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MEDICAL DEPARTMENT

ECLECTIC MEDICAL COLLEGE OF PENNSYLVANIA.

SESSIONS OF 1876-77.

The Annual Course of Lectures in this Institution commences

Monday, October 3d, 1876, and continues to July 1st, 1877.

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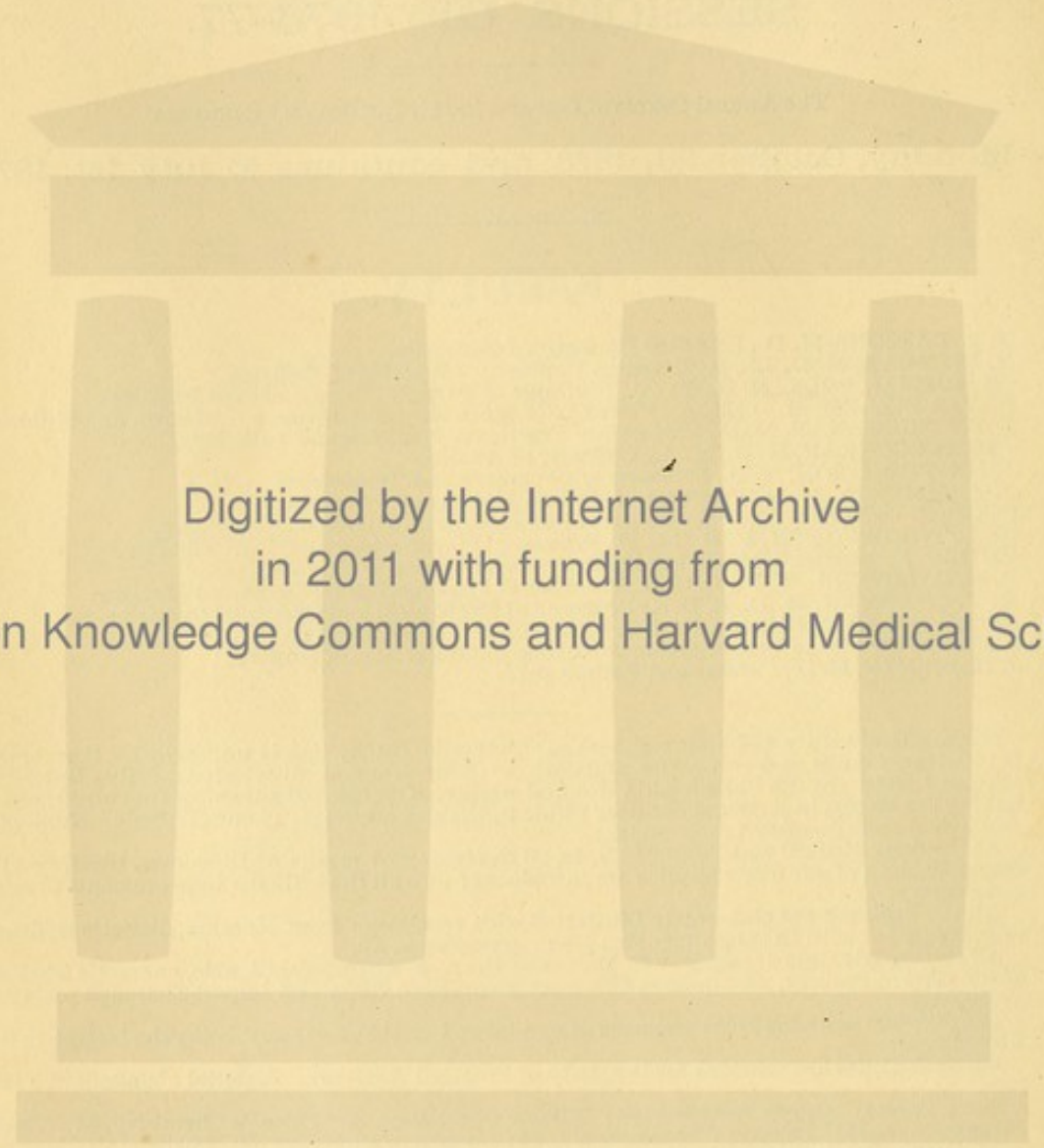

THE

Centennial Practice

OF

Medicine,

BY

JOHN BUCHANAN, M. D.,

Professor of Practice of Medicine and Pathology in the Eclectic Medical College of Pennsylvania.

PHILADELPHIA:

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BY

JOHN BUCHANAN, M. D.

DEDICATION.

TO

WILLIAM GRAY, Esq.

IN ADMIRATION OF

His many virtues and in grateful acknowledgment of
many acts of generosity these pages
are respectfully inscribed.

THE AUTHOR.

PREFACE.

We respectfully submit to the American Medical Profession this epitome of the Practice of Medicine, in the hope that it may aid in the establishment of a scientific system of medication, more in harmony with nature's laws than the destructive system of the Allopath or the expectant treatment of the Homœopath.

It is chiefly designed as a Text-Book for the student; an aid to the busy practitioner, and its aim is to elucidate more thoroughly the Eclectic System of Medical Practice.

JOHN BUCHANAN, M. D.

INDEX.

DISEASE.

Man's body resembles a stately mansion, constructed of beautiful but very perishable materials, all of which are needing repairs to keep up the shape and utility of the building. But not all in equal degrees; some portions may stand unaided for years, while others may need hourly looking after. When the occupant leaves the building, repairs cease, and then we see all the materials one by one falling into ruin.

What, then, raises to the rank of living creatures, and clothes with loveliness the masses of organic matter which are growing, moving, breathing, thinking, all around us? It is the power of the individual life to create its own individual form. It is the form which constitutes the self. The organic materials are the property of the form only so long as it retains them, and no longer—they are a floating capital. Over the innate essential elements it has no control. Life cannot make the brute materials which it uses live longer than that which it leaves unused; but it has the power of making them anew and building them up into a certain shape for the time they are made to last. In short, life rests on the metamorphosis or renewal of the body; as this renewal is more thorough, the individual is more perfect; if it stops altogether, the body is no longer living. If it partially stops, there is disorder, or what we call disease. Health is the perfect harmony of the human mechanism—a superabundance of life—an excess of vital action cannot exist. We cannot have a too active metamorphosis of the tissues, for the fresher their organic constituents, the more serviceable they are; incessant change is the organic law.

The most active metamorphosis of the body possible, the highest possible development of life, is health. The complete cessation of metamorphosis, is death. The partial cessation or arrest, is disease. In death the flesh goes on decomposing as during life, but there being no renewal, the form is lost. In disease waste goes on, perhaps more rapid, but renewal fags, incomplete or degenerate tissues are formed.

Equilibrium of the vital forces depends upon perfect harmony, or two forces carried on simultaneously; destruction and construction both are necessary; there must be no deficiency of either, for a preponderance of one over the other in any part, or a deficiency, constitutes a deficiency of life (a disease), an absence of health. This deficiency of life is the sole aim of treatment of disease, a recognition of how vital functions can be increased or diminished; how a balance can be maintained is the sole object of the physician.

DIAGNOSIS.

In the examinations of patients there should be a perfect system or order observed, according to a well defined plan. The name, age, occupation, temperament, previous history, residence, sex, should be carefully noted and then inspection, palpitation, measurement, percussion, pulse, heat. All interrogations should be put in a systematic order so as to arrive at a precise diagnosis and a rational indication of cure. But, above all, let us never forget that we are examining a fellow creature, who possesses the same feelings as ourselves. Prudence, delicacy and kindness should therefore guide our movements.

The best standard of correct diagnosis is between fifteen and forty-five; then ossification is perfect, respirations, pulse, heat, &c., all in the condition of perfect health.

Inspection of the general posture of the patient in repose and in motion, is often very suggestive. The position and attitude in fever and inflammation, in paralysis, hydrothorax, asthma, colic and spasmodic diseases, are highly characteristic. The supine position denotes muscular debility, quick forcible changes indicate excitement of the nervous system, while fixed or restrained movements are dependent on paralysis or inflammation.

Inspection of the countenance is of great importance, observing whether sadness, peevishness, despair, fear, grief or joy is evinced; also as to color or conformation. Yellow color in jaundice and scirrhosis. Pain in the head will cause the brows to corrugate; in the chest, the nostrils to be drawn upward; in the abdomen, the lips to be raised and stretched over the gums and teeth.

Inspection of the chest refers to the form and configuration of the entire thorax or its various parts, and a careful comparison of the two sides, whether in motion or at rest. The motions of the chest are referable to inspiration and expiration, which pass imperceptibly into one another. In disease these motions are altered in various ways. 1. By general excess or diminution, as in asthma or laryngeal obstruction. 2. By partial immobility, as in pleurisy or augmented expansion, as in pneumonia or pleurisy. 3. By increased rapidity, as in pericarditis; or unusual slowness, as in coma.

Inspection of the abdomen is no less important than that of the chest. In health it is slightly convex, marked by elevations and depressions, corresponding to the muscles of its walls, the umbilicus and prominences of the viscera below. It varies with age and sex, smooth and flat in the young, broader inferiorily in females than in males, from the greater width of the pelvis. In disease, it may be enlarged generally and symmetrically as in dropsies, partially or irregularly in ovarian, hepatic, splenic and

other diseases; it may be retracted from emaciation or intestinal obstruction. The respiratory movements of the abdomen bear a certain relation to those of the chest, and are increased or arrested with them. In pleurisy the respiratory movements are mostly abdominal, in peritonitis, altogether thoracic. Disturbed relations of the respiratory movements of both abdomen and thorax, are useful points in diagnosis in hydro-thorax, asthma, anæmia, ascites, abdominal tumors, &c.

Palpation.—This is a valuable mode of examination, and is practiced by simply applying the tip of the fingers or the whole hand or both and pressing with them. The most favorable position for palpation is the horizontal or erect position. The information that palpation gives us is: 1. Increased or diminished sensibility. 2. The altered form or shape, size, density, elasticity, &c., of the parts under examination. 3. The different kind of movements to which they are subjected. Pain, if inflammatory, is increased on pressure, but relieved if neuralgic. In paralysis, the diminution of sensibility can only be ascertained by feeling the part, and the limitation of the anæsthesia is best arrived at by pricking of the surface. Alterations in size, form and density, are often exactly made out by palpation; a change in elasticity, hypertrophy or atrophy, is also easily determined. Certain motions, as expansion and contraction, vibrations, frictions, grating, crepitation, are also easily determined by palpation. The natural fremitis or thrill perceptible on placing the hand on the chest, when a person speaks, is increasd or diminished in disease. Fluctuation is a sensation caused by pressing on or percussing parts in such a way as to cause displacement of their contained fluids.

Mensuration.—This is another valuable mode of examination, and consists in measuring the distance between any two points by a graduated tape. In ascertaining the circular measurement of the chest or abdomen, that moment should be selected when the patient holds his breath at the end of an ordinary expiration, great care being taken that the tape is carried evenly round the body. For measuring either side of the chest or abdomen, a spinous process of the vertebræ should be taken as a fixed point, and the middle of the sternum or umbilicus for the other. The exact levels of the measurements should be carefully noted, and an allowance of an inch or an inch and a half of the right side. The pressure of the stays in a female enlarges the thoracic, and diminishes the abdominal movements.

