMPHENE, CAMPHILINE, OR DADYL, *kam-feen'*, a product obtained from turpentine. By acting on that body with hydrochloric acid, hydrochlorate of camphene is formed, which is transformed into camphene by the abstraction of the hydrochloric acid by the aid of quicklime.

CAMPHINE, *kam'-feen*, a name applied commercially to a pure variety of oil of turpentine which is furnished by the *Pinus australis* of the southern states.

CAMPHOR, *kam'-fir* [Gr. *kamphogen*, Arab. *kaphoor*], a solid crystalline substance found in many plants, though only obtained in large quantities from two; namely, *Camphora officinarum* and *Dryobalanops aromatica.* The former, an evergreen tree growing in China, Formosa, and Japan, yields almost all the camphor of European commerce. The camphor, which may be regarded as a solid volatile oil, is diffused through the entire plant, and is separated from the root, trunk, and branches. These parts are cut into chips, and boiled in water till the camphor begins to adhere to the stirring-rod, when the liquid is strained and allowed to stand until the camphor concretes. It is then sublimed into inverted straw cones contained within the earthen capitals of the stills. It is generally in small grayish, slightly sparkling grains, which, by aggregation, form crumbling cakes. Refined camphor is prepared by mixing the crude product with lime, and subliming it into thin glass vessels of a peculiar shape, which are afterwards cracked so as to obtain the camphor in concavo-convex cakes, each about three inches thick, with a hole in the middle. Camphor is colorless and translucent, and has a strong, penetrating, aromatic odor, and a bitter, rather pungent taste, though leaving a sensation of coolness in the mouth. Its specific gravity is from .98 to .99; so that it floats upon water, and, evaporating while doing so, undergoes a curious rotatory movement. It volatilizes slowly at ordinary temperatures, melts at 288° Fahr., boils at 400°, and burns with a bright flame. It is soluble in alcohol, ether, oils, and dilute acids; also to a certain extent in water. Camphor is used in medicine, both internally and externally, as a temporary stimulant. In moderate doses, it increases the fulness of the pulse, raises the temperature of the body, and operates as a sudorific; and hence it is frequently employed in fevers, especially of the typhoid type, particularly in combination with opium, and other diaphoretics. It acts as an anodyne, allaying nervous irritation, and producing quietude and placidity of feeling; and hence it is used in mania, melancholia, and other forms of mental disorder. In large doses it produces lassitude, giddiness, confusion of ideas, disordered vision, noise in the ears, stupor, delirium, and convulsions. Dose, 1 to 10 grains. Camphor-water is made by macerating half an ounce of camphor enclosed in a muslin bag, for at least two days, in a gallon of distilled water, in a stoppered bottle, the camphor being kept at the bottom of the bottle by means of a glass rod. Dose, 1 to 2 fluid ounces. The spirit of camphor is composed of 1 ounce of camphor dissolved in 9 fluid ounces of rectified spirits. Dose, 10 to 30 drops. The compound tincture of camphor is composed of 40 grains each of opium in coarse powder and benzoic acid, 30 grains of camphor, ½ a fluid dram of oil of anise, and 1 pint of proof spirit, macerated for seven days in a close vessel, and then filtered, adding sufficient of proof spirit to make 1 pint. Dose, 15 drops to 1 teaspoonful. Camphor also forms a constituent in a number of liniments and several ointments. Raspail, the founder of a peculiar system of medicine widely adopted in France, elevates camphor almost to the dignity of a universal medicine. The alcoholic solution of camphor, and the liniments of which it is the principle ingredient, are much used for external application in sprains and bruises, chilblains and chronic rheumatism. Insects are kept from attacking specimens of natural history by placing pieces of camphor in the case in which such specimens are preserved. Furs, clothing, etc., may be protected from moths by placing camphor in the trunks or boxes where they are kept. (See CAMPHORA, and the five following subjects.)

CAMPHORA, *kam-fō'-ra*, in Botany a genus of plants belonging to the Natural order *Lauraceæ*. The most interesting species is *C. officinarum*, the camphor-tree, a native of China, Formosa, and Japan, where it grows to a considerable size. It is an evergreen, and all parts emit a camphoraceous odor when bruised. The wood is white, light, and durable, and is much used in China for carpenter's work. From the roots, trunk, and branches of this plant the *common* or *officinal camphor* is obtained. (See CAMPHOR.)

CAMPHORATED CHALK, *kam'-fo-rate-ed chawk*, is composed of 2 ounces of camphor reduced in a mortar to a fine powder, with 10 drops of spirits of wine; then add 12 ounces of precipitated chalk; mix them intimately, and rub them through a fine gauze sieve; or ½ ounce of camphor may be similarly mixed with 8 ounces of the precipitated chalk, and scented with any aromatic oil at pleasure. Both these powders should be kept closely stopped in a wide-mouthed glass bottle. Used as a local application in skin diseases, burns, excoriations, and ulcers.

CAMPHORATED SPIRITS OF WINE. Useful as an embrocation for sprains, rheumatism, chilblains, etc. Dissolve 1 ounce of camphor in ½ pint of rectified spirits of wine, or alcohol.

CAMPHORATED TINCTURE OF OPIUM. (See PAREGORIC.)

CAMPHOR JULEP. Ingredients:

| | |
|---|---|
| Take of Camphor | Twenty grains. |
| Spirits of wine | Twenty drops. |
| White sugar | Two drams. |
| Gum arabic | Two drams. |
| Boiling water | One pint.—*Mix.* |

*Mode.*—Rub the camphor into the spirits of wine, then mix in the sugar when reduced to a fine powder, and add the gum-arabic powdered.

Well mix these ingredients, and pour on them very gradually the boiling water, continuing the rubbing till the whole of the water is poured on. Cover it over, and when cold, strain it through fine linen for use. This julep is very useful in all spasmodic cases and nervous affections. Dose, 1 to 4 tablespoonfuls.

CAMPHOR LINIMENT. Ingredients:

| | |
|---|---|
| Take of Camphor | One ounce. |
| Olive oil | Two ounces.—*Mix.* |

Rub them well together till quite smooth. This is a useful liniment for cases of rheumatism, etc.

CAMP ITCH. (See Soldiers' Itch.)

CANADA BALSAM, *kan'-a-da*, the juice of the *Abies Balsamea* or fir balsam, a tree found growing in all parts of the continent of America. In small doses it increases the urinary discharge, and also acts as a general stimulant. It has been found useful in gonorrhœa, gleet, chronic inflammation of the bladder, bronchitis, catarrh, piles, and rheumatic affections. Dose, from 5 to 20 drops, three times a day.

CANADA, CLIMATE OF. (See Climate.)

CANADA FLEABANE. (See Erigeron.)

CANARIES, CLIMATE OF THE, *ka-na'-reez.* It resembles, but is not quite as equable, as that of Madeira. (See Madeira.)

CANARY WINE, *ka-na'-re.* This wine, which is also known by the name of Teneriffe, is a product of the Canary Islands. In taste it resembles Madeira; it is made from grapes which have been gathered before they are ripe, and, when new, has a sour and unpleasant taste. After being kept carefully for two or three years, its mildness increases greatly, and, like Madeira, it is greatly improved by a journey to the tropics. More of it is produced on the island of Teneriffe than on the other Canary Islands. The name of Canary is only applied to the Bidogne wine, and never to the Malvoise or Malmsey of the Canaries.

CANCER, *kan'-sur* [so called from the large blue veins which appear, in cancer, to resemble crab's claws], is a disease of a very malignant character, making its appearance as a scirrhous tumor, which ultimately terminates in an ill-conditioned and deep ulcer. Any part of the body may be the seat of this disease, though the glands are most liable to its attack. The female breast, the tongue, or lips, are among the parts most liable to it.

*Appearance.*—The tumor at first is small, hard, indolent, and nearly insensible, and showing no inflammation, with little or no discoloration of the surrounding skin. It remains in this state for a longer or shorter period, sometimes for years, but at length it passes into a more active condition—the tumor increases in size, the skin changes to a livid or red appearance, and pain begins to be felt in it. The pain, which is of a shooting or lancinating nature, is at first slight, and occurs at considerable intervals; but it increases by degrees, and the intervals diminish until it becomes almost constant. The cutaneous veins become turgid, and the surface of the tumor presents to the feel a knotty, uneven surface. Sometimes the skin never actually breaks, but, usually, after a longer or shorter period, the tumor ulcerates, and becomes an open sore. The discharge is of a thin, fœtid, acrid nature, which corrodes the surrounding parts. The sore presents thick jagged edges, and a soft center, eaten, as it were, into irregular cells. The shooting pains are now much increased, and are of a very violent nature. The disease pursues its onward course; sometimes it seems as if it had exhausted itself, and was allowing nature to work a cure by the formation of new flesh; but this is merely a delusion, for it soon recommences its destructive course, and at length, it may be after years, it seizes upon some vital organ, or the patient sinks exhausted by the pain and continued drain upon his system.

*Causes.*—Of the cause, nature, or treatment of this terrible disease, little is, unfortunately, known. By some it is regarded as constitutional, by others as local; some maintain that it is hereditary, others that it may be transmitted by inoculation. So far as may be judged from the conflicting evidence on these points, there does seem, in general, to be a certain constitutional predisposition to this disease; though, according to Mr. Paget, only a sixth of the cases can be traced to any hereditary transmission. The evidence is against its being transmitted by inoculation. If cancer be at any period merely a local disease, it can only be in its earliest stage, for, in a short time, the whole system seems to be infected with it; and hence it is that, after a time, the extirpation of the original tumor so often fails in effecting a complete cure. Though all ages and both sexes are liable to this disease, the younger are less frequently attacked by it than the old, and females are more subject to it than males. Though cancer is, unfortunately, by no means uncommon, it is not all, nor even the majority of tumors, that bear a general resemblance to it, that are cancerous; in fact, it is often with the greatest difficulty that the cancerous or non-cancerous nature of a tumor can be determined; the presumption always is, in the case of a tumor getting well, that it was not cancer: hence the great importance, in every suspicious case, of having recourse to a skilful surgeon. With medical quacks every tumor is pronounced to be a cancer, and every cancer curable, the cures effected in the former case being taken credit for as of cancer; and, in the latter case, much excruciating agony is entailed upon the sufferer without any benefit.

*Treatment.*—The only hope of a cure in cancer is by extirpating the tumor in its earliest stages; and even this, after all, frequently affords but a temporary relief. According to Mr. Paget ("Lectures on Surgical Pathology") "the average duration of life after the appearance of the cancer is forty-nine months." In forty-nine cases in which the cancer was once removed by operation, the average duration of life was somewhat more than forty-nine months; and hence he concludes that the average duration of life is not materially affected by the removal of the local disease, but adds, that it is probable that the progress of the more rapid cases is retarded by the operation. Sometimes, in place of the knife, escharotics, as chloride of zinc, are had recourse to, but with no better success. Much good may be effected by means of palliatives; the patient is to be sustained by good nourishing diet, but all stimulants are to be avoided, and everything that would tend to increase the activity of the disease. The state of the general health is to be carefully attended to, and both mind and body kept as free from excitement as possible. In the local treatment of the disease, sedatives, as hemlock, henbane, and opium, are to be had recourse to in order to allay the pain. Of the internal organs, the womb in the female, and the stomach, are the most frequent seats of the disease. Cancer is very rare under thirty years of age. When, from the nature of a tumor, its hardness, situation, age of the patient, and particularly if there be any hereditary bias towards the disease, incipient cancer is suspected, there should be no trifling, no leechings, or rubbing, or fomentings; the advice of a skilled surgeon should be sought at once; and neither time, distance, nor expense should stand in the way of procuring that assistance which may not only preserve life, but save from a lingering or painful death. Should the suspicions be unfounded, the mind is restored to peace; should they be correct, the one remedy, incision, cannot be too soon submitted to, before the glands adjacent to the disease, or other textures of the body, become tainted. In any stage of the disease, however, the advice of the regular practitioner ought to be taken; above all, let the sufferer and the friends beware of being tempted by the specious advertisements of quack remedies, and of wasting time of which every day is precious.

When, unfortunately, cancer has reached the stage at which hope of cure must be given up; when it has become an open, grey-looking ulcer, discharging thin fetid matter, the seat of shooting and stinging pain, and when the constitution is affected, it only remains to make the situation of the sufferer as comfortable as possible. Opium in its various forms is the great soother, and the other anodynes, hemlock especially, both internally and as a poultice, are all of service. Cod-liver oil in some cases allays the pain and retards the progress of the disease; but the regulation and administration of these remedies must be committed to the care of the medical attendant; the domestic remedies must be, the most perfect cleanliness and kindest consideration for the comfort and irritabilities of any one who is the victim of cancerous disease. Cancer cannot be said to be propagated by contact; but this should be avoided as much as possible; in the intimate relations of husband and wife, especially, whatever the organ or structure affected.

The lower lip is not unfrequently the site of cancer in old people; it is said, in those who smoke much; a painful sore in this situation, which will not heal, ought not to be neglected, but submitted to medical examination.

Among the lower animals this disease is not of infrequent occurrence, the animals most liable to its attacks being the cat and dog. (See BREAST, TONGUE, WOMB, CANCER SCROTI, MICROSCOPE; CALCIUM, COMPOUND ELIXIR IODO-BROMIDE OF; BERBERIS AQUIFOLIUM, ALTERATIVES.)

CANCER ROOT. (See OROBANCHE VIRGINIANA.)

CANCER SCROTI. Cancer of the scrotum, or chimney sweep's cancer, is a disease of the scrotum, to which chimney sweeps are particularly liable, owing, it is believed, to irritation, caused by the action of the soot on that part. It commences by an indurated enlargement of the integuments, which may continue for a long time without much apparent progress, but eventually proceeds to ulceration, and, if not checked, will involve the surrounding parts. Local applications may stay the progress of the disease and alleviate the suffering, but the only hope of a cure lies in excision, which should be done at an early stage of the disease, to afford any hope of permanent relief. (See CANCER.)

CANELLA ALBA, *ka-nel'-la al'-ba* [*Canella*]. An evergreen tree belonging to the Nat. order *Canellaceæ*. It is also known by the common names, wild cinnamon, white cinnamon. A native of Jamaica and other West India islands. The bark is the part employed in medicine. Canella is possessed of the ordinary properties of aromatics; acting as a local stimulant and gentle tonic, producing upon the stomach a warming, cordial effect, which makes it valuable as an addition to tonic or purgative medicines in debilitated states of the digestive organs. Seldom prescribed except in combinations. Dose: fluid extract, 15 to 20 drops; powder, 10 to 30 grains.

CANINE MADNESS. (See HYDROPHOBIA, BITES AND STINGS.)

CANINE TEETH. (See TEETH.)

CANKER LETTUCE. (See PYROLA.)

CANKER, OR CANCRUM ORIS. (See THRUSH, NURSING SORE MOUTH.)

CANNA, *kan'-na*, Canna Starch is obtained from a West Indian plant. It is imported from St. Kitts, and is an excellent arrowroot. It is a salutary and agreeable article of diet for invalids and children, and is easily digested. It may be boiled the same as arrowroot, and used for the same purposes, and in the same cases.

CANNABIS, *kan'-na-bis*, in Botany, the hemp, a genus of plants representing the Nat. order *Cannabinaceæ*. *Cannabis sativa*, the only species, yields the valuable fibre called hemp, which has been known for more than 2,500 years as a material for cordage, sacking, and cloth. In the Northern States the plant grows to the height of about six feet, but in warmer climates it has occasionally been found sixteen or eighteen feet high. The fruits, commonly termed hemp-seed, are oleaginous and demulcent, and are used for feeding birds. When submitted to pressure, they yield about twenty-five per cent. of a fixed oil, which is used for making varnishes. In the sap of the hemp-plant there exists a resinous substance which has extraordinary narcotic properties. In northern climates the proportion of this resin in the several parts of the plants is so small as to have escaped general observation; but in the warmer regions of the East, the resinous substance is sufficiently abundant to exude naturally from the flowers, leaves, and young twigs. The Indian hemp, which is so highly prized for its narcotic virtues, is considered by some botanists to be a distinct variety, and is distinguished by them as *C. sativa*, var. *indica*. This herb, and the resin obtained, are largely employed in Asia, and in some parts of Africa and South America, for the purposes of indulgence. The dried plant is smoked, and sometimes chewed. Five or ten grains reduced to powder are smoked from a common pipe along with ordinary tobacco, or from a water-pipe with a peculiar variety of tobacco called *tombeki*. The resin and resinous extracts are generally swallowed in the form of pills or boluses. The hemp-plant and its preparations appear to have been used from very remote times. The effects of the natural resin, or *churrus*, have been carefully studied in India by Dr. O'Shaughnessy. He states that when taken in moderation it produces increase of appetite and great mental cheerfulness; while in excess it causes a peculiar kind of delirium and catalepsy. The effect produced by hemp in its various forms varies, like that of opium, both in kind and in degree, with the race of men who use it, and with the individuals to whom it is administered. Upon Orientals its general effect is of an agreeable and cheerful character, exciting them to laugh, dance, and sing, and to commit various extravagances. It, however, renders some excitable and quarrelsome, disposing them to acts of violence. Indian Hemp, or *Cannabis Indica*, is narcotic, nervine, and anæsthetic, also hypnotic. The Chinese were acquainted with its use as an anæsthetic as early as the third century of the Christian era, and a celebrated Chinese physician is said to have operated on his patients after having rendered them insensible by a preparation of wine and hemp powder. This agent has been chiefly employed in spasmodic and painful affections, and in several of these its curative powers are unquestionable.

The cases of tetanus recorded, demonstrate that when given boldly in large doses, the resin of hemp is capable of arresting the progress of this formidable disease, and in a large proportion of cases of effecting a perfect cure. Professor Miller, of Edinburgh, says: "My own experience speaks loudly in favor of hemp. I can now record three fortunate cases under its use, all traumatic tetanus."

In neuralgia, the preparations of hemp have been found to palliate, and in not a few instances to effect a perfect cure.

The action of cannabis or Indian hemp, appears to have been salutary in rheumatism.

It is also recommended to produce sleep where opium, from long continued use, has ceased to produce its proper effects. Cases are mentioned in which cannabis entirely allayed the intense itching of eczema, while the patient continued under its effects, and procured refreshing sleep which no other means could obtain.

It has also been employed with satisfactory effects in the treatment of delirium tremens. Dose: fluid extract, 5 to 10 drops; solid extract, 1 to 2 grains; pills ½ grain each, 2 to 4 pills; pills 1 grain each, 1 to 2 pills; tincture, 5 to 20 drops.

CANTHARADIN, *kan-thar'-a-din*, the crystalline blistering principle contained in the *Cantharis vesicatoria*, or Spanish blister-fly, first obtained by Robiguet. To procure it the flies are digested in alcohol. The alcoholic solution is afterwards evaporated to dryness, and washed with cold ether, which dissolves out the cantharadin. When pure, it is insoluble in water, but very soluble in boiling alcohol. Lard, containing one five-hundredth of cantharadin, will produce a very powerful blistering effect when applied to the human skin.

CANTHARIDAL COLLODION, *kan-thar'-e-dal kol-lo'-de-un*, a solution of cantharides in collodion. It produces a blister in about the same time as the ordinary cerate, and has the advantages that it is applied with greater facility, is better adapted to cover uneven surfaces, and retains its place with more certainty. On application, evaporation of the ether takes place in less than a minute, and it may then be reapplied if necessary.

CANTHARIDES, *kan-thar'-e-deez.* The word is the Latin plural of *Cantharis—vesicatoria* the Spanish blistering fly. (See Blisters.) In addition to its uses as a blistering agent, the Spanish fly is used internally; but it is too hazardous a remedy for general use. It is sometimes given as a poison, for malicious or criminal purposes. When swallowed in a poisonous dose, cantharides quickly produce pain in the stomach and bowels, and intense inflammation; distressing irritation of the urinary organs follows, with constant desire to pass urine, which comes away in small quantities, with or without blood, or is entirely suppressed; stupor and delirium precede death. The remedies in a case of poisoning by Spanish fly must be of the most soothing character; milk given cold may, as it coagulates in the stomach, envelope the irritant particles, or it may be used boiled with flour; white of egg, linseed-tea, or indeed the emollient most quickly and easily procurable should be swallowed largely; and vomiting, if not present, promoted by a feather in the throat, or by ipecacuanha. Oil is sometimes forbidden in such cases, from its being a solvent of cantharides; but after vomiting, or even before, if the dose is not large, one or two doses of castor-oil may safely and advantageously be given, each in combination with 20 or 30 drops of laudanum. Injections of starch, linseed-tea, or the like, with or without laudanum, will allay the irritation in the lower bowels. Hot applications to the abdomen generally should be used, and if there is much tenderness, leeches, freely. Should the patient recover, the state of the alimentary canal and urinary organs for some time require care, and the mildest and most unirritating mode of living must be pursued. A little cantharides ointment, smeared upon the silk of a seton, increases the discharge when deficient.

CANTHARIS VITTATA, *kan'-tha-ris vit-ta'-ta* [*potato-fly*], the common potato-fly of the United States, possesses the same properties, in a minor degree, of the Spanish fly, and in the absence of the latter may be used for blistering purposes.

CANTHUS, *kan'-thus* [Lat]. The angle of the eyelids, where the upper and under eyelids meet. That nearest the nose is termed the internal or greater canthus; and the other, nearest the temple, the external, or lesser canthus.

CAOUTCHOUC, INDIA-RUBBER, OR GUM-ELASTIC, *koo'-chuk* or *ka-oot'-chook* [its Indian name]. Caoutchouc is the solidified milky juice of certain tropical plants, the largest supply being obtained from the *Ficus elastica*, a tree belonging to the order *Moraceæ*, found in Assam; from other species of *Ficus* growing in Java and America; from the *Siphonia elastica*, a native of Guiana and Brazil; and from the *Urceola elastica*, a climbing plant found in the islands of the Indian archipelago. Many other plants yield caoutchouc in small quantities, such as the common fig (*Ficus carica*), the spurge, the dandelion, and the celandine.

Chemically considered, pure caoutchouc is a carbide of hydrogen, or hydrocarbon, $C_8H_7$, possessing a specific gravity of 0.92 to 0.97 (Faraday). It is prepared by dissolving the commercial material in chloroform, precipitating with alcohol, and drying it at a temperature of 70° to 80° Fahr. As it is found in commerce, it is a dark brown material, soft and elastic at ordinary temperatures, hardening temporarily at about 40° Fahr. and melting at 250° into a liquid having the consistency of tar, which does not soon resolidify. It is insoluble in water and alcohol, but dissolves more or less readily in chloroform, washed ether, bisulphide of carbon, coal-tar, naphtha, benzole, and oil of turpentine. Nitric acid, sulphuric acid, and the alkalies, attack it but slowly. Caoutchouc dissolves in the fixed oils, but loses its elastic properties thereby. Caoutchouc, in its unvulcanized state, is most useful in the laboratory for connecting the tubes of apparatus. Its power for resisting re-agents, and its property of cohering to form a tight joint when newly cut, render it a desideratum in the modern laboratory. In its permanently melted condition it forms a valuable lute for pneumatic apparatus. Stoppers and stopcocks lubricated with it remain movable, yet perfectly air-tight. Vulcanized, it serves for gas bags and tubes, and for many other purposes. It must, however, be used with great care, as it is liable to introduce sulphur into solutions near which it passes.

CAPILLARIES, *kap'-il-la-reez* [Lat. *capillus*, a hair,] in Anatomy, are the minute blood-vessels of the body which form the connection between the extremities of the arteries and the veins. They vary in size from $\frac{1}{1500}$th to $\frac{1}{3000}$th of an inch in diameter, being smallest in the brain and largest in the bones. It is in the capillaries that nearly all the changes in the blood take place. It is in them that its carbonization is effected and animal heat produced, and from them that the bile, sweat, and urine are secreted. (See ANATOMY, CIRCULATION OF THE BLOOD.)

CAPISTRUM, *ka-pis'-trum* [Lat. a bridle], in Surgery, is a single split cloth bandage, used to support the lower jaw; so called from its resemblance to a bridle.

CAPSICINE, *kap'-se-sin* [from *capsicum*, derived from Gr. *kapto*, I bite, in allusion to its pungency], an alkaloid found in the capsules of the various species of capsicum used in the manufacture of cayenne pepper. It has a burning taste; is insoluble in water and ether, but soluble in alcohol, and may, when quite pure, be crystallized. It forms salts with nitric, sulphuric, and acetic acids. Its composition is unknown. (See CAPSICUM, ALKALOIDS.)

CAPSICUM, *kap'-se-kum* [from Gr. *kapto*, I bite], in Botany, a genus of plants belonging to the Nat. order *Solanaceæ*, consisting of numerous species, all remarkable for the presence of an acrid resin called *Capsicine* in their fruits, which are hot, pungent, and stimulating. Though now extensively cultivated in many parts of the Old World, the various species are supposed to be natives of South America. The officinal capsicum, the *C. annuum* of Linnæus, or the *C. fastigiatum* of Blume, has oblong-cylindrical fruits, not an inch long in the most valuable varieties, but two or three inches long in others. These fruits are commonly sold as *Chillies*, and are used to make a hot pickle, and the liquor known as *Chilli vinegar.* Cayenne pepper consists of the powdered fruits of several species of *Capsicum*, found in the West Indies and South America. In medicine, the fruit of the capsicum is used as an acrid stimulant and counter-irritant. In small doses it creates an agreeable sensation of warmth in the stomach, and promotes the digestive process. Dose, $\frac{1}{2}$ to 1 grain. Combined with salt, it is used as a stimulant in scarlet fever, and also as a gargle in relaxed sore throat; or in the form of cayenne lozenges. Of the tincture, $\frac{3}{4}$ ounce to 1 pint of rectified spirit, the dose is from 10 to 20 drops; dose of fluid extract, 3 to 15 drops. (See CAPSICINE.)

CAPSULE, *kap'-sule* [Lat. *capsa*, a chest], is a membranous production, enclosing any part like a bag; as the capsular ligaments enclosing the synovia of the joints, the capsule of the crystalline lens of the eye.

CAPSULES, *kap'-sūlz*, a name applied to small egg-shaped or spherical vessels, commonly made of gelatine, or of sugar and gelatine, and containing medicines of a nauseous nature, so that they may be swallowed the more readily. (See GELATINE.)

CAPUT, *ka'-put* [Lat. the head], in Anatomy, is applied to that portion of the human body which comprises the skull and face. The skull is distinguished into the following parts — the *vertex*, or crown; the *sinciput*, or fore part of the skull; the *occiput*, or hind part; the *tempora*, or temples. The parts of the *facies*, or face, are the forehead, eyes, nose, etc. The term *caput* is also applied to — 1, the upper extremity of a long bone, as the humerus; 2, the origin of a muscle; 3, a protuberance resembling a head, as the *caput Gallinaginis*, a small eminence in the urethra; 4, the beginning of a part, as *caput coli*, the head of the colon.

CARAMEL, *kar'-ą-mel* [Fr]. If sugar is melted, and the heat raised to 400° or 420°, the sugar loses two equivalents of water and becomes a brown, deliquescent, and nearly tasteless mass called caramel. It is often used by cooks and confectioners as a brown coloring matter. The brown color in brandy is due to a small portion of caramel dissolved in them.

CARAWAY. (See CARUM.)

CARBAZOTATE OF AMMONIUM. (See CARBAZOTIC ACID.)

CARBAZOTIC ACID, OR PICRIC ACID, *kär-ba-zot'-ik*, a complex acid, produced by the action of nitric acid on a number of organic substances, such as phenic acid, salicine, phloridzin, silk, indigo, and a number of the resins. It may be prepared in a variety of ways. Carbazotate of potash is anhydrous, and requires 160 parts of water for its solution; the salts of soda, ammonia, and the earths are freely soluble. The picrate or carbazotate of ammonium has lately been introduced as a substitute for quinine in the treatment of intermittent fever, and especially of the chills so prevalent in the Southern States. It is much cheaper than quinine, and said to be quite as efficient. It is given in doses of $\frac{1}{8}$ of a grain, three times a day.

CARBO ANIMALIS, *kär'-bo an-i-mal'-is*, bone-black or ivory-black. A tasteless, insoluble, rather coarse powder, of a dark brownish or blackish color, obtained by burning bones in covered iron vessels at a red heat. Its principle use is to decolorize organic matter, to purify syrups, and to remove from grain its fusel-oil. It is considered equal, if not superior, to hydrated sesquioxide of iron in poisoning by arsenic. It should be given in warm water, after the use of the stomach-pump and the administration of a strong mineral emetic.

CARBOLIC ACID, *kar-bol'-ik* [*Phenic acid*, *Hydrate of Phenyl*, *Phenole*, *Hydrated Oxide of Phenyl*, *Phenylic Alcohol*] ($C_{12}H_5OHO$).—Carbolic acid is a very abundant product of the distillation of coal. Laurent obtained carbolic acid from oil of coal-tar by collecting separately those portions which boil between 300° to 400° Fahr. By mixing with this oil a hot saturated solution of hydrate of potash, a white crystalline substance separates, the supernatant liquor is decanted, and the crystals are dissolved in a small quantity of water. The solution separates into two portions, the denser of which contains carbolate of potash. The potash is abstracted by the addition of hydrochloric acid, and the liquid carbolic acid rises to the surface. The carbolic acid solution is digested with chloride of calcium to remove water, and afterwards exposed to a low temperature. It then crystallizes in long colorless needles, which must be kept from contact with the atmosphere. Carbolic acid melts at 95°, and boils between 369° and 370°. The slightest trace of moisture is sufficient to cause the liquefaction of the crystals. Carbolic acid is but sparingly soluble in water; it is, however, readily dissolved by alcohol, ether, and acetic acid. It has a burning taste, and an odor of smoke resembling creosote. Its solution does not redden litmus, and leaves a permanent greasy mark on paper if let fall upon it. A splinter of deal dipped in carbolic acid and then into nitric acid becomes dyed blue. Carbolic acid has lately received an important application as a disinfectant and deodorizer. In medicine, carbolic acid possesses all the properties of creosote in an exalted degree. It is a valuable antiseptic, possessing the power of preserving organic substances by preserving from putrefaction and arresting fermentation in a remarkable degree. It is also used as a disinfecting wash for ill-conditioned ulcers and gangrenous sores. For disinfecting cellars, sewers, sinks, privies, etc., there is no better preparation than carbolic acid in the proportion of one ounce of the impure acid to a gallon of water. Five grains of the crystallized acid, rubbed up with an ounce of simple ointment (see OINTMENT), and applied morning and evening, will cure fetid perspiration of the feet and armpits. For old sores, indolent ulcers, and bad smelling wounds, a teaspoonful of the acid to a half-pint of water makes an excellent wash. One ounce of the acid to 4 ounces of glycerine, rubbed together until the acid dissolves, and applied morning and evening, will speedily cure the itch, and also makes an excellent application for scald-head, ringworm, and other obstinate cutaneous diseases caused by vegetable or insect parasites. Internally, it is used in chronic diarrhœa and obstinate vomiting, and like cases of gastric irritability. Dose, 1 to 3 grains. (See DISINFECTANTS.)

CARBON, *kär'-bon* [Lat. *carbo*, a coal],—symbol C, equivalent 6, specific gravity as diamond 3.35, as graphite 1.9 to 2.3, an elementary non-metallic solid body, very widely diffused through nature. Its purest and rarest form is that of the diamond, but in the forms of graphite and mineral charcoal it occurs very abundantly in nearly every part of the world. It also occurs, in combination with oxygen, as carbonic acid, in small quantities in the air, and in the waters of most springs. In combination, as carbonic acid, with lime and magnesia, it occurs, in enormous quantities, as limestone, marble, chalk, dolomite, etc.; whilst, combined with hydrogen, it enters largely into coal, peat, and lignite. From its invariable presence in all organic matter, it has been called the organic element; and Hoffman poetically calls organic chemistry "the history of the wanderings of carbon." From entering thus directly into the vegetable and animal creation, carbon may be considered as the most important element; and the giving out of carbonic acid by animals, to serve for the food of vegetables, is one of the many silent chemical operations constantly going on around us. The wonderful provision of Nature by which the carbonic acid cast out by animals as a poisonous product is converted into food for the support of plants, by the action of the sun's rays, has been the admiration of all philosophers and chemists from the days of Lavoisier to the present time.

Carbon, although not so characteristic a component of the animal as of the vegetable kingdom, yet enters largely into the constitution of the former; it assists to give permanent form to the various tissues, and furnishes one of the most active material agents, which, under the influence of life, make up the sum, and contribute to the varied changes and effects which are ever going on in the animated body. We have every reason to believe that carbon is the medium by which, as it combines with the oxygen inhaled by the lungs, and carried through the system by the blood—the animal temperature is maintained. Such being the case, it is evident that, next to oxygen, carbon is the element which must be most regularly and sufficiently supplied to the living body; the other constituent elements must undoubtedly be provided in food, but their omission for a time is not so apparently and quickly felt as that of carbon; if this be not furnished from outward sources, it is used up from the bodily tissues as long as they will yield it, even though its use involves their destruction, and the dispersion of the other elementary bodies of which they are composed. This actually happens in long fevers, during which little or no nourishment is taken; the carbon—and hydrogen—of the fat in the first place, and afterwards of the other portions of the body, is used up in sustaining the animal heat—as fuel—until a point is reached when it can be yielded no longer, and when the patient will actually die of cold, unless there is freely administered the gelatinous soups, the wine and spirit, with their abundant carbon and hydrogen, which yield their own combustible elements, to maintain the heat, and to protect the tissues of the already exhausted patient.

The discoveries of modern chemistry show us how beautifully the Almighty, in His goodness, has arranged the products of the various latitudes of the globe, has disposed the varied articles of food, he gives to His creatures, to man, in accordance with the various climates, and the modes of life in those climates, so that carbon may be consumed in due proportion along with the other elements; less in the watery fruits of the tropics and of our own summers, more in the fats and oils of the cold north.

Charcoal, or amorphous carbon, exists as ordinary wood charcoal and lampblack, generally combined with incompletely burned compounds of carbon and hydrogen. Coke and animal charcoal are other forms of carbon. Charcoal is made by inclosing wood billets in an iron retort, to which is adapted a tube for conveying the products of combustion to appropriate receivers, and exposing it to a red heat for four or five hours. Where wood is very abundant, large heaps, covered with powdered charcoal, leaves, turf, and earth, are fired and allowed to burn slowly for a month or more. Charcoal prepared in this way is superior to that burnt in retorts. *Animal charcoal*, or bone black, is prepared in cylinders, in a similar manner to that employed for wood charcoal. Carbon, in its amorphous condition, is a black, dense, perfectly opaque, insoluble, infusible, inodorous, tasteless body, conducting heat badly and electricity freely. At ordinary temperatures it shows no chemical affinities. This property has been taken advantage of by the ancients, who used it for ink. The same property has rendered it a common practice to char the inside of tubs and casks intended to hold liquids; and posts and piles partially charred are found to last longer under water than when immersed in their natural state. Finely divided charcoal has powerful antiseptic properties, and it is coming into use as a deodorizer for purifying the air of sewers. The great success attending the use of carbon for filters, both of air and water, is a proof of its efficacy as a disinfectant and deodorizer. Charcoal also has the peculiar property of absorbing coloring matter from organic solutions; hence it is used as a decolorizer. At high temperatures carbon combines energetically with oxygen, and will remove it from great numbers of its combinations: hence its use in reducing metallic oxides. Whatever be its source or form, carbon is chemically the same, and, when burned in oxygen, forms carbonic acid. Carbon unites with several of the elements to form very important compounds. Its inorganic compounds are treated of under the heads CARBONIC ACID; CARBONIC OXIDE; CARBON, BISULPHIDE OF; HYDROGEN. In Medicine, wood charcoal is used as an antiseptic and disinfectant. It has lately come much into use in indigestion, particularly in the form of lozenges, correcting flatulence, fetid breath, fetid stools, etc. It is also used as a tooth powder, and is believed to check decay of the teeth. Dose, from 20 to 60 grains. Charcoal poultice, a useful application for foul and fetid ulcers, is made by macerating 2 ounces of bread crumbs for 10 minutes in 10 fluid ounces of boiling water, mixing and adding gradually 1½ ounces of linseed meal so as to form a poultice, then adding ¼ ounce of charcoal, and sprinkling another ¼ ounce on the top. Animal charcoal possesses the same medicinal properties as those of wood charcoal, but some of these to a greater extent. It is particularly useful as a decolorizer, and as an antidote in poisoning by certain vegetable substances, the alkaloids, etc., if given immediately. As an antidote its action is much aided by its being mixed with water as hot as the patient can swallow it. Dose, 20 to 60 grains. (See CARBON, BISULPHIDE OF; AERATION, BLOOD, BILE, RESPIRATION, FOOD, CARBONIC ACID; OXYGEN, CARBONIC OXIDE, ETC.)

CARBONATE, *kär'-bon-at.* A salt formed by the union of carbonic acid with a base. They all effervesce with strong acids, and all are decomposed by heat, except the carbonates of potash, soda, and lithia.

CARBONATED WATERS. (See MINERAL WATERS.)

CARBONATE OF AMMONIA. (See AMMONIA.)

CARBONATE OF IRON. (See IRON.)

CARBONATE OF POTASH. (See POTASH.)

CARBONATE OF SODA. (See SODA.)

CARBON, BISULPHIDE OF, *kär'-bon bi-sul'-fide* ($CS_2$),—equivalent 38, specific gravity 1.27, boiling point 118.5° Fahr. Only one compound of sulphur and carbon is known. It is prepared by heating fragments of charcoal to redness in a retort; into which dip a tube reaching to the bottom of the charcoal. From time to time sulphur is dropped through the tube, which is closed again immediately. The sulphur and carbon gradually combine, and the bisulphide distils over into the receiver, which is kept cool with ice. It is at first yellow, from excess of sulphur; but by being re-distilled several times it is obtained in a state of purity. It is a colorless liquid, with an acrid, pungent taste, and a fœtid odor. It is insoluble in water, but dissolves in ether and alcohol. It is very volatile, and has never been frozen. It burns with a blue flame, giving off sulphurous and carbonic acid gases. It dissolves sulphur and phosphorus readily, and these elements may be obtained in crystals by slow evaporation of their solutions. It is said to be stimulant, diaphoretic, and emmenagogue in doses of 2 to 6 drops in mucilage or on sugar. The vapor is anæsthetic. (See CARBON.)