Mensuration is valuable in pleuritis, pneumonia, incipient phthisis, emphysema. An allowance of from one to two inches should be made whether the patient be a right-handed or left-handed person. The expansibility of the lungs, and the amount of air expelled from the chest after a full inspiration, may be accurately measured by the spirometer.

Percussion.—The object of percussion is to ascertain the resistance and size of organs. It may be performed directly, or through the medium of an interposed body, as the fingers or pleximeter (mediate percussion), it is best performed by spreading the fingers of the other hand. The ivory pleximeter possesses no advantages over the fingers. The sounds produced by percussion arise from the vibrations occasioned in the solid texture of the organs percussed. The different density and elasticity of these textures modify the number and continuance of the vibrations, and give rise to different sounds. The sounds obtained by percussion are essentially three, and these three sounds are respectively dependent, first, on the organ's containing air; second, on its containing fluids, and third on its being formed of a dense uniform parenchymatous tissue throughout. These tones, therefore, may be termed the *tympanitic*, the *humoral* and *parenchymatous*. The terms femoral, cardial, intestinal, hydatic, may be used to express some modification of sound produced in percussing the heart, intestines, &c. To become thoroughly conversant with those sounds, practice and perseverance are indispensable. The sense of resistance is an important consideration in percussion; it bears a relation to the density of the object struck; thus, firm and solid textures offer more resistance than the soft or elastic ones. The thorax of a child is elastic; that of an adult, unyielding.

Before proceeding to percuss individual organs in persons laboring under disease, a clear and accurate knowledge of the limits and intensity of dullness on percussion of the thoracic and abdominal viscera in health, should be well understood. Over the region of normal lungs, we have a clear tympanitic sound; congestion or effusion of tubercle in its first stage, may cause slight dullness and increased resistance, which only careful percussion can detect, but, in a more advanced stage, the dullness and increased resistance are well marked, and even an impression of hardness and solidity is communicated to the hand. Tubercular effusion takes place by affinity in the apex of the lungs. Inflammation at the base, when congestion or induration exists in those portions of the lungs which overlap the liver, it requires nice discrimination to detect it with certainty.

Fluid may be detected in the pleural cavity by percussing the patient in the recumbent position, where, if but little exist, there may be no unnatural dullness; but let the patient sit up, then the height or level of the fluid may be readily determined, and should be marked by a line of nitrate of silver. If the effusion fills the pleural cavity, no limit can be placed to the area of dullness. If the lung is emphysematous, or if air be present in the pleura, the sound becomes unusually tympanic.

The diagnosis of affections of the heart constitute the most difficult in the art of medicine. Its size can be easily appreciated and any abnormal deviations detected. Its size varies, but a normal heart should occupy an area of dullness equal to the closed fist of the patient; but in effusion between the pericardium and heart, the area of the dullness may be great, so also in the various forms of hypertrophy. It may bulge out in pericarditis. It is necessary to be cautious in percussing the liver, so as to determine its boundaries; the superior limit of this organ is generally found about two inches above the margin of the ribs; its inferior border descends a considerable distance. Variations in the size of the liver, from congestion, inflammation, abscess, hydatids, tumors or atrophy, may be exactly made out by percussion. In icterus, the increase and diminution of this organ will be found to bear a proportion to the intensity of organic disease. If the gall-bladder is distended by bile, or contains gall-stone, it is usually easily detected by percussion, and the dullness under the inferior margin of the liver, anteriorly and somewhat laterally, may be marked out. The size of the spleen is four inches long and three inches wide. In diseased states it may be atrophied or enlarged. In percussing this organ, place the patient on the right side. The sounds elicited on percussion of the stomach and intestines are of great value in determining the form of other organs as the liver, spleen, bladder, abdominal tumors, and effusion of fluid.

To obtain a correct appreciation of the kidneys by percussion, the patient should be placed on his abdomen, so as to give us a clear appreciation of the renal organs. A correct appreciation of the state of the bladder is derived by percussion.

Auscultation.—The object of auscultation is to ascertain and appreciate the nature of the various sounds which occur in the interior of the body, and its utility is limited to the pulmonary and circulatory organs. It consists in applying the ear to the part, or indirectly through the stethoscope. Before resorting to auscultation, it is absolutely necessary that the student or practitioner be thoroughly conversant with the *normal* sounds. This must be learned from the living patient, never from books or lectures.

Place your ear over the larynx and trachea of an adult male in perfect health, and you will hear two noises, one accompanying inspiration and the other that of expiration, called the laryngeal and tracheal sounds or murmurs.

Move the ear to the right or left of the manubrium of the sternum, and you will hear the same sounds diminished in intensity; these are the bronchial sounds or murmurs. Place the ear under the nipple of the right side, and two fine murmurs will be detected—normal vesicular respiratory murmurs—

keep the ear in the same place, and have the individual speak, and there will be a peculiar resonance of the voice called pectoriloquay or bronchophomy.

With regard to these healthy sounds, it should be remembered that vocal resonance originates in the larynx, and diminishes or increases, according to the distance of any point from the source of sound, and also to the power which the textures have in propagating it. Now in all affections of the lungs, these natural sounds are altered—new abnormal sounds are developed. The alterations of the natural sounds in diseased conditions may be increased, diminished, absent, or location changed; the most common alterations are in intensity, often stronger in one place than in another, or on one side (puerile respiration), indicating increased action at one part, and diminished action at another. There may also be an alteration in character, the sounds becoming harsh as in pneumonia; cavernous, when a cavity is formed, as in phthisis; amphoric in pneumo-thorax. There may also be an alteration in position; that is, that sounds which are natural to certain parts of the chest, are heard distinctly at places, where in health they are never detected. For instance in pneumonia, bronchial or tubular breathing may be evident where only a vesicular murmur ought to exist.

The inspiration in health is three times as long as the expiration, but in certain diseased conditions, this relation is altered or inverted. All the abnormal sounds may be classed under three heads; 1. rubbing or friction sounds; 2. moist rattles; 3. vibrating murmurs.

1. *Rubbing or friction sounds* are caused by some morbid change in the pleura, as effusion in pleurisy, where instead of sliding noiselessly on one another, they emit a rubbing sound like the rustling of two pieces of silk or brown paper, or grating, rasping, and between these extremes we have every intermediate degree of friction noise. The sound will depend upon what change the inflammation has produced, either a thin exudation, when the sound is soft, or the exudation is tougher or thicker when the sound will be louder; should it be hard, dense or rough, there is a harsh or grating noise present in the various forms of pleurisy and pericarditis.

2. *Moist rattles* are produced by bubbles of air traversing in a viscous fluid. They occur in the bronchial tubes, when they contain liquid exudation, as mucus or pus, or ulcers in some cases, so fine as to be scarcely audible (crepitating); so coarse as to resemble gurgling or splashing (cavernous), and between these two grades we may enumerate a large number of rules, as mucus, submucus, subcrepitating. For all practicable purposes, the term moist is applicable to all. These rattles are heard in pneumonia, phthisis, bronchitis, apoplexy.

3. *Dry vibrating murmurs* arise when the air tubes are obstructed, lose their elasticity, or are affected with spasm or thickening, whereby the vibrations into which they are thrown by the column of air produce tones of an abnormal character. The murmur is dry, and the fineness or coarseness of the sound will depend upon the calibre of the tube or cavity thrown into vibration. Murmurs may exist from a fine squeaking or a hoarse snoring, common in asthma, dry bronchitis, and emphysema.

Circulating organs in health or disease.—In putting our ear to the heart, we should pay attention to the impulse, to the character and rhythm of the sounds, to the place where they are heard loudest, and the direction in which they are propagated.

First find the spot where the apex of the heart beats against the walls of the chest; then listen to the sounds. Place the ear a little to the inside of the nipple, near the margin of the sternum, and listen to the sounds there; in the first position you will hear the systolic sound; in the second the diastolic sound.

There are two sounds then heard over the region of the heart. The first is dull, deep, more prolonged than the second, coincides with the shock of the apex of the heart against the thorax, and immediately precedes the radial pulse; it has its maximum of intensity over the apex of the heart, below the inside of the nipple. The second sound is sharper, shorter, more superficial, has its maximum of intensity nearly on a level with the third rib, and a little above and to the right of the nipple, near the left edge of the sternum. These sounds have received the names systolic (contraction) and diastolic (dilatation.) The two sounds are repeated in couples:—1. There is the long, dull sound, coinciding with the contraction of the heart. 2. There is a short pause. 3. The short, sharp sound. 4. A longer pause; all of which correspond with one pulsation.

With the systolic (contraction) sound we have the striking of the apex against the thoracic walls, then contraction of the ventricles, then rushing of the blood through the aortic orifices, followed by flapping of the auriculo-ventricular valves.

With the diastolic (dilating) sound, we have rushing of the blood through the auriculo-ventricular valves, and flapping together of the aortic valves.

In disease there may be a modification of the sounds heard in health, and also new or abnormal sounds developed. The modifications of healthy sounds are variations in their seat, intensity, extent, character and rhythm.

For example, the sounds may be heard at their maximum intensity lower than the natural point in cases of dilated hypertrophy of the left ventricle, enlargement of the auricles, or tumor at the base depressing the organ. They may be higher,

owing to some abnormal swelling, or more on one side than another by effusions of fluid or air in the pleural cavity, or tumors, aneurisms, deformity, &c.

The intensity and extent of the sounds may be diminished where the heart is atrophied or softened,—when there is a pericardial effusion, concentric atrophy of left ventricle, or emphysema. The intensity and extent of the sounds may be diminished where the heart is atrophied or softened; when there is pericardial effusion, concentric atrophy of left ventricle, or emphysema. The intensity and extent of the sounds are increased in cases of dilated hypertrophy, nervous palpitation, or when the adjacent parts of the lung are indurated, as in pneumonia and phthisis. The character of the sounds may be clearer or duller than in health, according as the walls of the heart are thinner or thicker. Often the sounds are muffled in cases of hypertrophy or softening of the muscular walls, or when there is effusion between the pericardium and heart. Sometimes they are rough, generally due to inflammatory change.

The frequency of pulsations varies in different affections. In certain diseased conditions, the beats are intermittent, in others irregular. There may also be a variation in sound; several sounds may be heard, then a sort of intermission depending either upon reduplication in the action of the valves when diseased, or on a want of synchronism between the two sides of the heart, sometimes from increased or irregular action of the organ, the sounds are bounding or tumultuous.

All the diseased or new sounds of the heart may be classed under two heads:—1. Friction murmurs. 2. Blowing or vibrating murmurs. The friction sound originates from inflammatory causes, same as friction sound in pleurisy. The vibrating murmurs depend on some organic change, generally the product of inflammation. These murmurs vary in character from a gentle blowing or puff from the nozzle of a bellows, (bellows murmur,) whilst others are harsher, grating or sawing; but all caused by some diseased condition of the valves. Sometimes the valves do not close, and as a result the blood regurgitates through them; in some cases the valves are constricted, indurated, roughened and calcareous. The abnormal sounds may be single or double, and have their origin either in the auriculo-ventricular or arterial valves, or in both. These sounds often resemble musical notes; more or less resembling the cooing of a dove, singing or whistling; all depending upon some excessive narrowing of the orifices, perforations of the valves, irregularities in their margins, or exudations on their surface.

Not unfrequently a soft systolic blowing is audible at the base of the heart, or over the carotids and deep jugular vein; sometimes it is continuous, resembling the humming of a top.

These murmurs are distinguished from valvular ones, by being systolic at the base of the heart, by their softness, by their not being permanent, by their occurring in anæmic or debilitated persons or young girls. On listening over the arteries, in the vicinity of the heart, we hear the same sounds, as are produced at the sigmoid valves, propagated along its course, but more distinctly as we move away from the base. Often we can detect a double murmur if near an aneurismal pouch. On applying the ear to the abdomen in health, there are gurgling and churning noises heard, caused by the displacement of gas and water, most audible after a cathartic.

In peritonitis, the friction or grating sounds are heard, owing to roughening of the peritoneum by inflammatory effusion. No conclusion as to the nature of the disease should be positively relied on by auscultation and percussion alone without a knowledge of all the circumstances of the case. They are only modes of reaching an end. There are also other valuable means of diagnosing certain diseases, as the diathesis, temperament, of the pulse by the sphygmograph; the kidneys by the chemical examination of the urine; the heat by the thermometer; the internal condition of organs by the endoscope; the amount of tubercular exudation in the lungs by the spirometer.

Temperaments.—No practitioner can be successful unless he possesses a thorough knowledge of the temperaments. They are divided into four, namely:

1. *The Sanguine.*—A vital temperament in which there is a florid complexion, expanded chest, great vivacity of disposition, a preponderance of the vascular system, whence the term plethoric, circulation full, strong and vigorous.

2. *The Bilious.*—A vital temperament, where the muscular system predominates. The body is remarkable for its compactness of fibre, indicative of strength and activity.

3. *The Encephalic.*—A temperament purely non-vital, in which there is a thin sharp outline, irregular and vivacious activity, great susceptibility of impressions, a predominance of the nervous over all other functions. The name has no diagnostic complexion—it may be either dark or fair.

4. *Lymphatic.*—Not a vital temperament, but one created by civilization, in which there is easily seen a full, soft, rounded form, and languid action.

It is a well-known physiological law, that if the respective parties to a marriage are similar or identical in temperament, so that no appreciable difference exists, sterility will be the result of the marriage; even though they be dissimilar in appearance, if they are made up of equal portions of the same temperaments, their union would be incompatible.

The sanguine and bilious are deemed the vital temperaments, for without the agency of one or other of them, there can be no reproduction or transmission of life. The *non-vital* lymphatic and nervous are supposed to be created by civilization and subject to change. The lymphatic and encephalic temperaments have respectively no diagnostic complexion. When they exist, they are founded on a vital temperament, and when that is bilious, the complexion is dark, when sanguine, fair. The non-vital temperaments have resulted from civilization, and are indispensable to a high state of advancement, and although they both possess feeble vitality in the abstract, still, from a combination with the vital temperaments, many a useful and ornamental modification of humanity are produced. If the vital or non-vital acquire a predominance, the tendency is to extinction.

The production of the non-vital is an important field of scientific discovery, involving the perpetuity of the civilized races of men. When the constitutional condition of married parties is nearly, though not entirely the same, offspring may result, but it will be scrofulous, idiotic, blind, deaf; will probably die in infancy.

The greatest difference that can be obtained between the respective sexes is that which obtains between a vital and non-vital temperament, and this difference is favorable to the elaboration of a sound viable progeny.

All marriages in antagonism to this law will entail on the offspring some unfortunate result. Children born from parents that are partly incompatible, possess a feeble organization which is liable to yield to the simplest forms of diseased action, and it is here that the scientific practitioner is so frequently baffled, and his best resources of no utility, for disease and death are stamped upon the very blood and tissues of children, the product of incompatible marriages.

THE PULSE.

The pulse in infancy is remarkable for its frequency, there being a gradual diminution to puberty, from which period to forty-five it ranges from seventy-five to eighty. From forty-five and upward there is a gradual decline.

In acute rheumatism, when frequent, remarkably full.

In all acute inflammatory diseases, generally firm.

Abdominal inflammations, small, very frequent.

In fevers proper, large and soft, or small and feeble.

In aortic regurgitation, hammering.

In hemorrhage, jerking.

In old age, and in all conditions of arterial degeneration, hard and unyielding.

In excitement, rapidity and shortness of stroke.

In all inflammations pertaining to the brain, remarkable for extreme frequency.

Cerebral disease, very unequal and depressed.

And if pressure on the brain, slow and labored.

Disease of the heart, irregular.

And in aortic regurgitation, remarkably faint and feeble.

Syncope and cholera, imperceptible.

And in all conditions of collapse, more or less faint.

When disease affects origin of subclavian on opposite side, pulse only found on one side.

In all conditions of depression, frequent.

Intermittent pulse depends either on cerebral disease or organic disease of heart, (generally valvular.)

Rule.—The more frequent the pulse, the greater the heat, the more rapid the respiration, the weaker the patient.

THE TONGUE.

Transverse fissure, intestinal irritation.

Longitudinal tracks, kidney irritation.

Sharp-pointed, nervous irritation.

Large flabby, glandular disease.

Red tip and edges, sharp-pointed, white coat in middle, chronic gastritis.

Smooth raw beef tongue, acute inflammation of stomach

A thin white even layer, gastric irritation.

Large, flabby, tremulous, creamy, delirium tremens.

Tremulous, and patient thrusts or darts it out, in chorea.

Buff coat, very dry, sharp-pointed, perhaps papillæ elevated, typhoid fever.

Thick coating in greatest extent, white or brown, in mal-assimilation.

Peculiar buff leather appearance, in cases of enteritis and hepatitis.

Dark or charcoal hue at root, blood poisoning.

Yellow or gingerbread, bilious.

Dark brown, malignant fever.

Strawberry color, surface generally coated, papillæ projecting remarkably, scarlatina.

A less projection, through a thin white coating still red, and moist often accompanies, hysteria.

Shining and glazed, especially when chapped, ulceration of bowels.

Apthæ and ulcerations, imperfect nutrition, mal-assimilation, the action of air and light, generates microscopic parasites.

Patchy tongue, chronic irritation of bowels.

Heavy white coat and occasionally red papillæ, gastric fever.

White mucus membrane elevated, very moist, gastric catarrh.

Tongue drawn to one side, caused by effusion upon base of brain on opposite side.

THE SKIN.

Peculiarity, thin and detached from subcutaneous structure in phthisis.

Some, but in a less degree, in all wasting disease.

A feeling of fullness and tension, in eruptive fevers, amounting to a sense of hardness in erysipelas, and producing a gritty feeling in small-pox.

Nails clubbed and hair falls off in tubercular disease. Hair falls off in secondary syphilis and in recovering from fevers.

Dry, harsh skin, most marked in children, in disease of abdomen, especially of a tubercular character.

Remarkably moist and soft, in delirium tremens.

Perspiration profuse and sour, in acute rheumatism. But in some of the most intractable forms of disease, it is also very sour; an excessive perspiration of any kind is often attended with milliary sudamina.

Colliquative sweats, constantly attend later stages of phthisis, and on profuse suppuration, such as lumbar abscess.

Rigor as in cutis anserinæ, is a common precursor of fevers.

The crackling feeling, emphysema, is very characteristic.

So is the doughy character and pitting under pressure, of anasarca.

Rigor occurring during process of inflammation, indicates formation of pus.

Slight rigor in heats and colds, indicates nervous depression.

Protuberant eyeballs, wasting of tissue.

THE APPETITE.

Becomes excessive in diabetes, voracious.

In mesenteric disease, craving.

When intestinal worms exist, capricious.

In hysteria, depressed, morbid, eating chalk, slate pencils, &c.

In pregnancy, fanciful longing for certain articles of food, apt to be abnormal.

In dyspepsia, very variously altered.

THIRST.

In diabetes, remarkably increased.

In cholera, very urgent.

In diarrhœa, urgent, but less so than in cholera.

Diuresis, with uncommon thirst, when there is no sugar in the urine, generally due to hysteria, not attended with hunger, low specific gravity.

ALTERATIONS OF COLOR.

In all varieties of anæmia, remarkably white.

In anasarca, from albuminaria, same.

Phlebitis, milk white.

Nervous irritation, marbly whiteness.

There is a certain yellowness of the malignant aspect, which is distinguished from jaundice by the pearly lustre of the eyes.

The yellowness of jaundice varies from a pale to a deep green yellow.

Redness of skin, when local indicates congestion, when general, is more frequently due to measles or scarlatina, or simply to febrile heat; it is the marked characteristic of erysipelas, erythema, gout and acute rheumatism.

In disease of the spleen, the skin has a muddy hue.

In Asiatic cholera, blue, also in forms of bronchitis, diseased heart, and in morbus ceruleus, cyanosis.

Livid in commencing gangrene, and might also some time be called livid, in disease of the heart.

Spots and patches of discoloration, valuable in recognizing certain fevers, purpura and scurvy, colica pictonum, nitrate silver, syphilis, and most cutaneous affections.

In Addison's disease, bronzed.

In a stage of shock, blueness of skin may be expected in many cases of malarial fever.

The skin is of a peculiar uriniferous color and odor in uræmia.

Purple spots or patches in purpura or scurvy.

SENSATIONS.

Flushes of heat, alternated with coldness, we find in nervous derangement.

An aura epileptica sensation, as of a gust of air on side of neck and head, or up the arm, and sometimes a creeping sensation up the leg, in epilepsy.

Numbness and pricking sensation, (as in a limb asleep), in paralysis.

There is a contrast in genuine cholera, between the corpse-like coldness of the body and the sensation of heat, with which the patient is oppressed. In diarrhœa, there is generally chilliness.

The common complaint in fever of chilliness when the skin is hot, is a sensation of an opposite kind.

The hypochondriac's sensations are opposed alike to the evidence of the senses and the conclusions of reason.

A patient's complaint of want of sleep, is almost sure to be exaggerated. The attendant's statement is alone to be relied on.

The sympathetic pains are important. Pain in the right shoulder is indicative of inflammation of the liver. Pain of the sacrum, of disease of the uterus. In the knee, indicative of in-

flammation of the hip; of the meatus, of stone in the bladder. At the orifice of the urethra, thigh and testicles, ovary, of inflammation of the kidneys, nephritis or nephralgia. In the cerebellum, of exhaustion of the lumbar portion of the spinal chord. A feeling, as though the upper part of the scalp is rising, indicates irritation of the pneumogastric nerve, and its recurrent branches. Drowsy, sleepy sensation (coma), is due to bile or urea in the blood.

Pain, anterior and posterior, over chest and abdomen, is indicative of carcinoma.

EMACIATION SEEMS TO AFFECT,

In phthisis, the arms and thorax most, face least.

In abdominal disease, the lower limbs and face.

In malignant disease, the general features. Increase of bulk becomes remarkable.

When upper half of body is anasarcous, and not the lower half, or when one limb is only œdematous.

When the head is enlarged, in chronic hydrocephalus.

When one side of the chest projects from effusion of fluid, or internal tumor, or one side of the abdomen from the same cause, the aspect is very significant.