CARBONIC-ACID, CARBONIC-ACID GAS, *kar-bon'-ik.* Carbonic acid ($CO_2$), equivalent 22, specific gravity 1.529. Carbonic acid is the product of the combustion of all substances containing carbon. It occurs in combination with metallic oxides in the mineral kingdom, also dissolved in mineral springs. It issues from the earth in volcanic districts, and forms the deadly choke-damp of the coal-mines. It is also a product of respiration, fermentation, and putrefaction, which is nothing more than slow combustion. It is easily prepared by acting on a carbonate, such as chalk or marble, with nitric, sulphuric, or hydrochloric acid, in a gas-generating apparatus. The carbonate of lime is converted into chloride of calcium, and the carbonic acid escapes as gas. Carbonic acid is known in the solid, liquid, and gaseous states. By a pressure of thirty atmospheres at 32° Fahr., it is liquefied, the pressure required decreasing as the temperature gets lower. Liquid carbonic acid is colorless, insoluble in water and fatty oils, but mixing in all proportions with ether, alcohol, bisulphide of carbon, naphtha, and turpentine. At 94° Fahr. it solidifies into a vitreous transparent mass; and is used, in conjunction with ether and bisulphide of carbon, for producing intense cold. Gaseous carbonic acid is colorless, possessing a slightly acid smell and taste. At ordinary temperatures it dissolves in water in the proportion of bulk for bulk. By pressure, water may be made to take up great quantities of the gas, the same volume being always absorbed, no matter how great the pressure may be. Upon the removal of the pressure, the gas escapes in bubbles. When inhaled, carbonic acid produces death, even when much diluted. A lighted candle is generally used to test an atmosphere suspected to contain carbonic acid; but it is found that air that will support combustion will contain sufficient of this gas to cause insensibility and dangerous illness. The ill effects of crowded rooms are owing to the systemic depression produced by small quantities of carbonic acid. Though a feeble acid, and easily separable from its combinations, carbonic acid unites with the metallic oxides, forming a very numerous and important class of salts, the carbonates, descriptions of which will be found under the headings of their bases. The carbonates of the alkalies are soluble in water, the carbonates of the other metallic bases being for the most part insoluble, except the water is highly charged with carbonic acid. Hard water contains carbonate of lime or magnesia, held in solution by the carbonic acid contained in the water; hence, when the gas is dissipated by boiling, the carbonate of lime is precipitated, incrusting the vessel in which it has been boiled.

Carbonic acid gas or choke-damp, is a compound of one part of carbon with two parts of oxygen. It is colorless, and much heavier than atmospheric air, a property which gives it a dangerous tendency to collect at the lower parts of any inclosed spaces in which it may be disengaged. Old wells, brewers' vats, the holds of ships, etc., are all liable to become the receptacles for carbonic acid gas, which, formed from some decomposing vegetable matter, lies like a stratum of water at the bottom of the receptacle. Should any one incautiously descend, so as to become enveloped in the carbonic acid atmosphere, respiration is either instantly stopped by spasmodic closure of the chink at the upper portion of the windpipe, and complete suffocation is the consequence; or if the gas is sufficiently diluted with air to be drawn into the lungs, it speedily manifests its narcotic effects upon the system, and the person quickly falls in a complete state of stupor. The respiration becomes labored, and after a time ceases; the countenance is livid or pale, and there may be convulsion, and frothing at the mouth. In such a case, the body of the individual must be removed, if possible, and as soon as possible, from the poisonous atmosphere, or the latter must be destroyed or dispersed. The many fatal accidents which have occurred from persons venturing rashly into old wells, and such like places, might be a warning for the future, and prompt the invariable employment of the simple test of lowering a lighted candle into the suspected place. If the flame be extinguished, the atmosphere is certainly destructive to life; if it burn even with a feeble and diminished intensity, there is danger. Of the various modes for destroying a carbonic acid atmosphere, none is more speedily effective than the introduction into it of newly-slaked lime, either spread upon a board, or mixed with water, and dashed into the place; fresh lime, having a powerful affinity for carbonic acid, quickly absorbs it. In the absence of lime, a quantity of fresh water dashed freely down, so as at the same time to absorb the gas and promote circulation of air, will be serviceable; or large bundles of combustible material, which will cause currents of air, may, when blazing freely, be thrown in. Caution in the first instance, is the best preservative; but in the event of an individual dropping in an atmosphere of choke-damp, it is perfectly useless for others to rush in to bring him out; they can no more exist in it than he could, and in stooping to lift a fallen body, they become all the more thoroughly immersed in the poisonous gas. Instead of rashly sacrificing life in the ill-directed endeavor to rescue another, let those who are present dash bucket after bucket of water or weak lime and water into the place, and on the fallen person, until the unextinguished flame tokens that the fatal atmosphere is weakened at least; and when they do venture in, tie over the mouth a cloth soaked in lime-water, in a weak solution of caustic potash, or of simple water if these cannot be obtained.

In cases of suffocation from immersion in choke-damp, cold water should be dashed freely over the individual as soon as removed into the open air, and this measure, succeeded by heat applied to the surface, stimulant embrocations to the chest, spine, etc., stimulant injections, and ammonia held at intervals to the nostrils, whilst artificial respiration is at the same time brought into action, and steadily persevered in for some hours. (See DROWNING.)

Carbonic acid is produced during fermentation, or by the slow decomposition of vegetable matter, such as damp straw, sawdust, wood chips, etc. It is the gas disengaged in effervescing liquors generally; it is also produced along with other vapors of which carbon forms a constituent, in the burning of charcoal.

Poisoning by charcoal fumes, either by design or accident, is not an unfrequent occurrence. In the latter case, it usually occurs from persons ignorantly retiring to sleep in a closed-up room, in which burning charcoal is used as a means of warmth. The carbonic acid, and other fumes disengaged, act slowly and insidiously, and exert so powerful a narcotizing effect, that those exposed to the influence are quickly rendered unable to remedy the circumstances, and perfect insensibility ensues. Too often it happens, that the discovery of the accident does not take place until morning, long after it is too late to remedy the fatal effects;

the sufferers are usually found dead. If living, they will probably be perfectly insensible; the countenance pale and livid. Immediate removal to the open air, and free exposure to its influence by removal of the greater part of the clothing, is the first proceeding, and the treatment recommended in cases of poisoning from choke-damp is to be followed. Carbonic acid is largely evolved in the process of lime-burning, and persons who have incautiously slept in the immediate neighborhood of a kiln have been destroyed by it. The poisonous contamination of the air in crowded assemblies has already been treated of in the articles, AERATION, AIR, etc.

There is yet another source of poisoning by carbonic acid, which occurs when it is largely given off from fluids taken into the stomach in a state of fermentation. This accident is said by Liebig to happen in Germany in consequence of persons drinking wine whilst it is fermenting; the generation of the carbonic acid is stimulated by the heat of the stomach, and it is given off in such quantity as to permeate even the lungs, causing suffocation. The best remedy is ammonia, both inhaled and taken into the stomach. (See AMMONIA.)

In medical practice, carbonic acid is given in the form of effervescing drinks. Some mineral waters contain it naturally; soda water, and other similar fluids, are mechanically impregnated with the gas; it is, too, very frequently given as disengaged from one of the carbonates of the alkalies by means of an acid. In most cases, the action of carbonic acid, given in this way, on the stomach, is very beneficial; it appears to be at once stimulant and sedative, and no remedy is more generally useful in cases of vomiting; it is an agreeable form of medicine to most persons. When effervescing drinks are given to persons confined to bed, they should always sit up for a few minutes after the draught is swallowed, to allow of the eructation of the air, which not being got rid of in a horizontal posture, may produce uncomfortable distension. Externally it is useful as a local anæsthetic in painful affections, as cancer, etc. (See AERATION, AIR, BLOOD, CARBON, OXYGEN, EFFERVESCENCE, VENTILATION, RESPIRATION.)

CARBONIC-OXIDE, *kar bon'-ik oks'-id* (CO),—equivalent 14. specific gravity 0.967. Carbonic oxide is produced when carbonic acid is passed over red-hot charcoal; and this gas is formed during the combustion of almost every organic substance. The first result of combustion is, of course, carbonic acid, which, passing over the red-hot coals or wick, as the case may be, parts with an equivalent of its oxygen. The gas, however, is inflamed as fast as it is formed, and reconnected with carbonic acid. It is generally prepared by the decomposition of oxalic acid by sulphuric acid. Oxalic acid consists of $C_2H_3$, united to an equivalent of water, without which it does not appear to be able to exist. The sulphuric acid abstracts this equivalent of water, leaving the $C_2H_3$ at liberty to separate into CO, carbonic oxide, and $CO_2$, carbonic acid. The latter is absorbed by passing the mixed gases through milk of lime. Carbonic oxide gas thus prepared is colorless and inodorous, burning with a blue flame, and giving rise to carbonic acid. It supports neither combustion nor respiration, one per cent. mixed with air being sufficient to cause dangerous drowsiness. It is now satisfactorily proved that the coma generally resulting in death produced by the combustion of charcoal in close rooms, is due to the formation of carbonic oxide by the carbonic acid formed during combustion being exposed to the action of so much incandescent material. It is a neutral body, has no action on litmus-paper, does not combine with acids or bases, and has never been liquefied; it is slightly soluble in water. (See Carbonic Acid.)

CARBUNCLE, ANTHRAX, *kär'-bungk-kl, an'-thraks* [Lat. *carbunculus*, a little coal]. Carbuncle resembles a boil in many respects, but is larger. It is a hard, inflamed, intensely painful swelling, of any size, up to that of a saucer, or even larger; it is flat on the top, and contains a slough, or mortified portion of cellular tissue, which must be discharged before the disease can subside. After the inflamed swelling has existed for some days, small points of ulceration through the skin on its surface begin to show themselves, they enlarge, coalesce, and at last form one large opening, through which the slough or core is discharged, either entire or broken down and mixed with bloody matter. When all has been got rid of, the cavity begins to fill up from the bottom; and generally in the course of a few weeks becomes entirely healed. Such is the progress of a carbuncle, which does not require interference.

*Treatment.*—The treatment consists in the first place, of assiduous fomentation, and poultices of bread, oatmeal or linseed meal, and in the open stage, yeast; when the cavity is fairly emptied of sloughs, the poultice must be exchanged for water dressing, which will in all probability require no alteration during the cure. A small carbuncle may thus, as far as the sore is concerned, be simply and safely attended to, but much more may be required. Carbuncle occurs in two very opposite states of system—in those of full habit, and in those of broken constitution. In the former, eight or ten leeches may with advantage be applied round the base of a large incipient carbuncle, and free purging, cooling saline medicines, and low diet be resorted to; should a surgeon be in attendance, he will probably make a free crucial incision to facilitate the exit of the core. In those of broken constitution, the opposite treatment will be requisite—all unnecessary loss of blood must be avoided, and whilst gentle alterative aperients are given, the system must be soothed by opiates, and supported by quinine or bark, along with strong meat broths, wine or porter. In such constitutions, a carbuncle of any size is a serious, if not unfrequently a fatal affection. Carbuncle is certainly indicative of a deranged state of the system generally, and of the assimilative powers in particular; it more frequently happens too, that a large carbuncle has been preceded by two or three smaller ones, or boils, in succession. The occurrence of these ought always to be taken as a warning; the man of full habit should reduce his diet, meat and stimuli in particular, take exercise freely, and 5 or 6 grains of compound colocynth pill every night, or every second night, for a week or ten days, and a gentle saline aperient in the morning. A tendency to carbuncle in the delicate or aged, must always be regarded seriously, not only as indicative of serious functional disorder of the assimilations, but from the direct danger arising from the disease itself. On this account, it is always desirable that the case should be put under efficient medical care, early, so that, if possible, constitutional treatment may arrest the threatened evil. In the case of a carbuncle of any size being developed on persons advanced in life, of weak constitutional power, the case is too dangerous to be left to domestic management if medical assistance can be procured. If not, the treatment must be carried out as above directed.

The most usual seat of carbuncle is the back part of the body and head, the arms and thighs. (See Boil.)

CARBURETS, *kär'-bu-rets.* Carburets are now called carbides, the word being more analogous to chloride, iodide, etc.

CARBURETTED HYDROGEN. (See Hydrogen.)

CARDAMINE, *kär'-da-mine* [Gr. *kardia*, heart or courage, on account of its strengthening properties], in Botany, a genus of plants belonging to the Nat. order *Cruciferæ*. *C. pratensis*, the cuckoo-flower, or lady's-smock, is a perennial met with in meadows and moist pastures, blossoming in the month of April and May, when its flowers, which are flesh-colored, white, or light purple, present a very pleasing appearance. Formerly the flowers were used medicinally, as a remedy in epilepsy. The leaves are antiscorbutic, and are sometimes eaten as watercress.

CARDAMOMS. (See Elettaria.)

CARDIA, *kär'-de-a* [Gr. the heart], is the name given to the superior opening of the stomach, on account of its being situated near the heart.

CARDIAC, *kär'-de-ak*, of or belonging to the heart. Thus cardiac medicines are cordials, or stomachic and stimulant medicines, supposed to stimulate or strengthen the heart.

CARDIAC ORIFICE. The name applied to the upper orifice of the stomach, where the œsophagus terminates. The lower opening of the stomach receives the appellation pylorus.

CARDIALGIA, *kär-de-al'-je-a* [Gr. *kardia*, and *algos*, pain], denotes pain or an uneasy sensation in the stomach, accompanied with anxiety, a heat more or less virulent, sometimes attended with oppression or fainting, and frequently with an inclination to vomit, or a plentiful discharge of clear lymph-like saliva. (See DYSPEPSIA, HEART-BURN.)

CARDITIS, *kar-di'-tis* [Gr. *kardia*, the heart, terminal *itis*], in Pathology, denotes inflammation of the heart. It is characterized by pain in the region of the heart, great anxiety, fever, difficulty of breathing, palpitation, cough, irregular pulse, and fainting. It is applied properly to inflammation of the muscular tissues of the heart itself; but this is a form of disease that rarely occurs alone, being usually accompanied by *pericarditis*, or inflammation of the pericardium, or by *endocarditis*, or inflammation of the lining membrane of the heart. The symptoms and treatment in each case are similar. (See HEART, DISEASES OF THE.)

CARDUUS, *kär'-du-us* [Lat. a thistle], the thistle, a genus of plants belonging to the Nat. order *Compositæ*, consisting of numerous species, some of which are noble-looking flowers. *C. benedictus* and a few others have been used in medicine as tonics and febrifuges.

CARE OF CHILDREN. (See CHILD, CHILDREN.)

CARIES, *ka'-re-eez* [Lat. rottenness], is a disease of the bones analogous to ulceration of the soft parts. It differs from necrosis, in that, in the latter, the bone is destitute of vitality, which is not the case when it is simply carious. Necrosis corresponds to mortification of the soft parts. Caries most frequently attacks the bones of the spine; but it may affect any of the bones, especially such as are of a spongy texture, as the carpal or tarsal bones, or the heads of the long bones, where they form articulations. The young, or those of a scrofulous habit of body, are most subject to this disease.

*Cause.*—The disease is generally the result of wounds, blows, exposure to severe cold, or a bad condition of the body, but sometimes it supervenes without any assignable cause.

*Symptoms.*—It begins with inflammation, usually attended with a dull, heavy pain and weakness in the part affected. In course of time an abscess forms, which, if not arrested, at length bursts and discharges a thin fluid containing particles of the bone. In caries of the vertebræ, curvature of the spine takes place, more or less, according to the vertebræ affected, and paralysis generally sets in. At the articulation of the bones, the part enlarges, the cartilages become affected, and amputation or excision of the joint is often necessary, in order to save the patient's life.

*Treatment.*—Much may be done in arresting the progress of this disease, at least in its earlier stages. For this purpose, the patient should be strengthened by good air and nourishing diet, at the same time that rest is enjoined: the state of the stomach and bowels should also be attended to. The former may be invigorated by the administration of citrate of iron and quinine, in doses of 3 grains, before each meal and at bedtime, and the latter be kept gently open by a mild saline aperient daily, or one tablespoonful every evening of the excellent cathartic elixir prepared by Wyeth, of Philadelphia. In the local treatment of the disease, blisters, leeches, and issues are to be employed. The abscesses are best left to nature, unless they are productive of much uneasiness, in which case they should be promptly opened by a medical man. When they have burst, the exfoliation of the diseased part should be expedited as much as possible, or when practicable the whole of the diseased portion should be removed by a saw or gouge, so that the healthy portions may granulate and heal. (See NECROSIS.)

CARMINATIVES, *kar-min'-a-tivz* [Lat. *carmen*, a charm; Fr. *carminatif*], is a term applied to certain substances which have the power of dispelling flatulence, or relieving pain in the stomach and bowels. They belong chiefly to the vegetable kingdom; as, cardamoms, peppermint, ginger, anise, and caraway seeds, and other aromatic stimulants.

CARO, *ka'-ro* [a Latin word signifying flesh], is frequently used in medicine, as well as many of its compounds; as, *carnæ columnæ*, the fleshy columns or muscular fasciculi within the cavities of the heart; *carneous*, fleshy, applied to some muscles of the heart; *carnicula* (dim.) a small fleshy substance; *carniformis*, having the appearance of flesh; *carnivorous*, flesh-devouring, applied to animals that live on flesh; *carnosus*, fleshy.

CAROTID ARTERY, *ka-rot'-id ar'-te-re* [Lat. *arteria carotidea*], is the name given to a considerable artery on each side of the neck. It is so called from the Greek verb *karoo*, I cause to sleep, because, if tied or compressed, the person becomes comatose, and has the appearance of being asleep. The right carotid arises from the arteria innominata, the left from the aorta. The left is thus rather longer than the right, and is, in general, somewhat smaller. They ascend backwards and outwards into the neck, and, when opposite the os hyoides, each of them divides into the external and internal carotid arteries; the former proceeding to the face and parts without the cranium, the latter to those within. The external carotid afterwards divides into ten branches; viz., the superior thyroid, lingual, lateral, occipital, muscular, pharyngea ascendens, posterior auris, transverse facial, temporal, and internal maxillary. The internal carotid enters the cranium by a somewhat tortuous course, and afterwards separates into four branches—the ophthalmic artery, and the anterior, posterior, and central arteries of the brain.

CARPHOLOGIA, *kär-fo-lo'-je-ą* [Gr. *karphos*, the nap of clothes, and *lego*, I pluck], is the picking of the bedclothes sometimes observed in persons in the delirium of a fever, and regarded as a very dangerous symptom.

CARPUS, *kär'-pus* [Gr. *karpos*], is a term in Anatomy applied to the wrist, or that part of the upper extremity between the forearm and the hand. The carpel bones, or bones of the wrist, are eight in number, and are arranged in two rows—a superior and inferior, each containing four bones. In the superior row, counting from without inwards, are the scaphoid or navicular, the lunar, cuneiform or pyramidal, and pisiform bones; and in the interior, the trapezium and trapezoid bones, the os magnum, and the unciform bone. These bones are connected with each other, with the metacarpal bones, and with the extremities of the radius and ulna, by numerous ligaments. (See ANATOMY.)

CARRAGEEN, OR IRISH MOSS. (See CHONDRUS.)

CARRARA WATER, *kar-ra'-rą*, is an artificially prepared effervescing water, holding carbonate of lime in solution by means of an excess of carbonic acid. It is useful in some forms of dyspepsia.

CARRON OIL, *kar'-ron oil*, is a mixture of equal parts of lime-water and linseed-oil; it has been much celebrated as an application in burns, having first come into use at the Carron iron works, in Scotland. It is certainly soothing, but need scarcely be employed whilst there are other and less disagreeable remedies at hand. When used, it is smeared over the burnt part by means of a feather. (See BURNS AND SCALDS.)

CARROT. (See DAUCUS.)

CARTILAGE, *kär'-te-ląj* [Lat. *cartilago*], in Anatomy, is a white, firm, elastic, glistening substance, intermediate between bone and ligament, and commonly known by the name of gristle. Cartilages are divided by anatomists into—1, articular, covering the surface of the bones, which form movable joints; 2, inter-articular, which are situated between the ends of bones, forming articulations; and 3, connecting cartilage, which unites one bone with another. In some cases, cartilage occurs unconnected with bone, as in the larynx and trachea. In early life, cartilage in various parts occupies the place of bone, and becomes afterwards ossified. The physical properties of cartilage—its firmness, elasticity, and powers of resistance—render it specially fitted for the purposes which it is intended to serve, facilitating the motions of bones, or connecting them together.

CARUM, *ka'-rum* [from Caria, in Asia, it being originally found there], a genus of plants belonging to the Nat. order *Umbelliferæ*. The species *C. carui* is the common caraway, a native of most parts of Europe. It is largely cultivated for its fruits, commonly called seeds, which have a pleasant odor and a warm aromatic taste, owing to the presence of about five per cent. of volatile oil. They are much used in confectionery and for flavoring cakes. The oil, obtained by distilling the fruits with water, is used as a corrective adjunct in medicines. Dose of the oil, 2 to 5 drops.

CARUNCLE, *kar'-un-kl* [Lat. *caruncula*, dim. of *caro*, flesh], in Anatomy, is used to denote a small piece of flesh, or a little fleshy excrescence; hence the *caruncula lachrymalis*, a small fleshy, glandiform body, situated on the inner angle of each eye.

CARYA, *ka'-re-a* [Gr. *karuon*, a nut], a genus of plants belonging to the Nat. order *Juglandaceæ*. The species are chiefly natives of North America. *C. alba*, the common hickory, is valuable for its timber, and also for its edible seeds, which are commonly known as hickory nuts. *C. Olivæformis* yields an olive-shaped or elliptical nut, which resembles the walnut in flavor, and is known as the pecan nut. *C. porcina* yields an edible nut called the hog-nut.

CARYOPHYLLUS, *kar-e-of'-il-lus*, a genus of plants belonging to the Nat. order *Myrtaceæ*. The most important species is *C. aromaticus*, the clove-tree, a native of the Moluccas, but now grown also in the Isle of France, India, and the West Indies. The cloves of commerce are the unexpanded flower-buds dried. They form a well-known spice, and are much used in medicine on account of their aromatic, stimulant, and carminative properties. The oil of cloves, *oleum caryophylli*, has a strong odor, and a warm, aromatic, and even acrid taste. It is one of the few volatile oils that sink in water, having a specific gravity of 1.05 to 1.06. The infusion of cloves is formed by taking ¼ ounce of bruised cloves, and 10 fluid ounces of boiling distilled water, and infusing in a covered vessel for half an hour, and then straining. Dose: of powder, 5 to 20 grains; oil, 2 to 5 drops; infusion, 1 to 2 fluid ounces. The dried unripe fruits are called mother cloves, and are used in China and other countries instead of the ordinary cloves, to which they are very inferior.

CASCARA SAGRADO, *kas-ka'-ra*. The bark has long been known to residents on the Pacific Coast as a sovereign remedy for habitual constipation and dyspepsia, and is likely to prove a very valuable addition to the materia medica. Dose, of the fluid extract, from 15 drops to 1 teaspoonful, three or four times a day.

CASCARILLA. (See CROTON.)

CASEINE, *ka'-se-in* [Lat. *caseus*, cheese], is the nitrogenous principle of milk, which forms a large portion of the curd. Caseine, in the soluble form, appears to be preserved in solution by a small quantity of alkali contained in the milk. In the coagulated form it is readily obtained by adding dilute sulphuric acid to the milk, which precipitates in the form of a curd. The curd is well washed and dissolved in carbonate of soda, and allowed to stand for twenty-four hours, to let the oil rise to the surface. This is skimmed off, and the caseine precipitated by an acid. The process is repeated a second time, and the coagulum digested with alcohol and ether, and dried. With all these precautions the caseine still contains some saline matter, which cannot be removed. It is also obtained by coagulating the milk with hydrochloric acid. Coagulated caseine is readily dissolved by the alkalies and alkaline carbonates. Caseine also unites with earthy carbonates, and forms insoluble compounds. A very tenacious lute is made by mixing poor cheese with slaked lime. The most remarkable form of coagulation is that produced by the action of the secretion from the mucous membrane of the stomach. This substance is called rennet, and consists of the inner membrane of the fourth stomach of the calf, salted and dried. When a solution of rennet is mixed with milk, a dense coagulum is formed, leaving the whey behind, as a thin, clear, straw-colored liquid. The quantity of caseine in milk varies according to the period of lactation at which the milk is examined; and varies also in different animals. (See FOOD, MILK.)

CASSIA, *kash'-she-ą* [from Arab. *katsa*, to tear off, the bark being stripped from the tree], commonly called senna, a genus of plants belonging to the Nat. order *Leguminosæ*, sub-order *Cæsalpinieæ*. The leaflets of several species furnish the important drug senna. Some uncertainty prevails as to the species yielding some of the commercial varieties. That kind commonly known as Alexandrian senna is generally supposed to be derived from *C. officinalis*, var. *lanceolata*, and *C. obovata*. This is the kind most esteemed, but it is frequently adulterated with the leaves of other plants. The common East Indian, Mecca, or Bombay senna is supposed by Royle to be the produce of *C. officinalis*, var. *acutifolia;* Tinnevelly senna, a very fine kind, is furnished by *C. officinalis*, var. *elongata*. The above three varieties are those generally used in this country. Senna has a faint, sickly odor, and a mucilaginous, bitter and nauseous taste. It is a common, safe and efficient purgative, and may be given to children, females, and elderly persons with safety. It acts principally on the small intestines, producing copious loose evacuations. Its efficacy is increased by drinking plentifully of diluents, and its nauseous taste is disguised by giving it in strong coffee or tea, or by the addition of sugar and milk. To prevent griping, which it has sometimes a tendency to produce, it is frequently conjoined with aromatics, as coriander, or ginger. It is usually given in the form of infusion, often in combination with a saline purgative, as sulphate of magnesia, or Epsom salts.

The infusion is formed by taking 1 ounce of senna, 30 grains of sliced ginger, and 10 fluid ounces of boiling distilled water; infuse for one hour in a covered vessel, and strain. Dose, 1 to 2 fluid ounces.

The compound mixture of senna, or black draught, is formed by dissolving 4 ounces of sulphate of magnesia and ½ an ounce of extract of liquorice in 14 fluid ounces of infusion of senna, with a gentle heat; then add 2½ fluid ounces of tincture of senna, 10 fluid drams of compound tincture of cardamoms, and a sufficiency of infusion of senna to make 1 pint. Dose, 1 to 1½ fluid ounces.

For tincture, take 2½ ounces of senna, broken small, 2 ounces of raisins, freed from seeds, ½ ounce each of bruised caraway and coriander fruit, and 1 pint of proof spirit; macerate for forty-eight hours in a closed vessel, and then strain. Dose, 1 to 4 teaspoonfuls.

The syrup and the confection are very useful and palatable preparations of this drug, but they contain a number of ingredients, and the making of them is tedious and complicated. Dose: of the former, 1 to 4 teaspoonfuls; of the latter, 60 to 120 grains; fluid extract, 1 to 2 teaspoonfuls; senna compound, 1 to 2 teaspoonfuls; senna pills, 2 grains each, 1 to 2 pills.

Other commercial varieties are, Tripoli senna, from *C. æthiopica;* Aleppo senna, from *C. obovata;* and American senna, from *C. Marilandica.* Another drug, called cassia pulp, or purging cassia, is obtained from a species of this genus; namely, *C. fistula.* The pulp is contained in the pods. It is of a reddish-black color, of a sweetish taste, and possesses laxative and purgative properties. It is one of the ingredients in the confection of senna. The pods of *C. Braziliana* are used in veterinary medicine under the name of horse cassia. The seeds of *C. Absus,* under the names of Chichou and Cismatan, are used in Egypt as a remedy in ophthalmia.

CASSIA BARK AND CASSIA BUDS. (See Cinnamomum.)

CASTANEA, *kas-ta'-ne-a*, in Botany, a genus of plants belonging to the Nat. order *Corylaceæ.* The species are familiarly known as chestnut-trees. *C. vulgaris* or *vesca* is the Spanish chestnut, which is much cultivated for timber, and for its edible nuts, which form a principal part of the food of the poor of the south of Europe. *C. Americana,* a native of the Northern States produces a much smaller, but very sweet nut.

CASTILE SOAP. (See Soap.)

CASTOR, *kas'-tur*, is the dried preputial follicles and their secretion obtained from the Beaver (*Castor Fiber*), and separated from the somewhat shorter and smaller oil-sacs which are frequently attached to them. The follicles are usually in pairs about 3 inches long, fig-shaped, firm and heavy, brownish, or greyish black, and containing a dry, resinous, reddish-brown or brown, highly odorous secretion, and in great part soluble in rectified spirit, and in ether. It is antispasmodic and stimulant, and has been recommended in various nervous diseases, as hysteria, epilepsy, catalepsy, etc., particularly when attended with uterine disorder. Dose, 5 to 10 grains. The tincture of castor (1 ounce in coarse powder to 1 pint of rectified spirit) is given in doses of ½ to 1 teaspoonful.

CASTOR-OIL. (See RICINUS COMMUNIS.)

CATALEPSY, *kat'-a-lep-se* [Gr. *katalepsis*, from *kata*, down or into, and *lambano*, I seize], in Pathology, is a disease characterized by a sudden deprivation of sensation and voluntary motion. The attack usually comes on without any warning, and during the paroxysm the patient remains in precisely the same position as he was in at the moment of attack. The circulation and respiration are in most cases but little affected; but occasionally they are greatly depressed, and are sometimes even imperceptible. The attack may last only for a few minutes, or it may continue for hours, and even, it is said, for days; and consciousness generally returns with the same suddenness as it left, the patient having no recollection of anything that passed during the attack. This disease bears a great resemblance to the mesmeric state, and, indeed, is so often feigned, that many have doubted whether it really had any existence. There can be little doubt, however, that it is sometimes, though not often, a real disease.

*Causes.*—The hysterical and melancholic are most predisposed to it; and the paroxysm is frequently induced by some strong mental emotion, or by some disorder of the digestive or secretive organs.

*Treatment.*—The treatment will necessarily vary in each particular case, according to the general condition of the patient and the probable exciting cause. Generally, however, the system should be strengthened by nourishing diet, gentle exercise, sea-bathing, and tonics. During the attack, the body should be kept warm and excited by gentle friction; mustard poultices should be applied to the soles of the feet, the palms of the hands, and the pit of the stomach; and strong ammonia applied to the nostrils. (See MESMERISM.)

CATAMENIA. (See MENSTRUATION.)

CATAPLASM. (See POULTICE.)

CATARACT. (See EYE, DISEASES OF THE.)

CATARRHAL AFFECTIONS OF INFANTS. (See SNUFFLES.)

CATARRH, CHRONIC, *ka-tär'*—*Causes.*—It is caused generally by a succession of colds, or follows as a sequel to an acute attack of influenza. In some instances, it appears to affect whole families at once, giving rise to the suspicion that it is contagious.

*Symptoms.*—Catarrh is frequently a chronic disease, attended with a disagreeable trickling of acrid matter from the posterior nares, or nostrils, into the throat. It is attended with a constant expectoration, and a continual hawking and spitting. In some people, it continues the whole year round, but is particularly aggravated in the autumn and winter, and gives rise to a cough which is very annoying, especially at night. There is often with it a good deal of irritability of the stomach, caused by swallowing more or less of the mucous discharge; and, also, at intervals, fever, giving rise, many times, to the supposition that the patient is becoming affected with consumption. In persons of advanced years, it often ends fatally, and always makes life anything but pleasant. On examining the mouth, the soft palate, the tonsils, and the upper and posterior part of the pharynx are observed to be red, the mucous membrane thickened and exuding a thick pus-like discharge.

*Treatment.*—The patient must be warmly clothed, and scrupulously avoid all exposure to damp, or intense cold, or sudden changes of temperature, and especially to wet feet. The diet should be moderate and stimulants avoided. If the case becomes aggravated, the patient must be confined to a warm room, and if there be much debility, carbonate of ammonia, in 10 grain doses, every three or four hours, will be found to give much relief. In the chronic catarrh of old people, when much expectoration has accumulated in the air-passages, the following will be very beneficial:

Take of Gum ammoniacum....................Two drams.
Dilute nitric acid.....................Two drams.
Acacia mixture................ ......Eight ounces—*Mix.*

Give 2 large tablespoonfuls every two or three hours.

Cures have been effected by impregnating the air of the apartment with fumes of benzoin, the drug being thrown on burning coals, or it may be inhaled from a common inhaler, the balsam being placed in boiling water. When the cough is hard and dry, and the expectoration tough and scanty, smoking stramonium affords, many times, almost instant relief. The powdered bay-berry root, used in the shape of snuff, has also been found of much service. Sulphate of zinc, 20 grains to the ounce of water, makes an efficient gargle when the throat is much inflamed. The happiest results have followed the use of the atomizer in this trouble. Any one of the following articles may be used by means of the atomizer, namely: Nitrate of silver, 1 to 10 grains to 1 ounce of water; chlorate of potash, 10 to 30 grains to 1 ounce of water; tar water, 1 to 2 drams of the officinal solution to 1 ounce of water; or, when the cough is very troublesome, fluid extract of conium, 3 to 8 drops to 1 ounce of water. Each of the above, used separately, is often attended with much success. In the absence of an atomizer, tar water or chlorate of potash, of the strength just indicated, may be snuffed vigorously up the nostrils. (See ATOMIZER.)

CATARRH, OR COMMON COLD, [Gr. *katarrheo*, I flow down]. Catarrh is inflammatory irritation of the mucous membrane lining the air-passages, the nostrils, and bronchi. It usually commences in the former and extends to the latter.

*Causes.*—Catarrh is generally the result of cold combined with damp, but very frequently of checked perspiration, in consequence of the individual passing directly from a warm into a cold atmosphere, and, we believe, more frequently by passing immediately from a cold into a warm atmosphere. It is, too, not improbable that the recently discovered agent, ozone, when it exists to excess in the atmosphere, exerts a violent effect upon the respiratory membrane. Catarrh is unquestionably the effect in many cases of unavoidable atmospheric changes and influences, but it is much oftener the result of carelessness or imprudence—of carelessness in not guarding the body against the effects of our changeable climate, and particularly the neglect of wearing flannel or some woolen material next the skin, which is the very best preservative. Rooms, in the house, too warm, and exposure to the air insufficiently clothed, are fertile sources of catarrhal affection, especially in children. Insufficient protection to the feet—and consequent dampness and "cold feet"—is another. (See COLD FEET.) There is, too, in females, the exposure of the chest, after heated ball-rooms, public amusements, etc. The use of fur round the neck is not unfrequently the cause of cold affecting the throat: whilst close to the skin, it produces warmth and perspiration, but when the boa or victorine is thrown back, a chill at once ensues. It is not meant to controvert the use of fur, but to guard against the incautious and sudden relinquishment of the protection.

*Symptoms.*—Catarrh commences with feverish symptoms more or less severe, shivering followed by heat. A peculiar dryness and heat of the lining membrane of the nostrils is followed by a discharge of thin, acrid, watery fluid, "a running at the nose," and with this there is intense headache between the eyes, or the throat may be first affected, or the chest itself may be directly attacked—though if not, it will quickly become so: the windpipe feels as if raw; there is frequent cough, dry and harsh, or with thin expectoration, and the breathing is oppressed.

*Treatment.*—The first measure in incipient cold, is to restore and excite the action of the skin, to get free perspiration. This is best accomplished by the vapor or warm bath; but if these cannot be had, the best remedies are, hot water to the feet, almost entire abstinence from food, rest in a warm bed, hot drinks, and one or two doses of some medicine to induce moisture on the skin. 6 or 8 grains of Dover's powder, repeated in two hours, if necessary, or 1 tablespoonful of the solution of acetate of ammonia, commonly known as spirit of mindererus, every two hours, will invariably produce perspiration, if the warm bath, the warm bed, and the hot drinks should fail. This is what is known as the *moist cure.* The following method of treatment, recommended by as high an authority as Dr. C. J. B. Williams, of London, is known as the *dry cure*, and has many enthusiastic advocates both in and out of the profession. He says: "It is the common practice to drink copiously of tea, gruel, or some other diluent during a cold; as long as this promotes perspiration it is of some utility, and although it augments the flow from the pituitary or nasal membrane, it has the effect of diminishing its acrimony by dilution. It is the acrimony of this discharge which reacts on the membrane, keeps up the inflammation, and its accompanying disagreeable symptoms. On this circumstance depends the efficacy of a measure directly opposed to that just noticed, but to the success of which we can bear decided testimony—we mean *a total abstinence from liquids.* To those who have the resolution to bear the feelings of thirst for thirty-six or forty-eight hours, we can promise a pretty certain and complete riddance of their colds, and what is, perhaps, more important, a prevention of those coughs which commonly succeed to them. Nor is the suffering from thirst nearly so great as might be expected. This method of cure operates by diminishing the mass of fluid in the body to such a degree that it will no longer supply the diseased secretion. Anything that will contribute to reduce the quantity of fluid in the body will assist in the plan of cure and shorten the time necessary for it to take effect. It is, therefore, expedient to begin the treatment with an aperient—a tablespoonful of castor-oil or a couple of ounces of infusion of senna, followed by the sweating mixture mentioned above, as is usual, and this is the more necessary when any fever attends; but beyond this no further care need be taken, and the individual can devote himself to his usual employments with much greater impunity than under the ordinary treatment. The coryza begins to be dried up about twelve hours after leaving off liquids; from that time the flowing to the eyes, and fulness in the head becomes less and less troublesome; the secretion becomes gelatinous, and between the thirtieth and the thirty-sixth hour ceases altogether; the whole period of abstinence needs scarcely ever to exceed forty-eight hours.

"It is then as well to return to the *moderate* use of liquids, as the first indulgence is apt to be excessive. It is not necessary to limit the solid food any more than to that which is plain and simple, except where there is an acceleration of the pulse, or gastric irritation, in which cases animal food should be abstained from. For the sake of comfort in mastication, the food should not be of the driest kind. Thick puddings and vegetables, with or without meat, will be the best dinner; and toasted bread or biscuit, *merely moistened* with tea, or other liquid, for other meals. A single cup of tea is sufficient to bring back the coryza immediately, after twelve hours abstinence has removed it."

*Preventive treatment.*—The best preventive against cold is the daily use of the cold bath, and this is the best means that can be adopted by those who have an habitual tendency to this disease. It should, however, be begun in summer, and the water ought to be at first tepid, but after being begun, the practice may be continued through the winter. The sponge bath is preferable for those in delicate health. The avoidance of the causes mentioned in the first part of this article is indispensable, especially with those having a tendency to this trouble. Flannel, worn next the skin during all seasons, is particularly important: in warm weather, wearing light flannels rather than dispensing with them altogether. (See Catarrh, Chronic; Cold, Bronchitis, Snuffles, Cough, Influenza, Clothing, Flannel, Ablution, Baths, Damp, etc.)

CATECHU, *kat'-e-ku* [Jap. *kate*, a tree, *chu*, juice], called *kut* or *kutch* by the natives of India, is properly an extract prepared from the inner brown-colored wood of the *Acacia Catechu;* but the term is now applied also to other extracts similar in appearance and properties. Some of the catechu of commerce is prepared from the kernels of *Areca Catechu*, and a kind called *Gambir*, or *Terra japonica*, from the leaves of *Uncaria Gambir*. This last, *Catechu pallidum*, or pale catechu, is the only kind that is now officinal. It is imported in cubes about an inch in diameter, or masses formed of coherent cubes. Externally, they are brown or reddish-brown; internally, ochreous, or pale brick-red, breaking easily with a dull earthy fracture. The taste, bitter, very astringent, and mucilaginous, succeeded by slight sweetness. It is entirely soluble in boiling water. Catechu is used as an astringent externally or internally. It is useful as a lotion, or ointment for indolent or ill-conditioned ulcers, where there is copious discharge; also as a gargle in relaxed sore throat, and as a local application to sore nipples. Internally, it is used in diarrhœa unaccompanied by inflammation, in doses of 10 to 30 grains. The infusion is made of 160 grains of the powder, and 30 grains of bruised cinnamon-bark, with

10 fluid ounces of distilled boiling water—dose, 1 to 2 fluid ounces; tincture, 2½ ounces of the coarse powder, and 1 ounce of cinnamon-bark bruised, macerated for seven days in a close vessel with 1 pint of proof spirit, and then strained—dose, 1 to 2 fluid drams, or 1 to 2 teaspoonfuls. Catechu lozenges are made of 720 grains of the powder, 25 ounces of refined sugar in powder, 1 ounce of gum acacia in powder, 2 fluid ounces of gum acacia, and a sufficient quantity of distilled water, mixed together, divided into 720 lozenges, and dried in a hot chamber with a moderate heat—dose, 1 to 6 lozenges. Catechu contains a large proportion of tannin, very similar in properties to that of galls, also a peculiar principle called *catechine.* (See ACACIA, ARECA.)