A delicate appearance, with long fringed eye-lashes, often points out the tubercular diathesis.

Thickened alæ of nose and upper lip, of scrofula, most marked in childhood.

The pallor of anæmia, is very important.

In chlorosis, waxy, greenish.

In kidney disease, pasty.

A puffy appearance about the eyelids, along with anæmia, is an indication of albuminuria.

The sallow hue of malignant disease, appears to be only another form of anæmia.

In heart disease and chronic bronchitis, the blue color, especially of the nose and lips is remarkable, and contrasts strikingly with the dusky flush of pneumonia, or the hectic flush of phthisis.

In typhus, congested features and suffused eyes, are exceedingly characteristic.

Irregular habits of living, generally indicated by a bloated blotchy face.

In erysipelas, parotitis, facial paralysis, &c., the features undergo remarkable change.

POSTURE AND GAIT.

Inability to stand depends on weakness, vertigo or paralysis. In weakness and vertigo, the patient reclines, in paralysis, he sits.

In curvature of the spine and disease of the hip, the body is bent to one side.

In excitement, the gait is quick.

In debility, slow.

In diseases of the brain and paralysis, labored staggering or uneven.

In rheumatism and disease of joints, stiff and halting.

In chorea, constant moving.

In nervousness, tremor, and more especially in delirium tremens.

Tonic spasm occurs in tetanus, disease of the spinal cord, poisoning with strychnine, &c. When long continued, it is probably associated with inflammatory softening of the brain.

Catalepsy is a peculiar form of tonic spasm cramp is its mildest manifestation.

Clonic spasm occurs in epilepsy, eclampsia, chorea and hysteria; subsultus is also a form of clonic spasm, allied to tremor.

In mania and delirium, the muscular movements generally are exalted.

The muscular movements are diminished generally in idiocy and imbecility, and last in paralysis. A certain restlessness sometimes belongs to hypochondriacs, and more rarely to hysteria, allying them with delirium in the external manifestation.

POSITION IN BED.

Head chiefly elevated, in disease connected with the heart, less frequently in disease connected with the lungs.

Head leant forward, when there is a pressure on the trachea.

Patient may be unable to lie down from pain of head or giddiness.

Lying on the back, is the position of debility; it is then combined with listlessness. Also, position of paralysis, when combined with inability to alter it; also, if stiffness and pain in acute rheumatism, when chiefly characterized by stillness. Same position generally assumed in peritonitis, when combined with drawing knees up toward the abdomen.

A prone position is generally only assumed in abdominal spasm or colic, sometimes but much more rarely in consequence of the pressure of an internal tumor.

When fixed on one side, we may generally assume that the breathing is much obstructed in the lung of the side on which he lies; when he is unwilling to turn to either side, it is commonly from the sense of pain accompanying inflammation; pressure produces pain on the affected side, while turning on the opposite, causes a sensation of dragging; a doubled up position with or without vomiting is present in colic, the passage of a calculi through the ureter.

EXPRESSION.

In disease of the heart and in urgent dyspnoea, acute laryngitis, the face is remarkably anxious and contracted.

When there is much pain, especially in a vital organ, the face is pinched and contracted.

Immobility, most remarkable in catalepsy, or in states of unconsciousness, and perhaps under the influence of spasms, and in tetanus.

In nervous and hysteria, the opposite state exists.

By the swelling of œdema or erysipelas, the expression of the countenance is materially altered.

CHARACTER OF THE URINE.

In hysteria, remarkably pale, limped and abundant, but not persistently so. Low specific gravity, often as low as 8 and 10.

In febrile states, generally dark colored, with or without deposit, on standing.

When the watery portion is deficient and much acid is secreted, there is a copious deposit on cooling.

In disordered liver, it gives a red stain to the vessel in connection with the foregoing states.

In jaundice, presence of bile gives it a dark porter color.

If the blood is mixed with urine, it has a smoky color when acid; a pinkish hue, when alkaline; quite crimson, when much blood is passed.

Urine, very highly colored, depositing a copious brick dust sediment, being an excess of uric acid, present in all inflammatory affections, except nervous, due to a rapid waste of fibrous tissue.

We have this condition in its greatest extent or intensity in inflammatory rheumatism; urine, when depositing a white sediment, flaky or gritty, is indicative of an alkaline diathesis, and is always present in diseases of the nervous system.

CHARACTER OF THE STOOLS.

Simply watery, characteristic of diarrhœa.

Undigested food observed, when functions of stomach are impaired.

Fœces solid, condition of constipation.

In fever, ochrey color.

In cholera, resemble rice water.

In acute dysentery, scybalous lumps, with blood or mucous pus serum, product of inflammation.

In chronic dysentery, muco-purulent discharges.

When an internal abscess discharges, per intestinal canal, pure pus.

When blood is mixed with the injesta, in stomach or upper part of the canal, black and pitchy coffee grounds.

In hemorrhoids or hemorrhage, lower down in canal, more or less mixed with blood of a more natural color.

In deficiency of bile, clay colored.

When fermentation supplants digestion, frothy and yeasty.

Form of fæces altered, by a stricture of rectum.

Prostate gland being enlarged, fæces flattened.

Hepatic and pancreatic disease, fat in stool, of chopped spinach stools, irritation of the brain.

RESPIRATIONS.

A normal pulse divided by four gives you the number of healthy respirations per minute, provided there is no disease of heart, lungs, brain.

Stertorous breathing with coma, inflammation of the brain, apoplexy, and congestive fevers, such as typhus.

Respirations imperceptible in collapse, most frequent in fevers and inflammations generally.

Most embarrassed in spasm of the cardiac and bronchii.

Hurried or excited respirations in hysteria or nervous irritation.

TEMPERATURE OF THE BODY.

Normal temperature 98°, adult life, slightly increased in children and diminished in old age.

An increase of heat over 98° indicates diminished vitality.

99° to 100°, phthisis pulmonalis; from 100° to 103, a condition of inflammation or fever, favorable.

From 103° to 105° and upwards, decidedly unfavorable.

A diminution of temperature is remarkable in emphysema, atrophy of heart, cholera, collapse, &c.

URISCOPY.

The character of urine in health and disease, and mode of examination.—Healthy urine is perfectly clear and transparent, thin or mobile, and, like water, will drop readily from a tube, but after standing awhile a very faint, flocculent, bulky deposit appears at or near the bottom of the vessel, which cloud consists of a little mucous, with imperfectly formed epithelial cells, from the mucous membrane of the urinary passages and epithelial debris.

Urine may vary in color at different times in the same individual, which depends on the aliment eaten or drank, and varies in color from a pale straw to a brownish yellow tint. It is therefore very important to pay strict attention to the color of the urine, for by so doing, very important information is often gained, which may lead us at once to suspect the presence of certain substances, and convince us that others are absent.

The period of the day, the nature of the diet, the activity of the respiratory process, changes of temperature, and various other circumstances, tend to change the color of the urine.

Healthy urine has a very peculiar characteristic aromatic smell, which may be affected by many articles of food and medicine, such as asparagus, garlic, cubebs, turpentine, copaiba, and various other articles.

Healthy urine has a specific gravity, varying from 10.15 to 10.20, and a healthy man usually voids from forty to sixty ounces, or from 17,500 to 26,250 grains during twenty-four hours. Quantity of water averages about 20,000 grains in twenty-four hours, or 940 grains per 1,000 grains of urine, and may vary much in health, and at different periods of the day. Quantity of solid matter varies inversely as the water, from 600 to 1,200 grains excreted in twenty-four hours. Acids vary at different parts of the day.

EXAMINATION OF URINE.

Note its reaction, the quantity passed in the twenty-four hours, its specific gravity, and the amount of solid matter it contains. Also, apply chemical tests, and resort to microscopical examination, if there be any deposit. Chemical analysis alone, will reveal the presence of urea, uric acid, extractive matter, salts, sugar, albumen, bile. It is also employed for ascertaining the composition of certain deposits.

By the aid of the microscope, we discover various substances which are either not recognized at all without its aid, or are with great difficulty proved to be present. It is of the utmost importance in the diagnosis of disease to pay particular attention to the color and quantity of the urine, for by so doing, we shall be better prepared to form a proper diagnosis of the disease we are about to treat. Urine with a smoky tint is absolutely diagnostic of the presence of blood. A brownish green urine denotes the presence of bile. In fevers we generally have a high colored urine. A dark urine should be examined for pigment. Should the urine be turbid, when first voided, it is a mark of disease, and pus is the most frequent cause of this appearance, which denotes ulceration in some of the urinary passages. Urine with a high specific gravity, and of a darkish brown color, is indicative of the presence of sugar. When the solids as well as the water are greatly increased in quantity, and the urine of a high specific gravity, we should be led to fear the present existence of diabetes.

A deficiency of water in the majority of cases is associated with an abnormal quantity of solid matter. In chronic inflammation of the kidneys, the urine is of a low specific gravity, and but a small proportion of urea is excreted in the twenty-four hours. A deficiency of urea exists in those suffering from ovarian tumor or cancer of the bladder.

Albumen in the urine due to the changes in the kidney; in the majority of cases in which the urine contains a very large quantity of albumen, and especially if the urine be of a specific gravity of 10.20 or higher, and of a dark brown smoky hue, caused by the action of the acid of the urine upon the coloring matter of the blood. The inference will be that the attack is an acute one, and that this quantity of albumen has not been passing away from the kidney for any length of time. In very many of these cases, blood, numerous casts of the uriniferous tubes are present. Whenever blood escapes from any part of the kidney or mucous tract, albumen will, of course, be detected in the urine, for serum will certainly pass through fissures which permit the passage of red blood corpuscles.

Chylous urine, so-called, on the account of its resembling chyle, and having a milky appearance. Such urine under the field of the microscope, is seen to contain a considerable quantity of very minute particles, exhibiting active molecular movements, and a few granular cells very much like white blood or chyle corpuscles.

In atrophy of the kidney, the urine as a rule is abundant, being in some cases very copious, of a light color, and a low specific gravity, while it contains comparatively little albumen, or even none at times, with but few or no casts, these being chiefly hyaline and granular with but little epithelium or fat. At the close, the urine often becomes very scanty or suppressed. Dropsy is absent in a great number of cases from first to last, and as a rule is but slight, or is only observed at intervals. The skin is dry and harsh, but does not exhibit the pale, pasty aspect, and the face has often a sallow and pinched appearance.

Of the fatty enlarged kidney.—Fatty matter is found in connection with the vascular and secreting structures of the kidney in various morbid conditions, and sometimes in very large proportions. This morbid deposit may affect a portion of the uriniferous tubes here and there only; a few of the uriniferous tubes in one part of the kidney, or almost every one of them throughout the entire organ; and instances are not uncommon in which oil globules are present in large numbers in every structure of the kidney. The microscope shows a uniform distention of the renal cells. Fat may be present in the urine when it will exhibit a milky or chylous appearance.

When casts containing oil globules, or oil enclosed in cells, are found in any number in specimens of urine from the same individual, which have been subjected to an examination at intervals of a few days, with or without cells containing oil, and free oil globules among them, we cannot be wrong in concluding that the condition is one of fatty degeneration of the kidney.

Blood is frequently found in the urine; and before we can arrive at a proper diagnosis, it will be necessary to learn from whence it flows, and whether from the urinary organs or not, and should it proceed from them, does it flow from the kidney, from the bladder, the uterus, or from some other portion of the urinary passages. And what is the principal cause of the hemorrhage?

It is of the utmost importance for the practitioner to know at the onset from whence it is poured out, as blood may flow from the vagina or the uterus, and become mixed with the secretions from the kidneys; or it may have been added for the purpose of deception. It is very important, therefore, that in the former case, a careful and rigid inquiry should be made in regard to these organs, or if necessary a digital examination will reveal the source of error; and in the latter, the patient should be watched, and by drawing off his or her urine with the catheter, the imposture may be detected. After being fully satisfied that the blood proceeds from the urinary organs, the next point will be to ascertain where the lesion exists, whether in the kidney, the bladder or uterus, and in order to understand this, it will be important not only to understand the character of the urine excreted, but thoroughly to investigate all the conditions by which it has been brought about. Should the blood come from the bladder, we shall find that it is not equally diffused through the urine, that discharged first being clear or nearly so, but at the end of micturation is much deeper in color, or it may be pure blood in a liquid form or in clots; and there is usually pain over the region of the bladder which is aggravated by pressure; there is a frequent desire to micturate, and there may be a stoppage in doing so.

When the blood comes from the kidney there will be pain in the lumbar region, with other symptoms pointing to the affected organ, such as albumen in considerable quantities in the urine, or the passage of gravel We do not find clots in renal hemorrhage, excepting when the blood coagulates in the infundibulum or the ureter, when it will be gradually forced downward, which clots are of a whitish color, and most generally of a cylindrical shape, and in their passage toward the bladder they often cause very severe pain. To aid us in our diagnosis, the microscope is called into requisition, and by its aid, we discover that the epithelium which is mixed with blood is not flat and in scales, like that which proceeds from the bladder, but is small and more or less round, and sometimes blood globules are seen to be collected on casts which have been moulded within the renal tubes.

Casts containing blood globules are not unfrequently met with in the deposit of urine in acute nephritis.

Casts of the Uterus and Vagina.—Cells of scaly epithelium are commonly met with in the urine of females, and derived from the vagina; they vary much in size and form, and are sometimes very irregular in shape, with uneven ragged edges. A considerable thickness of the epithelial layer of the vagina, and also of the uterus, is sometimes shed in the form of a membranous cast or mould; are frequently met with in the urine of females, which very much resemble the layers of cuticle which are detached from different parts of the cutaneous surface after scarlatina.

Leucorrhœa.—In this disease many imperfect cells of vaginal epithelium are formed upon the surface of the mucous membrane, as well as pus corpuscles, and many pus corpuscles originate in the cells of vaginal epithelium, even after the epithelial cells have assumed their distinctive form, but many of the younger cells of vaginal epithelium, and those in the follicles of the mucous membrane, themselves divide and subdivide, giving rise at length to multitudes of the spherical granular cells known as pus corpuscles.

In Leucorrhœa, the character of the discharge depends upon the location of the disease. Inflammation of the neck of the uterus causes a discharge of white mucous. In vaginal inflammation, there will be a purulent discharge of a yellow or greenish color.

Urine containing pus, deposits an opaque creamy sediment or a glairy mass, is generally alkaline, and always slightly albuminous. If the deposit be agitated with an equal quantity of liquor potass, a dense gelatinous mass results.

SPERMATORRHŒA.

Mucous casts from the seminal tubes are sometimes found in the urine, and must not be mistaken for casts of the uriniferous tubes. The casts of the seminal tubes are usually much longer than those of the kidney tubes. Not unfrequently spermatozoa are packed together in great number, so as to form, with the mucous in which they are imbedded, casts of considerable dimensions.

Of Urinary Deposits.—Light and flocculent deposits, usually transparent, and occupying considerable volume. Under this head we include mucous, with different forms of epithelium derived from the kidney, ureter, bladder, urethra, vagina, &c. Certain well defined forms of fungi and vibrones, sarcinæ, spermatozoa, casts of the uriniferous and seminal tubes, rarely benzoic acid in small quantity.

Dense and opaque deposits occupying considerable bulk. This class includes only deposits of urates, pus and phosphates. Granular or crystalline deposits occupying a small bulk, sinking to the bottom, or deposited on the sides of the vessel.

This division includes a great variety of substances; among the most important are uric acid, oxalate of lime, certain forms of triple phosphates and phosphates of lime, cystine, carbonate of lime, blood corpuscles, very rarely cancer cells, tubercle corpuscles, and small spherical cells.

Altered pus may resemble mucous. It is therefore, very important, in making a diagnosis, to understand the nature and quality of the deposit. For many practitioners have taken the thick glairy deposit which is frequently found in the urine, originating from disease of the bladder, as mucous, when its real nature was entirely different. It in fact consisting of pus, altered by the action of carbonate of ammonia, having been set free by the decomposition of urea, caused by some animal matter acting as a ferment after the urine has left the bladder. This change in some cases takes place in the bladder itself, in consequence of which there will be an expulsion of a glairy viscid matter, which often gives rise to serious inconvenience, and frequently in attempting to draw off the urine with a catheter, the instrument sometimes gets completely closed or plugged up. Urine of this character exhibits a highly alkaline reaction, and evolves an ammoniacal odor, and frequently contains considerable deposits of crystals of the triple ammoniaco-magnesian phosphates, with granules of phosphate of lime.

ON THE EXAMINATION OF URINE.

The examination of urine, as before stated, is of the utmost importance to the practitioner, and as a rule is too much neglected by the profession of the present day. It gives the physician valuable information in other affections, aside from the urinary organs, hence the vast importance of paying strict attention to this branch.

It is not only the duty of the physician, but for the welfare of the patient, that he thoroughly and carefully investigate cases in which urine may be in excess or deficient in quantity; for it always betokens disease, and in many a very serious state.

Period when the urine should be examined.—In all cases the urine should, if possible, be examined within a few hours after its secretion; and in many instances it is important to institute a second examination after it has been allowed to stand twenty-four hours or longer.

For the examination of urine, the practitioner will require certain re-agents and apparatus for performing chemical analysis, as well as instruments for the microscopical examination of the salts obtained from the urine and urinary deposits; he should familiarize himself with the use of these as soon as possible, and in order to do so, he should in the first place very carefully

study the character of healthy urine. The result of every analysis and observation should be carefully entered in a note-book at the time it is made.

The instruments and re-agents required for the analysis of urine, are as follows: Balances and weights. Test tubes of various sizes, also a rack and drainer. Test tube holder; spirit lamp; water bath; conical glasses; porcelain evaporating basins; wash bottles, for washing precipitates on filters; glass funnels of various sizes; filtering paper, for the purpose of filtering deposits from urine; glass measures of different sizes; stirring rods, these are made of ordinary glass rod. Test paper, blue litmus and reddened litmus; thermometer; urinometers; and specific gravity bottles.

Re-agents for Examining Urine.—Liquor potass.; sulphuric acid; nitric acid; acetic acid; sulphate of copper, 50 grains to one ounce; nitrate of silver, 25 grains to one ounce.

Fehling's solution for the examination of diabetic urine is made as follows: 69 grains of sulphate of copper, are to be dissolved in 345 grains of distilled water; to this solution a concentrated solution of 268 grains of tartrate of potash, and then a solution composed of 80 grains of carbonate of soda in an ounce of distilled water are to be added; the mixture is then to be poured into a 1,000 grain measure and filled up with water;

Or, the following modification of Fehling's test:

Sulphate of copper, 320 grains.
Tartrate of potash (neutral), 640 grains.
Caustic potash (potassa fusa), 1,280 grains.
Distilled water, 20 fluid ounces.

Reaction of Urine.—Urine having an acid reaction, immediately reddens blue litmus paper.

The alkaline reaction always renders red litmus paper blue.

Test for Albumen.—A portion of urine is to be poured into a test tube and boiled, if any cloudiness appears, we are not to judge at once that albumen is present. But if the cloud is permanent by the addition of a small quantity of dilute nitric acid, it is due to the presence of albumen.

Should it be alkaline, it will be requisite to determine whether it is due to fixed alkali or ammonia, which is proved by drying the test paper, when, if the alkalinity depends on ammonia, this evaporates, and the paper is restored to its former color.

Urates, Phosphates, Pus.—The most important of this class of deposits are those of urate of soda, earthy phosphates, and pus. To the practitioner they are especially interesting, and as their presence in the urine is characteristic of morbid conditions differing widely from one another, while the appearance of the deposits to the naked eye is very similar, it is a matter of great

importance that he should be able to distinguish them with certainty, and at the same time with facility, and the following is a very simple method to distinguish them:

After the urine has stood for some time in a conical glass, the clear supernatant fluid is to be poured off, and a little of the deposit transferred to a test tube, and by the addition of about half the bulk of solution of potash, one of the three following points will be noted:

1. The solution of potash may cause the mixture to become clear, but not viscid, in which case urate of soda and ammonia enter very largely into the composition of the deposit.
2. No change will be produced, in which case the deposit consists entirely of phosphate.
3. The mixture will become clear, and very stringy or viscid, so that it cannot be poured from the test tube in drops. In this case, we may be certain that the deposit consists of pus.

If liquor potassa gelatins the mixture, but does not render it clear, it is probable that both pus and phosphates are present.

Acid urine is rendered neutral by the addition of liquor potass.

Urate of soda, lateritious, nut brown sediment, varies much in color. Uric acid; tests: soluble by heat, in potash, ammonia, water; decomposed by acid: uric acid set free.

Phosphates.—Urine usually alkaline or neutral. When triple phosphates alone are present, the urine is sometimes feebly acid. Tests: insoluble by heat or in alkalies; soluble in acids, and afterwards precipitated by ammonia.

Uric Acid.—Color characteristic, usually of a dark mahogany brown, sometimes paler, very seldom quite colorless. Large separate clusters of crystals; it rarely forms a glanular deposit. Tests: if it consists of uric acid, it will be insoluble in hot water, but soluble in alkalies, potash, soda, and ammonia. A portion of the deposit is to be dissolved in a drop of potash. The alkaline solution is then to be treated with excess of acetic acid; after the lapse of a few hours, crystals of uric acid will be formed, which must be examined microscopically.

To recapitulate; normal urine, is slightly acid, and increases in acidity by long standing. Where the presence of acidity only is sought for, without regard to the quantity, the urine may be tested with litmus paper. Neutral urine is normal urine very much diluted. The urine may be alkaline; its sources are blood and pus, and the decomposition of urine or carbonate of ammonia in the bladder; its determining cause is the action of the oxygen of the air upon the above-named substances.

The action of the principal re-agents employed in the examination of the urine:—

1. Specific gravity is low in chronic cases of Bright's disease; but high where there is an excess of urea or uric acid, with high colored urine.

2. Heat throws down phosphates and albumen, the former soluble and the latter insoluble in acid. It also dissolves urate deposits, but not those of uric acid or the phosphates.

3. Nitric acid precipitates albumen quickly, and uric acid and nitrate of urea more gradually. Nitric acid also dissolves oxalates, and earthy and alkaline phosphates; it also decomposes urea into carbonate of ammonia with heat, and carbonate of lime and uric acid, without the aid of heat.