CATHARTICS, *kạ-thär'-tiks* [Gr. *kathairo*, I purge or purify], in Medicine, is a term applied to such substances as, taken internally, cause a special irritation of the intestinal canal, and increase the quantity or number of the alvine evacuations; in other words, have a purgative effect. Those which act mildly are usually called *aperients* or *laxatives;* those which act violently, *drastics;* those which produce copious watery stools, *hydragogues;* those which favor the secretion of bile, *cholagogues.* Cathartics act upon the system in different ways, and serve different purposes; and in each case that has to be selected which is best fitted to meet the circumstances. *Laxatives* are employed when we wish to evacuate the bowels with the least possible irritation, and include manna, cassia pulp, tamarinds, prunes, honey, confection of senna, carbonate of magnesia, sulphur, cream of tartar, bicarbonate of soda, or baking soda, and the fixed oils, as castor, almond, olive, linseed oil. *Saline*, *antiphlogistic*, or *cooling* cathartics increase the peristaltic motion of the alimentary canal, and augment the effusion of fluids, thereby giving rise to watery stools. They are the sulphates of magnesia, potassa, soda, etc. More active than the above are the *acrid stimulants*, as senna, rhubarb, aloes. Senna is employed where we want an active but not very irritant or acrid purgative; rhubarb is used in debilitated and relaxed states of the canal, and has a subsequent tonic and astringent effect; aloes is slow in its effect, and acts more particularly upon the colon and rectum. *Drastic* cathartics are such as jalap, scammony, camboge, croton oil, colocynth, elaterium, etc. They act powerfully and rapidly upon the bowels. *Mercurial cathartics*, as hydrargyrum cum creta, pilula hydrargyri, and calomel, are especially valuable from acting on the liver. Podophyllin acts similarly upon the liver. Cathartics serve not only to clear the alimentary canal, they purify the blood by draining off much of the serous portion, they stimulate the action of the absorbents in all parts of the body, and act as counter-irritants in inflammatory disorders. "Purging," says Sir Thomas Watson, "is an expedient which in cases of violent inflammation or high general fever, should scarcely ever be omitted. To keep the bowels what is called open, forms indeed a part of the antiphlogistic regimen; but in acute inflammatory diseases, active purging is of very great service. These two points are gained by it: the intestinal canal is freed from accumulated fæces or other matters, which, by their bulk or their acrimony, might prove irritating; and at the same time depletion is carried on by means of the serous discharge which is produced from that large extent of mucous surface. There are some cases of inflammation in which the operation of purgative medicines is of especial benefit, as in *inflammatory affections of the head,* either external or internal, of which part these medicines assist or cause depletion in a very sensible manner."

Purgative or aperient medicines are, unquestionably, much more generally had recourse to, both by medical men and the public, than any other form of remedial agents, but while it is undoubted that their use is great, it is also certain, that they are and have been very greatly abused. It is intended to consider, first, the use of aperients, and secondly, the abuse. Under such articles as ALIMENTARY CANAL, DIGESTION, etc., it has been sufficiently explained, how the food mass, after undergoing its principal digestion in the stomach, is gradually propelled through the entire tract of the bowels, and how, during this propulsion, its nutrient constituents are absorbed from it, the refuse being left for discharge; it has also been explained, that the discharge from the bowels does not consist simply of the food refuse, but contains also various secretions and excretions, thrown out into the bowels—from the general system—which excretions cannot be retained in the system without injury to the health.

From these considerations, it must be obvious to all how great the importance not only that the bowels should be active as regards the excretions into them, but as regards their own discharge, both of these excretions and of the food refuse. When the bowels are inactive in these respects, the state is termed constipation, or costiveness. As, under the latter term, the reader will find the evils which result from this condition, and also its most frequent causes, etc., sufficiently explicitly stated, it is unnecessary to repeat the information here. Under the same article, will be found an explanation of those general remedies which are most useful in removing the condition; and, indeed, when they prove sufficient, are certainly to be preferred to remedial agents; when they do not prove sufficient, either as temporary or permanent means of relief, the purgative or aperient medicines must be employed—under the general rule, that they should never be used stronger than requisite. By this it is not meant, that because manna, or sulphur, or magnesia, are classed in the laxatives, they are always, when possible, to be substituted for the purgative aloes, or castor-oil, or rhubarb, or senna, such a distinction could not be observed without other and greater counterbalancing inconveniences, but the rule should be, that relief to the bowels is to be afforded with as small an amount of purgative action as possible, unless that purgative, or, in other words, lowering action, is called for as a part of the treatment, as it is in persons of very full habit of body, etc.

Where aperient medicines are either taken or given domestically, there is often too little care in the selection: unless it be in pregnancy, or in consequence of individual experience, the idea seems to prevail with many, that one aperient is as good as another—this is far from being the case.

Except in persons whose bowels are very easily acted upon, or in such cases as those where the aperient is taken rather to give additional action than to open the bowels, the "laxative" aperients are scarcely sufficient as general aperients; those classed as purgatives, and the cathartic colocynth, under the form of its well-known compound pill, are in daily use.

There are few ailments in which increased action of the bowels is called for, in which, one or other of the laxative remedies in the list will not be applicable. Aloes is valuable for certainty of action on particular portions of the bowels, for the small bulk of its general dose, for its tonic bitterness and continued effect even after frequent repetition, but must be used, carefully, in pregnancy, piles, and other affections situated about the lower part of the canal. Castor-oil is recommended by its safety in almost all cases, by its certain, perfect action, and like aloes, by its not losing effect by repetition; but, unfortunately, it is too often the medicine most disliked and sickened at. Epsom salts require much discretion in use, but have deservedly thrown Glauber salts into disuse. Jalap is certain and active, but is apt to gripe and to sicken, and its bulk is an objection. Mercurials alone, or followed by castor-oil or senna, or combined with aloes, rhubarb, or colocynth, most valuable, are most abused. Rhubarb, mild, and with some persons effectual, is also tonic, but is apt to heat, and its bulk and taste are an objection, especially with children. Rochelle salt, similar to Epsom salt in action, is pleasanter. Senna, *the* medicine of the nursery, is invaluable; if properly prepared, is safe and certain.

Colocynth, in its well-known compound pill, forms part of the most generally used and useful purgative in costive habits. Scammony is, in many of the affections of children, especially combined with a mercurial, our most valuable purgative, and is recommended by the small bulk of its dose. (See articles on all the above-mentioned.) Purgatives, however, are used, not only as a means of clearing the bowels of their contents, but also as agents for the relief of those organs, such as the liver, which are closely connected with the bowels; and further, as remedies calculated to relieve distant parts, or the system generally. Thus, in many head affections, free purging is one of our most powerful remedies, in congestion of the liver it is most serviceable; in overfulness of the system at large, it relieves greatly. To the above fact, nature strongly points in those cases in which sudden and striking relief often follows an attack of spontaneous purging or diarrhœa.

*The abuse of aperient medicines*, owes its origin, probably, to a variety of causes. Constipation, either alone, or as a concomitant of disease, is so obvious and common a symptom; it so often occasions distress, or at least uncomfortable sensations, its removal is generally so simply effected, and often is so sensibly felt as a relief, that it cannot be matter of surprise, if both doctor and patient, habitually almost, look to the action of the bowels by purgative medicines, as almost the requisite preliminary to all other treatment, and within certain limits they do right; but the fatal facility of the treatment, assisted moreover by the powerful advocacy which it has received in years gone by, has certainly produced a far too general use of aperients as purgatives—not simply in the treatment of acute disease, but as a general rule of daily life. If the question be put: Which is the greater evil of the two, to have the bowels habitually confined, or habitually to take aperient medicines? There can be no question, if the choice *must* lie between the two evils, that the latter is the lesser one; but there are few cases in which the choice is so circumscribed. The bowels probably are confined, but they are so because the general conditions requisite for their healthy action (see COSTIVENESS) are neglected, and because the aperient *medicine* is used as the readiest substitute for a little trouble and perseverance. Thus used, the aperient is abused, and injury, more or less, is inflicted upon the system according to the nature of the medicine, the frequency of its use, and the strength of the dose. One most general effect of the abuse of aperients, is the weakened digestive power of the stomach, another the weakness of the system at large; and a third, not unfrequently, is continued irritation of some portion of the alimentary canal. The weakened digestion which follows the abuse of aperients may not be obvious at first; indeed, if the digestive organs have been overloaded and oppressed, instead of being weaker after an aperient, they are actually more active, and this apparent increase of activity is very apt to lead to a too frequent renewal of the remedy, and too often—trusting in the remedy—to a continuance of those habits of excess which caused the first disorder. (See DYSPEPSIA.) The debility of the system which follows the abuse of aperients, is the natural result of the digested food mass being hurried too rapidly through the bowels to admit of its nutrient portion being taken up and conveyed into the system; debility is also the result of the too frequent employment of purgatives, such as the salines, which increase unnecessarily the discharges—especially of the serous portion of the blood—into the bowels. Further, the too frequent use of purgatives irritates the bowels by depriving them of their natural protective mucus; in this way ulceration may result.

As a natural consequence of the food mass and of the secretions and excretions, such as the bile, being hurried too quickly into and through the bowels, and also of the mucus being carried off too abundantly, the stools, under the continued use of purgatives, assume an unhealthy character; perhaps contain too much bile, etc., and in consequence of this unhealthy appearance, and with a view to its correction, persons are too often induced to continue the very cause of its production, and go on purging. This is a very common case. (See APERIENT, MINERAL WATERS, BILIOUSNESS, DIGESTION, DYSPEPSIA, COSTIVENESS.)

CATHETER, *kath'-e-tur* [Gr. *katiemi*, I put down or into], is the name of an instrument employed for drawing off urine by introducing it into the bladder. It is a long tube, usually formed either of silver or gum-elastic, open at the handle, and having at the sides, near the point, holes or eyes into which the urine flows, and is thus carried off. Those for males are usually from ten to eleven inches in length, and considerably curved towards the point; those for females are much shorter and nearly straight. The introduction of the catheter is an operation requiring a considerable degree of tact and skill, and should be done with great caution.

CATNIP, CATNEP. (See NEPETA CATARIA.)

CATOPTRIC EXAMINATION OF THE EYE, *ka-top'-trik.* When a lighted candle is held before a sound eye, or one affected with amaurosis, three images are seen: the first from the cornea, the other two from the anterior and posterior surface of the crystalline lens; but if either of these structures have become opaque, the image from it is either dimmed or altogether absent. It is used in the diagnosis of cataract.

CAUDA EQUINA, *kaw'-dạ e-kwi'-nạ* [Lat. for horse's tail]. The spinal marrow, at its termination about the second lumbar vertebra, gives off a large number of nerves, which, when unravelled, resemble the horse's tail: hence the name.

CAUDLE, *kaw'-dl* [Fr. *chaudeau*, from, Lat. *calidus*, warm], is a kind of warm broth, composed of gruel, wine or beer, sugar, and spices, and given to the sick. A good mode is to beat up one egg in a wine-glassful of sherry, and add half a pint hot gruel, and flavor with nutmeg, lemon-peel and sugar.

CAUL, *kawl* [Lat. *caula*, a fold], is a thin membrane, sometimes found encompassing the head of a child when born. This was formerly regarded with great superstition, it being held to denote that the child so born would be very fortunate, and escape many dangers. A caul was also believed to confer the like benefits upon its possessor; and hence they were frequently sold at a high price. They were regarded by seamen as an infallible preservative against drowning.

CAULIFLOWER, *kol'-e-flou-ur*, a vegetable of the cabbage tribe, agrees better than most other vegetables with those of weak digestion. The addition of melted butter is injurious. (See BRASSICA.)

CAULIFLOWER EXCRESCENCE, *kol'-e-flou-ur eks-kres'-sense*, a highly vascular excrescence, growing about the anus, vulva, or os uteri, producing a watery discharge, and bleeding from the slightest cause. If in the anus, it is often syphilitic.

CAULOPHYLLUM THALICTROIDES. (See BLUE COHOSH.)

CAUSTIC, *kaws'-tik* [Gr. *kausticos*, from *kaio*, I burn], is applied to such substances as burn or destroy the skin and flesh by acting chemically upon them. The caustics principally used in practice are the nitrate of silver, or lunar caustic, and potassa fusa, common caustic, or caustic potash.

CAUSTIC, LUNAR. (SEE NITRATE OF SILVER.)

CAUSTIC POTASH. (See POTASH.)

CAUTERIZATION, *kaw'-tur-e-za-shun*, the application of a cautery.

CAUTERY, *kaw'-te-re*, is a burning or searing of morbid flesh by a hot iron or by some lighted inflammable substance, or by caustic medicines, the former mode being termed *actual cautery*, the latter *potential cautery*.

CAVERNOUS RESPIRATION, *kav'-urn-us res-pe-ra'-shun*, a sound similar to that produced by blowing into a bottle. It is produced by cavities filled with air, existing in the lungs.

CAVITY, *kav'-e-te* [Lat. *cavositas*]. A term applied generally to the hollow parts of the body, as the abdominal cavity, the articular cavities, the thoracic cavity, etc. The cavities of bones are usually named according to some real or fancy resemblance: thus we have glenoid cavities, cotyloid cavities, fossæ, sinuses, etc.

CAYENNE PEPPER. (See CAPSICUM.)

CEANOTHUS, *se-an-o'-thus* [a name given by Theophrastus to a spiny plant], a genus of the Nat. order *Rhamnaceæ*. The young shoots of *C. Americanus* are used as an astringent, and in New Jersey the leaves are employed as a substitute for tea; hence they are commonly known as New Jersey tea. It is astringent, expectorant, sedative, antispasmodic, and antisyphilitic. Used in gonorrhœa, dysentery, asthma, chronic bronchitis, whooping-cough, and other pulmonary affections. It is also useful as a wash gargle for sore mouth. Dose of the decoction, 1 teaspoonful three or four times a day. (See DECOCTION.)

CEDRON SEED. (See SIMABA CEDRON.)

CELANDINE. (See CHELIDONIUM.)

CELASTRUS SCANDENS, *se-las'-trus scan'-dens.* False bitter-sweet, staffvine, waxwork, and climbing bitter-sweet. Belongs to the Nat. order *Celastraceæ.* It is a climbing, indigenous shrub, growing from Canada to Carolina. It must not be confounded with the solanum dulcamara, or true bitter-sweet. The bark is the part used in medicine. It is alterative, diaphoretic, diuretic, with some narcotic powers. It is used in secondary syphilis, scrofula, chronic hepatic affections, or liver complaint, cutaneous affections, leucorrhœa, rheumatism, and obstructed menstruation. As an ointment, it is useful in inflamed and indurated breasts of nurses, in prurigo of the vulva, burns, excoriations, etc. Dose of the decoction, 2 to 4 fluid ounces, three times a day; dose of the extract, 5 to 10 grains. (See DECOCTION.)

CELERY, *sel'-ur-e*, an evergreen herbaceous plant, much used as a salad, and is a very wholesome relish, though it sometimes disagrees with persons of weak digestive powers. It is said to have properties which make it an efficient medicine in some diseases of the kidney. (See APIUM.)

CELIBACY. (See MARRIAGE.)

CELLARS. (SEE HOUSES, SANITARY SCIENCE.)

CELLS, *selz* [Lat. *cella*, a cell], in Physiology, are minute closed vesicles, or bags, formed by a membrane in which no definite structure can be discerned, and having a cavity which may contain matters of variable consistence. These cells, remaining as separate corpuscles in the fluids, and grouped together in the solids, persisting, in some cases, with but little change, in others undergoing a partial or thorough transformation, produce the varieties of form and structure met with in the animal and vegetable textures. In other words, they constitute the elementary form of all organisms, vegetable or animal. The embryo animal, as well as the embryo plant, is, in its early stages, entirely formed of cells of a simple and uniform character; and it is by a gradual transformation in the progress of development that some of these cells become converted into the diversified elements of a complex fabric. Indeed, it is now generally believed that the cell structures are the agents by which nutrition, secretion, and reproduction are carried on. Every cell owes its origin, in some way, to a pre-existing cell. In plants, the most common mode of multiplication is the subdivision of the original cell into two halves. Sometimes the new cells originate in little bud-like prominences on the surface of the parent cell, which, after a time, become detached and form cells. Cells have properly a spheroidal or rounded shape, but they assume various forms from coming in contact with other cells. The nucleus is a small round or oval body in the interior of the cell, sometimes lying free, but at other times attached to the cell wall, and averaging in diameter, in the animal cells, from $\frac{1}{6000}$ to $\frac{1}{4000}$ of an inch. (See Kolliker's "Manual of Human Histology;" Von Mohl's "Anatomy and Physiology of the Vegetable Cell;" Carpenter's "Principles of Physiology;" Quain's "Anatomy.")

CELLULARES, *sel'-lu-lārz*, plants composed of cellular tissue only, forming one of the two great sub-kingdoms in De Candolle's system of classification.

CELLULAR TISSUE OR MEMBRANE, *sel'-lu-lar*. Cellular membrane, or tissue, or areolar tissue, is the reticular membraneous web, which connects the various portions of the body, and fills up the interstices. It is made up of numberless little fibres and bands crossing each other in every direction, and enclosing small spaces, which freely communicate throughout the body. The most familiar exemplification of cellular tissue, and of its free inter-communication, is seen in the blown-up veal of the butcher. In the living body, the areolar tissue contains a thin water or serous fluid, which, when it accumulates in undue quantities, constitutes one form of dropsy, finding its way by permeation through the cellular meshes to the most dependent part of the body.

CEMETERIES, LOCATION, EXHALATION FROM, ETC. (See Sanitary Science.)

CENTAURY, RED. (See Sabbatia Angularis.)

CENTIGRAMME, *sen'-te-gram*, the one hundredth part of a gramme.

CEPHAELIS, *sef-e'-lis* [from Gr. *kephale*, head], a genus of plants belonging to the Nat. order *Cinchonaceæ*. The annulated root of *C. ipecacuanha* is the officinal ipecacuanha of the British Pharmacopœia. It is known as *true*, *annulated*, Brazilian, or Lisbon ipecacuanha, and is the only sort commonly met with in this country. It is collected in all seasons of the year, but chiefly from January to March, and is imported from Rio Janiero, Bahia, and Pernambuco. It is in pieces of 3 or 4 inches long, about the size of a small quill, of a greyish or light-brown color, contorted and irregularly annulated. It consists of two parts—a cortical or active portion, which is brittle; and a slender, tough, white-woody centre. The powder is pale brown, with a faint nauseous odor, and a somewhat acrid and bitter taste.

Ipecacuanha, or ipecac, is emetic, expectorant, and diaphoretic. Alterative, in small doses. Some authors suppose it to possess narcotic properties. In doses of $\frac{1}{4}$ of a grain to $\frac{1}{2}$, it acts as a tonic. It is a valuable remedy in acute bronchitis. The symptoms which indicate its use are a short, tickling, paroxysmal and spasmodic cough, to relieve which, small and repeated doses ($\frac{1}{2}$ a grain every hour), are the most effectual. This medicine is one of the safest and most efficient in suffocative catarrh, and can be used with confidence, either in old age or infancy. The paroxysmal and spasmodic cough and whooping-cough are sometimes rendered much milder by its use. Daubenton recommended minute doses of ipecacuanha to be taken in the morning fasting, for the relief of gastric debility, and constipation upon want of energy in the intestines. Fothergill recommended this agent in diarrhœa. It has been held in high esteem as a remedy for dysentery.

Writers of distinction ascribe efficient hæmostatic virtues to this medicine. Mangetus imputes to a dose of 1 dram of ipecacuanha the subsidence of an alarming hemorrhage from the womb, which preceded the expulsion of the ovum in a case of abortion. Dr. Osborne, of Dublin, says that the treatment of simple menorrhagia by ipecacuanha has never yet failed in his hands, and that he has also found it successful in the treatment of bleeding at the nose. Cases of its success in hemorrhage from the lungs, and profuse menstruation, are mentioned by Frank. In intermittent fevers of a bilious type, and still more in the bilious and remittent fevers, the administration of a full emetic dose of ipecacuanha at the outset of the disease, and even for two or more successive days, forms, perhaps, the surest method of moderating the violence and shortening the duration of the attack. It also prepares the way for a successful administration of cinchona.

When given in large doses of 15 to 20 grains, it acts as an emetic and as a purgative; in small doses of a few grains it is expectorant and diaphoretic. Its peculiar properties are principally due to an alkaloid called *emetine*. The wine is formed by macerating for seven days 1 ounce of the bruised root in 1 pint of sherry. Dose: as an expectorant, 5 to 40 drops; as an emetic, 3 to 6 teaspoonfuls. The compound powder is composed of $\frac{1}{2}$ an ounce of the powder, $\frac{1}{2}$ an ounce of opium in powder, and 4 ounces of sulphate of potash in powder. Dose, 5 to 15 grains. This is otherwise known as Dover's powder, and is one of the most valuable of our sudorifics. *Pill of I. with squill:* take 3 ounces of the compound powder, 1 ounce each of squill and ammoniacum in powder, and a sufficiency of treacle to form a mass of the proper consistence. Dose, 3 to 10 grains. The *I. lozenges* contain each a $\frac{1}{4}$ of a grain of I., and a dose is from 1 to 3 lozenges. Dose of fluid extract, as an expectorant, 5 to 10 drops; and as an emetic, ½ to 1 teaspoonful. Dose of syrup of ipecac, as an expectorant for children, one to twelve years old, 5 to 10 drops: and in croup, 10 drops to 1 teaspoonful every ten minutes till vomiting is produced; and as an expectorant for adults, 20 to 40 drops every two or three hours.

CEPHALALGIA, CEPHALALGY. (See HEADACHE.)

CEPHALIC, *se-fal'-ik* [Gr. *kephalikos*], is applied to something pertaining to the head. Thus, cephalic medicines are such as are administered for disorders of the head.

CEPHALITIS, OR INFLAMMATION OF THE BRAIN. (See BRAIN, DISEASES OF THE.)

CERA, *se'-rą* [Lat.] wax, the prepared honeycomb of the hive bee, obtained by dividing the comb and expressing the honey, and then melting the residue in boiling water. The impurities are skimmed off, and the wax is removed from the surface after the water has cooled. It is again melted and strained. This is the *cera flava* or yellow wax. *Cera alba*, or white wax, is formed by bleaching the former, making it fall in a melted state in small streams upon a revolving cylinder, and thus exposing it for some time to moisture, air, and light. Wax is chiefly used in medicine to form plasters and ointments. (See BEESWAX.)

CERASINE, *ser'-a-sin* [from *cerasus*, the scientific name of the cherry-tree], the portion of the gum of the cherry-tree which is insoluble in cold water.

CERASUS, *ser'-a-sus*, a genus of trees belonging to the Nat. order *Rosaceæ*, sub-order *Amygdaleæ*. Several species or varieties of this genus produce the well-known fruits called cherries. The varieties usually cultivated in our gardens are supposed to have been derived originally from two wild species, *C. avium* and *vulgaris*. Both have white flowers in clusters or nearly sessile umbels, and both are generally regarded as natives of North America, Britain, and of the middle and south of Europe. The timber of *C. avium* is valuable for the purposes of the cabinet-maker, turner, and musical instrument maker; and the leaves have been used as a substitute for tea. The bark of the species *C. cappolim* possesses astringent and febrifuge properties; that stripped from its root is used in Mexico as a remedy against dysentery. The leaves of *C. capricida* contain so much hydrocyanic (prussic) acid as to prove poisonous to cattle that feed upon them. Most parts of the species *C. Laurocerasus*, the cherry-laurel, but especially the leaves and seeds, are poisonous. The poisonous effects are supposed to be owing to a volatile oil containing hydrocyanic acid. Cherry-laurel water, obtained by distilling the leaves with water, is used medicinally for similar purposes as hydrocyanic acid. The kernels of the species *C. accidentalis*, a native of the West Indies, and others, are used for the purpose of flavoring liquors, such as cherry-brandy, Kirschenwasser, Maraschino, and Noyeau. The species *C. Padus*, or bird-cherry, has similar properties, though less powerful, to those of the cherry-laurel. *C. Virginiana*, the choke-cherry, has astringent and febrifuge properties, and its fruits are commonly mixed with pemmican. The inner bark of the *C. serotina*, the wild or black cherry, common in most parts of the United States and Canada, and improperly classified by some writers as *Prunus Virginiana*, possesses tonic, sedative, and astringent properties. It is useful where it is of importance to impart vigor of action to the system, and yet, to avoid any undue excitement of the heart and blood-vessels, as for instance, during the first stage of convalescence from inflammatory attacks, and in many pulmonary diseases. Its uses are indicated in all cases requiring the use of a general tonic, particularly in cases of the impairment of the constitution by dyspepsia, indigestion, etc.; in dyspepsia attended with neuralgic symptoms, and general debility following inflammatory fevers; in diseases in which debility of the system is united with general local irritation. On account of its gently astringent properties united with its sedative action, it has been found highly beneficial in complaints incident to the summer months, in diarrhœa, chronic diarrhœa, and in preventing the weakness and relaxation of the bowels which produce them. Wild cherry, horehound, lettuce, veratrum, and bloodroot, form a fine compound. It is admirably well adapted to those debilitated states of the system complicated with nervous irritability and cough. It operates with magical efficacy in the convalescent stages of inflammatory attacks, and pulmonary affections. Dose: fluid extract of wild cherry, 2 to 4 teaspoonfuls; fluid extract of wild cherry compound, ½ to 2 teaspoonfuls; prunin, the active principle of cherry, 2 to 6 grains; wine of wild cherry, 1 to 4 teaspoonfuls; ferrated wine of wild cherry, 1 to 4 teaspoonfuls.

CERATE, *se'-rate* [Lat. *ceratum*, from *cera*, wax], an ointment, of which wax forms a component; the hard wax, and fluid oil or lard, when combined, forming a compound of convenient consistence. Simple cerate is formed by melting together equal parts of white wax and olive-oil, and stirring during cooling.

Calamine, or Turner's Cerate. (See Calamine.)

Lead Cerate.—Acetate of lead, 5 drams; white wax, 8 ounces; olive-oil, 20 ounces. Dissolve the wax by heat in 18 ounces of the oil, rub up the acetate of lead finely with the remaining 2 ounces, add this gradually to the larger quantity, and stir during cooling.

Resin Cerate.—Take of resin, 5 ounces; lard, 8 ounces, beeswax, 2 ounces; melt them together with a gentle heat, and then stir the mixture briskly while it cools.

Soap Cerate is sometimes useful; it is better procured ready prepared.

CEREALS, *se'-re-ạlz* [Lat. *cerealia*, from *Ceres*, the goddess of corn], is a term applied to the grasses which are cultivated for human food, viz., wheat, barley, rye, oats, maize, and rice. They are for the most part distinguished by the large quantities of starch, nitrogenous compounds, and phosphoric acid, contained in their seeds, and which it is the object of cultivation to develop as much as possible. With the exception of rice they all contain nearly the same amount of nitrogen, in addition to which, wheat possesses a peculiar glutinous substance, called *gliadin*, which renders wheat-flour so well adapted for the making of bread. (See Food.)

CEREBELLUM. (See Brain.)

CEREBRITIS, *ser-e-bri'-tis*, inflammation of the brain. (See Brain, Diseases of the.)

CEREBRO-SPINAL MENINGITIS, OR SPOTTED FEVER, *cer'-e-bro spi'-nạl men-in-je'-tis.* An acute disorder, commonly happening as an epidemic, caused by some unknown external influence; sudden in its onset, rapid in its course, and very fatal. It prevailed as an epidemic in Europe during the fourteenth, sixteenth, and seventeenth centuries. The first epidemic in America occurred at Medfield, Massachusetts, in the early part of the present century, and since that time several circumscribed epidemics have been noted in various parts of the continent, particularly in the Southern and Western States. Many cases were seen during the late war, among both the Federal and Confederate troops.

*Symptoms.*—Nausea, with or without vomiting, severe headache, dizziness, excruciating pains in the nape of the neck, limbs, calves of the legs, and joints, the pulse quick and feeble, the skin moist and cool, the face suffused, and the eyes bloodshot; delirium is generally present, and is not so much violent as it is muttering and wandering; sometimes deep stupor is present from the beginning. From one to three days from the beginning of the attack, an eruption of dark red or purple spots is seen upon the neck, abdomen, back, arms, legs, and sometimes the face. Quite early in the disease there is extreme sensitiveness of the skin, so that even brushing it with the hand will bring on severe muscular contractions. One of the most persistent symptoms is a rigid condition of the muscles of the neck, the head being violently thrown back. As a rule, the bowels are constipated. Respiration is slow and labored, and toward the end stertorous. Squinting, with some degree of deafness and buzzing in the ears, are commonly present. The case may terminate in a few hours, or last many weeks.

*Treatment.*—There is no specific in this disease. The prime indication is to sustain the vital powers, a hot bath frequently gives relief. When the surface is cold, mustard to the feet, and friction with turpentine and chloroform, have been found useful. Relief has also followed a blister to the neck, preceded by the application of 6 leeches. If a malarial origin is suspected, large doses of quinine, 10 grains every six hours, should be given. Prof. Allen, of Chicago, had much success with the tincture of cantharides. The bowels should be kept open by injections containing croton oil, or turpentine. Bromide of potassium, and the inhalation of chloroform and ether, are sometimes useful, but often fail. During convalesence, fresh air, good diet, and tonics are required. Upon the first suspicion of this somewhat obscure and dangerous affection being present, the most skilled medical aid available should be promptly secured. It is a disease which unprofessional persons cannot with certainty recognize, much less successfully treat.

CEREBRUM. (See BRAIN.)

CEREMENTS, *sere'-ments* [Lat. *cera*, wax], cloths dipped in melted wax, with which dead bodies were enfolded when they were embalmed.

CEREUS BONPLANDII, *se'-re-us*, a species of cactus introduced from Mexico. This is said to exert a wonderful influence in functional and also in organic diseases of the heart. The irregular pulse is readily controlled, as well as palpitation and that feeling of impending danger we so often meet with in angina pectoris and excited action of the heart. It should rank high as a nerve sedative. Dose of the fluid extract, from 1 to 8 drops.

CEREVISIÆ FERMENTI, OR YEAST, *ser-e-vizh'-e-ą fer-men'-ti*, is the frothy matter which makes its appearance on the surface of wort, when fermenting, in the process of making beer. It is a light, soft substance, of a greyish color, and readily undergoes the putrefactive fermentation if kept moist, but may be kept for some time if dried. It is composed of vesicles containing granules, which are, indeed, a species of fungus, to which the name of *Torula Cerevisiæ* is given. Yeast is a tonic and antiseptic, but it is chiefly applied in the form of poultices to fetid and sloughing ulcers. Yeast poultice, *Cataplasma Fermenti*, is formed by mixing 6 fluid ounces of beer yeast and a like quantity of water, heated at 100°, and stirring in gradually 14 ounces of wheaten flour. The mass is then placed near the fire till it rises.

CERUMEN, *se-ru'-men* [Lat. *cera*, wax], is the waxy matter of the ear, of which the chief purpose is, probably, the repulsion—by its bitterness and other qualities—of insects which might enter or harbor in the passage.

It sometimes accumulates to so great an extent, especially in the aged, and in the young, particularly after acute diseases, as to cause deafness, more or less complete, which is generally accompanied with noises and other uneasy sensations in the affected organ. The accumulated wax may, possibly, be detected, by examining the ear-passage with the aid of a lighted candle. In order to remove the hardened mass, a small portion of warm olive or almond-oil must be dropped into the ear for two or three nights in succession, for the purpose of softening and loosening the wax; after that has been done, the passage must be thoroughly syringed out with warm water, by means of a two-ounce syringe, till the wax is detached and washed out. Some persons become faint and giddy on having the ears syringed; in such cases let the person lie down, as the operation is best undergone in the horizontal posture. (See EAR, SYRINGE, DEAFNESS.)

CERVICAL, *ser'-ve-kal*, belonging to the neck; as, cervical nerves. cervical muscles, etc.

CERVIX, *ser'-viks.* 1. The neck; properly the back part of the neck. 2. Applied also in two portions of organs, which somewhat resemble a neck, as *cervix uteri*, the neck of the uterus.

CETACEUM, OR SPERMACETI, *se-ta'-she-um*, is a crystalline, purely white, glistening substance, with little taste or odor, obtained from the head of the sperm whale, *Physeter Macrocephalus.* It is found, mixed with oil, in cells, in a peculiar cavity, along the upper jaw of the animal. The oil is separated from the spermaceti by boiling, and the latter is further purified by draining, pressure, fusion, and the action of a weak solution of potash. It is scarcely unctuous to the touch, does not melt under 100°, is insoluble in water, slightly soluble in alcohol, more so in ether, and readily in fixed and volatile oils. It is best purified from any oil it may contain by boiling in alcohol. Spermaceti ointment, *Unguentum Cetacei*, is formed by melting together, with a gentle heat, 5 ounces of spermaceti, 2 ounces of white wax, and 1 pint of almond oil, and stirring constantly while it cools. This is a mild and simple dressing for healing blisters and excoriated surfaces.

CETRARIA, *set-ra'-re-a*, a genus of lichens, which includes the well-known Iceland moss. This lichen, which has been named *C. islandica*, is officinal in the British Pharmacopœia, and is employed both as a nutritious food and as a mild mucilaginous tonic in catarrh and consumption. Combined with cocoa, it forms the article known as Iceland-moss cocoa. Two kinds of starch are found in this lichen—one called lichen starch, and the other inulin; also a peculiar bitter principle, which has been named cetrarin. When used for food only, the plant should be deprived of its bitterness, either by heating it twice in water to near the boiling point, or by digesting it in a weak alkaline solution, formed by adding ½ an ounce of carbonate of potash to about a gallon of cold water, and afterwards washing it with pure water. The officinal decoction of Iceland moss, *Decoctum Cetrariæ*, is formed by first washing 1 ounce of the moss in cold water, to remove impurities, then boiling it in 1 pint of distilled water for ten minutes in a covered vessel; afterwards strain with gentle pressure while hot, then pour distilled water over the contents of the strainer until the strained product measures 1 pint.

CEVADILLA, OR CEBADILLA. (See ASAGRÆA.)

CEYLON MOSS. (See GRACILLARIA.)

CHAFING, *tshafe'-ing*, a superficial excoriation. It may be remedied by cooling cerates, containing acetate of lead. (See CERATE.)

CHALK, *tshawk* [Lat. *calx*, lime], a variety of limestone, or carbonate of lime, of a soft earthy nature, generally of a yellowish-white color, and sometimes pure white. It often forms strata of great size. It has an earthy fracture, is easily broken, and is rough to the touch. After being burnt into quicklime, chalk is converted into mortar, in which shape it is much used. Perfectly purified chalk, when mixed with vegetable coloring matters, such as turmeric, litmus, and saffron, forms pastil colors. Medicinally, chalk acts as an absorbent, antacid, and mild desiccant. Taken internally it causes constipation, and is hence frequently used to check diarrhœa. From acting on the free acids of the stomach, however, its frequent use is injurious. Care should be taken, after using it for some time, to clear out the bowels, as it tends to accumulate in the intestines. It is also used externally as an absorbent and desiccant to moist excoriations, ulcers, burns, scalds, etc. For medical use it is usually prepared by elutriation, or washing, so as to free it from impurities, and is afterwards dried in small masses, usually of a conical form. This is prepared chalk, *creta preparata*, a white amorphous powder, effervescing with acids, and dissolving with only a slight residue in diluted hydrochloric acid. Dose, 10 to 60 grains. Chalk mixture, a very common form in which it is given to check diarrhœa arising from acidity, is formed by triturating ¼ ounce each of prepared chalk and gum acacia, in powder, with 7½ fluid ounces of cinnamon water, and afterwards adding ½ fluid ounce of syrup. Dose, 1 to 2 fluid ounces every three or four hours. The aromatic powder of chalk contains powdered cinnamon, nutmeg, saffron, cloves, cardamom seeds, and refined sugar, and is an excellent antacid stimulant and cordial. Dose, 10 to 60 grains. The aromatic powder of chalk and opium contains ¼ ounce of opium to 9¾ ounces of the above, and is given in doses of 10 to 40 grains. *Hydrargyrum cum creta*, or mercury and chalk, is formed by rubbing together 1 ounce of mercury and 2 ounces of prepared chalk in a porcelain mortar, until the metallic globules cease to be visible, and the mixture acquires a uniform gray color. Dose, 3 to 8 grains.

CHALK-STONE, *tshawk'-stone*, is the concretion deposited around and in the joints of those who suffer from chronic gout. It consists of the lithic acid and soda, which form a comparatively insoluble salt. The liability to the formation of chalk-stone is a reason why those who are subject to gout should, when an antacid is required, make use of potash, which, in union with lithic acid, forms a much more soluble salt than soda does. (See GOUT, URINE.)

CHALYBEATE SPRINGS, *ka-lib'-e-at*, natural waters, containing iron in solution. For an account of the most famous chalybeate waters, see MINERAL WATERS.

CHAMBER, SICK. (See SICK-ROOM; BED, BED-ROOM.)

CHAMOIS LEATHER, OR SHAMMY UNDERCLOTHES. (See CLOTHING.)

CHAMOMILE. (See ANTHEMIS.)

CHAMPAGNE WINE, *sham-pane'*, is produced from the grapes grown in Champagne, an old province of France. This wine is divided into two classes—white and red champagne. The former is made either sparkling or still. Sparkling champagne (*mousseux*) is produced by treating the wine in a particular manner during fermentation. The wine is racked off in December, and after being fined with isinglass, is bottled and securely corked. Carbonic acid is generated in the wine on account of the incomplete nature of the fermentation, and its effervescing qualities depend upon the quantity of that gas dissolved by the fluid. After the sediment which is deposited has been removed, a liquor, composed of a solution of sugar-candy in cognac, is added, and each bottle is tightly re-corked. Still champagne is first racked off in the March after the vintage. On account of the profitable nature of the manufacture and the popularity of champagne wine, it is much adulterated with the juice of pears, gooseberries, etc. Very little of the wine sold as champagne in Paris is really genuine. It generally consists of some cheap, light wine, charged with carbonic acid gas. Champagne contains only about twelve per cent. of alcohol, a much less proportion than port, sherry, and other strong wines. Its powerful intoxicating effects are due to its effervescence. It is the most speedily exhilarating of all wines, but its effects soon pass off, when not taken in excess. Within the last ten years, this wine has come into much more general use, owing to the reduction in price. In diseases of exhaustion, more especially in the extreme debility of fever, when the stomach is irritable, few medicines are equal to champagne frequently given, in quantities of from ½ to 1 wine-glassful. In many cases of even temporary nervous exhaustion it is a valuable restorative. To persons subject to gout, or calcareous formations, champagne is considered injurious.

CHANCRES, *shangk'-urz*, are small ulcers, the result of inoculation with the venereal poison. They commence in the form of small pustules, which, after breaking, degenerate into yellowish, grey-looking sores, around which the skin feels firm or hard. Thorough destruction of the chancre in the first instance, by means of nitrate of silver, lunar caustic, is the only safe measure. When the disease has advanced beyond the incipient stage, or indeed in any stage, it cannot be a subject for domestic treatment, and ought more especially, on account of the lamentable results which may ensue should the constitution become affected, to be without delay intrusted to proper medical care.

CHANGE OF LIFE. (See MENSTRUATION.)