4. Hydrochloric acid transforms urates into uric acid, and precipitates uric acid; it also detects indican by the violent change of color.

5. Sulphuric acid with the addition of sugar, changes the color of urine to crimson or violet, if bile be present.

6. Acetic acid precipitates deposit, if mucous be present.

7. Liquor potassæ precipitates earthy phosphates, turns the urine brown on boiling, if it contains sugar, dissolves deposits of urates and uric acid, and forms a gelatinous mass, should pus be present.

8. Liquor ammoniæ dissolves cystine and precipitates earthy phosphates.

9. Solution of chloride of barium precipitates phosphates and sulphates, the former soluble and the latter insoluble in acids.

10. Nitrate of silver forms a yellow deposit, if alkaline phosphates be present, and a white deposit, if chloride of sodium be present.

11. Alcohol or ether precipitates albumen, dissolves hippuric acid, but does not dissolve uric acid; ether dissolves fat.

From the foregoing, it will be observed that the tests for albumen are heat, nitric acid and alcohol.

The tests for urea and uric acid are high specific gravity, nitric acid, hydrochloric acid and liquor potassæ.

The tests for the phosphates are heat, liquor ammoniæ and the chloride of barium. The test for the sulphates is chloride of barium.

The test for sugar, is liquor potassæ.

Semen in the urine, when newly voided, appears milky, but becomes precipitated when allowed to settle.

In order to conduct the tests so as to insure accurate results, it is necessary, first of all, to ascertain its reaction on litmus paper, which, if the urine be acid, it changes red; but if alkaline, changes red turmeric to blue.

THE SPHYGMOGRAPH.

This is an instrument which has lately been invented for the medical profession, and certainly it is destined to prove of great service to the physician in aiding him to form a correct diagnosis and prognosis of all diseases that are dependent upon the circulatory system. By this instrument the various curves of the pulse are produced on paper, whether relating to the ascent, the descent, or the vertex of the curve, indicating all the changing curves from the normal pulse in health to the abnormal pulse in pathological conditions of the highest order. The sphygmograph is generally applied to the radial artery, and it is found that if both limbs are generally healthy, the tracings of the instrument on both sides will be the same.

1. The curve of all *normal* radial pulses is of an exquisitely tricrotic character, and is only modified by the influence of frequency and intensity of the heart contractions, which depend on age, state of nutrition and condition of the artery.

By repeated experiments, it has been demonstrated that the descending part of a pulse-curve, is the most important one. It shows two negative waves, each followed by a positive wave or ascent. A less essential ascent occurs sometimes at the bottom of the great incisure. In middle age, the normal radial pulse is either large, middle or small, with respect to intensity.

By applying sphygmograph, it will be manifest by the gradual alterations of the curve, that the small pulse is simply the concealed large modification, which differs from the middle pulse inasmuch as the first secondary wave is met with a little nearer the apex.

The wave exists in the middle pulse about equal height with the middle of the ascending limb of the whole curve. An inaccurate trace of the large pulse is likely to result from the weakness of the spring which must be strengthened, but so as not to retard the reproduction of the first secondary wave on the paper. The tracing lever has no movements of its own, but its regularity is disturbed by hiccough. The normal radial pulse in *old age* possesses its own specific character, as indicated; 1st, by the great dimensions of the curve; 2d, by the closer proximity, not only of the first, but of all secondary ascensions to the apex of the curve; and 3d, by the extreme predominance of the first secondary wave, the basis of which exceeds in length two to three times of the great ascension.

Similar to the radial pulse of old age, stands that which is met with in people not far advanced in years and suffering from hypertrophy of the left ventricle, and, next, that which accompanies insufficiency of the aortic valve.

The normal radial pulse of children, from two to about seven years of age, is distinguished by a wave which ascends rapidly,

and descends gradually by small undulations. In girls the first secondary wave appears to be more marked than in boys.

2. The curve of the *pathological* radial pulse. The individual disease cannot be recognized by the pulse *peculiar* to it, but the pathological changes which the normal curve of the radial artery undergoes, take place simultaneously with the changes ensuing in fever, and are indicated by the rise or fall of temperature. The transformation of the normal pulse-curve is effected according to the following law: the great incisure becomes enlarged at the expense of the adjacent secondary waves.

The dicrotic form is the center of all pathological pulses, distinguished by its great incisure, extending downward to the base of the curve, and by its smaller first secondary wave, and by its increased frequency, which causes the great ascent to appear more shifted toward the end of the curve. This type in fever is preceded by the hypodicrotic pulse, the great incisure of which does not reach yet to the base of the curve, while the great ascent is only a little retarded.

In the hyperdicrotic pulse, the lowest point of the great incisure is rounded off, and lies below the base of the curve; the first secondary wave is reduced in its size to a minimum. The great ascent, being assailed itself appears, by the again increased frequency, even more at the end of the curve.

In the highest paroxysm of fever, the great incisure and great ascent annihilate each other, and with the disappearance of the dicrotic form, the monocrotic pulse is established. The changes of temperature influence the pulse-curve in acute disease in a different manner than in chronic disease.

The radial pulse-curve in *acute febrile diseases of middle age.* In a febrile accession and rise of temperature to about 103.5° Fahr., the pulse assumes the hypodicrotic type, followed by the dicrotic form when between 103.5–105° Fahr. At this stage of the fever, the first secondary wave has lost much of its amplitude and energy, while the great ascent having gained in strength, makes the dicrotism easily perceptible to the finger. This has been observed in pneumonia, pericarditis, &c., as well as in typhus.

Exceptions to the rule are due to a disturbed innervation of the system of circulation.

If the fever exalts the temperature above 105° Fahr., the pulse becomes hyperdicrotic. If quinine has been given, the great incisure is not rounded off, but more pointed at the lowest point, and the retrograde metamorphosis to the dicrotic pulse, at the end of the paroxysm, tends to prove that the great ascent has never been completely conquered by the great incisure.

A pulse at 106–108° Fahr., exhibits the more or less perfect monocrotic type; it often appears only to usher in death.

The radial pulse-curve in chronic febrile diseases of the middle age. The normal radial pulse-curve is found at or even below 97° Fahr. This will be reduced the longer the duration of the fever is, and the more the organism is undermined.

The radial pulse-curve in febrile disease of old people commencing about fifty or fifty-two. Following the foregoing rules, the result is modified by the character of the pulse peculiar to old age. The first secondary wave being prominent, may lose its size considerably, while the great incisure increases, but the tricrotic character of the curve will remain better and preserved for a longer time. The pulse-curve of persons with insufficiency of the aortic valve, if affected with febrile disease, is similarly attacked.

ENDOSCOPE.

This new and highly valuable instrument consists of a lamp placed in the vertical position, having its light reflected by means of a mirror fixed at an angle of 45° down a tube, but which can be turned to any angle in the vertical plane. But to furnish a detailed description of the instrument would be foreign to our purpose, which is rather to consider the diseases in which its use is of advantage. We may remark, however, that the success of the exploration depends on the accurate adjustment of the apparatus.

The endoscope, though not meant to replace the ordinary methods—those derived from touch—yet it is of peculiar value in certain conditions of the urethra. In stricture its employment furnishes us with the evidence as to the color and configuration of the face of the stricture with the position of its orifice; points highly important with a view to the diagnosis of the case. During the transition from the period of ulceration and granulation to that of cicatrization the mucous membrane loses its pink or red color and becomes pale or grayish.

Cystitis, a common complication of gleet, the endoscope shows to depend on granulations in the bulb or prostatic urethra. In recent cases the tendency can be cured by destroying the granulations. Cystitis can also be diagnosed by endoscopy when resulting from the herpetic condition of the urethra.

To discriminate between the tubercular affection of the testicle and chronic gonorrhœal orchitis, the use of the endoscope is often indispensable. A hypersecretion from the urethra may occur in lymphatic constitutions, without any lesion. This condition can also be recognized by the endoscope and demands tonic treatment. The diagnosis between the tumor and columnar bladder is greatly facilitated by the use of the endoscope.

Calculi can easily be seen in the bladder, and even then volumes can be obtained by counting the number of times which the field of the instrument is changed in passing over their surface.

The number as well as the size of the stones can be ascertained by this instrument.

But the utility of the endoscope is not limited to diseases of the urethra. It may be applied to any portion of the human body into which a straight tube can be introduced. With it the interior of the bladder may be minutely examined, should the presence of tumors, ulcerations and calculi be suspected. The rectum can be searched for ulcerations, constrictions, tumors and other morbid affections. But the cavity of the uterus, the auditory meatus, nasal fossæ, the pharynx and larynx can also be explored.

The endoscope is also valuable in the case of wounds, especially in deciding as to the presence or absence of a foreign body.

The endoscope is destined to become as highly prized as the laryngoscope and opthalmoscope are at present, and even more so, inasmuch as the former is not limited in its application to one organ, but can be employed to any part containing a cavity through which a straight tube can be passed.

SPIROMETER.

Is an instrument for measuring the volume of air expired from the lungs. Each stage of phthisis diminishes the volume of expired air. The quantity of air expired after *complete* inspiration is termed the vital *volume* or *capacity*. The vital capacity always increases with stature, but only slightly affected by weight.

Females measure less than males (some ten or twelve per cent.), and either sex gradually decrease in lung capacity after the prime of life, 40 to 45 years of age.

The extreme breathing capacity is diminished by *obesity*. By extreme breathing capacity is meant the volume of air which can be expelled from the lungs by the most forcible expiration, after the deepest inspiration. A man whose height is between five feet seven inches and five feet eight inches should breathe in health two hundred and thirty cubic inches, and the ratio increases according to stature, thus:

For every inch in height between five and six feet the extreme breathing capacity is increased eight cubic inches.

The breathing capacity is modified by any abnormal condition which interferes with the mobility of the thorax or the dilability of the lungs. Phthisis pulmonalis is the most prominent of these morbid conditions, and the variations in this disease may be epitomized thus: Ten cubic inches below the due quantity, *i. e.*, two hundred and twenty instead of two hundred and thirty inches, need not excite alarm; but there is a point of deficiency in the breathing volume at which it is dif-

ficult to say whether it is merely one of those physiological differences dependent on a certain irregularity, or a deficiency indicative of disease. A deficiency of fifteen per cent. or upwards is suspicious, and unless the patient is exceedingly fat, is probably the subject of disease. On the other hand an individual having phthisis may have only ten per cent. of the full vital capacity and yet life be maintained.

Every inch of tuberculated lung will insure a decrease of forty cubic inches in measurement. If the deficiency in any case does not indicate more than ten per cent. less breathing capacity than the physical conformation would indicate, there is no real cause of apprehension, but if the deficiency exceeds fifteen per cent. the subject of it should lose no time in securing medical aid.

MICROSCOPE.

A thorough knowledge of the structures of the human body is now (compared with former times) so complete that the microscope is an indispensable agent for the medical practitioner to possess. The best microscope for the anatomist and physiologist is an instrument of sufficient power, from 250 to 300 diameters, one that combines steadiness, power of easy adjustment, facility for observation, demonstration, and portability.

For the purpose of obtaining a perfect diagnosis, it is indispensable that a complete knowledge of the tissues, both in their healthy and diseased conditions, should be acquired, but such knowledge can never be obtained without the aid of the microscope.

Perhaps in no disease is its value better illustrated than in that of cancer, for the varieties of cancerous growths are based on the different microscopic appearances of their minute structure. Moreover, the microscope often reveals the existence of a cancerous deposit in surrounding textures where it would not be suspected.

ELECTRICITY.

This is a valuable aid to diagnosis in some diseases, and when used, the positive pole of the battery should be applied to the spine or origin of the nerves. The best mode of application is by wet sponges. In atrophy of muscles, if there is an entire loss of contractile power (electric muscular contractility), we have reason to suppose either that the muscular fibres have degenerated into fat, or that a complete breach of nervous influence has occurred. In incipient phthisis, the positive pole to the spine, and with the negative bath to the chest, how quickly and instinctively will the patient complain of soreness when

we reach or touch the tender point; the place where tubercular exudation is taking place. Electrization is sometimes valuable for diagnostic purposes, e. g., the atrophied muscle of rheumatism contracts well under the galvanic stimulus, whereas it has an opposite effect in fatty transformation of the muscular tissue.

The electric fluid may be communicated by points, sparks, or by shocks, according as a greater or less intensity is required. Electricity acts as an excitant, counter irritant, and it acts on the economy by increasing or decreasing the quantity of positive or negative electricity the human body may contain. When it increases the positive electricity it diminishes the negative, *et vice versa.*

PROSTRATION OR SHOCK.

This is a state that signifies great depression of vital power—a condition that follows any accident or injury, the inhalation or absorbing of any poison, the effect of any depressing passion or excess.

Symptoms very variable, usually we find them lying cold, shivering, half unconscious, feeble pulse, sighing respiration. If the vascular system is chiefly affected, perfect syncope, pulse respirations imperceptible; if the nervous system, patient bewildered, incoherent, comatose, perhaps spasm, vomiting, paralysis of sphincters, comatose.

The duration is variable, depending on the power of vital resistance on the part of the patient and amount of violence inflicted or poison absorbed, from a few minutes to 48 hours.

The mode or manner of recovery from a shock is termed reaction—everything depends on the nature of that reaction. If it is perfect, we have *recovery;* if it is altogether wanting, we have *fever.*

The indications in treatment are to stimulate the vital forces to healthy reaction. If the patient is cold, shivering, respirations and pulse feeble, diffusible stimulants should be administered, as brandy and water, capsicum, ammonia, hot bottles of water inside of the thighs, cupping along each side of the spinal column, general puerperal stimulation; if incapable of swallowing, remedies should be administered by rectum. The grand idea being to establish an equilibrium in the body, care being taken not to stimulate and thereby produce additional exhaustion or excitement; in other words perfect reaction is desirable, so that fever, the condition of imperfect reaction, may be obviated.

FEVER.

Fever is a condition of imperfect reaction, a salutary effort of nature at elimination or repair, not a disease but an effort. It is invariably preceded by a shock, general or local, of long or short duration, followed by a fever, pain in the head, back, calves of the legs, general derangement of the secretions, high heat, frequent pulse and respirations.

The chief exciting causes of all forms are anything that has a tendency to impair the functions of the body as shock from cold, wet, damp, mechanical irritation, poisons generated by decomposing organic matter or otherwise, the miasma of sewers, putrid marshes, crowded abodes, specific poisons.

Those and other poisons gain access to the body either through the skin, bronchial mucous membrane, and especially the salivary glands of the mouth. There are two things necessary to poisoning, not only the poisoning but the person acted on. It is only on a pre-disposed or devitalized body that a poison acts. Living in poisonous districts, we constantly take in small doses of the poison, but the vital forces eliminate. It is only the exhaustion of vitality that allows the poison to do its work.

Fevers are either idiopathic, that is, produced within the body itself, out of its own substance, or symptomatic irritation reflected from a wound or amputation. Besides these two conditions there may be immaterial forces; these are only known to us by their association with ponderable matter.

That the poison gains access by the salivary glands of the mouth and is swallowed, is apparent by the disturbance of the stomach. Once the poison has gained admission and is diffused by the circulation through the system, its effects are to disturb the vitality of organic living matter with which it comes in contact. The destruction is interstitial, kills only certain constituents.

General nervous depression is the characteristic of all fevers. There are invariably rigors; any severe shock, an operation or absorption of poison causes more or less of a rigor in proportion to the sensitiveness of the individual. Pain is but a symptom of depression, partial death, nausea, loss of appetite, vomiting, diarrhœa, headache, &c., simply evidence of diminished vitality.

In fever we have a diminution of evaporation, the dormant skin does not act as a refrigerator, destructive metamorphosis is great, the semi-vital chemical changes raise the temperature.

Whenever we have rapid changes, the temperature is raised, the passage of organic into inorganic matter is indicative of an advance of death, the frequent respirations, the dry, dormant skin and torpid liver, &c., give us the increased heat.

The prognosis of fever will depend altogether on the amount of vital depression present.

The treatment of all fevers is based upon one fundamental rule; stimulating the vital forces to healthy reaction—see where vitality is wanting and aid in supplying it.

An early condition, even in the stage of shock or incubation, is the lowered vitality of the stomach; how poorly it digests food; how it loathes to work. The poison that produces the fever, mixed with the saliva, has descended and may multiply its germs in the gastric mucous. At an early stage, even before or after the virus has commenced to operate on the system, the fever may be often stayed by emptying the stomach with an emetic. So that the patient should drink freely of tepid water, with bi-carbonate of soda, and then appropriate doses of green lobelia and bayberry should be given so as to produce free and copious emesis, and, in some fevers, as a means of breaking up or cutting short, may be repeated daily. Succeeding the emetic, an alcoholic vapor bath. The skin is dry and hot from deficient perspiration and evaporation on the surface of the body.

If this form of bathing is not admissible, sponging should be resorted to three or four times a day with tepid water, to which bi-carbonate of soda should be added. In some cases vinegar is a good addition. The relief given is most sensible and immediate. The patient should be well dried, then rubbed briskly with the dry hand so as to stimulate the periphery of nerves, that the stimulus should be reflected to the brain and thereby vitality increased.

In exhausting fevers, like typhoid, much advantage is derived after the sponging by anointing the body with sweet olive oil. This supplies the place of arrested sebaceous follicles and softens the skin for the exhalation of water.

Oil and water are perfectly compatible in the living tissues.

Perfect rest in the recumbent position should be rigidly observed in all fevers. It is productive of life; symptoms become ameliorated. Fresh air, great cleanliness, thorough sanitary and hygienic measures, good nursing, day and night, should be inculcated.

Physiological chemistry explains the necessity of drink in fevers. Water requires to be in excess of the demand; acidulated drinks of hydrochloric or acetic acid enable the albumen to be acted on by the gastric juice. All acid substances have the power of increasing the alkaline secretions. Ease of mind and cheerfulness promote vitality, aid in the restoration of the

body; normal warmth promotes reconstructive growth. Depression lowers the power to produce heat, or it is produced in any irregular way. Artificial heat is therefore a means of renewing life. Blankets, silk, &c., for clothing, conservators of heat; such covering is impervicus to atmospheric changes. Cotton and linen should be avoided. Heat to the extremities in all fevers; it is readily assimilated and acts as a tonic.

In fever the nitrogenous tissues are devitalized, drained away, and it is highly important that they should be replaced as rapidly as possible.

Small doses of nitrogenous aliment should be given frequently. These pass over the irritated stomach unconsciously and are taken up by the intestines, requiring very little to make them fit for absorption. The most suitable food is milk. It forms the most appropriate nourishment for the debilitated viscera of the fever patient. Two or three ounces should be given every two hours, with a small quantity of lime or soda water. If it disagrees, substitute beef tea for the milk. If the patient gets either a good supply of milk or beef tea it renders the dangers of the fever less formidable.

Eggs and oysters are highly nutritious food if taken raw. They are quickly absorbed; but if they are delayed and putrefy, the products of their decomposition are peculiarly injurious; the sulphuretted hydrogen and ammonia evolved are poisonous to the intestines. Eggs and oysters should therefore be avoided until convalescence has restored the gastric powers.

As to the use of alcohol in fevers we must be guided entirely by the condition of the nervous system—by the amount of destructive metamorphosis going on. If there is complete prostration or low muttering delirium it is required; if there is a tremulous state of the muscles, a sharp, weak, unequal pulse or a destructive metamorphosis going on, give this powerful anæsthetic, this arrester of change.

In our pathology of fever we have a condition of vital depression (nervous), and in order to meet this condition we must use arterial sedatives, as aconite, veratrum, digitalis, gelseminum, a class of remedies calculated to stimulate the brain. Arterial sedation with those remedies must be rigid, the circulation well equalized, convalescence established upon tonics.

Fevers are usually divided into *continued*, *intermittent*, *remittent*, *eruptive*, *surgical*.

EPHEMERAL FEVER.

One day fever, usually caused by cold, wet, mental depression. All the symptoms of fever are well defined—headache, pain in the back, legs, increased action of the heart, lungs, high heat, general derangement of the secretions, anorexia. In the course

of from sixteen to twenty-four hours symptoms yield to gentle perspiration, which lasts a few hours, leaving no trace of fever but a slight debility.

It is a fever easily recognized by the history of the case, by its short duration, by its common occurrence in children and nursing women.

Treatment.—A warm bath; an emetic, if there is nausea; open bowels, with neutralizing mixture and leptandrin; enemas; rest in bed. Then add half drachm tincture aconite to four ounces of water and give teaspoonful doses every half hour until perspiration takes place, subsequent to which the fever declines.

If it takes place during lactation an arrest of secretion in the mammary gland takes place, in which case a mixture of belladonna, muriate ammonia, should be applied.

Convalescence should be established upon nutritious diet. Elixir of cinchona or Beach's Wine Bitters should be administered in teaspoonful doses.

GASTRIC FEVER.

So-called, because it is induced by a shock to the stomach.

It is caused by anything that will irritate the stomach, as pastry, cabbage, nuts, candies, alcohol. There is a period of incubation during which the child suffers from languor, lassitude, debility, nausea, vomiting, followed by rigors, and a fever, nausea, vomiting, pain over the region of the stomach, acid or fœtid breath, white-coated tongue, &c.

Its duration is from seven to fourteen days. It terminates in recovery or some other type of fever.

It is easily recognized by the history of the case, derangement of the stomach, nausea, vomiting, white coat on tongue, the irritation of the brain, and the absence of any other type of fever, and also that it is peculiar to children.

Treatment.—An emetic of the wine of lobelia to remove offending material from the stomach, followed by alkaline bath, bowels to be opened with enemata. Neutralizing mixture should be administered freely, beginning with teaspoonful doses; repeat every three hours until the rhubarb appears in the stools, then administer in five drop doses so as to get the secondary action of the drug, which is tonic and astringent. The fever should be controlled with tincture aconite alkaline, sponging, diaphoretic teas for drink. Diet, milk and lime water. Stomach should have rest.

As the fever declines, such tonics as the wine bitters, elixir cinchona, sulphate cinchonine, should be given.

BILIOUS FEVER.