CHANGE OF TYPE, *tshanje tipe.* The change of the type of disease is perhaps the question of all others which at the present time is most angrily discussed in the ranks of the medical profession, names of the highest eminence being ranged on both sides of the disputants. The question is this: Is disease, as observed now, the same as disease observed forty years ago, and if so, how are we to account for the great change in practice, which may be best illustrated by the fact that now there is almost an entire disuse of bleeding instead of its nearly constant employment? or, on the other hand, has the type of disease changed, and are our inflammations of a different character than formerly, and can this different character be proved by the result of an examination of inflamed parts after death, as contrasted with those formerly examined? It will readily be understood how very few medical men are in a position to give an opinion upon a subject which requires so much experience and so much extended observation to settle it. Here, as in most similar questions, both parties are probably right to a certain extent; that is to say, our diseases at present, as a rule, are not of the severe, or, in medical language, sthenic type which marked them fifty years ago, owing, doubtless, to the influence of many external circumstances, while it must also be admitted that a closer, a more accurate, and a more advanced observation of the phenomena of disease, has satisfied the minds of medical men that the severe bleedings of many of the more ignorant of the routine practitioners of days gone by were unnecessary and even hurtful. It is well known that there were many in the times alluded to who looked with great distrust and apprehension upon the indiscriminate blood-lettings of their brethren who ruthlessly ordered poor dying men and women to lose 50 or 60 ounces of blood, because they were feverish!

In short, were one to sum up all that has been said upon this subject, it would amount in substance very much to this—that whether the type of the disease has changed or not, the bleeding system was carried to a most enormous excess; that the type has probably not changed quite so much as those of the old school would have us believe, and that at the present time there is not a little danger of the non-bleeding system being overdone by those who treat diseases according to the theories advanced by others, and not upon the merits of each individual case. (See Bleeding, or Blood-Letting.)

CHAPPED HANDS. (See Chaps.)

CHAPPED LIPS. (See Chaps.)

CHAPPED NIPPLES. (See Nipples.)

CHAPS, *tshaps*, are cracks of the skin, generally occurring on the hands or lips, and occasioned by undue exposure to extremes of heat and cold, more particularly in persons whose circulation is naturally weak. The part is swollen and inflamed, and attended with heat, pain, and itching. They are to be treated with cold cream, spermaceti, or lard. The best preventive of chaps is to occasionally rub the parts with glycerine, or a solution of glycerine and water. Chapped hands, so troublesome to many in frosty weather and during cold winds, may partly be avoided by care in thoroughly drying the skin after washing. The following prescriptions will be found useful:

| | | |
|---|---|---|
| Take of | Borax | Two scruples. |
| | Glycerine | Half an ounce. |
| | Water | Seven and a half ounces.—*Mix.* |

This may be used twice a day.

| | | |
|---|---|---|
| Take of | Lead solution | One dram. |
| | Oxide of zinc | One dram. |
| | Glycerine | One dram. |
| | Pure lard | Two ounces.—*Mix.* |

Rub well together and apply to the hands every night. Or,

| | | |
|---|---|---|
| Take of | Benzoate of zinc | One dram. |
| | Oil of almonds | One dram. |
| | Cold cream | One ounce.—*Mix.* |

To be applied to the hands every night. Or,

| | | |
|---|---|---|
| Take of | Oxide of zinc | One dram. |
| | Carron oil | Half an ounce. |
| | Simple ointment | Half an ounce.—*Mix.* |

Glycerine, either alone or with a small quantity of sugar of lead added to it, is very useful, and ought to be applied to the hands of those who suffer much in this way, after each time they are washed.

Those who are obliged, from the nature of their occupation, to wash their hands frequently, are the great sufferers from chaps, the chaps or cracks themselves becoming dangerous, in some occupations, from their liability to absorb poisonous substances into the blood. For the treatment of chapped hands, M. Testelin recommends the application of honey heated in an oven, and deprived of its viscidity by the removal of the froth formed under the influence of heat. It should be applied over the hands whenever they are washed, and spread with gentle friction. The above-mentioned author asserts that he has thus succeeded in curing chaps, and in preventing their return, in servant-maids whose hands are frequently exposed to the contact of water, and who usually suffered from this inconvenient affection throughout the winter. He prescribed the same remedy with entire success in Brussels to a clear-starcher, although this person did not for a single day discontinue her employment.

CHARCOAL. (See CARBON.)

CHARLATAN, *shär'-la-tan* [Ital. *ciarlare*, to talk much], a pretender; a quack. Hence *charlatanry*.

CHEERFULNESS, EFFECT OF, ON HEALTH. (See HEALTH, PASSIONS.)

CHEESE, *tsheez* [Sax. *cese*, or *cyse*], is the curd of milk, salted, pressed and dried. Milk is composed of three parts—the oily or fatty portion, commonly known as cream, and which separates on standing, being lighter than the rest, and the curd and whey, the former remaining dissolved in the latter until coagulated by some acid. In the manufacture of cheese, the acid is supplied by the rennet, which, being the dried stomach of the calf, contains a large amount of gastric juice, and appears to be the natural milk-curdle. It is prepared by salting and drying the inner membrane of the stomach of a sucking-calf. When required for use, a piece is soaked for some hours in water or whey, and the whole is added to the warm milk that is to be curdled. When the curd has coagulated, it is separated from the whey by straining, and pressed in a ring or hoop. The variety of color and flavor in cheeses results from difference of pressure, length of time in keeping, varying proportion of salt, and many other circumstances. Annotto is sometimes added to the milk to give color to cheese. Cheese forms a strong and nourishing food for those that can digest it, but it is only adapted to those who are of robust constitutions, and who take much exercise. It is very improper for persons of weak digestion, or of sedentary habits. It tends to produce costiveness, and in no case should it form the principal part of a meal. In small quantity, however, and when well masticated, and eaten with a due proportion of bread, cheese is nutritious and stimulating to the digestive powers. (See FOOD.)

CHELIDONIUM, *kel-e-do'-ne-um* [from Gr. *chelidon*, a swallow, the plant being said to flower at the coming, and dry up at the departure of the swallow], the celandine, a genus of plants belonging to the Nat. order *Papaveraceæ.* The species *C. majus* is found in waste places and on old walls in this country, and may be recognized by its small yellow flowers, and the orange-colored juice which exudes from its stem when plucked. This juice is poisonous, and is a popular application for the cure of warts. It has been used with success in the treatment of opacities of the cornea. It yields chelidonic acid. Celandine is stimulating, aperient, diuretic, and sudorific; it is used in liver affections, and is supposed to exert a special influence on the spleen. Applied in the form of a wash or poultice in scrofulous and cutaneous diseases and piles; also to indolent ulcers, fungous growths, etc. As a drastic hydragogue, it is fully equal to gamboge. Dose: of fluid extract, 10 to 20 drops; of solid extract, 5 to 10 grains.

CHELONE GLABRA, *ke-lo'-ne gla'-bra,* balmony, a perennial herbaceous plant, belonging to the Nat. order *Scrophulariaceæ.* It is sometimes called snake-head, turtle-bloom, turtle-head, salt-rheum weed, etc. It is found in the United States, in damp soils. It yields an active principle called *Chelonin.* Especially valuable in jaundice and diseases of the liver; likewise for the removal of worms. Used as a tonic, in small doses, in dyspepsia, debility of the digestive organs, and during convalescence from febrile and inflammatory diseases. As a tonic, its influence seems to be expended principally upon the digestive apparatus, increasing the appetite, promoting digestion and assimilation, improving the condition of the blood, in both volume and quality. Dose: of the fluid extract, ½ to 1 teaspoonful; of the tincture, 1 to 2 teaspoonfuls; of Chelonin (active principle), 1 to 2 grains; of the powder, 1 dram; of the decoction, 1 to 2 fluid ounces. (See Decoction.)

CHEMICAL ATTRACTION. (See Affinity.)

CHEMICAL FOOD. (See Phosphates.)

CHEMICAL NOMENCLATURE. (See Chemistry.)

CHEMISTRY, *kem'-is-tre* [Arab. *kimia,* the occult science; Fr. *chimie,* Ital. *chimica*], "has for its object the study of the nature and properties of all the materials which enter into the composition or structure of the earth, the sea, and the air, and of the various organized or living beings which inhabit these latter." (Fownes.)

*History.*—The empirical mixing of two substances, possessing different properties, to form a third, differing from either, must have commenced with the first peopling of the earth. The fact was transmitted to others, who improved on it, and experimented on other similar bodies; and thus was a mass of practical information obtained, which gradually developed into chemical manufactures. The origin of chemistry is generally traced to Tubal Cain, the father of workers in metal, between whom and Hermes Trismegistus lies a period of obscurity of which we know nothing. Hermes is said to have been the inventor of alchemy, a notion not entitled to much credit. In any case, Egypt, which is said to have been colonized by his son Mizraim, was the foremost chemical nation of the East; their glass, pottery, colors, and method of embalming their dead, bearing strong testimony to the fact of their having brought the art to a great state of perfection. The practical preceded the theoretical; but by degrees, as men began to think, they began also to observe and theorize. They saw that a gross earthy matter, such as iron ore, became transmuted, as it were, by fire into a hard metallic substance, like iron. What more rational, then, for them to suppose than that gold could be formed in a similar way? The change of earth into metal was to them more wonderful in theory than the change of lead into gold. Thus began alchemy—that specious monster which enticed within its grasp legions of philosophers, to whom it gave stones for bread, but whose labors have not been without their effect in the subsequent progress of the science. The origin of alchemy is lost in obscurity. Philology, however, comes to our aid, and points out to us that common chemical words, such as alcohol, alkali, aludel, and others, have an Arabian origin, which plainly indicates that the Arabians, although perhaps not the inventors of the Black Art, were at any rate its most ardent votaries. Gradually another notion stole in. The principles and practice of pharmacy became more general, and a specious logic was brought to bear on the fact that certain salts and liquors of a metallic nature assuaged pain and restored drooping vitality. It was then but one step further to go to find a compound that would prolong life indefinitely. Another object of pursuit was the universal solvent, or alkahest. The first practisers of alchemy were, no doubt, honest, serious men; but as time wore on there arose a mass of impostors who found ready dupes in avaricious people, who were ever ready to buy the secret of unbounded riches. In this way there was formed a mass of almost unintelligible knowledge, carefully concealed from the vulgar by secret symbols and an absurd nomenclature. Through this accumulation of rubbish there ran some golden veins; and we must never forget that, although alchemy had its philosopher's stone and universal solvent, it also gave us a hundred salts and preparations daily used in our own laboratories.

Towards the end of the fifteenth century arose a set of men whose brains were made in a better mould than those of their predecessors. Putting aside the idea of transmutation of metals, they turned their attention to the discovery of the principles that governed the formation and composition of bodies already in their hands, rather than to the pursuit of chemical chimeras. Paracelsus, though imbued with the fanciful doctrines of astrology and demonology, must always be regarded with reverence for his virtues and pity for his faults. He must ever be considered as the connecting link between the alchemists and chemists. A few of his researches will be sufficient to show that, although full of the maddest hallucinations, he was one of those rare geniuses who have the power of lifting a science from the mire. He was the first to offer a true chemical explanation of the action of mercury, iron, and lead in the human system. He distinguished alum from copperas, showing that the former contained an earth, the latter a metal. He admitted the existence of other elastic fluids besides air. He was aware that animals could not live, and inflammable matters could not burn, without air. To him succeeded Van Helmont, who was the first to distinguish between aerial fluids, or gases, as he called them. After Van Helmot came Boyle, the founder of the Royal Society, one of the most acute experimentalists that ever lived. His numerous experiments are marvels of accuracy, bearing even the test of our present knowledge. He and his contemporary Hook made great improvements in the air-pump, the invention of Otto Guericke, and paved the way to further discoveries. At the beginning of the eighteenth century come the names and discoveries of Becher and Stahl, the founders of the phlogistic theory. They found that by heating charcoal with metallic oxides or calces, they were reduced to a metallic state. They further noticed, that when charcoal was burnt it was entirely dissipated. Upon these facts they founded the theory that charcoal, or phlogiston, was a principle which united with the calx to form the metal. This notion appeared to be further borne out by the fact that metals, when heated, are converted into calces; the explanation of which was, that the volatilized charcoal, or phlogiston, was consumed by the heat. This theory, which was the first general principle applied to the whole range of chemical phenomena, maintained its ground for some time, until the discoveries of Priestley tended to overthrow it, by proving that the calx, or oxide, of mercury, instead of gaining something by being heated, lost something, and that that something was oxygen. About this time Cavendish discovered hydrogen, and Rutherford nitrogen—experiment being heaped upon experiment, and discovery on discovery, until the Stahlian theory gave way. It was succeeded by that of Lavoisier, the father of modern chemical science, who classified and arranged the known chemical facts into a system unparalleled for its precision, extent of view, and logical accuracy. His discoveries were few, but he reasoned on the discoveries of others with wonderful astuteness. From this moment chemistry marched onward with giant strides.

It would be impossible to enumerate the whole of the discoveries that have taken place since the commencement of the present century; a few will suffice to show how wonderfully this science has progressed even in our own time. The application of the voltaic current to the decomposition of the alkalies, by Davy, resulted in the discovery of a dozen or more new metals. The atomic theory of Dalton threw great light upon the composition of salts and acids. The invention of the present symbolic notation by Berzelius, and the determination of the elementary equivalents, soon followed. In 1811, Davy overthrew the notion of Lavoisier, that acids could not exist without oxygen, by proving that hydrochloric acid consisted only of chlorine and hydrogen. In 1812, Courtois discovered iodine; Balard followed some time after with bromine. Element succeeded element until they reached the number of sixty. All this time organic chemistry was making great progress. The vegetable alkaloids began to attract great attention; their analyses were made, and new theories founded on them. The early laborers, Liebig and Berzelius, threw great light on this branch of the science, which is even to this day the most attractive to many famous chemists. The development of the theory of organic radicles has gone on increasing, fostered by the labors of Faraday, Laurent, Gerhardt, Hofmann, and a host of others, until it has assumed a mathematical precision unknown to any other branch of physical science. The investigations of organic compounds by these philosophers have resulted in a complete change, both in the notation and nomenclature of mineral substances. This theory, which was founded by Gerhardt, and has received his name, will be afterwards explained. The last great discovery has been spectrum analysis, which has resulted in the addition of three new elements to our already bulky list, *cæsium* and *rubidium*, by Messrs. Bunsen and Kirchoff, of Heidelberg, and *thallium*, by Mr. Crookes, a distinguished English analytical chemist. The researches of Graham upon the diffusion of salts in solution and in dialysis, or the separation of crystallizable and non-crystallizable substances in solution by means of an intervening diaphragm, are amongst the most brilliant discoveries of the age. The researches of Schonbein, Schroetter, Brodie, and others, on the allotropic states of bodies, seem to point to the compound character of the present elementary bodies. In fact, chemistry at the present day is making such enormous strides that it can only be properly studied in the current scientific journals.

*Principles.*—"It is the province of chemistry," says Professor Miller, "to ascertain the nature of the different substances of which the universe is composed; to trace their mutual reactions on each other; to effect new combinations of these components with each other; and to define the conditions on which the combinations existing around us are producible." Material substances are endowed with two different kinds of properties, *physical* and *chemical*—the study of the former belonging to natural philosophy, of the latter to chemistry. The physical properties of an object are those which refer to its condition, whether solid, liquid, or gaseous; the chemical are such as relate essentially to its action upon other bodies, and to the permanent changes which it either experiences in itself, or which it effects upon them. Chemical action occurs when two or more substances so act upon each other as to produce a third substance, differing altogether from the original ones in properties; or when one substance is brought under such conditions that it forms two or more bodies differing in properties from the original one. All substances are either *simple* or *compound*. The simple substances, or elements, so far as known, are 63 in number; and of combinations of these, all the compound substances are made up. All substances, whether simple or compound, are believed to be made up of small indivisible particles, called *atoms*. These can be united with one another, or separated from each other, but in no case can any one of them be broken up or divided into smaller particles; and hence the name [Gr. *atomos*, indivisible.] What the real size, form, or weight of these particles may be, we have no means of determining. The relative weight, however, of the atoms of the different elementary bodies to each other, is fixed; and those of hydrogen being lighter than those of any of the other elements, it is taken as the standard. The *atomic weight* then of any of the elements, is the relative weight of its atoms to those of hydrogen. *Chemical attraction* or *affinity* (see AFFINITY) is the force which is exerted between the particles of different kinds of matter, causing them to combine, so as to form a new matter, with properties peculiar to itself, and different from those of its constituents. Chemical combinations do not take place indifferently, but in accordance with certain strict rules, or laws. Each particular chemical compound is always constituted of the same elements, combined together in the same proportion. It frequently happens, however, that two elementary bodies unite together in more than one proportion, and so form different compounds, but these are still formed on a uniform plan, and the proportions of the elements are in each case related. One substance will unite with another in preference to a third, or, in some cases, in preference to any other. This preference is denoted by the term *elective affinity*. By means of this elective action, some combinations may be decomposed. When one element can take the place of another element in a compound, so as to form one analogous, it is said to be *equivalent*. Thus, 100 parts, by weight, of mercury, 80 of bromine, 39 of potassium, 23 of sodium, are respectively exchangeable for, or equivalent in combination to, one part of hydrogen. The relative quantity of hydrogen which can enter into chemical combination being less than that of any other element, its combining proportion is taken as the standard of comparison or unity. The composition of a body may be determined either *analytically* or *synthetically.* By analysis a body is separated into its constituent elements, so as to determine their nature or quality, or their quantity. The former is called *qualitative*, the latter *quantitative*, analysis. By synthesis, different elements are combined, in order to form compounds. That branch of chemistry which treats of the nature and properties of elements and compounds of mineral origin, is called *inorganic;* and that which deals with those of bodies of an animal or vegetable nature, or the products of such, is called *organic chemistry.* Recent discoveries, however, have rendered the distinction between these two less and less marked, so that it is impossible to define their exact limits. There is, in fact, no definite line of demarcation between inorganic and organic products. Carbon being the characteristic element in all organic bodies, some define organic chemistry as the chemistry of carbon, or of the carbon compounds. (See CARBON.)

*Formulæ.*—The alchemists, for the sake of mystery, employed the signs of the different planets to represent the various metals. Modern chemists, for the sake of convenience and brevity, have given to every element one or two letters called symbols, which are used, in conjunction with figures and algebraic signs, to express every known compound. The principle upon which modern chemical notation is founded, is that each symbol indicates one or more atoms of the element it represents: thus, C, $C_2$, $C_{27}$, indicate respectively one, two, and twenty-seven atoms of carbon. Two symbols, placed side by side, signify that they are in close chemical union: thus, AgO signifies a compound containing an atom of silver united to an atom of oxygen. A comma, separating two or more groups of symbols, must be taken to mean that they are not in such intimate chemical union that the groups cannot be separated without decomposition: thus, $AgO, NO_5$, represents nitrate of silver, which, by certain treatment, can be separated into AgO, oxide of silver, and $NO_5$, nitric acid. The sign *plus* + signifies that the union is still weaker: thus, $AgO, NO_5+HO$ means nitrate of silver united to an atom of water, HO. A number placed on the left of a group of symbols signifies that the whole group, as far as the next comma or *plus*, is to be multiplied by it: thus, $KO,2CrO_3$ signifies that one equivalent of potash is united with two of chromic acid. Sometimes the group to be multiplied is enclosed in a parenthesis: $3(HgCy)+2(KO,SO_3)$ means that three equivalents of cyanide of mercury are united to two of sulphate of potash. Formulæ may be *empirical* or *rational*,—the former giving merely the constituents of a compound, the latter indicating the manner in which they are grouped. It is evident, therefore, that a compound can only have one empirical formula, while its rational formulæ are as numerous as the theories of its composition. Alcohol, for instance, is represented empirically by the formula $C_4H_6O_2$. Rationally, it may be represented as the ethylate of water, $HO,C_4H_5O$; the hydrated oxide of ethyl, $C_4H_5O,HO$; as a compound of olefiant gas and two equivalents of water, $2HO,C_4H_4$, and so on, *ad infinitum.* Brackets are used to denote substitution compounds; that is, compounds in which one element, or group of elements, has been substituted for another without materially affecting the character of the compound. Two changes have been lately introduced into chemical formulæ that it will be well to notice;—one in which dashes are used to denote the atomic power of the element; the other, a line through a symbol, to signify that its atomic number has been doubled. Bi‴ means that bismuth has a triatomic power in the way of forming substitution compounds. This notation originated with M. Gerhardt, an eminent French chemist, whose views on the subject are daily gaining ground, and at no distant day will be generally adopted.

*Gerhardt's Notation* differs from that in common use by the doubling of certain equivalent numbers In looking through a series of equivalents, side by side with the specific gravities of the elements to which they belong, it will be seen that there is a discrepancy between the specific gravities and the equivalents of some few bodies. This will be plain from the following examples:

| | *Equiv.* | *Spec. Grav.* |
|---|---|---|
| Hydrogen | 1 | 1 |
| Oxygen | 8 | 15.9 |
| Sulphur | 16 | 31.7 (vapor). |
| Chlorine | 35.5 | 34.9 |
| Bromine | 80 | 79.8 |

To remove this anomaly, M. Gerhardt doubles the equivalent numbers of oxygen, sulphur, carbon, selenium, and tellurium, on the assumption that *equal volumes of elementary gases and vapors contain the same number of atoms when compared under similar conditions of heat and pressure;* which is equivalent to saying that an atom of oxygen weighs sixteen times as much as an atom of hydrogen, because a cubic foot of the former gas weighs sixteen times as heavy as a cubic foot of the latter. According to this new system, therefore, the equivalents of oxygen, carbon, sulphur, selenium, and tellurium are doubled; and in most chemical books these doubled equivalents are indicated by a line drawn through the letters. Besides the changes in the equivalents, Gerhardt revived and fully carried out a theory of the constitution of acids and salts, first propounded by Sir Humphrey Davy. According to the present theory, as first started by Lavoisier, Berzelius, and others, nitrate of silver would be formulated thus: $AgO,NO_5$; being looked on as a compound of nitric acid and oxide of silver; but on comparing this salt with its corresponding haloid, chloride of silver, a discrepancy occurs, which vanishes, if we consider nitric acid, as existing in nitrate of silver, to consist of $NO_6$ instead of $NO_5$. From numerous other anomalies, occurring chiefly in organic bodies, Gerhardt came to the following conclusion: 1. That every uncombined acid necessarily contained one or more equivalents of hydrogen. 2. That the bodies hitherto regarded as dry acids possessed no acid properties until united with hydrogen and oxygen. 3. That salts were formed by the substitution of one or more atoms of hydrogen, by one or more atoms of a metal, or some substance acting as such. Thus, the bodies known as $NO_5$, $SO_3$, and $CO_2$, are neutral and inert, until united with an equivalent of water, when they form respectively nitric, sulphuric, and carbonic acids. This brings the haloid and oxyacid salts into perfect harmony, both being regarded as acids in which the hydrogen is replaced by a metal:

$$HCl + K = KCl + H$$
$$HSO_4 + K = KSO_4 + H$$

Or, in other words, the acid is regarded as the nitrate, sulphate, or carbonate of hydrogen, and the salt formed, as the nitrate, sulphate, or carbonate of the metal. Hence the terms nitrate of potassium, sulphate of sodium, and carbonate of ammonium, are used by Gerhardt's followers, instead of those in ordinary use. Gerhardt also originated the system of arranging compounds according to types, and fully worked out the theory of the formation of all bodies by the substitution of one element, or group of elements, by others of a similar character.

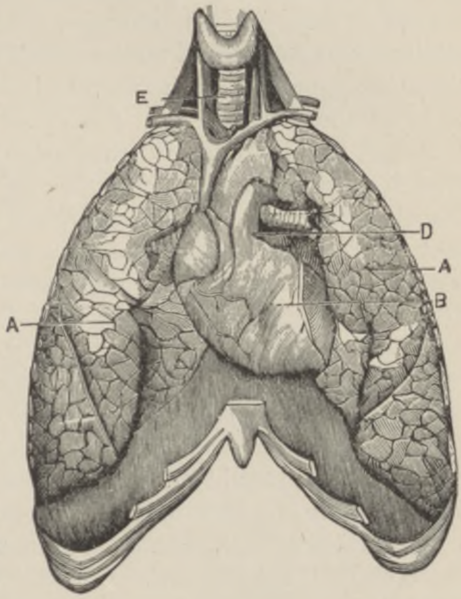
*Nomenclature.*—The present system of chemical nomenclature is due to Lavoisier, and is based on the principle that the name of a compound should, as far as possible, express its composition and properties. The names of many of the simple elements we have received from the alchemists, and were formed on no definite plan. Those elements which have been lately discovered have been named either from some characteristic property possessed by them, or from some word indicating their source. Metals, as a rule, terminate in *ium*, as *potassium*, *thallium*, etc.; metalloids in *on*, as *boron*, *silicon*, etc.; gases in *ine* or *gen*, such as *chlorine* and *oxygen*. In several instances, theory grounded on insufficient facts has been allowed to influence the name of an element; for example, oxygen was named from *oxus*, acid, and *gennao*, to generate;

the Lavoisierian theory being that no acid could exist without oxygen. Subsequently, however, it was found that oxygen occurred in all bases, and that many acids existed that contained hydrogen in its stead. The Lavoisierian nomenclature is founded on the fact that when a compound of two elements is submitted to the action of the voltaic current, these elements separate, one (the electro-positive body) being attracted by the negative pole, and the other (electro-negative body) going to the positive pole. As a rule, it was found that the metalloids were electro-negative, and the metals electro-positive. The simplest combinations of two elements are termed binary compounds, and fall naturally into two divisions,—bases and acids. Bases always end in *ide*, and are compounds of different proportions of a metal with a metalloid. The proportion of the metalloid is indicated by the addition of a Greek or Latin numerical particle: thus we have the *protoxide*, *sesquioxide*, *binoxide*, and *teroxide* of various metals, indicating that these compounds contain 1, 1½, 2, and 3 doses of oxygen to 1 of metal. When the metal is in excess, Greek prefixes are used: we have, for instance, the *dinoxide* or *trisoxide* of a metal, showing that the metal is in a double or triple dose. Generally, the prefixes *sub* and *per* are used to indicate the excess of metal over metalloid, and *vice versa*. The termination *uret* was formerly used in several cases, such as *sulphuret*, *phosphuret*, etc.; but it is now abandoned in favor of the termination *ide*. The compounds of the metalloids with each other are named on the same principle. When the dose of oxygen is large, the compound is generally possessed of acid properties; thus we have $Cr_2O_3$, the sesquioxide of chromium, which is a base; but, by increasing the oxygen, we obtain $CrO_3$, which is an acid capable of forming salts with bases. The amount of oxygen contained in oxyacids is indicated by the termination *ic* or *ous*, or the prefixes *hypo*, under, or *hyper*, above. The compounds of acids with bases are always indicated by the termination or prefix of the word giving the name of the acid. Acids ending in *ous* and *ic* form salts ending in *ite* and *ate*, the prefix being, of course, preserved. When the oxide with which the acid is united is a protoxide or peroxide, the prefixes *proto* and *per* are added; for instance, the pernitrate and protonitrate are the nitrates of the protoxide and peroxide of the metal. When the dose of acid is greater or less than the base, the prefixes *sub*, *bi*, *sesqui*, are used; as the *subcarbonate*, *bicarbonate*, and *sesquicarbonate of soda*. In double salts the name of the base only is repeated; as the *tartrate of potash and soda*. There are a few instances of acids and salts which have the same composition, but different properties. They are distinguished from the ordinary kind by the prefix *meta;* thus we have *phosphoric acid* and *metaphosphoric acid*. The prefix *pyro* signifies that the acid or salt has been obtained by heat; for instance we have pyrogallic acid produced in this way from gallic acid. In organic chemistry the nomenclature is in many cases somewhat confused. This is not owing to any want of proper principle in the formation of new words, but rather to the differences of opinion existing amongst chemists as to the composition of the substances indicated. Thus, aniline is called *phenylamine*, *phenylia*, and *benzidam*, by different chemists, who each have a theory touching its composition. Organic chemistry may be defined as the chemistry of organic radicals or compounds containing carbon, which act in every way as elements. Organic radicals generally terminate in *yl*, and mostly contain carbon, hydrogen, and oxygen. Thus we have *ethyl*, the radical of ether, which forms oxides and salts in the same manner as iron, lead, or any of the purely elementary bodies. There are also compounds corresponding to the electro-negative bodies *oxygen*, *hydrogen*, *nitrogen*, etc. We have, for instance, *cyanogen* and *amidogen*, which form *cyanides* and *amides*, similar in their properties to *chlorides* and *oxides*. The termination *ol* or *ole* is generally applied to neutral compounds of carbon and hydrogen, possessed of neither basic nor acid properties, and are mostly liquids; such as *benzol*, *pyrol*, *quinol*. The termination *in* is applied to other neutral substances, generally solid; such as *paraffin*, *naphthalin*, and *albumin*. Those ending in *ine* or *ia* are generally bodies allied to the alkalies in their properties. We have, for instance, *quinine* or *quinia*, *strychnine* or *strychnia*, *aniline*, etc., which form salts with acids. Many of those which end in *amine* resemble ammonia, and are considered substitution compounds of that body, in which one or more equivalents of hydrogen are replaced by an organic radical. If two or three equivalents are replaced, the prefix *di* or *tri* is added to the word; for instance, we have *dimethylamine* and *tripropylamine*, the composition of which is plainly indicated by their names. When the hydrogen is replaced by different bodies, their names are prefixed. We have, for instance, *ethyl-methyl-amylamine*, which consists of one equivalent of nitrogen united to one each of the organic radicals ethyl, methyl, and amyl. There are also substitution acids as well as bases; such as *bromobenzoic acid* and *chloracetic acid*, in which *bromine* and *chlorine* are substituted for an equivalent of hydrogen. Thus, although these names appear unintelligible and unwieldy to the superficial observer, they are as easily understood by the chemical student as any term including several nouns and adjectives would be to an ordinary individual.

CHENOPODIUM ANTHELMINTICUM, *ken-o-pó-de-um ant-hel-min'-te-kum*, or Wormseed. A perennial plant belonging to the Nat. order *Chenopodiaceæ*. It is found growing in almost all parts of the United States, and is commonly known as Jerusalem oak. The seeds are the part used in medicine, and owe their activity to an essential oil, which may be obtained by expression. It is one of our most valuable anthelmintics, and is used in various forms to expel round worms from children. A dose of it is usually given before breakfast in the morning, and at bedtime in the evening, for three or four days successively, and then followed by some brisk cathartic. Dose of the fluid extract, 1 to 2 teaspoonfuls; of the infusion, a wine-glassful; of the oil, from 2 to 8 drops on sugar. (See INFUSION.)

CHERRY AND CHERRY LAUREL. (See CERASUS.)

CHEST, *tshest*, or, in medical language, the thorax, is the important cavity situated between the neck and the abdomen—which contains the heart and large blood-vessels and the lungs. It is separated from the abdomen by the diaphragm, it is bounded by the breast-bone anteriorly, laterally by the ribs, and is supported posteriorly by the spine. It is singular how much ignorance there is among the uneducated regarding the situation of what is called the chest; generally it is referred to the pit of the stomach; and what is called "a pain in the chest," is in many instances, a pain in the former situation. In ordering applications, leeches, blisters, and such like to the chest among the uneducated, it is absolutely requisite to indicate with the finger the exact spot on which they are to be placed, otherwise the chances are, that if simply the chest is named, the pit of the stomach will be understood; a serious mistake in many of the acute affections of the chest, particularly in children.




ORGANS OF THE CHEST.

A, Lungs. D, Pulmonary Artery.
B, Heart. E, Trachea.

The form of the chest itself is, or ought to be, that of a truncated cone, broad below, narrow above. It is true it appears the reverse of this, even naturally, and is made to do so still more by the absurd ideas about small waists; but the greater apparent width at the upper part of the chest in the living person is due to the shoulders and arms, when these are removed, the contrary is seen to be the case, and the cavity itself is evidently much more capacious in its lower than in its upper part. The principal contents of the chest are the lungs—and the heart—with the large vessels immediately connected with it.

When by tightly-laced corsets, or other contrivances, the lower part of the chest is compressed, the contained viscera must find room somewhere; the diaphragm yields more readily than the long ribs, and is pressed down upon the liver, stomach, and bowels, disordering their functions, and laying the foundation of disease, whilst at the same time the free play of both lungs and heart are impeded. In other words, the possessor of that most desirable physical conformation, a capacious chest, is doing all that is possible to render it otherwise; or should the cavity be naturally small, to make it still more deficient in size, by artificial restraint, instead of every means being used to augment its capacity. A small chest always gives a greater liability to disease; all tendency therefore to contraction, stooping of the shoulders, etc., ought most sedulously to be watched and attended to, particularly in young people, whilst the bones are still soft and yielding; disease may be either the cause or the consequence; the spine too should be well examined. Exercises, which from moderate exertion call for full expansion of the chest by respiration, and full play of the arms, are generally useful. The elastic "chest expander," made of vulcanized India rubber, is a most excellent contrivance for the purpose. Some trades, particularly that of shoe-making, tend in the course of time to affect the conformation of the cavity of the chest.

The physical examination of the chest as regards measurement, the sounds elicited by tapping upon it in various ways with the fingers, and heard by the application of the ear, either directly, or mediately by means of the stethoscope, are most important aids in the investigation of disease, and should never be omitted or objected to. (See Heart, Lungs, Respiration, Auscultation, Stethoscope.)

CHEST EXPANDER. (See Chest.)

CHESTNUT, *tshes'-nut.* Chestnut is the fruit of the *Castanea vulgaris*; it is nutritious, contains much starch, and no oil, like many others of the nut tribe. It is certainly indigestible from its firm and coherent substance, but is rendered much more unwholesome by being converted into flour, in which state it is largely used in Europe. Roasted chestnuts are more wholesome than raw, but are not fit for weak stomachs.

CHEST, WATER IN THE. (See Dropsy.)

CHICKEN. (See Poultry.)

CHICKEN-POX, *tshik'-in poks*, is a mild eruptive disease which spreads by infection, and chiefly attacks children, occurring once during life. It is preceded in most, but not in all cases, by slight feverishness, for one or two days. The eruption first appears in the form of conical pimples with a white head, on the breast, shoulders and neck, more sparingly on the face, and on the body generally. On the second day, the vesicles appear like little globular blisters, but with very slight surrounding inflammation; on the third and fourth days, the fluid they contain becomes opaque or whey-like· they now either break or shrivel up, forming thin puckered crusts, which fall off piecemeal in one or two days more, seven or eight days being the whole time occupied by the course of the disorder. Little or no treatment is required beyond a gentle aperient repeated once or twice, and care taken that the child does not irritate by scratching.

Chicken-pox might be mistaken for modified small-pox by the inexperienced; it is distinguished by the absence or extreme mildness of premonitory fever, and by the rapid development, course, and different form of the vesicles, particularly in the absence of the central depression, which characterizes the true small-pox vesicle.

CHICK-PEAS. (See Cicer.)

CHICKWEED. (See Stellaria Media.)

CHICORY, *tshik'-o-re*, the *Cichorium intybus*, the root of which, when roasted and ground, forms the well-known adulteration of coffee. Some persons consider the admixture of chicory with coffee an improvement, and at all events harmless, but investigations of the "'Lancet' Sanitary Commission," in England, tend to show that infusion of chicory, alone especially, and also when mixed with coffee in the proportion of twenty-five per cent., produced sense of weight at the stomach, languor, and headache; it has, by an eminent European authority, been assigned as one of the exciting causes of amaurosis. Infusion of chicory occasionally acts as an aperient, at other times as a diuretic. In consequence of chicory not containing essential oil, it has not, when roasted, the fragrance of coffee, its infusion has a "sweetish and mawkish taste, and is dark-colored, thick and glutinous." But although chicory is used as an adulteration, the "Lancet" investigations go to prove that it is itself extensively adulterated with various substances. These are, "carrot, parsnip, mangel-wurzel, beans, lupin seeds, wheat, rye, dog biscuit, burnt sugar, red earth, horse chestnut, acorns, oak bark, tan, mahogany sawdust, baked horse's and bullock's liver, Hamburg powder," which consists of peas roasted and ground, and colored with the next article, "Venetian red," also an adulteration. Perhaps after such disclosures, few persons will prefer chicory in their coffee; and, at all events, the moral fraud of vending for the pure article that which is mixed, ought not to be suffered. When hot water has been allowed to stand for some time on coffee containing chicory powder, the grains of the latter lose their color, and resemble small brown sago, whilst those of the coffee become rather darker than before. (See COFFEE.)

CHILBLAIN, *tshil'-blane.* A chilblain is an inflammatory affection of the skin, more particularly of the fingers or toes, caused by alternations of cold and heat, and is characterized rather by irritating and troublesome itching than by pain. Persons of fine skin, scrofulous constitution, or languid circulation, are most liable to suffer from chilblains, and old people and children more than those of middle life. The sudden exposure of the skin to heat when very cold, is generally, and justly, considered to be an exciting cause of the affection, but one quite as frequent, is keeping the surface in a state of artificial warmth by the use of sleeping socks and hot applications in bed, or of fur-lined shoes and foot-warmers in the day-time. All these applications keep the skin in a continual state of unnatural perspiration, weaken its tone, and so render it more susceptible of the effects of cold, when exposed to it. To prevent chilblains, in the predisposed, the feet ought to be regularly bathed with cold—or, in the case of the aged, tepid—water, or salt water, every morning, and afterwards well rubbed with a rough towel. To keep the feet warm, exercise should be depended upon rather than artificial heat. When chilblains have formed and the skin is unbroken, stimulant applications, such as brandy, camphorated spirit, paregoric, or turpentine, will any of them be of service, applied by means of a piece of linen, or gently rubbed on. When the skin of a chilblain breaks, an ulcer is the consequence, which discharges a thin slimy fluid and is often difficult to heal. In this case, the inflammation should be subdued in the first place by means of a poultice, and afterwards an ointment used, made either with 40 drops of extract of lead, or 10 grains of red precipitate to the ounce of lard. Of course all friction or pressure from boots or shoes must be guarded against.

Chilblains, when the skin is unbroken, are said to be quickly cured by the following:

Take of Tincture of iodine..........................Two drams.
Chlorinated solution of soda.................Six drams.—*Mix.*

Apply over inflamed parts twice or thrice daily, drying in before the fire.

The following ointment is also very good, and may be used whether the skin is broken or not:

Take of Benzoate of zinc ..........................One scruple.
Fresh lard.................................One ounce.—*Mix.*

To be applied night and morning.

The following domestic remedy is also sometimes of service: Shake well together in a bottle, spirits of turpentine, white vinegar, and the contents of an egg, in equal proportions. Rub gently when the chilblains are in a state of irritation, and until the redness and swelling are dissipated.

Two parts of glycerine to 100 of collodion make an excellent protective application.

When there is great pain and irritation, the following powerful remedy may be used:

| | | |
|---|---|---|
| Take of | Tincture of aconite | One ounce and a half. |
| | Atropia | Two grains. |
| | Rectified spirit | Half an ounce.—*Mix.* |

Twenty drops to be rubbed into the affected parts night and morning. It is not to be applied where the skin is broken. This preparation is poisonous, and should be marked poison.

CHILDBED, *tshild'-bed.* The term may be applied either to the actual labor itself, or to the confinement generally, from the first commencement of the symptoms to the completion of convalescence. It is in the latter sense it will be considered in this article.

*The process of childbirth* consists of a series of the most beautiful adaptations to the mechanism and structural and vital endowments of the human frame, with every providential provision for the safety both of the mother and infant, during the trying but important event. When the full period of pregnancy is completed, the process which is to free the womb of its contents, commences with the preparatory relaxation of the various parts connected with the passage of the child into the world; shortly, the long-closed orifice, or "mouth" of the organ begins to open or dilate, allowing, in the first place, the protrusion of the membraneous bag which contains the fluid, or waters, in which the infant floats, and which protrusion forms a soft wedge, dilating the maternal structures preparatory to the passage of the hard head of the infant, which follows as propelled by the expulsive efforts of the womb. Sooner or later, however, this membraneous bag gives way under the pressure, the waters are discharged with a gush, and the head itself becomes, in great measure, the dilating agent. Although not in the position at the commencement of labor, at its conclusion, the head of the infant should pass from the mother with the face looking directly backwards, and in the great majority of cases it does so, attaining the position by a series of turns which cannot be profitably explained to the unprofessional. In some cases, however, the position of the head is reversed, so that it passes with the face directed forwards, causing a more protracted and painful labor. Moreover, the head may not come forward, or "present" first, at all, but some other portion of the child, causing an irregular or cross birth.

*Most women form, or endeavor to form, a calculation as to the period at which they may expect to be confined*, and while some do it with considerable apparent exactness, others get far wrong, much to the inconvenience of themselves and of those appointed to attend upon them. The most usual calculation as regards the duration of pregnancy, is forty weeks from the last menstrual crisis, and this is generally made the basis of the calculation; but as more cases fall within the period than extend beyond it, it is safer for expectant mothers to arrange their preparations for the thirty-eighth week than later. By some it is thought that the duration of pregnancy in the case of a male child is longer than in that of a female. As, however, cases of premature confinement of living children are not uncommon, it is always desirable that essentials be provided for as early as possible.

*The most generally received premonitory sign of approaching labor at the full period*, is "sinking;" that is, from twenty-four to forty-eight hours before the actual process commences, the female seems as if she were smaller and lighter altogether, the waist especially showing a diminution in size. At this time, also, there is generally a degree of fidgetiness, or undefined mental anxiety, similar to that which is observable in the lower animals, and there frequently exists irritability of the bowels and bladder, calling for repeated efforts at relief. When the bowels are very troublesome, and there is much involuntary straining, or, as it is called, "tenesmus:" nothing relieves more than an injection consisting of ½ pint of gruel with 20 drops of laudanum. At length, slight twinges of pain are experienced, either in the womb itself, or in the back, hips and thighs, or in all together, and there is more or less discharge of slimy mucus, generally streaked with blood: shivering, with nausea or vomiting, are also frequent concomitants of the first accession of labor.

*As time advances, the pains become more defined and regular*, and when these, the "grinding" pains, have fairly commenced, the first stage of labor may be considered as established. This stage lasts, on an average, from six to twelve hours, but may, of course, much exceed, or fall short of this stated period; during its continuance, the mouth of the womb undergoes "dilatation," or full opening. Towards the close of the first or dilating stage of labor, the pains are altered in character, and become expulsive, or as they are popularly termed, "bearing down," at first slightly so, but as the process advances, their forcing character is more strongly marked, and in most instances, the nearer the birth of the child, the more powerful and nearly connected are they, until at last the infant is expelled. Generally towards the middle of the expulsive stage, the "waters" are discharged; the sudden gush sometimes causes alarm to the inexperienced, who ought on this account to be forewarned of the circumstance. The whole process of labor, in the case of first children, averages from twelve to thirty hours; it is, however, not only as regards time, but in every other respect, liable to great variation. Attacks of spurious pain, resembling true labor, are not uncommon during the last month of pregnancy, but these may be known by the absence of the previous sinking, and of most of the other symptoms above enumerated, as characteristic of the real process. The attack is often the result of confined bowels, or of indigestion, and is removable by a tablespoonful of castor-oil with 10 drops of laudanum, or by a dose of rhubarb and magnesia. Occasionally, active labor commences with a species of spurious spasmodic pains, which want the regularity of the true ones, and only worry and exhaust the patient, who is herself conscious that they are "doing no good." In such a case, the best treatment is to administer 25 drops of laudanum, and to keep the patient perfectly quiet, so that she may sleep if possible; if she does so, in all probability she wakes in a few hours with real labor in full activity; but sometimes even sleep does not intervene, the anodyne seems at once to convert the spasmodic into the real useful labor pain, and contrary to its usual effect, actually to stimulate the progress of the case. Occasionally, when labor has reached a certain stage, pain becomes suspended without obvious cause, and continues so, for a longer or shorter period; in such cases patience is the best resource, unless the cessation of pain appears to be connected with some of the complications of childbirth to be hereafter noticed. The discharge of the waters is sometimes the first sign of the commencement of labor, or perhaps, more correctly, their discharge from imprudent exertions, such as shakes, jumps, etc., hurry on the process, which, in such cases, is often lingering. This premature discharge not unfrequently occurs, when some other portion of the child than the head is first in the birth. It being pre-supposed, that every female in expectation of her confinement, if inexperienced herself, will, under the advice and guidance of female friends, provide for, and make those arrangements most suited to her individual case and circumstances, as soon as the first symptoms of approaching labor exhibit themselves, the female attendants ought certainly to be summoned; but should a medical man be engaged, it is proper before sending for him, to feel assured that the process has commenced in earnest. When sinking pains recurring regularly every ten minutes or quarter of an hour, are accompanied with slight "show," as the discharge of slimy mucus is termed, the medical attendant may be safely summoned, and he will, or ought to see to all subsequent details.

A word or two in reference to trusting entirely to unprofessional assistance in the important operation of parturition, may not be out of place here.

In natural labor, under ordinary circumstances, a calm, judicious, not too self-reliant female attendant, who has had some experience in previous cases, may easily perform all that is to be done. But serious results have followed, on account of absence of skilled help when emergencies have suddenly arisen, and it is in view of the liability to these very emergencies that it is so desirable, in all cases, to have a physician present, or at least, within easy call. There may be malposition of the child, which the female may not detect, alarming and dangerous flooding may immediately follow the birth of the child, the placenta may be adherent to the walls of the womb. There may be fatal syncope on the part of the mother, or suffocation of the child, all of which may be speedily remedied by a professional man, but may speedily prove fatal in his absence. Even though none of these alarming symptoms should suddenly present themselves, many long hours of pain are frequently saved to the suffering female by the assistance in little details. which none knows so well how to render as the competent physician.

*When female attendance is trusted to*, these details require to be carefully and judiciously insisted upon:

A lying-in chamber ought to be as roomy, and, whilst free from draughts, as well ventilated as circumstances will permit. (See BED-ROOM.) The bed should be of such moderate height, that an attendant can conveniently give assistance to the patient. A mattress is always preferable to feathers, and curtains, as in beds generally, are better dispensed with. In addition to the ordinary furniture, a night-chair and bed-pan should be provided; and a vessel of some kind which can be used as a bath for the infant. Some water-proof material is requisite for "guarding" the bed against injury from moisture. Formerly, a prepared skin used to be the general material, but there are now many water-proof articles, quite as well or better adapted for this purpose. Sheet gutta-percha answers well, and is cheap. An easy chair, a pitcher for pure water, a little brandy, a fan, and bottle of smelling salts, cups and vessels, including a sick-feeder (see BED-ROOM) for administering either food or medicine, are all advantageous additions to the numerous little etceteras; these are, sponge, washing flannel, and starch powder; a little lard without salt, or cold cream, soft towels, and abundance of napkins or doubles; four ties or ligatures, each six inches long, and composed severally of four plies of stout linen thread; a pair of blunt-pointed scissors that will cut, and a flannel receiver for the infant. A little laudanum and sal-volatile ought always to be at hand; but when a medical man is in attendance, he more generally carries those with him.

*One female friend, and no more,* in addition to the nurse, should be present at the accouchement; but it is advisable to have another female in the house, though not actually present in the room, particularly if a midwife only has charge of the case. Mothers ought never to be present at the confinement of their daughters.

*As soon as labor commences, the chamber should be prepared,* all extraneous articles removed, and whatever may be wanted put in order; the guard placed upon the bed, and the latter so arranged that when the patient lies upon her left side near the edge of it, there may be plenty of room for those about her to pass and act. The patient herself ought to be encouraged to walk about, and her mind kept occupied and cheerful by conversation; light nourishment, such as a cup of tea or gruel, being given as desired, in small quantity at once; at this time, too, if the bowels are at all confined, they should be unloaded by a dose of castor-oil, or better still, by an injection, consisting of a pint of thin gruel, to which a tablespoonful of olive-oil is added. As time advances, and as soon as the pains exhibit signs of "bearing down," the patient, if not previously undressed, should now be so, and the folded binder—(see BINDER)—placed on the abdomen, so as to give gentle and equable support. The patient may still continue to walk about a little, but as soon as the pains become decidedly expulsive, she must be placed in bed upon her left side, and remain so, unless raised up for necessary purposes, until the infant is born. During all this time the room should be kept moderately cool—if regulated by a thermometer, about 55° Fahr. The patient, most likely, particularly towards the end of her labor, will become extremely hot, and then the occasional and moderate use of the fan is very agreeable. She should be induced, from time to time, to take a few spoonfuls of gruel; but the stomach is not to be overloaded, and above all things, the pernicious and too prevalent custom of giving stimulants, brandy, rum, etc., is to be avoided. A case which really requires such aids, requires also the presence of a medical man to sanction and regulate their use; if given when not required, feverish heat, headache, thirst, general uncomfortableness, and it may be after bad consequences, are the only results. Among the lower, and indeed among some of the better classes, it is customary for patients to be "put to bed" in their day-clothes; independent of the uncleanliness of the proceeding, it is not at all times free from danger, when, after the confinement is over, it becomes requisite to remove these clothes, and substitute the bed-dress; the usual excuse, that it is for the support given by the corsets, is quite inadmissible when the binder is used, which amply supplies the place of the above undesirable articles; besides, the presence of the corsets and clothes may seriously interfere with measures which must be taken in some particular cases, such as those of flooding. Another practice which is often followed by midwives cannot be too strongly condemned, it is that of delivery being effected with the patient kneeling on the floor; it is highly dangerous. Such attention must always be given to the bladder that it may be duly emptied, although, in most instances, the sensations of the patient herself ensure this point.

*When the last strong pains of labor are expelling the head of the child*, the midwife who has, or who ought to have, sufficient experience to be aware of the progress of the case, should elevate the upper knee during the occurrence of each pain, for the purpose of affording free space; this mode of proceeding is preferable to the pillow placed between the knees, which heats, and is always getting displaced. A towel or some such material is frequently attached to the bed-post or some fixed point, and many women appear to derive comfort from holding it during the paroxysm of pain; it may be permitted, if it does not encourage too great efforts at straining. The feet must be kept warm; cold feet may retard the frequency and force of the pains.

*It cannot be too strongly impressed upon the minds of all, that childbirth is a natural process*, and one fully competent in all ordinary cases—and in more extraordinary ones that might be imagined—to accomplish its end, safely and unassisted. And without assistance, or any attempt at assistance, it must and ought to be completed as far as female attendance is concerned.

*As soon as the head of the infant is born*, the attendant midwife ought to pass her fingers around its neck, to ascertain, as sometime occurs, that the navel cord is not twisted around it; should it be so, she must endeavor gently to slip it over the head, otherwise the neck may be so strongly compressed as to occasion fatal strangulation. The cord may be coiled once, or two or three times around the neck. At this period also, the mouth and nostrils of the child—if there is any delay in the passage of the body—should be kept as free as possible from the surrounding discharges, which may be drawn in by the efforts to breathe. Neither ought the body, nor even the legs of the infant, to be drawn from the mother, their expulsion should be left to the natural efforts of the womb, for if too suddenly emptied, its natural action becomes embarrassed, and irregular contraction, accompanied with unnecessary pain and discharge, may be the consequence. The infant being fully born, the navel cord must be tied by the ligatures, which have been ready provided; the first being placed about three fingers' breadth from the body of the child, and the other about an inch and a half further; the intervening portion of cord being divided by the scissors. The infant now separated from the mother is to be placed in the flannel, in the arms of the nurse, and put in a moderately warm situation. (See CHILD.)

*In tying the navel cord*, one or two cautions are requisite. The first ligature must not be placed nearer the body than the distance above-named; and before the second is put on, it is well—to prevent spurting—to squeeze the blood up toward the body of the mother, out of the intervening portion. For cutting the cord, a pair of blunt-pointed scissors should be used, and care taken at the moment that no other portion of the child is intruded between the blades; it has occurred that a finger or toe has been lopped off by a careless attendant. After the cord is cut through, the cut extremity attached to the child must be carefully examined, to make sure that it does not bleed, particularly if the cord be thicker than usual, in which case the tying must be most carefully performed. From careless tying and neglect, infants have been bled to death from the navel vessels immediately after birth. Should the infant not appear to breathe as soon as born, it is well to delay the severance of the cord for a minute or two, whilst at the same time the mouth and nostrils are freed from all adhering mucus, and efforts are made to rouse, by blowing upon the face, or by two or three smart taps on the back. As soon as the infant is separated from the mother, it is proper to ascertain by the hand placed upon the abdomen that there is not a twin child; if there be, the remaining bulk will indicate it in a way that can scarcely be mistaken, and should it prove so, the recurrence of the pain which is to effect the expulsion of the second child, must be quietly waited for, unless hemorrhage, or some other occurrence, dictates a different course. In most cases of twin children, the second is quickly and easily born, after pain sets in.

*When labor is completed*, the binder must be tightened up, so as to give gentle and comfortable support to the now lax abdomen, and the patient left quiet until the accession of pain gives signal of the throwing off of the after-birth. (See AFTER-BIRTH.) When this is affected, the binder will again require slight tightening, and a warm napkin, sprinkled with brandy or whiskey, applied to the mother. At this time, chillness, succeeding the profuse perspiration, is often complained of, and should be counteracted by some additional covering. The female must now be allowed to remain quiet, but not left alone, and so far attended to, that any symptoms of faintness, or undue discharge of blood—flooding—may be detected. If all goes well, in the course of half an hour, if desired, a cupful of gruel or arrowroot may be given; in the course of another half hour, a dry, warm, open, flannel shirt, and dry napkins should be substituted for those which have become wet; by this time, everything ought to be arranged and quiet for the patient's repose.

*Such are the incidents of natural and regular labor;* and could we calculate upon the process following undeviatingly the same course in all cases, it might safely and at all times be left to the care of judicious and instructed females; but, as too well known, accidents and difficulties of the most formidable nature will arise, which tax to the utmost the skill and nerve of the well-educated practitioner; and with some, this is an argument why every case of confinement should be attended by a medical man—in many situations at least, a physical impossibility. As, therefore, many cases must be left to female care, the foregoing directions will, it is trusted, lead to their safer and better management, whilst those which are to follow are intended to point out what cases ought never to be trusted to a female attendant, and what symptoms occurring in a case under female care, indicate the approach of such difficulty or danger as requires the attendance of the male accoucheur. As a general rule, in a first confinement, it is always desirable to have the attendance of a medical practitioner, and especially so, should the female be the subject of any deformity, such as curvature of the spine, should she in early life have suffered from any tendency to rickets, or been the subject of epileptic fits at any period of life. Also, if there exists any suspicion of heart or other organic disease. If a previous confinement has in any way been irregular, or has required instrumental or artificial delivery of any kind; if convulsive fits have occurred; or if there has been flooding, either from difficulty with the after-birth, or any other cause, the woman ought never to trust herself in the hands of a female.

*When a midwife, either professed or otherwise, is in attendance upon a case, fainting coming on at any period, any symptoms of wandering or delirium, or of convulsion, any unusual discharge of blood whilst the process is going on, should at once be the signal for summoning medical assistance;* also, should the labor be more than usually protracted, without obvious cause, provided the pains are regular, sufficiently numerous, or forcible; should the navel cord, or anything unusual, such as the infant's hand, be felt protruding externally; and lastly, after the child is born, should there be any difficulty with the after-birth—(see After-birth)—either with or without flooding, medical aid should be summoned at once.

*In the interval which must or may elapse in many cases before medical assistance can be obtained, should fainting come on,* the female must be laid on the bed with the head on a level with the body, air should be freely admitted around her, and smelling salts used to the nostrils, whilst brandy or whiskey, or sal-volatile are administered by the mouth. It ought to be ascertained whether there is any discharge of blood externally, and if so, cloths, dipped in cold or iced water, are to be freely used to the lower part of the bowels. Wandering or delirium, or convulsion, must be soothed by the most perfect quiet, and by the free use of cold applications to the head, and mustard plasters to the calves of the legs; whilst if the person is of full habit, and if the face is full and flushed, from six to a dozen leeches are to be applied to the temples. In all cases of unusual discharge of blood, the measures recommended under the article ABORTION are to be employed, and it must be borne in mind, that if the accident occurs after the birth of the child, firm pads composed of folded napkins must be kept firmly bound over the situation of the womb—in other words, one or two inches below the navel—and kept there whilst cold is used to the external parts. In a case of sudden and profuse outward flooding after the birth of the child, occurring in a thin individual, much may be done to arrest it, by some one instantly pressing the hand firmly and steadily upon the belly—at the navel—until the pulsation of the great main artery, or aorta, is felt, and felt as arrested by the pressure, to beat up to the hand, but not beyond.

*It must, however, be kept in mind that alarming, and even fatal loss of blood*—internal hemorrhage as it is called—may be going on within the womb, and yet be unmanifested by any outward flow, the first signal of the mischief, probably, being faintness, and if the abdomen is now examined, it will be found to have enlarged more or less since the birth of the child. This dangerous condition requires the most energetic and well-directed efforts of a medical man to save life, and not one moment should be lost in procuring the assistance. In the interval, the binder well spread over the bowels, and two or three folded napkins placed underneath it, to assist the pressure, is to be tightened well up, and in addition, firm pressure must be exercised with the expanded hands of an attendant on the outside of the binder. By this method, the ordinary attendants will do more to retard the further filling of the womb with blood; at the same time cold is to be used to the lower part of the bowels, and stimulants given sparingly. The medical man, on his arrival, will take much more active measures which could not properly be employed by others. The above dangerous accident of the lying-in chamber will sometimes occur in spite of every care, but it frequently results from bad management, such as too sudden emptying of the womb by abstracting the child, instead of allowing the natural efforts to accomplish the entire process; by impatience with the after-birth, neglect in putting on the binder insufficiently, or not at all, or by moving too soon after delivery. The existence of cough has a tendency to promote its occurrence. The occurrence of internal flooding is sometimes indicated by continued pain complained of in the bowels or back, different from the usual intermittent after-pain.

*Lastly, whatever accident may occur in the lying-in room, it should be the endeavor of those around to avoid the excited hurrying*, which too often seeks to do everything, and does everything but what is right. This is one reason at least why it is proper to exclude all but the necessary attendants, and especially mothers, from the scene; they communicate their own alarm to the patient, and aggravate the danger, if it exists, by so doing.

*When a female has enjoyed a few hours' repose after her delivery, if the bladder has not been relieved*, it should now be so; a little light nourishment, such as gruel, taken, and the infant applied to the breast, whether it appears to contain milk or not. (See Breast.) If the confinement be a first one, the after-pains will scarcely give trouble. When they are severe, 20 drops of laudanum may be given in a little water. (See After-Pains.) Perfect quietude is to be observed.

*It is not probable that the bowels will act of themselves, particularly if opium has been given;* it is therefore right on the morning of the third day after confinement to give an aperient. Castor-oil is almost universally prescribed; but when the person is of full habit, and if there exists any tendency to fever, a common black draught is preferable. After the bowels have been moved, the patient, if doing well, is to be allowed an improved diet; a little meat soup, or light pudding; and now, provided it can be done without putting the person in the erect posture, the bed may be made, and the night-clothes changed. After the fourth day, according to the state of the patient, a little solid animal food is to be allowed; but stimulants, whether immediately after the confinement, or during the period of convalescence, should never be taken unless for some special reason, such as great debility. At the end of the week, if all goes on well, the female may get on the sofa, towards the tenth day begin to get her feet to the ground, and gradually return to her usual mode of life. During the whole of the convalescence, there is no greater comfort, or more salutary practice than the free use of tepid water, so as to preserve the strictest cleanliness; by the use of gutta-percha sheeting, or some other waterproof article, drawn under the patient, it may be fully employed without wetting the bed.

*When a confinement has been a moderately favorable one*, if the foregoing directions are attended to, there are few cases that will not progress regularly to complete convalescence; it is true, that among the poor some of the means and conveniences cannot be carried out or procured as fully as could be wished; but the most essential, fresh air and cleanliness, are mostly at command, and might be more freely taken advantage of than they are, and in all cases something like moderate care ought to be observed—which is too often not the case. As regards comforts and conveniences, in no way can the charity of the more fortunate be applied to the relief of their poorer sisters, than in the provision both of linen, lent—and diet bestowed, suitable to the time of trial, when poverty is often so severely felt.

*But recovery after childbirth does not always preserve the smooth course.* The accession of the milk may be accompanied with feverish excitement. This, if not extreme, is to be allayed by means of aperients castor-oil, black draught or seidlitz powder, and effervescing saline draughts, to each of which may be added five grains of nitrate of potassa. Within the first few hours or days after delivery, the woman may be attacked with shivering, or rather shaking so severe as to shake the bed, succeeded by heat of skin, thirst, delirium, and with or without severe pain in the bowels; she is attacked with childbed fever, and cannot be too quickly seen by a medical man, in the meantime, the diet must be kept at the lowest ebb; if time must elapse before efficient aid can be got, there should at once be given a pill composed of 1 grain of opium and 5 grains of calomel, and this repeated regularly every six hours; if pain is severe, a dozen of leeches at least, if they can be procured, must be put on the abdomen, and if not, light hot bran poultices continually applied. If the bowels have not been moved, they must be opened by an injection of gruel and castor or olive-oil. The thirst is to be relieved by toast-water freely allowed. But the above active measures are not to be the substitutes for a medical attendant; the attack threatens life, and may require all that skill can do for its removal; if only a few hours are likely to elapse before aid is procured, the poultices, a single dose of calomel and opium, and the injection should only be resorted to.

*If a woman, at any time during the first few weeks after her confinement,* becomes excited and talkative, if she wanders slightly, if the eye becomes restless and wild-looking, and if sleep is absent, she requires immediate attention, for an attack of childbed mania is probably impending. A medical man should be immediately summoned. In the meanwhile, the most perfect quiet is to be preserved around the patient, who should be placed in bed, in a room with the light slightly shaded; cloths dipped in cold or iced water are to be applied to the head, the feet kept perfectly warm, and the bowels, if confined, opened by a gentle aperient, but not purged. This, perhaps, is all that it is desirable should be done before the case is seen by a professional man, but on an emergency it may be requisite, without this aid, to resort to the use of opium—Battley's sedative solution is the best—of that 10 drops, or of laudanum 15 drops, along with 1 grain of ipecacuanha powder, should be given in a little water, every half-hour, till quiet sleep is procured, or till at least four doses of either of the above have been administered.

*Occasionally, shortly after labor, the skin of the patient becomes covered with a "miliary" eruption*, consisting of numberless points resembling minute blisters. This is generally the result of over-heating or stimulating, and was much more frequently met with in former times than now, that a more cooling and rational system has been adopted.

*The principles to be kept in mind in domestic management of childbirth*, by those in attendance are: To have everything in order and ready at hand; to exclude all useless attendance; to encourage the mind of the patient; to preserve the moderate temperature of the room, and its free ventilation; to abstain from giving stimulants, and from loading the stomach with food; to have the bowels clear; to avoid all meddling interference; to summon medical assistance on the first appearance of anything unusual; lastly, let the patient be assured, that the process, though a painful, is a natural one, and He, who has ordered its marvellous arrangement and adaptations, will be present in the hour of travail. (See Binder, Puerperal Fever, Pregnancy, Child, After-Birth, After-Pains.)

CHILDBED FEVER. (See Puerperal Fever.)

CHILDBIRTH. (See Childbed.)

CHILD, CHILDREN, CHILDHOOD, *tshild, tshil'-dren, tshild'-hood.* The period of childhood, including infancy, may be said to extend from birth to the thirteenth or fourteenth year, and truly it may be said, that the child is the father of the man, for upon the original constitution, and upon the physical and mental training of this most important epoch of human life, depends in great measure the usefulness, and consequently the happiness—it may be the eternal welfare—of the future man and woman.

Infancy.—*Continued from Childbed.*—When an infant is born, should it, in consequence of protracted labor or some other cause, not draw breath, and appear purple on the surface, it is advisable in the first place to pass the end of the finger, covered with a piece of thin cotton or linen, into the mouth, for the purpose of clearing away the stringy mucus which not unfrequently obstructs the passage of air into the lungs. If, under these circumstances, the navel cord continues to pulsate, it should not be tied for at least two or three minutes, during which efforts are to be made to rouse the child, by blowing sharply on the face, or by one or two slight slaps on the back; at the same time an attendant ought to be getting a warm bath—temperature 98° Fahr.—in readiness. If, after the lapse of time above-mentioned, animation still seems suspended, the cord should be tied without further delay, and the infant at once removed and placed in the warm water up to the neck, the body being well supported, and the mouth and nostrils carefully kept from being accidentally submerged. The mouth and throat having been cleared from obstructing mucus as above directed, some one, whilst the nostrils of the infant are closed, should, by placing their mouth over that of the child, endeavor to inflate the lungs with their breath, and then withdrawing the mouth, to empty them by pressure exerted upon the abdomen and sides of the chest. The direct effort to inflate the lungs having been repeated a few times, the artificial respiratory movements—alternately pressing upon the ribs and abdomen, and allowing them to recover by means of their own elasticity—should be persevered in for a considerable period. In these cases of suspended animation in infants, electricity is unquestionably a powerful restorative; but hitherto the difficulties attending its ready application just at the moment, have rendered it almost unavailable; now, however, the newly-invented electric chains of Pulvermacher will probably place in the hands of the accoucheur, and, from their simplicity, even of others, a readily applicable source of the above powerful stimulant. (See ELECTRICITY.)

*When an infant exhibiting full signs of life is separated from the mother, and placed in the flannel receiver, it must not be covered up too closely*—the caution is not superfluous, for infants have actually been smothered in this way by the extra carefulness of the nurse; it must, too, be placed where it will be warm. As soon as the child can be attended to, it ought to be examined all over, to ascertain whether it be perfectly formed; and the tying of the navel cord should be seen to be secure. Washing with warm soft water—temperature 98°—soap, and soft flannel, is the next requisition. The skin of a newly-born infant is covered with a white unctuous matter, which is to be removed; this should be done as gently and effectually as possible, without fraying the skin, the arm-pits and other folds of the body being particularly attended to. The child, after being washed, is often dried upon the receiver, placed on the nurse's knees; a better plan is, to have placed on the lap a moderately soft pillow, covered with two or three large warm napkins, on which to lay the child. The drying, which should be done in cold weather at a moderate distance from a fire, having been effected gently, without scrubbing, a little starch powder should be dusted into the folds of the groins and arm-pits, but not elsewhere, unless the skin appears frayed. The portion of the navel cord remaining attached to the child, is now to be wrapped in a piece of soft linen, which is kept in place by a binder of fine flannel, five inches wide, and long enough to pass twice round the body of the child, so as to give support without pressure, and fastened by needle and thread—not by pins: if too firmly applied the respiration of the infant is interfered with. The remainder of an infant's clothing is so much regulated by custom and other considerations, that it is unnecessary to mention it here, further than to impress the rule that it should be perfectly loose and easy, and fastened entirely by tying or sewing. A cap should never be placed upon a child's head, which is naturally hot enough to do without artificial covering. When the infant has been dressed, it should be laid to rest in the cradle, or place prepared for it, perhaps beside its mother, but at all events where it will be perfectly warm. It will probably sleep for some hours. It ought not be fed for the first few hours after birth. As too frequently practised, the unfortunate baby is dosed with "rue tea," "sugar and butter," or some such mess, or stuffed with soaked bread or gruel, and the first foundation laid of the disordered bowels, wind, screamings, etc., etc., which are so general in young infants. When the infant wakes from its first sleep, or, at all events, in the course of four or five hours after birth, it should be put to the breast; even should there not be sufficient secretion of milk to satisfy the child, it is well both for it and the mother, that it should be thus early induced to take the nipple. If, as may occur, the milk-flow is delayed, it will be necessary to give the infant the artificial support of cow's milk, unskimmed, but diluted with half water, and very slightly sweetened; this may be given, either from a common nursing bottle, or by means of a spoon, but the former is preferable. On no account should anything like bread, gruel, or the like, be allowed to pass the lips of a newly-born infant, unless under the pressure of extreme necessity, such as might happen on board ship, and then, the powder of grated biscuit, or of twice-baked bread, softened in water, is the least hurtful substitute. The first milk of the mother is thin and serous, and is generally considered to exert an aperient action upon the infant's bowels, by which the slimy olive-green discharge named "meconium," which first occurs from them, is carried off. Should the bowels not act within twenty-four hours after birth, from 6 to 8 drops of castor-oil should be given, mixed with a small quantity of moist sugar. Should this have no effect, it may be repeated; but should the infant appear to make the straining effort to relieve the bowels, without its being effected, the vent ought to be carefully examined by a medical man, as it may happen that closure of the bowels, complete or partial, exists, but which may, nevertheless, be remediable. The case is not common, but its possibility is not to be forgotten.

*The majority of mothers are able, and ought, as a sacred duty, to* *nurse their own infants;* but cases occur in which, from illness succeeding the confinement, or from general weakness of constitution, a female is unable to do so, either with benefit to herself or the child. When she cannot, it becomes a serious question, whether the duty of nursing is to be devolved upon another, or whether the infant is to be brought up by hand. The general voice says the former, the author confidently asserts that the latter is preferable. In the first place, it is requisite to provide a nurse, whose own infant is of the age, or nearly so, of the infant to be wet-nursed; it will not do to put a young infant to the breast which has been nursing for many weeks or months. This is the first but the lightest difficulty. But there is a much more serious consideration. We have yet to learn the full measure of influence, both physical and mental, which may be exerted upon the child by the peculiar physical and mental constitution of the foster-mother from which it draws its first nourishment. It is true the physical development is generally rigorously scrutinized, but how are passions and mental tendencies to be measured, and we do know that the class from which wet-nurses are often selected, are certainly not in the habit of controlling their appetites and passions; and farther we know, that the physical qualities, at least, of the milk, are very liable to be affected by the mental emotions of the nurse; here at least is one source of danger, were we sure, which we are not, that there is no deeper, more lasting, life-felt influence exerted. And withal, it is quite possible, that some physical taint, venereal perhaps—it has happened and may happen—has escaped the searching examination of the selecting physician. These are all serious considerations for a mother before she submits her child to draw its first nourishment from the body of a stranger, one too, who must either be suffering from the intense grief which every mother feels who loses her infant from her breast, and whose milk must be affected by that grief, or who must have been compelled by poverty, and all its physical evils, to undertake the task; or one whose mental constitution is so unscrupulous, that, without necessity, she will consent for gain, to cast aside her own infant, and, at the risk of its welfare, give its birthright to a stranger. Are any of these the qualifications which a mother will choose for the nurse of her child, even if she has the selfishness to tempt another to desert her own legitimate offspring? Medical men often witness the painful sight of one infant declining away, whilst the mother is nourishing another into strength. The system and importance of wet-nursing has been much over-rated; for it is perfectly possible, if the care and trouble requisite will be incurred, to bring up a child by hand, as well and healthily as at the breast of a foster-mother. Care and trouble it does involve, but if these are grudged, the child had better go to its grave at once.

*In bringing up a child by hand, milk must be its only nourishment for the first three or four months.* Ass's milk, or goat's milk, may be employed, but more generally cow's milk will be used, either with or without the cream removed, according to its richness, and according—as the first few days' experience will show—to its effect upon the infant. The milk is to be diluted with one-half water, and just perceptibly sweetened. It is not to be given by spoon, but by means of a common nursing-bottle, which should always be of glass; of these bottles there should be two, both on account of accidents, and also, that the unvarying and essential cleanliness may be observed. Without the most scrupulous care—and on this depends the success of bringing a child up by hand—the purity and wholesomeness of the food cannot be preserved. The milk and water should be mixed fresh, at least twice a day, and, in summer kept in vessels immersed in cold water; it is to be given to the child at nearly the temperature of the body—about 96°. The food is to be sucked from the bottle, and much care is requisite in the management of the artificial nipple. It should, without being too impervious, occasion the infant some exertion to draw the milk through it, if it does not, the child is apt to over-fill the stomach, and loses the exercise which it has when it draws its nourishment from the breast of the mother. Silver nipples are generally too hard for the gums. India-rubber nipples of excellent quality are now made. Wash-leather or parchment, double linen, and muslin, are also used for this purpose. Whichever is used, it must be made up into the form of a cone, or like a small jelly-bag, with a piece of sponge about the size of a large pea, to give a little substance, fastened inside by one or two stitches passed through. The nipple must then be firmly secured to the end of the feeding-bottle, and will require changing every day, otherwise it becomes sour-smelling and unwholesome, independent of which, wash-leather thickens and becomes impervious, and the other materials are apt to wear through. Again it is repeated, that the most thorough cleanliness, in milk-can, bottle, and nipple, is to be observed, and must, except in rare instances, be a mother's care. Another caution is requisite. In feeding children from the bottle, careless nurses may frequently be observed to incline it the wrong way, so that the infant goes on for a time sucking wind. The best nursing bottles, however, are so constructed that this cannot occur while there is milk in the bottle. For the first three or four months this milk and water food is all that is requisite, with the addition if at any time the bowels should be too much relaxed, of a portion of isinglass, from one to two small teaspoonfuls dissolved in the half-pint of fluid. About the fourth or fifth month, a small portion of arrowroot or wheat flour may be boiled in the water before it is added to the milk, and about the seventh or eighth month, the spoon may be used to give some of the more solid milk and farinaceous preparations. In bringing up by hand, as well as at the breast, during the first three months at least, the child will require feeding about six or seven times in the twenty-four hours. At first, about 6 tablespoonfuls, or 1½ fluid ounces may be given at each feeding on the average, and this quantity may be gradually increased. Small delicate children, however, will scarcely take half this quantity, and great care must be taken, both with them and others, not to allow the stomach to be overloaded. If an infant is habitually vomiting after feeding, the quantity allowed at once must be reduced, for, though happily the infant stomach relieves itself easily of superfluous food, it is better to avoid the superfluity, notwithstanding the popular fallacy that vomiting or spewing is a sign of infant health.

*The system of rearing by hand* is much more prevalent in some parts of Germany than in this country. The following passage from the work of Dr. Andrew Combe, the substance of which he says he derived from the German work of Dr. Von Ammon, is so full of practical instruction, that the author makes no apology for quoting it at length:

"In some constitutions, however, cow's milk does not agree when merely diluted and sweetened; but answers perfectly well when a large proportion of water and a small quantity of any well-prepared farinaceous substance is added. In this case, it is a common custom in some parts of Germany to dilute the milk with a weak infusion of any light aromatic, such as linden-tree flowers, instead of pure water. But after the first month or two, where diluted milk does not agree, a small proportion of well-boiled arrowroot, grated Dutch rusk, or well-baked or toasted bread, sometimes forms a very useful addition wherewith to thicken the milk to the consistence of thin gruel. Briand, indeed, remarks that milk diluted and boiled for a length of time with any light farinaceous substance, is more easily digested by some infants than pure milk: and that when the use of milk alone is followed by white and curdy evacuations, a change to a *bouilli*, made of milk and farina, often restores them to a healthy color and consistence. For this reason, he recommends panada, made by boiling for a length of time in water, or milk and water, thin slices of bread, previously well dried in the oven. Another of which he speaks highly, is the *creme de pain*, made by infusing in water for several hours well-baked bread, previously dried in the oven in slices, and boiling it gently for some hours more, adding water from time to time to prevent it becoming too thick. It is then strained and sweetened, and a few drops of orange-flower water are added. For infants a few months old, arrowroot, sago, or semolina, may be used in the same way. The *bouilli* in common use in France as the first food of infants, is made by gently roasting the best wheat-flour in an oven, then boiling it for a considerable time, either in water, or in milk and water, and adding sugar to it. When carefully made, not too thick, and free from knots, it is considered an excellent food, especially where the use of milk excites a tendency to diarrhœa, or colicky pains. On changing to the *bouilli*, the digestion immediately improves, and the evacuations become healthy and unattended by pain."

"*In some instances, especially when the bowels are sluggish, barley-water or thin gruel, with or without the addition of weak chicken-tea, or beef-tea, answers best;* and the grand rule ought to be to follow what seems best suited to the individual constitution. In soft flabby children, the chicken or beef-tea is often most useful; while in thin, active, and irritable infants, the milder milk and farinaceous diet answers best. But in trying the effect of any alteration, we must not be too rash, and because no advantage is apparent within a day or two, conclude that therefore it will not agree. In many instances, the effects of a partial change of diet show themselves so gradually, that it is sometimes only after an interval of a week or two, or even longer, that we can tell positively whether benefit will result from it or not."

*When the infant is to be nursed at the breast of its mother, it ought, as above directed, to be put to it, unless some cogent reason forbids, within six hours after birth,* and from that time it will require it every three or four hours for the first few months. It may be requisite, either from weakness of the child, or some other cause, to have the nipple drawn out either by a stronger or older infant, or by some other means. Should the mother not be able to nurse her infant entirely, the extra feeding must be conducted upon the rules laid down for bringing up by hand.

*The first few weeks of an infant's life* are spent principally in sleeping and taking nourishment, movement is but little indulged in, and consequently the power of sustaining the animal temperature is but slight; for this reason care is always requisite that sufficient heat be preserved, both of clothing and of situation, during the day, and by the infant sleeping with its mother or nurse during the night, for the first few weeks of its life at least. Equally important with temperature, nay even more so, is the purity of the atmosphere which a young child breathes; errors in this respect have led to the most deplorable loss of infant life. One instance is sufficient to illustrate this point: it is the well-known one of the Lying-in Hospital of Dublin, in which, at one period, one child out of every six died within the first fortnight of existence, but by the adoption of proper means of ventilation, this very great mortality was at once reduced to one death for every nineteen or twenty children born. It is unnecessary here to repeat what has been said in the article Bed-Room, upon the means of ventilation, etc., and to that article the reader is referred. The cradle or bassinet in which an infant sleeps should not be smothered up with curtains, and it is better, for some time at least, without sheets, light blankets only being used.

The mattress should be hair, if possible, but where economy is requisite, cotton-wool will answer the purpose; it should be protected from wet by means of waterproof material of some kind. A pillow too large and soft is not advisable, for by allowing the head to sink into it, an injurious amount of heat and perspiration is promoted, and the child rendered susceptible of cold when taken up. The skin of an infant requires the most scrupulous care; by its powerful agency it frees the body from matter which must be noxious if retained, and which is especially apt to act injuriously upon the susceptible infant nervous system. The skin ought to be washed with tepid water and soap, night and morning, and after each washing, reaction promoted by gentle friction with the hand for a few minutes. Care must always be taken that the situation for washing is sufficiently warm, but not, as too often the case, before a scorching fire; draughts of air are especially to be guarded against. Before leaving this subject, it is requisite to notice the filthy custom, that has been observed, of allowing the scurf, the oily secretion, and the dirt, to cake upon the skin of the head, under the idea that it preserves from cold. The habit is not only disgusting, but is productive of disease—perfect cleanliness is requisite here as elsewhere.

In fat children, the creases or folds in the skin require extra attention, from the liability of the opposed surfaces to become inflamed, and to pour out an irritating moisture; dusting with starch-powder, or the intervention of a piece of soft linen spread with simple cerate (see Cerate) may either of them be used as a remedy. The portion of navel cord which is left attached to the child, will require attention. This separates by a kind of moist decay; it may come off entirely by the fourth day, or take a fortnight to do so; it must never be hurried. Generally, when the navel separates, it leaves the puckered closing of the skin perfectly complete; it sometimes, however, occurs that bleeding or inflammation and ulceration take place at the time of separation; such cases ought at once to be placed under medical care. When actual bleeding occurs, the condition is all but hopeless. When the opening at the navel does not thoroughly close at birth, protrusion of a portion of the bowel takes place when the child cries. This state of things, apt to occur when the cord has been of more than average thickness, requires much attention, as the comfort and safety of the individual, especially of a female, in after life, may be considerably interfered with, if the malformation is not, as it may be, cured in childhood. The belly-band, or binder, has of course considerable power in preventing the protrusion through the navel opening; but in these cases it is not sufficient; and for the first few weeks, one or two graduated compresses, made of folded linen, should be placed over the navel, underneath the binder; and when the child is a month or six weeks old, the following apparatus must be used: From a cork, the diameter of which is about half as large again as that of the protrusion, a slice the eighth of an inch thick is to be cut, flatly padded, covered with linen, and affixed to two cross pieces of plaster by stitching. The plasters being warmed before application, are used to retain the padded cork directly over the opening of the navel; above all, the binder is applied. The plasters will probably require renewal every few days. It is better to trust to the linen pads alone, as long as any tendency to inflammation of the skin exists, using at the same time a plaster of simple cerate or gold-beater's leaf next the skin. Instead of either linen or cork pad, one of vulcanized India-rubber, filled with air, might be substituted. The treatment of navel protrusion, or hernia, in infants, and the management of the apparatus, involves some amount of care and trouble, but not more than the necessity and importance of the evil demands for its rectification. In such cases, the infant should be kept from crying by all reasonable means, the best preventive being the careful attention to the rules of health laid down in this article.

*Rupture at the groin* may occur in children at birth, and may be suspected to exist, when unusual fulness or swelling is observed in this situation, and if the fulness and tension is increased when the child cries, the case should at once be seen by a medical man.

*Any malformation with which an infant is born*, ought as soon as possible to be submitted to the judgment of the surgeon, so that he may have full opportunity of fixing the appropriate time for its rectification or removal. The operations for hare-lip, distorted joints, such as club-feet, are now performed at a much earlier period than they were formerly. In the case of vascular nævus, or mother-mark, (which see) which often increases rapidly from a mere perceptible point to a large size, surgical interference as early as possible is most important. These nævi are composed of so thick a network of capillary vessels as to be almost spongy, and should they be accidentally wounded, bleed freely, and if of any size, dangerously; they vary in color from bright red to purple; if the finger be pressed upon a nævus, it becomes emptied of blood, and pale; but the instant the pressure is removed, the blood, and consequently the color, instantly return. There are various methods employed for their removal; but the one used in each case must depend upon the surgeon; a simple, painless, and frequently successful mode of cure, is vaccinating upon the nævus, which is cured by the inflammation which takes place in the progress of the cow-pox. The possibility of this being done is an additional reason why the disease should be seen as early as possible by a medical man. The continued use of the compound tincture of iodine to a nævus, the surface being painted over with it night and morning, will, sometimes, if perseveringly adhered to, be successful in removing it; the application being intermitted for a few days should the skin become sore.

*Tongue-tying in infants is not uncommon;* it depends on too great prolongation of the "frænum," or bridle which retains the tongue in place. It is easily rectified by a snip of the surgeon's blunt-pointed scissors.

*The time at which an infant may first be taken out of doors after birth*, must depend, of course, greatly upon the time of year; in fine warm summer weather, in the course of ten days or a fortnight, it will be safe to make the change; in winter it can scarcely be prudent to do so for a month or six weeks, and then only on a fine day. In either case, free exposure in the house should first be practised, the first airing should not extend longer than twenty minutes, and the eyes, especially at first, must be shaded from the glare of the sunlight; of course, either the chill of morning, or the damp of evening, must be avoided. A young infant should not be taken out during the prevalence of east wind.

*The principal ailments*, likely to come under domestic management, to which infants are liable, are thrush, red gum, colicky-pains in the bowels, and diarrhœa. For the first—thrush—the reader is referred to that article. Red gum is a mild species of "papular" eruption, to which many children are subject soon after birth. It is quite devoid of danger, and requires no treatment if the bowels are in good order, if not, a dose or two of castor-oil may be given. The usual friction after washing must be moderate during its continuance. Inflammatory swelling of the breasts in infants is not unfrequent; gentle friction with camphorated oil, three or four times a day, will suffice to remove it. Most infants are troubled, more or less, with wind, or colicky-pains in the bowels, and not unfrequently with diarrhœa, but these are much aggravated by errors in feeding so universally prevalent, particularly among the poorer classes; sometimes when the child is nursed entirely at the breast, particularly of a wet-nurse, they are caused by the nurse's transgressions in diet. Attention to the rules already laid down relating to feeding, will greatly prevent the above ailments; but when they do occur, they must be rectified as simply as possible, but never by the dangerous and baneful quack carminatives so extensively sold and used.

Pain, and wind in the bowels in children, are generally connected with superabundant acidity; for the correction of the cause and its consequences, either of the two following mixtures may be used moderately, both with safety and good effect. No. 1:

Take of Calcined magnesia............Twelve grains.
Dill water....................One and a half ounces.—*Mix.*

No. 2:

Take of Prepared chalk................Ten grains.
Dill water.....................One and a half ounces.—*Mix.*

Of either of the above mixtures, a small teaspoonful may be given, and repeated if requisite. The first, or No. 1, is to be selected, should the bowels be at all confined; the second, No 2, should they be too relaxed. It is not recommended that either of these medicines, simple as they are, or any others, are to be given too freely to infants, and on every slight occasion, but it is better to give them than to allow a child to suffer; they, or something similar, ought to be the substitutes in every nursery for the secret quack nostrums. It is true they will not either as quickly stop pain, or sleep a child, as mixtures which contain opium or poppy syrup; but they cannot, like them, either put it into its last long sleep by an over-dose, or injure not less fatally, when frequently used, even in small doses, by gradually disordering the brain and nervous system. When either of the mixtures above recommended are given to children, or indeed whenever magnesia or chalk is given habitually, it is always prudent to give an occasional dose of castor-oil, as cases have occurred in which concretions of chalk, and of magnesia, have accumulated in the intestines. The dose of castor-oil for a young infant may be from 10 drops to ½ a teaspoonful. In cases of diarrhœa, should the affection be slight, and the infant be a hand-nursed one, the addition of isinglass to the milk food will, in most cases, stop the tendency at once, particularly if assisted by a few doses of mixture No. 2, and by a warm bath for five or six minutes, at a temperature of 98°, regulated by a thermometer. Should the affection be more severe, the emulsion of castor-oil with yolk of egg (see CASTOR-OIL) must be given. To 1½ ounces of the emulsion, made with 1 teaspoonful of castor-oil, 2 drops of laudanum, or 20 drops of paregoric are to be added, and 1 teaspoonful, or twelfth part, given once in six hours. And here the opportunity is taken to warn, respecting the administration of opiates to children. They are most susceptible of the influence of the drug, and accidents are continually occurring—more frequently perhaps than comes to light—from its effects; a single drop of laudanum has been known to prove fatal to a young infant. The above treatment is given, not as an inducement for parents, who can readily procure medical aid, to take the treatment of their children, when ill, into their own hands, but it is because it may be of service in situations when skilled assistance is not readily procurable. Many of the diseases of children commence insidiously, but after attaining a certain stage, run their course rapidly. No parent, therefore, who either values his child's life, or his own peace of mind, should delay procuring medical assistance when real illness shows itself; but at the same time, the very same reason ought to induce every parent to inform himself upon the nature of the symptoms which most generally usher in real illness in children, and also, how and by what means the illness which these symptoms indicate, is to be most effectually retarded and obviated. More upon this head will be given when the diseases of childhood generally are touched upon. Within the first five months of an infant's life, vaccination ought to be performed, that is, before the constitution is liable to suffer from the irritation of teething. (See Vaccination.)

*The period of teething varies extremely*, and not less so in the manner in which it affects children. For information upon the mode in which the teeth are developed, the reader is referred to the articles Teeth and Dentition. Some children cut the two front teeth of the lower jaw—which always appear first—as early as the fourth or fifth month, whilst others, apparently equally strong, do not have them developed within the year. The usual, and popularly received sign of approaching tooth-cutting, is watering of the mouth, but this may continue for many weeks before the teeth appear. Before the teeth come through, the gums flatten on the top, look semi-transparent and full, and are sometimes extremely swollen and inflamed. The constitution of the child always sympathizes more or less with the cutting of the teeth, most simply and beneficially so by the occurrence of mild diarrhœa, which is always—unless it goes to an undue extent—a safeguard, and is better not interfered with. When the gums are much swollen and inflamed, and must be very painful, the susceptible brain and nervous system of the child is strongly and injuriously affected by the irritation. The little sufferer is fevered, flushed in the cheeks, and peevish, sleep is disturbed with moaning and starting, and the fingers are constantly in the mouth, or the lower jaw is moved from side to side. In such cases, lancing the gums thoroughly, warm baths, and aperients if the bowels are not relaxed, are the remedies, the first especially, without which the others are useless or nearly so. The popular idea, that lancing the gums is beneficial, by assisting the passage of the teeth through them, is quite erroneous, and may lead to an erroneous method of performing this simple little operation, which every parent who lives at a distance from medical assistance, and particularly in emigrant life, ought to know how to do. The real benefit is derived from the relief which the incisions afford to the tense and distended gum, and from the slight flow of blood which follows, and on this account it is advisable, not only to cut the upper surface, but also the side of the gum, so as to divide the vessels freely. The operation is most conveniently and safely done by a "gum lancet" made for the purpose—but a common penknife may be employed on emergency, the blade being wrapped with a piece of linen, to within a short distance of the point, to prevent any chance to cut the lips. It is superfluous to describe this simple proceeding, it should be seen done once, or at least the method shown. It is not recommended, of course, that the gums are to be lanced for every slight irritation of teething, but when the child exhibits the graver symptoms above described, it ought to be done at once, and, if requisite repeated again and again. In addition to lancing the gums, a warm bath for ten minutes will be found eminently serviceable in soothing the irritated system, and aperients should be given—2 grains of gray powder at night, followed by a small teaspoonful of castor-oil in the morning, or if stronger action be thought requisite, a powder composed of 1 grain of calomel to 2 of powdered scammony is to be given at bedtime to a child of six or eight months old. If the irritation attendant on teething produces convulsion, medical aid must be had as soon as possible, and in the meantime, those remedies employed which are suitable. (See CONVULSION.)

In judging of the diseases of children, it ought to be borne in mind that the pulse of an infant is always quick, averaging from 120 to 130 in the minute, and that at the end of the first year its average is still considerably above 100. (See PULSE.)

*The regulation of the exercise of young children* is of much importance. At first, the mere respiratory movements, occasional crying, and the effort of sucking, are exercises sufficient, if *gentle* nursing movements be employed; but gentle they must be; the system so often adopted of jerking infants about is much to be condemned, and may be extremely hurtful. In the course of a few weeks after birth, the infant begins to show signs of increased power of movement, and evidently experiences physical pleasure in the exercise of its limbs; as time goes on, its next effort is to sit up in the nurse's arms, till, if a vigorous healthy child, at about fourteen months, generally, it tries to walk;—all these movements will come spontaneously to the child, when its frame and muscular powers are adequate to the exertion, but they should never be forced. It is astonishing what an amount of practical ignorance prevails on the above point; children are put to sit in chairs, held upon their feet, or put in go-carts of various construction, long before the bones are fit to bear the weight, and curved spines and distorted legs are the consequences. Again, it is repeated, every advance of the child towards walking and the upright position, can only be safe when spontaneous. When a child first commences walking it must get falls, but it is surprising how little material injury the head, which most generally suffers, seems to receive. At the same time, in families in which tendency to head affection exists, extra care must be taken—a padded band round the head is a useful and frequently used protection. (See *Walking* in article EXERCISE.)

*We make the following extract, as showing the sort of observation and knowledge required by those who would be skilful nurses for children*: —"The signs of disease differ, as well according to the age of the child, as according to the disease from which it is suffering. Cries are the only language which a young baby has to express its distress; as smiles, and laughter, and merry antics tell, without a word, of its gladness. The baby must be ill, is all its cries tell one person; another, who has seen much of sick children, will gather from them more, and will be able to judge whether its suffering is in the head, or chest, or stomach. The cries of a baby with stomach-ache are loud, and long, and passionate; it sheds a profusion of tears; now stops for a moment, and then begins again; drawing up its legs to its stomach, and, as the pain passes off, stretches them out again; and, with many little sobs, passes off into a quiet sleep. If it have inflammation of its chest, it does not cry aloud, it weeps no tears; but every few minutes, especially after drawing a deeper breath than before, or after each short, hacking cough, it gives a little cry, which it checks apparently before it is half finished; and this either because it has no breath to waste in cries, or because the effort makes its breathing more painful. If disease is going on in the head, the child will utter sharp, piercing shrieks, and then, between whiles, a low moan or wail, or perhaps no sound at all; but will lie quiet, apparently dozing, till pain wakes it up again." This is quoted as an instance of the kind of observation that is required, and to show how much a skilful nurse in such matters may help the doctor to find out quickly what is the matter with his little patient who cannot speak for himself. It is very often the case that, when a child's nurse is asked what sort of a night he has passed, she either can give no answer at all, or one which is quite unsatisfactory. How important a question this is, however, may be in some degree realized by reading the following, (from Dr. West's "How to nurse sick children,"—an English work): —"With the approach of night very many diseases get worse; and while you expect this is to be the case, you must carefully notice what are the signs of increased illness which, in each instance, manifest themselves. Fever is generally higher—you must notice if it is very much so; the dull, heavy state of many children suffering from inflammation of the brain, or from some forms of fever, in which they lie dozing during the day, is often succeeded by delirium and loud outcries for some hours at night; or, if the child sleeps, it talks much in its sleep about its lessons or its play; and the observation that these things have happened will serve to help the doctor in his judgment. If, though these things do not occur, yet the child is restless, you must try to ascertain from what cause. It may be from pain, or it may be from thirst, or from cough which disturbs the child, or from difficult breathing, which grows worse whenever the child falls asleep, and then wakes him up again every few minutes; or it may be from that sleeplessness which illness brings with it. If, then, you are to give a useful report to the doctor at his visit, you must not merely be able to tell whether the child slept or was restless, but you must have watched so attentively as to be able to describe exactly the manner in which the night was passed; to report when the child slept, and how—when it was restless, and why." A good nurse further observes all particulars relating to the breathing of her little patient, cough, etc.; whether there is any tendency to vomiting, or to excessive thirst; whether there has occurred anything like a convulsion, drawing in of the fingers or toes, squinting, or twisting of the features, flushing of the face, any eruption on the skin, or any fact whatever which may be of importance.

*One of the most common and troublesome matters to deal with in the case of infants is a tendency to excoriation and redness of the skin in those suffering from diarrhœa.* Now, this is very troublesome; and from the excessive irritation gives rise to great suffering. It can be almost entirely prevented by extreme cleanliness and good management after the bowels are moved. Soap must not, however, be used, as it increases the irritation, but very thin starch should be employed instead. The child should then be carefully dried with a soft napkin, and the parts dusted with Fuller's earth or with zinc powder, and afterwards dressed with an ointment made with one dram of benzoate of zinc to an ounce of lard. The ointment must be kept quite fresh, as rancid ointments never fail to increase the irritation and soreness.

*Many children are destroyed by being too much moved about when suffering from exhaustion owing to excessive vomiting, purging, or some severe disease.* In such cases the little patient is lifted by its mother or nurse from its cot many times in an hour, whereas it should never be removed from the recumbent posture at all. By turning it from side to side it may be shifted and changed, and even a new night-gown may be put on in this way, if it is slit up the back and run together afterwards by means of a few stitches.

*Vomiting and diarrhœa are among the most frequent troubles of children, especially those that are brought up by hand;* in fact, many children at one time or another of their existence are reduced so low by them that, to an inexperienced spectator, it would seem almost impossible they could recover. Now, in checking the tendency to these, the nurse can do a great deal by means of a little common sense, and can greatly aid the doctor. Foolish and inexperienced nurses, when a child vomits or purges after everything that he takes, go on cramming him with food under the idea that as what he has had has come back or gone through him, it can have done him no good, and therefore he had better have some more. It is painful to see the poor little creatures sometimes in this state, vomiting taking place every time they are moved. The obvious indication under such circumstances is to give the tired and irritable stomach an hour or two's rest at a time, and then cautiously at first, and without moving the child, give only a small teaspoonful of cold water, to be followed, if that is retained, by a little cold milk and water, or something of the simplest description, small in quantity and *cold*. If that is retained, a gradual return to its accustomed food may be attempted. Chlorodyne is a most useful addition to our medicines for children's diseases, especially diarrhœa. It requires, however, to be very carefully and cautiously used. (See CHLORODYNE.)

*When a child begins to walk, and to attempt to talk, the period of infancy may be considered as ended, and childhood begun.* Many of the directions applicable to the former are equally so, in a modified degree, to the latter, and *vice versa;* but "childhood" requires further remark. When distinct nursing is no longer requisite, the child becomes more truly the inhabitant of *The Nursery*, and much of its health and happiness for the next few years of its life, will depend upon the proper regulation of this important department of the household.

Whatever is said respecting the necessity for pure air and ventilation, either in this article or any other, such as BED-ROOM, AIR, HOUSES, VENTILATION, etc., applies to the nursery, or rather nurseries; for every parent, whose means will admit, should provide a night and a day nursery for his children, and in neither should such operations as washing clothes, cooking, etc., ever be carried on. The double room will allow of all necessary airings, washings of floors, etc., to be perfectly carried out without the health or comfort of the children being interfered with. Should one nursery only be available, the children should be taken out of it as soon as possible after rising in the morning, the windows thrown wide open, and all necessary cleaning performed before they again enter it, and, both now and at every period of the day, all kinds of slops removed. Should any action of the bowels take place during the night, the receptacle should be put out of the room at once. The observations respecting the sanitary regulation of the nursery, are more particularly applicable in the case of the middle classes, who lack the abundant accommodation of the wealthy, and whose children, in towns at least, do not have the same free access to the open air, as those of their poorer neighbors. The situation of a nursery in the house is important; it must, if possible, be in the upper stories, it should have a south aspect, abundantly supplied with light—the latter is a most necessary consideration. A guarded open fire-place is one of the best means of warmth, and the heat, regulated by a thermometer, should be kept as near 60° as possible.

But, however salubrious the nursery arrangements, children must have as much open air as possible; when the exercise can be taken as play, in summer, upon the grass, or otherwise, it is quite the most beneficial; when weather and other considerations forbid, and walking is had recourse to, it must not go to the extent of real fatigue. At all times it adds much to the beneficial effect of exercise if the mind be engaged pleasurably in it—and therefore, all active plays, either in-doors or out, are preferable to the mere walk, which few children enjoy. The clothing during the whole period of childhood, in a changeable climate, requires much attention; woolen texture next the skin, both winter and summer, is indispensable for health; during the former season, it should cover the chest and abdomen, and come at least half way down the thighs; in the latter, it may be a lighter material, and not extend so far over the chest; woolen stockings extending over the knees ought always to be worn in winter, and at all times should the entire clothing be such as will keep the surface of the skin comfortably warm; there is no greater or more fatal error than that which exposes children lightly clad to the influences of our variable climate, with the view of hardening them.

Thorough purification of the skin must be maintained. A child should be washed all over with soap and water at least once a day. In the case of strong children, the water may be cold, in the weaker, tepid, and in both friction with a tolerably rough towel should be used after the bath, both to cleanse and to promote reaction. If a child continues chilled and cold-looking, and appears languid after a cold bath, it is a sign it does not agree, and the temperature of the water should be raised, or the washing should first be performed in tepid water, and just at the last, a little cold water dashed over the body. (See Ablution, Baths and Bathing.)

*The food in childhood* claims care, equally with air, clothing, exercise, and cleanliness; its regulation in infancy has already been sufficiently noticed. For strong, healthy children, particularly those inclined to full or gross habit, the milk and farinaceous—such as rice, sago, bread, etc.—cannot be exchanged for a better, for the first fourteen months at least, but if children are delicate, and incline to the lymphatic constitution, the use of animal broths ought to be commenced even as early as the sixth month. The broth made from fowl, mutton, beef, or veal, should not be too strong, should be free from fat, and is better thickened with arrowroot or sago for a young child, or with rice or bread-crumb for an older one. Towards the twelfth month, a lightly boiled egg may be given, but quite the best method of giving the powerful nutriment of egg to children, is to break the raw egg into some one of the milk preparations, whilst the latter is quite hot, and to beat up together. In this way, the albumen is sufficiently cooked, but not hardened. When the teeth of a child are sufficiently advanced to masticate it, animal food in the solid form may be given, but the quantity and frequency must entirely depend upon the constitution of the child. Strong, ruddy children are better with it only twice or three times a week; weaker children should have it once a day at least, and in the more advanced stages of childhood, perhaps twice, but this is a point which should be settled by a medical adviser. Potatoes, and the more wholesome vegetables, ripe fruits in their season, may all be allowed to children, in moderation, after the first eighteen months, and particularly should there be a tendency to costiveness, or to eruptions on the skin, and other affections depending upon gross habit of body; weaker children may also partake of them, but more moderately, and provided they do not become substituted for more indispensably, nourishing food. Children at any age are better without baked pastry of any kind, but boiled paste puddings are not unwholesome;—cheese, and all sorts of spiced and seasoned dishes are quite objectionable. A healthy child should never have an alcoholic stimulant within its lips, and tea or coffee, if allowed, should be very weak, and made with much milk; but there are some delicate children, nay infants, who may derive much benefit from a portion of alcoholic stimulant, carefully given as medicine, and as medicine requiring so much care and consideration, that it should only be employed when and as advised by a medical man. Children should not be made to wait long without some nourishment in the morning; the rapid changes which go on in their system render them peculiarly sensitive to any, even temporary, want of nourishment. Regularity in meals is important even from the earliest period of existence; it is always advisable that the principal meal be taken early in the day.

Physical training, however, and the closest attention to physical regulations, require the addition of mental training to carry out thoroughly even the physical education of a child. For the infant a cheerful nurse is most valuable. As childhood advances, whatever may depress or frighten ought especially to be guarded against, and all threats or practices which excite undefined terror, especially avoided. Affection of the brain may be the result. Undue precocity in a child should always be regarded, if not with alarm, at least with suspicion. Many scrofulous children are unusually precocious, and as a general rule in such instances, the brain is more prone to disease, which may end life, or predispose to mental affection. In such cases it is of the highest importance not only to avoid everything which can stimulate to mental effort, but to excite them to such moderate and regular physical exertion, as will in some degree draw off from the brain itself, both the activity of circulation and of nervous energy. (See PRECOCITY.)

There are some diseases which are more particularly considered as those of childhood, such are measles, whooping-cough, scarlet fever, small-pox at times, and chicken-pox, not that they do not occur in adults, but more generally, being passed through but once, it is in the earlier years of life. In addition to the above, such affections of the brain as acute inflammation ending in effusion of water, convulsive disease, croup, inflammation of the lungs, and summer complaint, are the most common acute affections of children. They and other diseases may be referred to under their proper heads. Children quickly exhibit the general symptoms of illness, but it often requires much more tact and discrimination to make out its exact seat and nature than it does in the case of adults; it is, therefore, always desirable to place them under proper medical care as quickly as possible, at the same time the following ought to be some guide as to the site of the affection, and to its provisional treatment:

When in a child complaining of illness, or appearing ill, the eyes look heavy, and are wholly or partially closed against the light, if the brow is contracted, and if with these symptoms there is general fever, some acute affection of the head is to be dreaded, and the indications should not be neglected for an hour; if vomiting is present with the above, so much the worse. Oppression of the breathing, along with general appearance of depression, is often the forerunner of severe inflammatory affection of the chest, which may be considered as established, if heat of skin, general fever, rapid breathing and cough succeed. In the chest affections of children, the movements of the nostrils are much affected. Constipation, which can scarcely be classed as a disease, is almost natural to some children, but requires correction, and this should be effected if possible by food. Coarse wheat bread or corn bread should always be employed, and fruits, either cooked or ripe, such as roasted apples, given in moderation; honey or treacle are useful, but nothing is more so, than the daily use of porridge made from oatmeal. When the tendency to constipation in children cannot be overcome by diet, the next best remedy is the use of a small enema or injection of gruel, simply or medicated with castor-oil, senna, or any simple aperient, or made with soap water, but the simple gruel ought always to be tried first. Dr. Marshall Hall considers, that in children especially, the use of warm injections exerts a peculiarly beneficial effect in stimulating the liver. An injection for a child of six years old, should not exceed 12 ounces, and ought to be administered slowly. When medicine must be given, as general aperients, castor-oil or infusion of senna are most useful; caution must, however, be exerted in forcing the former medicine—as sometimes must be the case—upon very young children; death has been occasioned from its getting into the windpipe. The aromatic syrup of rhubarb is a most excellent, safe and pleasant aperient medicine for children; but where a tendency to constipation exists, it should not be habitually used, on account of its subsequent astringent action; magnesia is easily given in milk, and may be useful either in the solid or fluid form where active effects are not required, but the former especially ought not to be long continued. Calomel and gray powder, given alone, are too much given for their aperient action; they should not be administered except under medical sanction.

As a general rule, in giving medicine to children, deception should not be practised: but whilst the child knows that it is medicine which it takes, it ought to have it in as palatable a form as may be, without interfering with the efficacy of the drug. Refer to articles on diseases and medicines generally. (See ABLUTION, BATHS, BED-ROOM, SLEEP, VENTILATION, CLOTHING, DIET, MILK, OATMEAL, EXERCISE, ELECTRICITY, BREAST, SKIN, TEETH, EMACIATION, SNUFFLES, COUGH, VACCINATION, CRY OF CHILDREN, SCREAMING, FEAR, RUPTURE, SANITARY SCIENCE, HEALTH, CONTAGION, COLD FEET, MINERAL WATERS.)

CHILD-CROWING, OR SPASMODIC CROUP. (See CROUP, FALSE.)

CHILDHOOD. (See AGE, CHILD.)

CHILL FEVER, *chil fe'-vur*, a common name for one of the forms of ague, and hence the treatment is the same as prescribed in article AGUE (which see).

CHIMAPHILA UMBELLATA, *ki-ma-fil'-ạ um-bel-la'-tạ*, Prince's Pine, or Pipsissewa, a plant belonging to the Nat. order *Pyrolaceæ.* It is also known by the common names, ground leaf, ground holly, American wintergreen, king's cure, rheumatism-weed. This is a small evergreen plant, growing in the northern latitude of this country, Europe and Asia. The whole plant is endowed with active properties, tonic, diuretic and astringent. Highly recommended in dropsy; useful in disordered digestion and general debility, rheumatism, and disorders of the kidney, scrofula, in obstinate, ill-conditioned ulcers, in cutaneous eruptions, and in chronic affections of the urinary organs. Dose: of the fluid extract, ½ to 1 teaspoonful; of the solid extract, 10 to 20 grains; of the decoction, 1 to 4 fluid ounces; to be taken three times a day. (See Decoction.)

CHIMNEY, *chim'-ne.* A chimney, by intention the channel by which the smoke and fumes of fire are conveyed away, also performs the no less important, but scarcely—until of late—calculated upon, office of a ventilator. In former times, when the fire-place formed almost a separate chamber, *in* which persons sat round the fire, or indeed as long as it retained its ample dimensions, the people enjoyed an efficient means of ventilation, although in ignorance of the benefit. By change of fashion, the chimney has been gradually contracted and lowered to the model of the present modern fire-place; whilst this has been done, from ignorance of the necessity for pure air, no provision has been made to supply the loss of the efficient ventilating power of the old-fashioned construction, and consequently health must have suffered, and does suffer materially from the omission, although it is to be hoped that the diffusion of popular knowledge upon this and other points of sanitary regulation, will not allow such to be the case much longer. The fire-place, however, is a notable instance of society enjoying ignorantly an arrangement conducive to health; and that ignorance, whilst making alterations more consistent with comfort and convenience, doing away with one great advantage, of which it remains for science to point out both the loss and the means of reparation. As whatever goes up, or ought to go up, the chimney, are vapors and gases which cannot remain down without injury to health, it is a matter of importance that the fire-place of a house draw well, more especially those of bed-rooms in which fire is used. As a means of ventilation simply, independent of the fire, the importance of a fire-place is so great, that rooms in this climate which are destitute of one cannot be considered healthy, although it must be confessed, that this secondary office appended to the original intention, is rather a clumsy method of effecting so important an end; it is one, however, of which it is requisite to make the most, and therefore fire-places ought to have a thorough good draught for smoke, ought never to be stopped when not in use, unless other means of efficient ventilation are possessed, and, when possible, should be fitted with some efficient mechanical contrivance for increasing their ventilating power. (See Bed-Room, Ventilation, Air, Aeration, Carbonic Acid, Stoves, etc.)

CHIMNEY-SWEEP'S CANCER. (See CANCER SCROTI.)

CHIOCOCCA RACEMOSA, *ki-o-kok'-ka ra-se-mo'-sa*, or cahinca, a climbing shrub belonging to the Nat. order *Cinchonaceæ*. It is sometimes called snowberry. It is a native of the West Indies, South America, and of the sea-coast of Florida. The bark of the root is the part used. In medium doses it augments the urinary discharge, and slightly increases the action of the heart, besides increasing the peristaltic action of the bowels. If warm infusions of this drug be drunk, and the body be kept warm, it will produce perspiration instead of purging. In large doses it is a violent emetic. It has been found very efficient in dropsy, amenorrhœa, rheumatism, and syphilis. In Brazil, it is used as an antidote to poisonous snake-bites. Dose of the powdered root-bark, 20 to 60 grains, three or four times a day.

CHIONANTHUS VIRGINICA, *ki-o-nan'-thus vir-jin'-e-ka*, or fringe tree. A shrub belonging to the Nat. order *Oleaceæ*. The bark of the root is the part used. It is aperient, alterative, and diuretic. An infusion is found beneficial in bilious and typhoid fevers, as well as in obstinate intermittents. The dose of the infusion is from 2 to 10 large tablespoonfuls four times a day. (See INFUSION.)

CHIRETTA OR CHIRATA. (See OPHELIA CHIRATA.)

CHLORAL, *klo'-ral*, is a thin, oily, colorless fluid, of a peculiar penetrating odor, which excites tears, and with but little taste. It is prepared by passing perfectly dry chlorine into anhydrous alcohol to saturation, whence the name. It is freely soluble in water, alcohol, and ether; boils at 201°, and has a density of 1.5. Mixed with its own volume of water and evaporated, it forms a white crystalline mass called the *Hydrate of Chloral*, which has been found to possess properties analogous to those of chloroform, but its effects are produced more slowly, and last for a much longer time. It is administered by the stomach, and its action is owing to the production of chloroform in the system by means of the alkalies of the blood. It acts as a powerful sedative on the motor and sensory nerves and seems to have also a contracting influence over the arteries. As a narcotic it is much safer and more certain than opium, and is without any of its unpleasant after-symptoms. The sleep produced is calm and refreshing. In painful diseases, as neuralgia, gout, cancer, burns, etc., in sleeplessness, or nervous agitation, delirium tremens, insanity, and the like, it is found to be of the greatest service. Dose, from 15 or 20 to 60 grains. (See ANÆSTHETICS; ETHER, SULPHURIC; CHLOROFORM.)

CHLORATE OF POTASH, *klo'-rat*, is usually formed by passing chlorine through a mixture of solution of caustic potash and hydrate of lime. It is refrigerant, sudorific and diuretic. This medicine has been very successfully employed in scurvy, liver affections, canker, abscesses, boils, mercurial salivation, maternal inflammation of the mouth, eruptions, and by some practitioners mainly relied on in scarlet fever, fœtid breath, diphtheria, and ordinary cases of sore throat. It is acknowledged a superior remedy in gangrene and ulceration of the mouth, destroying the disagreeable odor, diminishing the discharge of saliva, and expediting granulation. Some authorities pronounce it a sedative to the nervous and circulatory systems, and a stimulant to the digestive and urinary organs. Dr. Watson states that 1 dram dissolved in 1 pint of water is a beneficial daily drink in typhoid fever. It may be applied externally as a wash or injection in solution of 6 to 20 grains to 1 fluid ounce of water. It answers thus in affections of the mouth and throat, aided by internal administration. In persistent sore mouth or throat, and whenever ulceration exists, a very strong solution must be used, which may be prepared by putting 2 teaspoonfuls of chlorate of potash into an ordinary-sized coffee cup, and filling it with boiling hot water. Use this as a gargle several times a day. 1 fluid ounce of water dissolves about 25 grains of the crystals. In internal administration no nicety need be observed in the dose. As a prophylactic in salivation, small doses will serve. Ordinary dose, 10 grains in water, three or four times a day. (See Potash, Chloric Acid, Gargles, etc.)

CHLORIC ACID, *klo'-rik*, is formed by passing a current of chlorine through an alkaline solution when the chloride of the metal and the chlorate of the alkali are formed. It is colorless, strongly acid, has an oily consistence, and a pungent smell. It is not decomposed by light, and its oxidizing properties are very powerful. It forms salts with bases, called chlorates, which are decomposed by heat, the chloride of the metal being left behind, while oxygen is liberated. The most useful of them is the chlorate of potash, which is formed by passing chlorine through a solution of caustic potash: chloride of potash and chloride of potassium are formed, the former being separated by crystallization. (See Chlorate of Potash.)

CHLORIC ETHER, *klo'-rik e'-ther*, is called in the British Pharmacopœia, spirit of chloroform. There are few remedies more generally used in all spasmodic affections, such as asthma, coughs, etc. It is also of great value as a sedative in painful affections, especially in combination with opium and other remedies. Owing to its intensely sweet taste, it is much used to make certain mixtures more palatable. It is invaluable as a diffusible stimulant in cases of great debility, and of obstruction to the respiration occurring in the course of heart or pulmonary disease, or both. The following prescription, which will be found as palatable as most liqueur, may be taken in cases of difficulty of breathing, faintness, etc.:

Take of Spirit of chloroform....................Three drams.
Compound tincture of cardamoms......Five drams.—*Mix.*

A teaspoonful to be taken in a wine-glassful of water when required. Or,

Take of Spirit of chloroform..................Two drams.
Tincture of ginger.....................Six drams.—*Mix.*

A teaspoonful to be taken in a wine-glassful of water. (See ETHER, SULPHURIC.)

CHLORIDE OF LIME, CHLORINATED LIME. (See CALCIUM, CHLORINE.)

CHLORIDE OF SODIUM. (See SALT.)

CHLORINE, *klo'-rin* [Gr. *chloros*, green]—symbol Cl, equivalent 35.5, specific gravity 2.44. Chlorine, dephlogisticated marine acid, or oxymuriatic acid, was discovered by Scheele in 1774, while examining an ore of manganese. It was thought at first to be a compound gas; but Gay-Lussac and Thenard supposed, and Sir Humphrey Davy proved, that it was an elementary body. It was the latter philosopher that bestowed upon it the name of chlorine, from *chloros*, green (Greek), on account of its color. It occurs in nature in great abundance, in combination with many mineral substances, such as rock-salt; also in sea-water and sea-plants, as the chlorides of potassium and sodium. It may be prepared in two ways—either by heating black oxide of manganese with hydrochloric acid, or by heating a mixture of black oxide of manganese, chloride of sodium and dilute sulphuric acid. It is a transparent gas of a greenish-yellow color and a powerfully suffocating odor, which, even largely diluted with air, produces great irritation of the air-passages. It is about two and a half times heavier than atmospheric air. Water absorbs about twice its volume; it can, therefore, be only collected by displacement or over warm water. Under a pressure of four atmospheres it condenses into a yellow limpid liquid, rather heavier than water, and remains fluid and unfrozen at a temperature of—220° Fahr. With water, chlorine forms a definite hydrate, which, when subjected to a cold of 32° Fahr., solidifies in the form of large yellow crystals. Chlorine is not combustible, but supports combustion to a certain degree. Chlorine, in common with several other elementary bodies, has the property of replacing hydrogen in its organic compounds. It is in this manner that chlorine bleaches textile fabrics. The brownness of the fabric is due to some brown organic substance, which, when submitted to the action of chlorine, parts with its hydrogen and assumes a colorless form, containing chlorine. Another property of chlorine is that of destroying noxious vapors and miasmata. For the same reason, it is used as a disinfectant, the action being the same as that mentioned above. A small proportion of chlorine gas diffused through the atmosphere, very quickly and thoroughly destroys not only the smell, but the injurious properties of floating emanations, which are capable of engendering disease. Chlorine gas is obtained in various ways, but the great magazine for its supply, is common salt, which is composed of chlorine and sodium. For sanitary purposes, various preparations, calculated to yield chlorine, simply and easily, have been used; of these the chloride of lime is the best known. Chlorine is possessed of powerful affinities, and unites with all the metalloids and metals. In Medicine, when used externally, it acts as a local irritant and rubefacient. Inhaled even when mixed with air, it causes a sensation of tightness and suffocation, and violent cough. When largely diluted it occasions a sensation of warmth in the respiratory passages, and promotes expectoration.

CHLORINE WATER, *klo'-rin waw'-tur*, is made by passing chlorine gas through water, is used externally as a caustic application to wounds caused by rabid animals, and diluted, as a wash in skin diseases, and a gargle in putrid sore throat. It is sometimes given in typhus, scarlet fever, and diseases of the liver. It is also used as an antidote in poisoning by hydrocyanic acid or sulphuretted hydrogen. The antidote to chlorine poisoning is the cautious inhaling of ammoniacal gas. Chlorine is inhaled by putting 2 ounces of chlorinated lime into a suitable apparatus, moistening it with cold water, and inhaling the vapor as it arises.

CHLORODYNE, *klor'-o-dine*, a secret medicine which has been much used as an anodyne and sedative. It was first introduced by Dr. J. Collis Browne, though the invention has been claimed by others, and has led to some expensive law suits. It is composed of chloroform, morphia, hydrocyanic acid, and certain other ingredients. Several attempts have been made to ascertain its exact composition. We give the latest and apparently the most correct:

| | | |
|---|---|---|
| Take of | Chloroform | Four fluid drams. |
| | Muriate of morphia | Twenty grains. |
| | Rectified ether | Two fluid drams. |
| | Oil of peppermint | Eight minims. |
| | Diluted hydrocyanic acid | Four fluid drams. |
| | Tincture of capsicum | Six fluid drams. |
| | Mixture of acacia | One fluid ounce. |
| | Treacle | Five fluid ounces.—*Mix.* |

It is agreeable to the taste of many persons, and can be given either alone in water, or combined with other remedies. Perhaps its greatest value has been in cases of irritating cough, as in consumption, and in irritation of the bowels, accompanied by pain and diarrhœa. In the former case 5 or 10 drops in an ounce of camphor mixture, three times a day, and in the latter the same dose in an ounce of chalk mixture may be given. In cases of acidity, with much irritation of the stomach, an excellent prescription is, 10 or 15 drops of chlorodyne with 15 to 20 grains of bicarbonate of soda, in a wine-glassful of water, two or three times a day. From its warm, aromatic taste, and comforting action in cases of griping and uneasiness in the bowels, it is generally a favorite remedy with patients; and, although, in the strictest sense of the word, a quack medicine, and, of course, not allowed a place in the Pharmacopœias, yet it is very much prescribed by some medical men. Either alone, or combined with other remedies, it has proved of eminent service in cases of sea-sickness which have resisted many other kinds of treatment. It has been extensively used, both in this country and abroad, domestically as well as by regular practitioners, in the treatment of diarrhœa and dysentery, and it has been authoritatively stated that it is one of the best known remedies for cholera. One thing is certain, that its uses are so varied and general that it should form part of the equipment of every domestic medicine-chest. Chlorodyne of known composition can now be obtained, so that those who have a very proper objection to using remedies the constituent parts of which are kept secret, may employ it without further scruple. In the cholera epidemic at Manilla it was stated that chlorodyne had proved more efficacious than any other remedy which had been tried. Of course, as it has the action of a powerful opiate, it must be given with extreme caution to young children. and in all cases where opiates are likely to exert an undue action.

In infantile diarrhœa 12 grains of bicarbonate of soda or baking soda, and 5 drops of chlorodyne, in 1½ ounces of water, form an excellent mixture where there is griping and flatulence; 1 teaspoonful may be given twice or thrice in the twenty-four hours. When diarrhœa is present, chalk may be substituted for soda.

CHLOROFORM, *klo'-ro-form* [prefix *chloro* and *formyl*], $C_2HCl_3$.—This interesting compound is produced by a variety of reactions. The most usual way of preparing it is by acting upon dilute alcohol with chloride of lime. Chloroform is a colorless, volatile, mobile, highly refracting liquid, of specific gravity 1.497, and boiling at 142° Fahr. It has an ethereal odor, and a sweetish penetrating taste. It is readily soluble in ether and alcohol, but sparingly so in water. The vapor of chloroform has the remarkable property of rendering a person breathing it temporarily insensible to pain. To Professor Simpson, of Edinburgh, is due the credit of introducing chloroform as an anæsthetic. (See

ANÆSTHETICS.) Chloroform is an excellent solvent for sulphur, phosphorus, and iodine. It also readily dissolves fatty and resinous bodies. It is a perfect solvent of caoutchouc, which is left unaltered on evaporation. Chloroform is given internally in doses of 3 to 10 drops as an anodyne, stimulant, and antispasmodic. The spirit of chloroform, 1 fluid ounce of chloroform to 19 fluid ounces of rectified spirit, is given in doses of 20 to 60 drops; the compound tincture, 2 fluid ounces of chloroform, 8 fluid ounces of rectified spirit, and 10 fluid ounces of compound tincture of cardamoms, in doses of 26 to 60 drops. The liniment is composed of equal parts of chloroform and liniment of camphor, and is used as an anæsthetic application in neuralgia, rheumatism, painful tumors, etc.

The power which chloroform possesses of producing "anæsthesia," or insensibility to pain, when inhaled, is now too universally known to require comment. It is, however, too potent an agent to be trusted in unprofessional hands, except, indeed, under direct medical sanction and direction in each particular case. In the more painful and larger operations of surgery it is one of the greatest boons conferred upon suffering humanity, and its use tends to diminish the average mortality after them; in the case of minor operations, however, such as tooth-drawing, it becomes a question whether its employment is advisable; fatal cases have followed its inhalation, and although these have been in very small proportion compared with the numbers in which it is daily and hourly administered, still the fact of their having occurred, is sufficient to make us pause before incurring even the remote chance of so serious a result, for the sake of avoiding a momentary though sharp pain. Moreover, cases do occur, in which very disagreeable effects, such as headache, sickness, hysteria, etc., have succeeded the use of chloroform. No one should ever be tempted to inhale this agent, without being certain beforehand that no tendency to organic disease exists, especially of the heart or lungs.

Although not suited for domestic use as inhaled, chloroform may be employed with perfect safety and much advantage, as an external application in painful affections, of the nerves especially, such as neuralgia and toothache. For this purpose, a piece of linen or lint, of a size proportioned to the part affected, is to be soaked in the fluid, and applied to the skin, covered with some material, such as oiled silk, to prevent quick evaporation. It destroys the silk—in the course of a few seconds, it produces an intense but scarcely disagreeable burning sensation, which continues until the fluid is all dispersed. In many cases the neuralgic pain disappears at once. When the covering is removed, the portion of skin to which the chloroform has been applied is found much reddened, sometimes slightly blistered. A small portion of cotton wool soaked in chloroform will, sometimes, if placed in the cavity, allay the pain of toothache. Chloroform, taken into the stomach, has been found useful in spasmodic diseases, asthma, hysteria, etc., and might be administered, in the absence of other remedies, in doses of from 6 to 10 drops, with 1 teaspoonful of brandy or whiskey in 3 tablespoonfuls of water. The best covering for lint soaked in chloroform when used to the skin is very thin tin foil, which is of course, unaffected by the agent, like oiled silk or gutta-percha. A most excellent and safe mode of using chloroform internally, is in the form of julep, that is, dissolved in water. If ½ a dram by measure of chloroform be well shaken in a bottle, with 20 ounces, or 1 medicinal pint of water, it is exactly dissolved. The resulting mixture is an extremely pleasant stimulant and anodyne, and may be given in doses of from 1 to 3 tablespoonfuls, or even a little more. (See ANÆSTHETICS; ETHER, SULPHURIC; LAUGHING-GAS.)

CHLOROSIS, OR ANÆMIA, *klo-ro'-sis a-ne'-me-a* [Gr. *chloros*, green], commonly called green sickness. A disease to which young females are subject, and which is characterized by a peculiar sallow or greenish-yellow hue of the countenance, and hence known as the green sickness.

*Causes.*—Chlorosis or anæmia may arise from accidental causes, such as deficient nourishment, unhealthy situation, extreme loss of blood, or may be of constitutional origin. In the former case, it is generally quickly recovered from, if the constitution be a good one, under the use of iron and good living; in the latter case, it often requires long and patient perseverance in these and other means to effect a cure. The primary cause of chlorosis, or anæmia, is still obscure, but the direct cause of the symptoms is undoubtedly poverty of the blood.

*Symptoms.*—It is usually attended with great debility, palpitation of the heart, difficulty of breathing, pains in the back and loins, very heavy sleep, headache, mental debility, impaired, capricious, or depraved appetite, constipated bowels, swelling of the feet, general languor and listlessness, and other distressing symptoms; the monthly secretion is either absent or very pale.

*Treatment.*—To improve the vital fluid must be the great aim of treatment. The bowels should be kept open, not purged, by some mild aperient, such as the compound rhubarb, or colocynth pill, and 10 drops of the muriated tincture of iron, or 2 grains of the ammonio-tartrate of iron, given in a wine-glassful of water twice or three times a day. If the salicine, appetite is deficient, and does not improve, a dose of tonic bitter, quinine, or gentian, (which see) must be given along with, or substituted for 1 dose of iron. Cod-liver oil is also useful. The diet must be generous; meat twice a-day, eggs if preferred, puddings in small proportion, and bread partly substituted for vegetables. Malt liquor, porter, or beer, to the extent of one of the usual pint bottles, may be taken, in divided portions, daily, or a couple of glasses of port-wine, if the former disagrees. The patient ought to retire to rest by ten o'clock, and to rise, as a general rule, by half-past seven, but ought never to delay breakfast beyond the mere time required for dressing; going out before the meal is quite out of the question, and, indeed, in some cases, where there is a tendency to fainting, it is better to have a cup of coffee, or warm milk, before rising, and even to this, as a temporary remedy, it may be requisite to add a teaspoonful of brandy or other spirit. The skin must be attended to, but by tepid sponging only. The bed should be a hair mattress. Exercise in the open air, on foot or horseback, must be regular, but not carried beyond comfortable fatigue. Change of air to the sea-side, or to a chalybeate spring, is of great service. Mothers are often anxious about the non-appearance of the monthly discharge; its absence is but a symptom of the disease, and it is better that the constitution should not be drained even by it, until it is able to support it. Such are the general rules respecting anæmia, but a confirmed case should always be submitted to the medical man—causes may be aggravating, or effects such as consumption, springing from the disease, which he only can detect. Moreover, in extreme cases of this disease, sudden death has occurred. (See CHALYBEATE SPRINGS, MINERAL WATERS, IRON, QUININE, SALICINE, GENTIANA, CITRATE OF IRON AND STRYCHNIA, MENSTRUATION.)

CHOCOLATE. (See COCOA.)

CHOKE-CHERRY. (See CERASUS.)

CHOKE-DAMP, *tshoke'-damp* [Ang.-Sax.]. Choke-damp is a name given by miners to carbonic acid, as distinguished from fire-damp, which is carburetted hydrogen. Choke-damp is met with in rooms where charcoal is burnt, and where there is not sufficient draft to allow it to escape; in coal-pits, near lime-kilns, in breweries, and in rooms and houses where a great many people live huddled together in wretchedness and filth, and where the air in consequence becomes poisoned. This gas gives out no smell, so that we cannot know of its presence. A candle will not burn in a room which contains much of it.

*Effects.*—At first there is giddiness, and a great wish to sleep; after a little time, or where there is much of it present, a person feels great weight in the head and becomes stupid; gets by degrees quite unable to move, and snores as if in a deep sleep. The limbs may or may not be stiff. The heat of the body remains much the same as at first.

*Treatment.*—Remove the person affected into the open air, and, even though it is cold weather, take off his clothes. Then lay him on his back, with his head slightly raised. Having done this, dash vinegar and water over the whole of the body, and rub it hard, especially the face and chest, with towels dipped in the same mixture. The hands and feet also should be rubbed with a hard brush. Apply smelling-salts to the nose, which may be tickled with a feather. Dashing cold water down the middle of the back is of great service. If the person can swallow, give him a little lemon water or vinegar and water to drink. The principal means, however, to be employed in this, as, in fact, in most cases of apparent suffocation, is what is called artificial breathing. This operation should be performed by three persons, and in the following manner: The first person should put the nozzle of a common pair of bellows into one of the patient's nostrils; the second should push down, and then thrust back, that part of the throat called "Adam's apple;" and the third should first raise and then depress the chest, one hand being placed over each side of the ribs. These three actions should be performed in the following order: First of all, the throat should be drawn down and thrust back; then the chest should be raised, and the bellows gently blown into the nostril. Directly this is done, the chest should be depressed, so as to imitate common breathing. This process should be repeated about eighteen times a minute. The mouth and the other nostril should be closed while the bellows are being blown. Persevere, if necessary, with this treatment for seven or eight hours—in fact, until the patient revives, or absolute signs of death are visible. Many lives are lost by giving it up too quickly. When the patient becomes roused, he is to be put into a warm bed, and 20 drops of sal-volatile given cautiously now and then; or if this cannot be had, a little brandy and water, or whiskey and water, may be given in like manner. This treatment is to be adopted in all cases where people are affected from breathing bad air, smells, etc. (See RESPIRATION, CARBONIC ACID, DROWNING.)

CHOKING. (See FOREIGN BODIES IN AIR PASSAGES, SUFFOCATION, ASPHYXIA, FOREIGN BODIES IN GULLET, ACCIDENTS.)

CHOLAGOGUE, *kol'-a-gog*, a term applied to purgative medicines which bring away a quantity of bile. (See CATHARTICS.)

CHOLEIC ACID. (See BILE.)

CHOLERA, ASIATIC, OR MALIGNANT, *kol'-e-rą* [Gr. *chole*, bile, and *rheo*, I flow]. This is an epidemic disease consisting of vomiting and purging, and in some respects resembling bilious cholera, but differing from it by the early supervention of collapse, the great mortality, and the suppression of bile and urine.

*Causes.*—Cholera is due to the presence of some poison in the blood.

The general theory of the disease is, that the symptoms of collapse are due to the violent purging, and constant retching and vomiting, but some deny this fact, and maintain that they are due to some obstruction to the circulation through the large vessels leading to the lungs; and that the suppression of bile and urine, the black color of the blood, and the coldness of the surface of the body may be accounted for by the diminished oxygenation going on in the system. Some cases have been traced to the use of impure drinking water, or unwholesome food, and in all neighborhoods where the disease is rife, the water supply should be carefully examined. This deadly malady is contagious, and may be conveyed from person to person through the medium of air or water. Dr. Pettenkoffer, of Munich, believes that the subtle poison acts like a ferment. Anything tending to debilitate the system will act as a predisposing cause of cholera, such as intemperance, uncleanliness, inhalation of impure air, long-continued abstinence; and during the epidemic no drastic purgatives should be taken, for fear of laying the foundation for this epidemic distemper. At such times all cases of diarrhœa should be looked upon with suspicion.

Death may take place from exhaustion, or there may be hemorrhage from the bowels; in some cases the system becomes poisoned with the retained excreta. The mortality of the disease is fearful, for when the second stage is arrived at, nearly half die.

*Symptoms.*—This disease is divided by scientific writers into three stages, each attended by its own symptoms; the first is that of diarrhœa, and is marked by nausea, vomiting, and purging; in the second stage, or that of collapse, the surface of the body grows cold and blue, the features shrink, and the patient shivers; the nails turn blue, and rings which just now fitted the fingers tightly, drop off; the voice becomes low, weak, and hollow, and is peculiar to this disease, and hence called the choleraic voice, or *vox cholerica;* the eyeballs sink in, the secretion of bile and urine is stopped, and the stools look like rice-water, and have a peculiar sickly odor. The blood is thick, black, and tarry, there are severe cramps in the legs and body, thirst becomes extreme, but the intellect remains clear. The third stage is that of consecutive fever, accompanied by renal or pulmonary congestion.

*Treatment.*—Dr. Watson thinks that the first stage, or that of diarrhœa, should be arrested, if possible, by astringents, thus:

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|---|---|
| Take of Prepared chalk | Two drams. |
| Powdered gum acacia | Two drams. |
| Laudanum | One dram. |
| Tincture of catechu | Half an ounce. |
| Pure water | Six ounces.—*Mix* |

Give two tablespoonfuls every four hours.

Dr. Johnson, on the other hand, says that the vomiting and purging on no account should be stopped, but that emetics and mild purgatives should be given; and he prefers castor-oil. The diet should be scanty, and consist of milk and farinaceous food, sago, rice, arrowroot, gruel, tapioca, and oatmeal. When the symptoms of cholera are well marked, and the disease has arrived at its second stage—that of collapse—medicine has very little power over it, as seen in the many drugs which have been held up by different medical men as being almost antidotes. During the epidemics of cholera, many were the different kinds of treatment resorted to; one man trusted to brandy and opium, another to bleeding and mustard emetics; some put faith in cajeput-oil and hot baths; while others gave large doses of saline drugs, and in some few instances injected hot saline solutions into the blood. Dr. Stevens strongly advocated the alkaline treatment, and Dr. Tanner acquiesces in his views. The following was his prescription:

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|---|---|
| Take of Chloride of sodium.................. | Two drams. |
| Carbonate of soda.................. | Three drams. |
| Chlorate of potash.................. | Forty-two grains. |
| Pure water.......................... | Six ounces.—*Mix.* |

Give 2 tablespoonfuls diluted with water every half-hour.

At the same time mustard poultices were applied to the abdomen, and alkaline injections thrown up the bowels.

Dr. Johnson treats the stage of collapse thus: no food is allowed, and only cold water to drink; emetics and mild purgatives are still persevered in; and in extreme cases bleeding is had recourse to, to relieve the congested state of the pulmonary vessels and the right side of the heart. Dr. Watson treated all his cases in the second stage, on large doses of calomel.

In the third stage, or that of consecutive fever, pulmonary engorgement may be relieved by leeches or cupping, and a mustard poultice may be applied. Should the kidneys become congested, the skin and bowels may be called into action by diaphoretic and purgative medicines, and the patient may have a few leeches applied over the affected organ.

*Prevention.*—During the prevalence of cholera, many err in making material changes in their ordinary modes of living, and by so disordering the regularity of the functions, lay themselves open to attacks of the disease. Of course, if a man is aware that he is habitually indulging in practices injurious to health, such as intemperance, debauchery, etc., he only acts wisely as regards his physical safety, in changing those habits, but it is hazardous to alter regular modes of living, which have hitherto been found compatible with good health, it being understood, that whatever tends to lower the standard of health, favors the attack of the disease. There is, however, one important precaution which ought to be observed, at all times indeed, but more particularly during the epidemic of cholera, the perfect purity of the drinking-water should be ascertained, and its freedom from all decomposing organic matters made certain. Care is also to be observed not to take active purgatives, particularly salines, which produce watery evacuation; if aperient medicine is required, it ought to be of a warm character, such as magnesia and rhubarb, with some aromatic; for whatever produces free action of the bowels, apparently increases the susceptibility to attack. For this reason, too, the slightest tendency to diarrhœa should at once be arrested, by the aromatic confection or chalk-mixture, repeated as often as requisite, with the addition of from 5 to 10 drops of laudanum to each dose, and the use of milk and farinaceous preparations, containing gelatine, for food. The following will be found very useful in such cases:

| | | |
|---|---|---|
| Take of | Confection aromatic | One dram. |
| | Prepared chalk | One dram. |
| | Powdered gum-arabic | One dram. |
| | Pimento-water | Two ounces. |
| | Pure water | Four ounces. |
| | Laudanum | Forty drops.—*Mix.* |

A grown person to take 2 tablespoonfuls for the first dose, and 1 tablespoonful after every evacuation of the bowels. Dose for a child between five and ten years of age, 1 teaspoonful.

The speedy adoption of these measures, in places distant from medical assistance; and their enforcement by the clergyman or some intelligent individual, might do much to check the disease. Should the astringents above recommended fail, 3 or 4 doses of acetate of lead and opium might be given by a careful person, 3 grains of the former to 1 of the latter, repeated every four or six hours. (See CHLORODYNE, HEALTH, SANITARY SCIENCE, AUTUMNAL COMPLAINTS.)

CHOLERA INFANTUM. (See SUMMER COMPLAINT.)

CHOLERA MORBUS. (See BILIOUS CHOLERA.)

CHOLESTERINE, *ko-les'-te-rin*, is a crystalline fatty matter found in the bile, nerves, brain, and blood, and forming almost the entire substance of gall-stones. It is tasteless and inodorous, insoluble in water, but soluble in alcohol and ether. It consists of $C_{26}H_{22}O$. According to Dr. Flint, of New York, cholesterin is a product of the destructive assimilation of the nervous tissue, being absorbed from the substance of the brain and nerves by the blood, and eliminated by the liver.

CHONDRUS, *kon'-drus*, in Botany, a genus of *Algæ*. The most important species is *C. crispus*, commonly called carrageen, or Irish moss, which is used medicinally for its nutritive, emollient, and demulcent properties, being administered in the form of a decoction or jelly.

*C. mamillosus*, which has similar properties, is always found in the carrageen moss kept at the stores.

CHORDEE. (See GONORRHŒA.)

CHOREA. (See SAINT VITUS'S DANCE.)

CHROMIC ACID, *kro'-mik* ($CrO_3$). This acid occurs in nature in combination with lead as chrome yellow, and with iron as chrome iron-ore. It is prepared by adding 1 measure of a warm saturated solution of bichromate of potash to 1½ of concentrated sulphuric acid. The acid is added in small portions at a time, the solution being allowed to cool between each addition. Chromic acid crystallizes out, and bisulphate of potash remains in solution. Although chromic acid is one of the most powerful oxidizing agents known, it is easily decomposed by light and organic substances. The most useful of the compounds of chromic acid is the bichromate of potash, which forms fine red tubular crystals, which are anhydrous, and remain unchanged by exposure to the air. Both the chromate and the bichromate are extensively used in dyeing and calico-printing. Chromic acid is a powerful caustic, and is sometimes applied to cancerous and other ulcerations. Its action is slower and more gradual, and it is said to cause much less pain than other similar applications, but it is deeply penetrating in its nature, and requires to be carefully used.

CHRONIC, *kron'-ik* [Gr. *chromos*, time], a term applied in Medicine to such diseases as are of long duration, as contra-distinguished from acute—those that soon terminate either in recovery or death.

CHRONIC BRONCHITIS. (See BRONCHITIS, CHRONIC.)

CHRONIC CATARRH. (See CATARRH, CHRONIC.)

CHRONIC CATARRH OF THE CHEST, OR CHRONIC BRONCHITIS. (See BRONCHITIS, CHRONIC.)

CHRONIC DIARRHŒA. (See DIARRHŒA.)

CHYLE, *kile* [Gr. *chulos*, juice], is the milk-like fluid which is formed by the action of the bile and pancreatic juice upon the chyme in the duodenum, and absorbed by the lacteal vessels. The use of the chyle is to supply the matter from which the blood is formed and the waste of the living organs repaired. (See DIGESTION.)

CHYLOPOETIC, *ki-lo-po-et'-ik*, is a term applied to the viscera which assist in the formation of the chyle.

CHYME, *kime* [Gr. *chumos*, juice], is the ingested mass formed by the action of the stomach upon the food, and which passes from the stomach into the duodenum. (See DIGESTION.)

CICATRIX, *se-ka'-triks* [Gr. for a scar], is the scar or mark left upon the skin or upon an internal organ, at the place where separation of substance, either from violence or ulceration, has been healed.

CICATRIZATION, *sik-a-tre-zā'-shun* [Lat. *cicatrico*, I heal up], is a term applied to the healing or skinning over of an ulcer or broken surface of the skin.

CICER, *si'-ser* [from Gr. *kikus*, strength, in reference to its qualities], a genus of plants belonging to the Nat. order *Leguminosæ*, sub-order *Papilionaceæ*. *C. Arietinum*, a native of the countries around the Mediterranean, produces the edible seeds called chick-peas. These are extensively used as food, either boiled or roasted, and are the most common parched pulse of the East. The herbage affords a nutritious food for cattle.

CICHORIUM. (See CHICORY.)

CIDER, OR CYDER, *si'-dur* [Fr. *cidre*], the expressed and fermented juice of apples. The apples are reduced to a pulp, then placed under a press; the screw is turned slowly and the juice exudes, flowing into a tub; from this it is poured into casks placed in a position where there is a free current of air. The liquor ferments, and the clear cider is drawn off from time to time: this is again racked until it is perfectly clear. Cider requires great care in keeping, being apt to turn sour. It is largely used as a beverage, contains from 5 to 9 per cent. of alcohol, and is therefore intoxicating when largely partaken of. It is largely drunk in some localities exposed to malaria, the *malic acid* it contains being supposed to act as a prevention to ague. Good cider vinegar is useful when sponged over the surface of the body, to allay itching.

CILIUM, *sil'-e-um* [Lat.], is a name given in Anatomy to the eyelid or eyelash, and hence the term *ciliary* is applied to the arteries, glands, etc., belonging to the eyelids. (See EYE.)

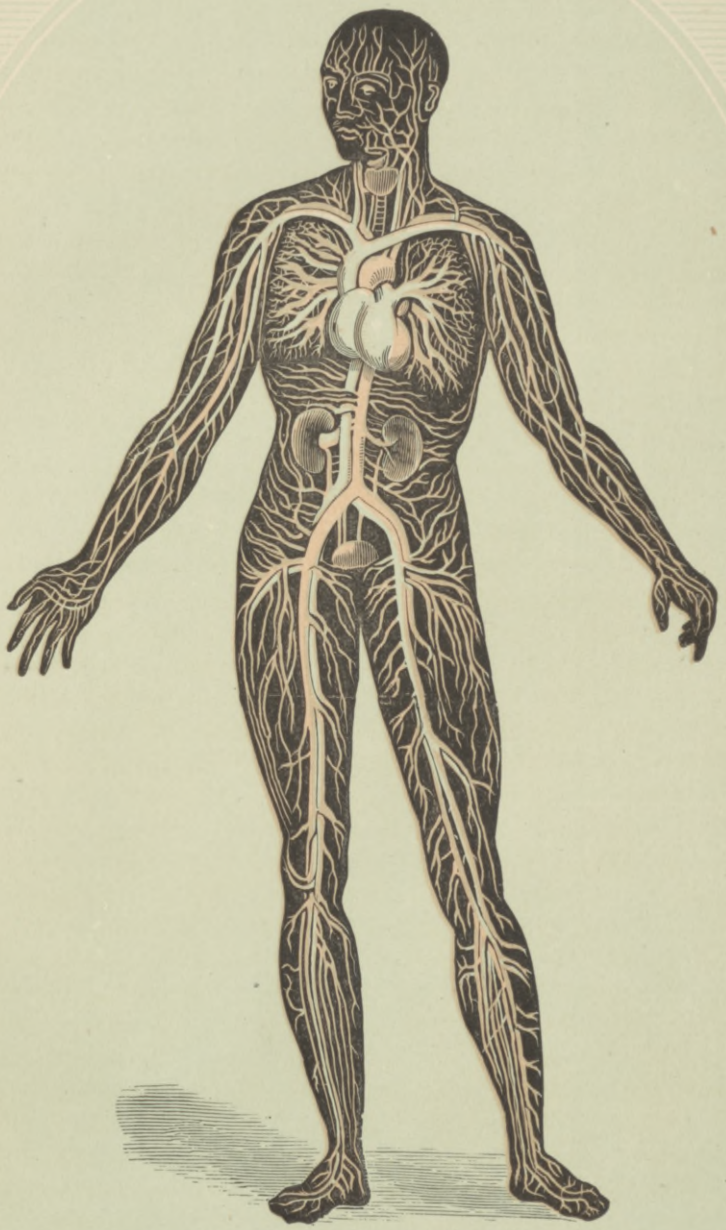
CINCHONA, *sin-ko'-nạ*, the typical genus of the Nat. order *Cinchonaceæ*. The plants of this genus are natives of the intertropical valleys of the Andes, and are found principally on the eastern face of the Cordilleras, growing commonly at heights varying from about 4,000 to nearly 12,000 feet above the level of the sea. The plants are small shrubs or large forest trees, with evergreen leaves, and commonly showy flowers. They appear to require great moisture, and a mean temperature of about 62°. The cultivation of these plants has lately been commenced in India with every prospect of success. The barks of several species and varieties are extensively used in medicine, and are undoubtedly the most valuable drugs known. They are imported into this country under the names of *Cinchona*, *Peruvian*, *Crown*, and *Jesuits'* bark. Over thirty different varieties have been described. The most important are *Loxa*, pale or crown bark; *Calisaya*, or yellow bark; and red bark. These three are officinal, and are the principal sources of the precious alkaloids *quinia* or *quinine*, *cinchonia* or *cinchonine*, and *quinidia*, which are all used in Medicine, and possess in an eminent degree tonic, febrifugal, and anti-periodic properties. The barks themselves have similar properties, and are, moreover, slightly astringent. The name cinchona was given to the genus by Linnæus, in compliment to the Countess of Cinchon, whose husband was the viceroy of Peru. She had derived great benefit from the bark during her residence in South America; and on her return to Europe, in 1639, she took with her several specimens. The native names, curiously enough, are very similar to the scientific one, being *qinquino* and *quina-quina.* The medicinal use of the bark was first made known in Europe by the Jesuits, hence the common name Jesuits' bark. Cinchona is tonic, and somewhat astringent, and, topically, antiseptic. It has succeeded well in cases of debility, from exhausting and protracted diseases, and in that languid and prostrate condition of the system prevalent during the heat of spring and summer months, when a general tonic is necessary. It is valuable in functional derangements of the stomach, improving digestion, and invigorating the nervous and muscular systems in diseases of general debility, and in convalescence from exhausting diseases. As a tonic it will be found of advantage in measles, small-pox, scarlet fever, during the absence of fever or inflammation, also in cases when the system is exhausted by purulent discharges. It may likewise be used in all chronic diseases attended with debility, as scrofula, dropsy, obstinate skin diseases, etc. To obtain the anti-periodic influence, the red and yellow barks are considered superior to the pale, while the pale is preferred as a tonic. All the varieties of cinchona are tonic, astringent and anti-periodic, and are, of all medicines of their class, the most powerful and uniform in their action. They owe their astringency to the presence of cincho-tannic and red cinchoric acids. Their tonic and anti-periodic properties are due to the alkaloids, particularly the quinine, in which they abound. Peculiarity in the action of the different kinds of bark depends on the proportions in which the alkaloids are present in them. The powder of cinchona bark is given in doses of 10 to 60 grains, but in general it is better administered in one of the many forms in which it is prepared. The infusion is formed by infusing ½ ounce of the powder for two hours in 10 fluid ounces of boiling distilled or rain water, and then straining; dose, 1 to 2 fluid ounces. Decoction, boil for ten minutes 1¼ ounce of the powder in 1 pint of distilled or rain water, strain and add water to make up 1 pint of product; dose, 1 to 2 fluid ounces. Tincture of cinchona, 4 ounces of powder to 1 pint of proof spirit; dose, ½ to 2 teaspoonfuls; dose of the fluid extract of cinchona, ¼ to 1 teaspoonful. To be taken three or four times a day. (See Quinine, Cinchonia, Ague, etc.)

CINCHONA COMPOUND, *sin-ko'-na kom'-pound.* Compounded of cinchona, orange peel, gentian, serpentaria, cloves, and red saunders. This combination of tonics has met with the entire approbation of all who have used it, in cases of debility arising from the weakening and exhaustion of the hot season, in dyspepsia, and in that debilitated condition of the system consequent to severe sickness, as well as accompanying chronic complaints. In these cases Nature needs assistance, and only a gentle assistance, that she may bring the system back to its normal state, and give an increased vitality to the functions. In that enfeebled state of the system consequent to old age, a slight tonic stimulant is necessary, and in such cases the best results have followed from the use of the cinchona compound. It is applicable, indeed, to all cases when the cinchona alone would be administered. Dose of fluid extract cinchona compound, ½ to 1 teaspoonful, three or four times a day.

CINCHONIA, OR CINCHONINE, *sin-ko'-ne-a, sin'-ko-nin*, is an alkaloid resembling quinine, but less energetic in its action, found in the different species of cinchona. The muriate and sulphate of cinchonine, as well as cinchonine itself, have of late been much recommended as substitutes for quinine. They have certainly this advantage, that they are much cheaper, but pretty extensive experience of them in hospital practice has not warranted physicians in coming to the conclusion that they are to be considered at all equal to quinine, either as tonics, or as antiperiodic remedies. Some patients complain of low and depressing sensations after taking cinchonine or its salts. There can be no doubt, however, that they are worthy of a more extensive trial than they have yet received at the hands of the medical profession. Quinine is such an expensive remedy, that of course, it would be a great boon to the poor if a cheap substitute equally efficacious could be obtained, and it is far from improbable that some of the preparations of cinchonine may be found, which will take its place. Dose, 5 to 15 grains, three times a day. (See ALKALOIDS, CINCHONA.)

CINERITIOUS, *sin-e-rish'-us* [Lat. *cineritius*, resembling ashes], is a term applied to the exterior substance of the brain on account of its ashy appearance.

CINNAMOMUM, *sin-na-mo'-mum* [Lat.], a genus of plants belonging to the Nat. order *Lauraceæ*, including many species remarkable for their aromatic properties. *C. zeylanicum*, the cinnamon-tree, a native of Ceylon, is extensively cultivated in that island, also on the Malabar coast, in Java and Cayenne, for the sake of the aromatic bark of the young branches, which forms the true cinnamon of commerce. Cinna-



CIRCULATION OF THE BLOOD.
(Heart, Lungs, Arteries and Veins).

mon is much employed as a spice, and medicinally as a cordial, stimulant, carminative, astringent, antispasmodic agent, and as an adjunct to other medicines. It owes its properties to the presence of a volatile-oil and tannin. The volatile-oil is imported from Ceylon, where it is obtained from the rejected bark by distillation. It is known by the name of oil of cinnamon, and is used medicinally as a stimulant, and by cooks and confectioners for flavoring. Cinnamon water is prepared by taking 20 ounces of the bruised bark with 2 gallons of water and distilling 1 gallon. The tincture of cinnamon is made of 2½ ounces of the bark in coarse powder and 1 pint of proof-spirit, macerated for forty-eight hours, passed through a percolator, and then filtered. Dose, ½ to 2 teaspoonfuls. *C. cassia*, a native of China, yields the cassia bark of commerce, which possesses analogous properties to those of cinnamon. From this bark the fragrant oil of cassia is obtained. The cassia buds of commerce, which are now much used as a condiment, are said to be the flower-buds of this plant. Several other species of cinnamomum yield aromatic barks.

CINNAMON. (See CINNAMOMUM.)

CIRCULATION OF THE BLOOD, *ser-ku-la'-shun* [Lat. *circulus*, a circle], is the course of the blood through the body, from the heart to the capillaries, and from the capillaries back again to the heart. The several organs of circulation are the heart, arteries, veins, and capillaries. By the heart the blood is propelled through the arteries to all parts of the body. The capillaries are very minute vessels, connecting the extremities of the arteries with those of the veins; and by the veins the blood is returned again to the heart. The heart is composed of two distinct cavities, separated from each other by a partition or septum, and termed the right and left sides of the heart; the right being also termed the venous or pulmonic heart, the left the arterial or systemic heart. Each of these sides is subdivided into two cavities, the superior being termed the auricle, the inferior the ventricle. The blood which has been distributed by the arteries through the different parts of the body, passes from them, by means of the capillaries, into the veins. The veins from the lower part of the body empty themselves into the inferior vena cava, and those from the upper part into the superior vena cava, and both pour their contents into the right auricle. This contracts, and forces the blood into the right ventricle, which, in turn, forces it through the pulmonary artery to the lungs, where, by the action of the air, the venous blood is purified and changed into arterial. It is then conveyed by the four pulmonary veins into the left auricle, whence it passes into the left ventricle, from which it is propelled into the aorta, and by this means distributed to all parts of the body. The pulse which is felt in the arteries is caused by the action of the heart propelling the blood in waves through the body. The discovery of the circulation of the blood is due to Dr. Harvey, afterwards physician to Charles I.; the opinion previous to his time being, that the blood circulated only in the veins, and that the arteries, from being always found empty after death, contained nothing but air; and hence their name. Although the forces which circulate blood, namely, the muscular propelling power of the heart, the muscular and elastic contractility of the arterial coats, and the suction power exerted within the chest, are sufficient of themselves, during health, to maintain the vital current, which flows, and must flow from the first moment of life until death; their power and efficiency is much assisted by the muscular movements of the body, by exercise, which, quickening the respiration and the action of the heart, sends the blood with increased force and frequency throughout the frame, and stimulates every function to increased action. Thus, provision has been made by the Creator, that whilst the powers which circulate the blood can, of themselves, carry on that necessary process sufficiently to preserve life; high health and vigor can only be attained by the active exercise of our limbs. In the aged, and in those exhausted by disease, who are long confined to a horizontal posture, the circulating powers become too feeble to overcome the force of gravity, and the blood tends to accumulate, more particularly in the lungs, in the most dependent part; for this reason, change of posture is advisable. (See ARTERY, VEINS, BLOOD, HEART, RESPIRATION, OXYGEN, CARBONIC ACID, AIR, ETC.)

CISSAMPELOS, *sis-sam'-pel-os* [Gr. *kissos*, ivy; *ampelos*, a vine], a genus of plants belonging to the Nat. order *Menispermaceæ.* The root of *C. Pareira*, a climbing plant indigenous in Brazil, is an article of our Materia Medica, and is commonly known as *Pareira brava.* It possesses bitter, tonic, and diuretic properties, which are chiefly due to the presence of an uncrystallizable alkaloid named *cissampeline* or *pelosine.* Its main use in medicine has been in chronic inflammation, or catarrh of the bladder. Taste at first sweetish and aromatic, afterwards intensely bitter. The decoction is formed of 1½ ounces of the root sliced and boiled for fifteen minutes in a pint of distilled water and afterwards strained. Dose, 1 to 2 fluid ounces. The extract is formed by digesting for twenty-four hours 1 pound of the root in coarse powder with a pint of boiling distilled water, percolating, and adding more boiling water until a gallon of the liquid has passed, then evaporating the liquor until the extract is of a consistence suitable for making pills. Dose, 10 to 20 grains. The liquid extract is formed by adding 3 fluid ounces of rectified spirit to the above. Dose, ½ to 2 teaspoonfuls.

CITRATE OF IRON, *sit'-rąt ī-urn* [Lat. *citreum*, the citron], is a compound of iron and citric acid. It is an elegant and pleasant form, and may be given in solution in water in 2 or 8 grain doses. It becomes moist if exposed to the action of the air. (See Iron.)

CITRATE OF IRON AND STRYCHNIA, *sit'-rąt, i'-urn, strik'-ne-ą.* This is one of the best of the tonic and strengthening chalybeate preparations. It is very useful in cases of nervous debility, accompanied with uterine derangement; and also in cases of anæmia, or deficiency of blood, with debility, languor, and lowness of spirits. It is a beautiful, sparkling salt, of a rich, purplish brown color. The following prescription may be taken as a good example of the way of administering it; and if it agree, the dose may be doubled with advantage:

| | | |
|---|---|---|
| Take of | Citrate of iron and strychnia | One scruple. |
| | Chloric ether | One dram. |
| | Water | Half a pint.—*Mix.* |

2 tablespoonfuls to be taken three times a day.

For those who dislike a sweet taste, the chloric ether may be omitted; and if it be desired to give an acid tonic, 2 drams of dilute nitric acid may be substituted for the chloric ether. It may also be given in the form of pill if required. It has been used in the treatment of paralysis of certain kinds. One hundred grains of the salt contain only one grain of strychnia. Dose, 3 to 5 grains for an adult. (See Iron, Strychnia.)

CITRATE OF MAGNESIA, *sit'-rąt, mag-ne'-zhe-ą,* a popular and effective medicine when cooling aperients are needed, and in large doses acts as a mild cathartic. The effervescing properties of this elegant preparation are retained in granular form, preserving the flavor as a palatable saline draught. As an aperient or purgative it is pleasant to the taste, unobjectionable to the most delicate organization, mild but certain in its operation, and has a popularity unequalled by any other of its class of medicines. 1 to 2 teaspoonfuls dissolved in 2 fluid ounces of water act as an aperient. Larger doses are required to produce a purgative operation. (See Magnesia, Concretion.)

CITRATE OF POTASH, *sit'-rąt, pot'-ash.* This salt is used medicinally, in the form of the common effervescing saline draught, made with citric acid and carbonate of potash. It is useful in allaying irritability of the stomach and vomiting, and is a slight diaphoretic. Dose, 20 to 60 grains in water. (See Potash, Effervescence.)

CITRATE OF QUININE AND IRON, *sit'-rąt, kwe-nine', kwi'-nine,* or *qwin'-ine, i-urn,* is a compound of iron, citric acid, and quinine, and is an elegant and highly useful form of tonic; it may be given in doses of 5 or 10 grains in solution in water. (See Iron, Quinine.)

CITRATE OF SODA, *sit'-rąt, so'-dą.* A scruple of carbonate of soda, neutralized by a sufficient quantity of lemon-juice, or 10 grains of citric acid, forms an effervescing draught, which has nearly the same effects as that made with citrate of potash. (See SODA EFFERVESCENCE.)

CITRIC ACID, *sit'-rik as'-id*, is found principally in the lemon, orange, and other members of the *Aurantiaceæ* family. It also occurs in other acid fruits, such as the gooseberry, raspberry, strawberry, and tamarind. It is procured by neutralizing lemon or lime-juice with chalk, and decomposing the insoluble citrate thus formed with sulphuric acid. Citric acid is very soluble in water. It crystallizes in transparent, colorless, rhombic prisms, which have an agreeable acid taste. Combinations of citric acid with iron and ammonia are much used in medicine; and it is also used in the preparation of effervescing draughts. The properties which render lemon-juice a remedy against scurvy are due to the presence of citric acid.

CITRINE OINTMENT, *sit'-rin oint'-ment* [*Unguentum Citrinum* or *Hydrargyri Nitratis*, *Ointment of Nitrate of Mercury*], is formed of 4 ounces by weight of mercury dissolved in 12 fluid ounces of nitric acid, and adding 15 ounces of prepared lard, melted in 32 fluid ounces of olive-oil. This is a valuable stimulant application, particularly in chronic inflammation of the eyes, when it is applied to the eyelids. It is also used in various diseases of the skin, as well as to foul and indolent ulcers. In its ordinary form it is too strong; and should be mixed with once or twice its weight in lard. Iron utensils or spatulas must not be used in its manipulation. It is an ointment which very quickly spoils.

CITRUS, *sit'-rus* [said to be from the town *Citron*, in Judea], in Botany, a genus of plants belonging to the Nat. order *Aurantiaceæ*. The different species and varieties of this genus yield the fruits known under the names of orange, lemon, lime, shaddock, pompelmoose, forbidden fruit, kumkuat, and citron. The species of *C. Aurantium*, and its varieties, produce all the various descriptions of sweet oranges, the most important of which are the St. Michael's, the blood-red, the Maltese, and the common oranges. *C. Bigaradia*, or *vulgaris*, yields the bitter or Seville orange. By distilling the rind of the ripe sweet orange with water, a fragrant oil, named essential oil of sweet orange, is obtained. The rind itself is used in medicine as an aromatic, stimulant, and tonic. The juice of the fruit forms a refreshing beverage, and in medicine a valuable refrigerant. The bitter orange is chiefly used for making marmalade. Its rind yields a volatile oil called essential oil of bitter orange, and is used medicinally, and for making candied orange peel. *C. Limonum* and its varieties produce the fruits called lemons, the chief varieties of which are the wax-lemon, the imperial lemon, and the Gaeta lemon. Both the rind and juice are employed in medicine, the former as an aromatic and stomachic, and the latter for its refrigerant and anti-scorbutic effects. The juice contains a large quantity of citric acid, and is extensively used for flavoring, and to form the refreshing beverage called lemonade. The rind contains a large quantity of essential oil, which is obtained from it by expression or by distillation, and is known as the essential oil, or essence of lemon. This oil is principally used as a flavoring agent in confectionery and in medicine, and occasionally in perfumery. *C. Limetta* is the source of the lime. This fruit is generally imported into this country in a preserved state, and in that condition it forms a most agreeable dessert. Its juice is also imported, and largely employed, with that of the lemon, in the preparation of citric acid. *C. medica* yields the fruit called the citron, which is supposed to be the Hebrew *tappuach*, translated in the English version of the Old Testament "apple." The rind of the citron is imported in a preserved state, and is used in confectionery. The pulp is less acid and juicy than that of the lemon. The citron, lime, and lemon, are distinguished from the orange by their adherent rinds, their most lengthened form, and by the occurrence of a more or less prominent protuberance at the apex. (See LEMON, ORANGE, CITRIC ACID.)

CITY AIR. (See AIR.)

CITY HEALTH. (See AIR.)

CLAIRVOYANCE. (See MESMERISM.)

CLARET, *klar'-et* [Fr. *clairet*, from *clair*, clear], a name commonly used in this country, to denote the light red wines of France. *Clairet*, in France, signifies those wines which are red or rose-colored; but the word as used by us to denote every description of light red wine, is unknown in France. Claret is one of the most wholesome of the light wines. It contains 15.10 per cent. of alcohol. In convalescence, from acute fevers, in which wine is admissible, but where there exists tendency to fever from slight causes, claret is most useful, and preferable to the stronger and heavier wines. In diabetes, claret has been recommended as superior to every other form of stimulant. (See WINE.)

CLAVICLE, OR COLLAR-BONE, *klav'-e-kl* [Lat. *clavicula*, from *clavis*, a key], is the bone which extends horizontally from the sternum to the scapula, and serves to keep the shoulders apart, that the arms may enjoy a freer and wider range of motion. It takes its name from its resemblance to the ancient Roman key, and is curved somewhat in the form of an italic *f*. Its sternal end is thick, strong, and expanded, while the acromial end is broad and flattened, and presents an oblong surface, in order to articulate with the acromion process of the scapula. (See ANATOMY, SHOULDER.)

CLAY, *kla*, AS A DRESSING FOR FŒTID SORES.—It is well to know that, when no other substance—such as charcoal—can be obtained, clay poultices may be applied to sores, the discharge from which is of an offensive nature. The clay must be used only after having been finely powdered, and after all impurities are removed; and it may be employed either alone or mixed with bread, linseed-meal, or the materials commonly used in the making of any ordinary poultice. Dr. Schreber of Leipsic recommends the use of clay as the most "energetic, the most innocent, the most simple, and the most economical of palliative applications to surfaces yielding foul and moist discharges." He moreover considers that it has a specific action in accelerating the cure. Clay softened down in water, and freed from all gritty particles, is laid, layer by layer, over the affected part, to the thickness of about a sixteenth of an inch. If it become dry and fall off, fresh layers are to be applied to the cleansed surface. The irritating secretion is rapidly absorbed by the clay, and contact of air prevented. The cure thus goes on rapidly. This clay ointment has decisive action in cases of fœtid perspiration of the feet or arm-pits. A single layer applied in the morning will destroy all odor for the day. It remains a long time supple, and the pieces which fall off in fine powder produce no inconvenience. Nothing certainly could be more simple than the above method. It may be applied by means of a feather or a camel's hair pencil, care being taken not to put on too much at a time, but rather to apply it in fine layers.

CLEANLINESS. (See Ablution, Baths, Skin; Skin, Diseases of the; Teeth, Clothing, Flannel, Health, Sanitary Science, etc.)

CLEAVERS. (See Galium Aparine.)

CLEMATIS VIRGINIANA, *klem'-a-tis ver-jin-e-an'-a*, or virgin bower. A climbing perennial plant belonging to the Nat. order *Ranunculaceæ*. It is a native of the United States, growing on river banks, and in moist places from Canada to Georgia. The bark, leaves, and blossoms, are the parts used. When applied to the skin in the pure state they blister, and sometimes are used for purposes of vesication. Used externally in certain cutaneous diseases, and internally it is said to possess diuretic and sudorific properties in a high degree. It is not, however, very much used. Dose: of the solid extract, 1 to 2 grains; infusion, 1 to 2 ounces. (See Infusion.)

CLERGYMAN'S SORE THROAT, *kler'-je-manz* [*Dysphonia Clericorum*]. This is in some cases a nervous, but in others an inflammatory disease affecting the throat of men who are in the habit of speaking much, and so most frequently met with in clergymen, public speakers, singers, and actors. It consists of inflammation, and relaxation of the mucous membrane lining the back part of the mouth, the soft palate, and fauces; the tonsils are somewhat enlarged, and the uvula elongated. There is an uneasy sensation in the throat, as if something were lodged there, and the patient is constantly trying to swallow it; the voice is weak, thick, and hoarse, and in some cases scarcely audible. In many cases cough harasses the patient, being attended with expectoration of mucus.

*Treatment.*—If upon examining the throat we find no signs of inflammation, we should recommend change of air and scene, to the patient, and tonics must be given, as quinine and iron, and the cold shower bath will be found useful.

| | |
|---|---|
| Take of Sulphate of iron | Sixteen grains. |
| Sulphate of quinine | Twelve grains. |
| Dilute sulphuric acid | One and a half drams. |
| Compound tincture of lavender | One dram. |
| Pure water | Eight ounces.—*Mix.* |

Let 2 tablespoonfuls be taken three times a day.

In some few cases, when other remedies have failed, bichloride of mercury has been successful, and may be given thus:

| | |
|---|---|
| Take of Bichloride of mercury | Two grains. |
| Powdered opium | Five grains. |
| Confection of roses | Two scruples.—*Mix.* |

Divide into 16 pills, 1 of which must be taken night and morning.

Liberal diet must be allowed; and the nervous patient should mix freely in society, resting for a short time from his vocal exertions. The organs of voice may be *swabbed* with a solution of nitrate of silver, containing 1 scruple of this salt to 1 ounce of distilled water; for this purpose a camel's hair brush should be used, which is made in the form of a right angle towards its end, and which, by a little careful manipulation, may be gently directed down upon the vocal cords. When the tonsils are inflamed, a warm linseed poultice may be applied to the throat, and the following gargle used:

| | |
|---|---|
| Take of Dilute sulphuric acid | Three drams. |
| Compound tincture of lavender | Two drams. |
| Pure water | Half a pint.—*Mix.* |

This gargle to be used frequently. After using this application, the mouth should be freely rinsed out with cold water to prevent the acid exerting an injurious influence upon the teeth. If the tonsils be in a chronic state of inflammation and enlargement, they may be removed by the knife of the surgeon.

CLIMACTERIC, *kli-mak'-ter-ik* [Lat. *climactericus annus*, from *climax*, a ladder or steps], denotes a critical year or period in a man's life, wherein, according to astrologers, there is some notable alteration to happen in the body, and the person will be exposed to great danger of death. The idea of climacterics is very ancient. According to some, every seventh year of a man's life is a climacteric year, certain important changes then taking place in the body. The ages of sixty-three and eighty-four are regarded as the *grand climacterics*, the changes being then greater, and the danger attending these periods much increased. Others allow the term climacteric only to the product of 7 multiplied by odd numbers, as 3, 5, 7, 9, etc. Some, again, consider every ninth year a climacteric. (See CLIMACTERIC DISEASE.)

CLIMACTERIC DISEASE, *kli-mak'-ter-ik diz-eez'*, is a sudden giving way of the vital powers in persons of advanced life, without any definite disease to account for the change. The affection seldom occurs before fifty years of age, and is more common in men than women, for one reason, probably, that its most frequent exciting cause is over-work and anxiety of the mind in business. The person who is becoming the subject of climacteric disease, complains of weakness coming on gradually, the appetite gives way, sleep is deficient, the bowels sluggish, the pulse quick, and the tongue furred; the flesh falls away, and the altered countenance assumes an aged look in a short period: in other words, the "constitution is breaking up," and the individual's friends remark that "he grows old very fast." Swelling of the limbs, eruptions of the skin, and mental apathy, are further concomitants of the disease, which, if unchecked, may run on to a speedy fatal termination; whilst it also renders the patient liable to sink easily under any attack of acute illness, even of a common cold, which, too, it may be observed, is often the first traceable commencement of the attack of climacteric. Another very frequent cause, is grief caused by the loss of friends or relatives, who have been much mingled in the affections and habits of daily life. When an aged person exhibits the symptoms described above, he should be immediately attended to: the case *must* be put under medical management, and will require tonic treatment, generous living, complete relaxation from the cares and anxiety of business, and, if possible, change of climate. Dr. Day, an English writer, in treating this subject, makes the remarkable statement, that by careful statistics kept of the deaths of nearly fifty-five thousand people, who exceeded sixty years of age, the fact was shown, that the deaths in January were nearly twice as many as in July. The above, with many similar observations, shows the importance of those who have arrived at this stage of life, spending two, three, or more winters in a mild, equable climate. Frequently many years may thus be added to life. Florida is probably the most desirable resort for this class of health-seekers. (See AGE, OLD; DECAY, CLIMACTERIC, HEALTH, LONGEVITY, CLIMATE, ACCLIMATIZATION, HEALTH RESORTS.)

CLIMATE, *kli'-mat*. Climate is derived from the Greek word *klima*, signifying inclination, but which was also applied to certain zones on the earth's surface, from their supposed inclination to the pole. In its present and most general acceptation, the word climate may be said to include all those atmospheric conditions and changes that sensibly affect our organs, such as heat, moisture, winds, electricity, etc. It is to the varieties in the climate of different places that we are indebted for the great variety that exists in the vegetable and animal kingdoms. Every species of plant has certain climatic boundaries, some much more extended than others, within which alone it will flourish. Animals, too, have their climatic bounds. To man alone is it given to subsist in any climate. Even him, however, different climates affect very differently—some being favorable to health, others tending to disease. As in the case of plants and animals, it is found that the pathological characters of disease vary with the climate, and that particular diseases have their geographical seats and limits, being regulated in their distribution according to atmospheric temperature and moisture, the density and electricity of the air, the nature of the soil and the character of the vegetation. Each race of mankind has its prescribed salubrious limits, and deteriorates in proportion as it departs therefrom. The study of the effects of different climates upon different constitutions and their curative effects in different diseases, forms an important branch of medicine. By change of climate the patient is exposed to new atmospheric, celestial, and telluric influences, varying in all conceivable varieties and modes of association from those to which he has been accustomed. There are few diseases that may not be influenced by climate; and hence the necessity to the physician of making himself acquainted with the atmospheric conditions of different localities.

The latitude, the elevation, the proximity to, or the distance from the sea; the soil, the absence or presence of water, including the drainage, the amount of wood, and the shelter or otherwise from prevailing winds, all exert important influences upon the characteristic climate of any locality, and have to be considered in the recommendation given, or plan of action resorted to by invalids. The decision respecting the climate, resort to which is likely to benefit each individual case, is so much matter of judgment, and is really so important, that medical opinion ought always to be taken, when change of air or climate is seriously sought as a remedy in illness. Very much precious time is often lost, and real injury inflicted, from want of due care upon this head, and from persons acting upon their own ideas, or upon insufficient advice.

There are few diseases, perhaps, which do not derive either temporary or permanent relief from change of air and climate, but some are more strikingly benefited than others; these are particularly diseases of a neuralgic, intermittent, or spasmodic character, of which whooping-cough and asthma are good examples. Chronic rheumatism, scrofula, weakness of the constitution generally, including pulmonary consumption, and dyspepsia may also be mentioned. As a general rule, benefit appears to result from change to a climate presenting characters which contrast with those of the one in which the individual is or has been generally resident; the dyspeptic or consumptive patient will derive advantage by removing from the colder to the more genial region; the fever-stricken resident of the sultry or vaporous plain, will regain health and strength in the bracing air of the hills, and even the country child, in whose constitution whooping-cough lingers, will probably lose it if transferred to city air for a short period. Perhaps no air exerts such universally tonic effects as that of the sea, but to some it is too stimulating in some particular localities, though not so in others, but, in fact, the differences in climate, and its effects, are so numerous and varied, that it is impossible here to pass beyond the general consideration of the subject. Unquestionably some amount of the beneficial influence of change of climate is due to the stimulant effect upon the mind, which excitement and change of scene produce, this being more particularly the case, if the condition of the individual permits or calls for the continued change of travelling from place to place.

The error is frequently committed, of resorting to the change of climate as a last resource, which, if earlier had recourse to, might have proved of essential or real service. Another error, is trusting too much to the curative power of climate, and invalids, by throwing aside the restraints of the regimen to which they have been previously subjected, and neglecting the other accessory adjuncts to recovery, fail to derive the full measure of benefit which they ought; and this, more especially if they do not consider and endeavor to accommodate themselves to the modes of living, and other requirements, adapted to the climate in which they are resident for the time.

*The choice of a climate* is a question to the consideration of which too much time and attention cannot be given. There are many points to be thoughtfully and carefully considered, in connection with each individual case—for the change, if not productive of much good, is likely to be fraught with much danger. Some climates have a tonic effect on the system, while others are sedative in their nature; in some cases the atmosphere is exceedingly dry, in others, saturated with moisture. In prescribing change of climate we must, therefore, fully make up our minds as to the requirements of the case. The moist atmosphere that would be of a decided benefit to the patient with irritable throat and air-passages, would be decidedly injurious to one suffering from gout or rheumatism, and the cold atmosphere that would almost kill a patient suffering from chronic catarrh, would be just the air for a patient suffering from torpidity of the liver. In the search for a desirable change of climate, it is always necessary that we should find one in which there is a comparatively equable temperature — not many degrees difference between the heat of the day and the night—not any very sudden transitions from heat to cold, and the reverse—no high, irregular winds, and especially no malaria, or marsh poison, now known to be the cause of so many diseases, especially fevers of different kinds.

*Of the climate of the Eastern Hemisphere* little need be said here beyond what may be found in article HEALTH RESORTS, as those possessed of sufficient means to enable them to take so extended a trip, can easily acquaint themselves with the climatic differences by reading some of the very many works that treat of that subject. The Island of Madeira is, in the equability of its temperature, one of the most desirable places known for the consumptive, where the necessary comforts can be obtained. The summer and winter being mild, it is peculiarly suited for the permanent residence of the patient. The climate of the Canary Islands resembles Madeira, but is not quite as equable.

*The climate of the United States*, owing to its great extent from north to south, its great chains of mountains and its magnificent water-courses, has a very variable climate, or more correctly, is possessed of many climates.

*The climate of the New England States* is as a rule severe, but comparatively uniform; the winters are long and cold, the summers short and hot; the winds are frequently high and irregular, and near the coast are extremely unfavorable to those suffering from pulmonary complaints. Owing to the almost entire absence of malaria there is not much fever, and comparative freedom from epidemics. The climate of Rhode Island and Connecticut is modified by warm southern winds, but even in Vermont and New Hampshire, the genial summer renders it a most delightful part of the country.

*The climate of the Middle States* presents many variations. New York, on the whole, is healthy; throat and lung diseases prevail in the east, and bilious complaints in the west. New Jersey possesses a good deal of marsh land, giving rise to malarial fevers. Maryland has neither the extreme cold of the north, nor the excessive heat of the south, but in the vicinity of the bay and Potomac, where there is much marsh lands, remittent and intermittent fevers prevail. The Atlantic States north of Florida, especially near the coast, owing to the sudden changes, and the damp and ofttimes cold easterly winds, are extremely unfavorable to consumptive and rheumatic patients.

*In the Southern States* a great portion, owing to immense tracts of marsh lands, is unfavorable to invalids. The high, dry lands of South Carolina and Florida, are well adapted for those who could not stand the cold, moist winds of the northern Atlantic States, nor the severe dry cold of the northwest. The climate of Southern Florida is perhaps the most equable on the continent, and is the most frequently visited by invalids, many thousands going each year. Southern Texas has been highly recommended by some, and the climate at times is very propitious for those with weak lungs, having very much the same temperature as some parts of Florida, but the sudden advent of those terrible winds known as "northers," renders it not at all a safe climate for sufferers from bronchial affections. The climate of Arkansas has a good reputation for the relief of pulmonary disease, being sheltered from the north winds and the fierce heat of the south. The Hot Springs of this State, so famed for their health-giving influence, will be mentioned under the articles MINERAL WATERS and HEALTH RESORTS.

*Of the Northwestern States, Minnesota* is famed for the salubrious character of its winters, and notwithstanding the severe cold, that State is annually visited by many suffering from pulmonary and rheumatic trouble, who, after a residence of some time, go away wonderfully relieved. St. Paul has long been noted as a health resort.

*The climate of Wisconsin* is similar in many respects to Minnesota. The winters are long and severe, but, as a general rule, uniform. The temperature is very much modified by the moisture from the lakes, which form so much of the eastern and northern boundaries of the State. The summers are beautifully mild, though the springs are backward, and the southern and central portions are dotted all over with health resorts, which are visited with benefit by parties from all parts of the Union.

*Colorado.* Perhaps a more favorable region still for consumptives, is the elevated State of Colorado, with its pure bracing air and its complete freedom from all miasmatic diseases. Asthma, catarrh, bronchitis, and consumption, if not too far advanced, are almost invariably cured. It has numerous mineral springs, which combine with its bracing climate and mountain parks, to render it a great national sanitarium.

*The climate of California* is twofold; that of the sea-coast, and that of the interior; that of the former, owing to the dense volumes of cold mist which pour in from the ocean, contrasts very unfavorably with the dry salubrious atmosphere of the interior. Except in the north, there is scarcely any winter; the sea-breeze, which tempers the drought of summer in the beautiful Californian valleys, also moderates the severity of the winter. After Colorado, these middle and Southern counties of the Golden State are admirably adapted for a resort for the weak-lunged invalids of the Atlantic States and the Canadian Provinces. (See CONSUMPTION.)

*Western and Middle Oregon* are noted for their mild, equable, and healthy climate.

*The climate of the Dominion of Canada* is somewhat variable. In the eastern provinces it is very similar to that of the Northeastern States; the winters are long and severe, the summers hot but very pleasant. High, irregular winds frequently prevail, making the climate undesirable for consumptives and rheumatics. The climate of the Province of Quebec resembles Northern New York, and that of Ontario is similar to Western New York. In Manitoba and the Valley of the Saskatchewan, the snow falls early and in great abundance, continuing to a late date in the spring, the thermometer falling many degrees below zero; but the summers, though short, are beautiful, and the air is not unfavorable, even to those with weak lungs and irritable air-passages. The climate of British Columbia is comparatively mild, resembling very much that of Oregon, and in some respects that of California.

*In resorting to change of climate* for the restoration of health, care must be taken that the journey be made by easy stages, in pleasant company, and by the least monotonous route. The night air, if possible, should be avoided, and the meals be as regularly partaken of as at home. The first few days after arrival, the patient need not be surprised if he should suffer some headache, or a slight attack of diarrhœa, with some slight febrile excitement. Absolute rest, low diet, and mild saline laxatives, will speedily bring amendment. Particular attention must be paid to the clothing, so as to conform as much as possible to the requirements of the particular region; it will be safe, however, always to wear flannel next to the skin. (See HEALTH RESORTS, MINERAL WATERS, ACCLIMATIZATION, AIR, SEASONS, MADEIRA, CANARIES, ETC.)

CLIMBING BITTER-SWEET. (See CELASTRUS SCANDENS.)

CLINIC, CLINICAL, *klin'-ik*, *klin'-e-kal* [Gr. *klinikos*, from *kline*, a bed], is applied to the observation and treatment of diseases at the bedside of the sick; and hence clinical lectures are such as are given at the bedside of the patient, or from notes and observations made at the bedside. This is the most valuable mode of instructing in the art of medicine; the students are taken to the bedside of the patients in a public hospital, and there practically instructed in the various phenomena of disease, taught to observe the characteristics of each individual case, and to study the effects of the various modes of treatment. In modern times at least, clinical medicine was entirely neglected till about the middle of the seventeenth century; and it was not till the beginning of the eighteenth that it began, by Boerhaave, to be systematically carried out. Since that time it has come into general use, and now every good medical school has an establishment for clinical medicine in connection with it.

CLONIC, *klo'-nik* [Gr. *kloneo*, to move to and fro], a spasm which is not of long duration, though it may be repeated in rapid succession; such are the spasms which affect the muscles in epilepsy.

CLOTHES, DAMP. (See Damp.)

CLOTHING, *klothe'-ing.* Health and comfort depend in no small degree upon clothing, particularly in a variable climate like ours. Care should be taken that all articles of dress be worn so as not to press injuriously upon tender parts or to impede the action of important organs. It is particularly necessary to attend to this in regard to children. Further, the clothing should be warm and suited to the season of the year. Children and old people require to be much more warmly clad than such as are in the prime of life. It is a great mistake to clothe children too thinly. In this way the seeds of disease are frequently laid. John Hunter was wont to say that the best receipt for rearing healthy children was "plenty of milk, plenty of sleep, and plenty of flannel." Even the robust should always wear flannel next the skin; how essential then, must it be for the delicate, and those who are subject to colds. Flannel worn next the skin should be frequently washed, at least once a week. They should also be changed at night. No garment should be slept in that has been worn during the day, on account of having become impregnated with perspiration, exhalations from the body, dust, etc. Some persons, who from irritability of the skin, cannot wear woolen material next it, find a woven silk texture a good substitute. Shammy vests are sometimes worn with benefit by the weakly, over flannel, and by those subject to rheumatism, next the skin. Drawers of the same material are also useful in rheumatism, sciatica, etc. The form of clothing must ever vary with fashion; the principle ought always to continue the same, that is, it should involve complete and thorough protection of the surface of the body, and especially of the cavities of the chest and abdomen, from cold or sudden chill. This is best insured by a covering of woolen material next the skin; the habit should be commenced from the earliest childhood, and continued through life in every season of the year, varying only the thickness of the flannel, or other woolen texture, according to the average temperature. No outward clothing can be so uniformly efficacious as the inner one of wool, as a protection against our variable climate, and yet very many there are, who, both in their own persons, and in those of their children, neglect this real preservative of health, and therefore, this real economy, although the cost at first may seem much to the poor. In addition to the inner clothing, the outer ought of course to be sufficient, and in winter, an addition made on going from the warmth of the house into the open air. In this respect, men are generally better provided, under all circumstances, than women and children. Women, from the nature of their dress, and from the pernicious custom of exposing the chest and arms—not always, which would be less hurtful—but occasionally, suffer much from errors in clothing; they subject themselves to the extremes of fur and thick shawls in the morning, and of thin dresses at night, added to which there is often exposure to currents of air when heated, and without any protection against their effects. Any article of clothing, such as fur, etc., which keeps up a more than average degree of heat, and even induces perspiration, and which is liable to be thrown off or put on easily and as fancy dictates, is hazardous and injurious. Children are in many cases most insufficiently protected from the weather; numbers are without a single article of woolen underclothing, either in consequence of carelessness, or from the erroneous idea of rendering them hardy; a system which may answer in the offspring of hardy parents, whose children are hardy in every other respect, but which can only be productive of injury to health in those who spend most of their time in warm, perhaps too warm, rooms and nurseries. The surface of a child, from the neck downwards, ought to be kept warm by clothing; exposed chests, bare legs, and thin insufficient coverings, are synonymous with croup, inflammation of the lungs, and scrofula. For the same reason that boas, etc., are unsafe articles of dress for women, comforters and woollen neck-wrappers are not advisable, except under particular circumstances, for boys; they heat the neck, and if thrown off carelessly, predispose to cold or bronchitic affection. The clothing of the feet is a matter of the highest importance to all; dryness and warmth must be attended to by those who value health. Cork soles are a good invention, as they effectually protect the feet from dampness. On the other hand, the head is often, in infants and children especially, kept too hot. (See Flannel, Climate, Acclimatization, Air, Cold, Damp, Tight-Lacing, Catarrh or Common Cold, Rheumatism, Animal Heat, etc.)

CLOVER, RED AND WHITE, *klo'-vur*. Red and white clover grow on grass lands all over America. An ointment made from the flowers and leaves, boiled down to an extract, is useful in foul conditioned ulcers.

CLOVES. (See Caryophyllus.)

CLUB-FOOT, *klub*, is a distortion of the foot, occasioned by the greater contractions of some muscles than others, by which means the foot is drawn out of its natural position, it may be inwards or outwards, with the elevation of the heel and depression of the toes, or the depression of the heel and elevation of the toes and fore part of the foot. Such deformities are usually congenital, but sometimes they may arise from some disordered state of the system, or be occasioned by convulsions. When recent, it is of importance to ascertain the cause, and to direct attention to its removal. If owing to weakness or irritation, we must strive to strengthen the muscles, and to soothe the nerves. Attention to the general health, properly directed exercise of the part, and, if necessary, special appliances to retain the limb in position, will go far, in most cases, to effect a cure. In cases where these means are ineffectual, a careful subcutaneous division of the contracted tendons rarely fails to effect a cure. (See DEFORMITY.)

CLYSTER, ENEMA, OR INJECTION, *klis'-ter, en'-e-ma, in-jek'-shun* [Gr. *klyso*, to wash out], are all names for the same useful adjunct to medical treatment, the mechanical injection of fluid into the bowels by the fundament and rectum. Clysters are most commonly employed as aperients, but they are also used as anodynes, or antispasmodics, for the purpose of dispelling wind, or as internal fomentations, or as styptics. In illness they are generally administered to the patient by others, but instruments are constructed to facilitate their self-administration, which is of course preferable when, as frequently occurs, they are often required in ordinary health.

*The mechanical means* used for the administration of clysters are very numerous, the most useful are the injecting syringes of different kinds, procurable in any drug store.

*The injection syringe* is most useful when the clyster to be administered much exceeds half a pint in quantity, when it is used as an aperient, and requires to be forcibly injected. When the clyster does not exceed half a pint, as in the case of children, or when used as an anodyne or styptic, the vulcanized india-rubber bag is quite the most convenient mechanical agent, from its simplicity, and the ease with which any one may use it. When a clyster is administered to the sick, the patient may either be laid on the face or on the left side, near the edge of the bed, with the knees drawn up. The metal or bone pipe which is introduced into the bowel, should be well oiled or greased, and its introduction should be effected with perfect gentleness, not straight up, but in a direction slightly inclined towards the back bone, care being taken that no abrasion or scratching of the parts be occasioned; this is a most necessary caution in all cases, but more especially in those in which repeated use of the remedy will probably be required. Even with the greatest care, the parts are liable to become sore, causing the patient both to dread and suffer each time the instrument is used, and even to be unable to bear a continuance of the practice. In all cases a clyster should be given slowly and gently, and care taken that air is not thrown up into the bowel as well as fluid; with the syringe, this is to be avoided by pumping it full of fluid before it is applied to the patient, and by not continuing the operation when the fluid used gets so low in the basin as to allow air to be drawn in; with the bag care should be taken that the pipe-end is always held the lowest. When the bag is used, air is less likely to be introduced if the patient is laid on the face. If an instrument has been used for anything but simple water, it ought always to be well washed out with warm water before putting by. When taken to pieces it must always be unscrewed by the hand holding the metal mountings. Clysters self-administered, can only be so conveniently, by means of the syringe.

*Aperient clysters* may be simply mechanical, of water, gruel, and the like, either cold, tepid, or warm, or they may be medicinal. There is an objection to clysters of simple water, that in some cases they are apt to wash off the natural protecting mucus of the bowel, and therefore it is perhaps better as a general rule, and where the remedy is often or habitually used, to employ a demulcent, such as gruel or barley-water. Cold clysters, sometimes useful, ought never to be resorted to except by medical direction; the fluid about the temperature of 90° will generally be found most appropriate, and when used simply, about a quart thrown up slowly, but with sufficient force, will be found a suitable amount for the generality of adults. Some use a much larger quantity, as much as two or three quarts; this, in certain cases of illness, may be a useful measure, but as a habitual thing is bad; the frequent over-distension with so large a quantity of warm fluid, produces want of tone, which aggravates the torpid tendency of the bowels, and favors fæcal accumulation. For a child of six years of age, half a pint of simple gruel clyster is ample. These simple clysters act by stimulating the bowel by their mechanical bulk; when a medicinal clyster is used, the object is in some degree to avoid this, so that the medicinal agent may not be expelled before it has time to exert its peculiar agency. The medicinal clyster ought, therefore, as a general rule, not much to exceed one-half the quantity of the simple one.

*The simplest* and readiest medicinal clyster is made, either with a tablespoonful of common salt in a pint of gruel, or with a piece of brown soap, the size of a hazel-nut, rubbed down into a pint of warm water; or instead of these, from ½ ounce to 1 ounce of Epsom salts, or 2 ounces of olive-oil, or half that quantity of castor-oil; or infusion of senna, ½ ounce of leaves to the pint, may be employed. Stronger clysters, with turpentine, croton-oil, etc., are also used by medical men.

*Anodyne clysters* ought always to be so small in bulk—not exceeding 3 fluid ounces—as not to stimulate the bowel to expel them, which, from the nature of the cases in which they are usually given, it is apt to do. In all cases, anodyne clysters are most conveniently administered by means of the vulcanized bag, and the best form is from 15 to 25 drops of laudanum in 3 ounces of moderately thin starch. This clyster is of course to be retained in the bowel if possible. One of the most useful clysters for dispersing flatulence, is made with 2 drams of tincture of assafœtida to ½ pint of gruel, to which, if there is much pain, 10 or 15 drops of laudanum may be added; or the same quantity of assafœtida tincture, may, if required, be added to an aperient clyster. A useful domestic clyster, in the country, for the same purpose, is ½ pint to 1 pint of strong "rue tea," or infusion of rue.

Clysters used for the purposes of internal fomentation may be given to the amount of 1 quart, and of a temperature of 98° or 100° Fahr.

*In hemorrhage* from the lower bowel, when it is proper to interfere with it, a 2 or 3 ounce cold styptic clyster may be used, made with sulphate of zinc 4 grains, or sulphate of iron 1 grain, to 1 ounce of fluid. (See SYRINGE, COSTIVENESS.)

COAGULABLE LYMPH, *ko-ag'-u-la-bl limf.* The transparent, gelatinous exudation from wounded or inflamed vessels, which becomes organized and serves to repair injuries or produce adhesions. Its peculiar component is fibrine, and it differs from blood only in the absence of red globules.

COAGULATION, *ko-ag-u-la'-shun* [Lat. *coagulatio*], is the conversion of the whole of a fluid, or of some of its constituents, into a solid. The solidification of the white of an egg by heat is an instance of the former, that of the clot in blood, or of the curd in milk, of the latter. The coagulating power of the blood is the great safeguard in bleeding, which could not be permanently stopped by any appliances, without this property of the vital fluid, and it is the loss of this property that gives rise to the occasional cases of danger or death from bleeding, in consequence of comparatively slight wounds, such as those from leech-bites, or from the extraction of a tooth.

COAL-GAS, FIRE-DAMP, *kole'-gas.* Coal-gas, or fire-damp, is a compound of carbon with hydrogen. The fearfully destructive explosions in the coal mines are the result of the ignition of this gas when it has collected in quantity. Its constant use in dwelling-houses, as a means of light, sometimes gives rise to similar accidents, and occasionally life has been endangered by the inhalation of it when it has escaped into an apartment. This has sometimes occurred from persons unused to gas-light, blowing out the flame on going to bed, instead of turning the stop-cock. In such cases, treatment very similar to that pursued in poisoning by carbonic acid may be followed out. (See CARBONIC ACID.)

COAL OIL AND ITS MEDICINAL USES. (See PETROLEUM.)

COAL-TAR, *kole'-tar* [Ang.-Sax. *col tare*]. This is used in several forms as a disinfectant, and also is said to have been applied, in solution, with success in the treatment of itch. The *liquor carbonis detergens*, or concentrated alcoholic solution of the active principles of coal tar, is used as a dressing for putrid sores in the form of emulsion with a little water, and is a favorite remedy with many in skin diseases, especially of a scaly character. Its antiseptic or preservative qualities have made it a favorite with those interested in the collection of specimens of natural history. (See TAR, DISINFECTANTS.)

COBWEB, *kob'-web*, employed as a styptic to arrest bleeding from simple flesh wounds, or from leech-bites. The web of the black spider, which builds in outhouses, etc., has been used with much success, as a medicine in ague, given in doses of 10 grains, in the form of pills, every two hours, commencing six hours before the return of the paroxysm.

COCA LEAVES. (See ERYTHROXYLON COCA.)

COCCULUS INDICUS, *kok'-ku-lus in'-de-kus*, or Indian berry, is the fruit of the *Anamirta paniculata*. It has some resemblance to the bayberry, and is imported into this country from the Eastern archipelago. It is chiefly used for adulterating cheap beer; and it is really wonderful in how many ways it is fitted to disguise a liquor prepared from insufficient quantities of malt and hops; thus, it imparts to the sophisticated liquor an intensely bitter taste, a darkness of color and a fulness of body, while it adds to its inebriating qualities. It is scarcely necessary to state that the cocculus is never employed by respectable brewers. Its use has been forbidden by law. In large doses it is poisonous to all animals, and it has long been used by sportsmen for stupefying fish and game. In medicine it has been employed in the form of an ointment as an external remedy for certain skin diseases. It owes its active properties to a very poisonous crystalline alkaloid called picrotoxine.

COCCYX, OR OS COCCYGIS, *kok'-siks* [Gr. *kokkos*, a cuckoo], in Anatomy, is the name given to the lower end of the spine, from its supposed resemblance to a cuckoo's beak. (See SPINE.)

COCHINEAL, *kotsh'-e-neel*, an insect which yields the well-known coloring matter carmine, is brought from Mexico, being gathered from various species of cacti, on which it feeds. It is used chiefly as a coloring agent, but has been employed, especially as a domestic remedy, in whooping-cough. Its powers are very doubtful. Tincture of cochineal is formed by macerating for seven days in a close vessel, 2½ ounces of the powder in one pint of proof spirit, and then straining and filtering. Dose of the tincture, ½ to 1 teaspoonful every three or four hours.

COCHLEA. (See EAR.)

COCKLEBURR. (See AGRIMONY.)

COCKSCOMB, RED. (See AMARANTH.)

COCK-UP-HAT. (See STILLINGIA SYLVATICA.)

COCOA, CHOCOLATE, *ko'-ko, tshok'-o-lat.* Cocoa is prepared from the seeds or beans of a tree—the *Theobroma Cacao*—cultivated chiefly in the West Indies and South America. The beans are roasted to develop the aroma and free them from the husks, which are comparatively innutritious, though frequently mixed up with the prepared cocoas of commerce. Cocoa, when genuine and properly prepared, is a wholesome and nutritious article of diet; it contains a considerable quantity of oily or fatty matter, starch, etc., and a peculiar principle, "theobromine," which, according to Liebig, nearly approaches theine and caffeine—the characteristic principles of tea and coffee—in composition; cocoa does not, however, affect the nervous system in the same manner as these beverages, and may therefore be taken in cases when they are inadmissible. Cocoa, as a beverage, ought to be prepared only from the crushed beans themselves, or "nibs," as they are called, for there is no certainty as regards the purity of the various artificial preparations sold under the names of "flake," "rock," "granulated," "homœopathic" cocoa, etc. In recent investigations these often puffed-off compounds have been found to be made up of cocoa, sugar, starch, or flour, husks of the cocoa bean, etc., and sometimes with fats and oils of various kinds, and earthy and coloring matters.

Chocolate is professedly a manufactured article, and should be made with the kernels of the cocoa bean, perfectly free from husks, and reduced to a smooth uniform paste with sugar, and starch of some kind, such as arrowroot; vanilla or cinnamon being used to impart flavor. Such a preparation as chocolate is of course liable to many adulterations, of which the most deleterious are those with ochre, red lead, vermillion, sulphate of lime, chalk, etc.; tallow is sometimes used in the preparation of the cheap forms. It need scarcely be said that those who make use of chocolate ought always to procure it from dealers on whom they can depend. That of French make is generally to be preferred. As an article of diet, chocolate is extremely nutritious, but on account of the oil it contains, is apt to disagree with weak stomachs, particularly if too great heat be used in preparing; moreover, the addition of vanilla is apt still more to increase its indigestibility, and, according to Dr. Paris, to occasion nervous disorder. (See COFFEE, TEA, BREAKFAST.)

# INDEX OF DISEASES,

WITH REFERENCES TO REMEDIES.

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As it would be manifestly impossible, in a work of this kind, to give, in one short article, *all the remedies* that may be prescribed for any particular disease, this index has been prepared with the view of enabling the reader, after perusing the article on any particular disease, conveniently to turn to other remedies not mentioned in the article, but which are also used in the treatment of the same or similar forms of disease. For example: Having read the article on *Rheumatism*, its treatment, etc., the reader may turn to this index, and under the word "Rheumatism," find references to all the medicines or remedies contained in the book which are mentioned as being useful in the treatment of this disease.

The reader should understand that this is not an index of *all* the articles or subjects in the book, but of diseases *only*. Should he attempt, by the index, to find such articles as "ANATOMY," "CIRCULATION OF THE BLOOD," "SANITARY SCIENCE," or any others, not strictly classed under the head of diseases, of course he would fail; therefore, let him remember, that since all of the titles in the book are arranged in *alphabetical order*, every article may be found by turning directly to the body of the work, and proceeding after the manner of looking for a word in a dictionary.

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### A.

## B.

## E.

## Q.



## R.