A form of fever induced by depression of the liver. It is generally caused by eating carbonaceous food, alcoholic drinks, malaria—by anything that will depress the liver. It is easily recognized by nausea, vomiting, brown-coated tongue, yellow skin, conjunctiva, coma, &c.

Symptoms.—There is a shock, a period of incubation, in which there is languor, lassitude, debility, nausea, vomiting, brown-coated tongue, yellow skin, pain, perhaps, over the region of the liver and shoulder, or there may be diarrhœa or constipation.

In the treatment of this fever an emetic of the compound powder of lobelia, followed by suitable doses of the compound powder of mandrake to act on the liver; an alcoholic vapor bath; then rest in bed; control the circulation with one or two drops of the tincture of veratrum every hour. Diet, milk or farinaceous food. Stimulate the depressed liver with either podophyllin or soda or nitro-muriatic acid. As soon as the fever is controlled establish convalescence upon tonics.

INTERMITTENT FEVER.

Malarial fever or ague, a form of fever prevalent in all countries where the temperature of the atmosphere exceeds 75° or 80°.

Cause.—Decaying vegetable matter acted on by solar heat, operating on a predisposed patient—one rendered so by fatigue, mental exhaustion, intemperance, &c.

The experience of all ages clearly shows that the miasma of decaying vegetable matter, when taken up in the human body produces intermittent and remittent fever. The precise nature of the germs evolved by heat is not clearly established, although it has been clearly demonstrated that it is no known gas, but some spore or germ. Vegetable decomposition is the source of the poison, for the special morbific influence is no where so powerful as in the vicinity of stagnant water filled with debris, marshes, &c. From these organic germs are evolved; ponderable, because those who sleep on the ground or in the lower apartments of dwellings are more likely to become affected. Those germs, though weighty, are often (in highly rarified atmospheres) diffused over extensive areas of country, and attain higher altitudes. Fires either destroy or disperse it, hence large cities are almost exempt from the action of the poison, unless in the suburbs.

The effect of trees in intercepting miasmata is most remarkable, and it is probably due to their power of condensing or absorbing the vapors, and also to their influence in altering the current of the air.

Malarial germs are taken into the human body by the skin, bronchial mucous membrane, but especially by the salivary glands of the mouth, swallowed into the stomach, thence taken up by circulation, and produce the following toxical results:

1. Irritation of the brain, more or less, according to the amount of poison and power of vital resistance.

2. After some time a peculiar form of blood disease is engendered. That fluid becomes fibrinous or clotty, dark colored. There is a natural tendency for such blood to coagulate in the delicate interstitial structure of the brain, in the granulated structure of the liver and kidneys, in the very vascular structure of the spleen, and even to adhere to the walls of blood vessels. When this condition has lasted some years a condition of leucocythemia, or white cell blood, is engendered.

3. This white cell disease of the blood is properly the third stage and is brought by the action of the poison on the blood, but especially by the spleen being infiltrated with this thick or fibrinous blood, enlarged, indurated, caked, or hypertrophied; it fails to raise the standard of white corpuscles to red.

This fever is easily recognized by the paroxysms occurring with periodicity, being ushered in with rigors and terminating in critical sweat. During the remissions there is an interval of good health, but at the end of a certain interval the phenomena are repeated.

The characteristic of this fever is its periodicity—its paroxysms occurring at longer or shorter intervals, but most recurring every twenty-four, forty-eight or seventy-two hours. The twenty-four hour type is the *quotidian*, the forty-eight hour type the *tertian*, and the seventy-two hour the *quartan*. In the first species the interval is twenty-four hours; in the second forty-eight hours; in the third seventy-two hours. The period between the termination of one paroxysm and the commencement of the next is the intermission. In quotidian the paroxysms occur for the most part in the morning; in tertian, at noon; in quartan, the afternoon. Besides these forms we have cases occurring once a week, once a month, once a year. Any type may take on a double form.

Symptoms.—This fever may set in suddenly, or it may come on gradually, with a feeling of general indisposition, which at the end of a few days culminate in a regular paroxysm. An ague fit is composed of three *stages*, the *cold*, *hot* and *sweating*. The cold stage is ushered in with feelings of languor, lassitude, debility, headache, pain in the back and legs, chilliness. These sensations, as of cold water running down the back, shivering; the skin is shriveled; papillæ rendered prominent; goose skin or cutis anserina from irritation of the nerves that supply the microscopical muscles of that gland called the arrectores

pilorum. The teeth chatter; the nails turn blue, and the whole body is shaken; there is exhaustion; often urgent thirst; the countenance is anxious; the features contracted; eyes dull and sunken; pulse feeble; respiration hurried or oppressed; mental irritability. The duration of this stage varies from a few minutes to several hours and is succeeded by the hot or febrile stage.

Then all the symptoms of fever are well defined; increased respiration; more frequent pulse; elevated temperature; pinched mouth; excessive thirst; painful sense of fullness in the head; great restlessness; irritability; sometimes delirium. This stage may last a short time or some hours. Then follows the sweating stage, beginning with a slight moisture on the forehead, then over the entire body. Then all the symptoms become ameliorated, and the patient feels in perfect health until another paroxysm takes place.

Effects.—Irritation of the brain, liver, kidneys, with diseased spleen. The spleen indurated, enlarged, caked; in all conditions of shock or prostration there is a determination of the capillary circulation to the internal viscera; the spleen, the safety-valve of the heart, suffers, from the blood being driven inward, great congestion. It is true the enlargement subsides during the intermission, but repeated attacks give rise to hypertrophy, besides the blood being extremely fibrinous. A *stasis* takes place in its fine structure, so perfect consolidation and inability to elevate the white corpuscles; liver, kidneys, suffer similar morbid changes.

Treatment.—In the general management of this fever the diet should be good and nourishing; clothing warm; rest in the recumbent posture inculcated. The paroxysm should be treated as follows: In the cold stage the feet should be placed in warm mustard water and the patient caused to drink freely of some warm tea, as boneset, or capsicum; or, if the patient is feeble, wine-whey may be freely allowed, while the application of external warmth is to be assiduously employed by means of warm clothing, hot bricks to the feet, or alcoholic bath. The latter may be easily prepared by means of a long wicker-work cradle, closed at one end by a board. This is laid over the patient and covered with blankets; a curved tin tube is then passed through a hole in the center of the board, the other end of the tube expanding into a bell looking downward, and having a spirit lamp placed beneath it; and thus the air under the wicker-work soon becomes very hot. As soon as the fever appears the extra covering should be removed, cooling drinks administered, the body sponged with tepid water; from one to three drops of either the tincture of aconite or veratrum should be given every half hour until the fever subsides: heat to the

feet. When the hot has subsided into the sweating stage the action of the skin should be encouraged by an infusion of asclepias. Emetics are most valuable at the outset, and should frequently be given, and the secretions regulated, especially if there is derangement of the alimentary canal. For the purpose of stimulating the vital forces to eliminate or overcome the poisonous character of those germs, medical agents for the purpose should be given during the remission and continued for several days in succession, taking care that two or three doses should be given during that stage.

The following is excellent:

℞.—Sulph. quinine,
Prussiate iron, āā, grs. xii;
Podophyllin,
Gelsemin, āā, grs. j;
Capsicum, grs. xxv.—*Mix.*

Make six powders and give one at a dose, so that the patient will take three before the chill; or the following:

℞.—Sulph. quinine,
Prussiate iron, āā, grs. xx;
Podophyllin,
Gelsemin, āā, grs. jss;
Oil black pepper, drops x.—*Mix.*

Make twenty pills and give two at a dose, so that the patient takes six before the rigor.

Sulphate bebeerine may be substituted for the quinine, if there is any idiosyncrasy to cinchona, but it is a remarkable fact that cinchonism is less readily produced in ague than in any other affection.

The salt of the willow bark (salicin) and the active principle of the dogwood (cornin) have been highly lauded by some, but they are by no means efficacious drugs.

The following is deemed excellent:

℞.—Salicin,
Cornin,
Eupatorin per.,
Citrate iron, āā, grs. xx.—*Mix.*

Make six powders. Give as above; or,

℞.—Chinoidin,
Capsicum,
Salicin, āā, grs. x.—*Mix.*

Make ten pills; one every hour during the intermission.

An excellent mode of procedure, where cheapness is an object, is the following:

℞.—Pulv. cinchona,
Cream of tartar,
Pulv. cloves, āā, ℥i.—*Mix.*

Dose.—From a half to one teaspoonful every three hours in a glass of water.

It is satisfactory to know that ague can be effectually broken up without cinchona.

Begin treatment with an emetic, cathartic, alcoholic vapor bath, perfect rest in bed. Then give from five to ten drops of tincture of the green root of gelseminum every hour until the physiological effects are produced, afterwards at longer intervals. A rapid cure is the result.

Another excellent plan is to give the following:

℞.—Tinct. capsicum, ℥iv;
Hydrocyanic acid, dil., gtt. xv.—*Mix.*

One teaspoonful every two hours during the intermission in a decoction of boneset.

Hypodermic injection of one grain quinine in solution over the deltoid muscle is an excellent proceeding. Same rules as for the anti-periodic powders. Indeed, any remedial measure calculated to impart more vitality to the brain may be regarded as a means of cure.

If the patient has suffered from the fever a few weeks or months, the blood has taken on its peculiar pathological condition, thick, black, clotty, then to the above remedies *alkalies* must be added. This is indispensable, hence common salt, cream of tartar, bicarbonate of potassæ, sulphate or phosphate of soda must be administered freely, because it is impossible to aid the vital forces to recovery unless we chemically change this fibrous condition of the blood, so we find the following efficacious:

℞.—Huxham's tinct., bark, ℥iv;
Tinct. capsicum, ℥j;
Chloride sodium, (common salt,) ℥ii.—*Mix.*

A teaspoonful every three hours; or,

℞.—Syrup boneset, Oss;
Common salt, ℥j.—*Mix.*

A tablespoonful as above.

In the second stage these alkalies in some form should be given.

In recovery from the first and second stage of the fever a tonic treatment should be persevered with for a month or six weeks, as a tablespoonful of the wine bitters, or a teaspoonful of the tincture of bark before meals.

In the third stage, where the brain, liver, kidneys and spleen are seriously implicated—where the spleen is hypertrophied—fails to raise the white corpuscles to red, white cell blood, a general alterative tonic, hygienic and dietetic course of treatment should be inculcated and persevered with for some years. Alkaline baths, irritating plaster, &c., a high standard of health, good diet, warm clothing, abundance of sleep, are our best prophylactics.

REMITTENT FEVER.

This fever bears a resemblance to intermittent in its cause and effects. It is a form of continued fever, characterized by remissions. There is no cessation of the fever, simply an abatement or diminution. The period of remission varies from twelve to twenty-four hours, at the end of which time the feverish excitement increases, exacerbation being often preceded by chilliness and rigors.

The cause of this special type of fever is malarial and paludal poisons acting upon an impaired or shattered nervous system. This form of fever varies much in severity according to the locality in which the poison is generated, in some sections being mild, in others it acquires a bilious and malignant form, and is very severe and fatal, hence there are many names for the fever, as remittent, bilious or malignant.

Symptoms. — The paroxysm of remittent fever commences usually with chilliness, languor, lassitude, mental depression, a feeling of cold down the back, and headache. To these sensations soon succeed febrile symptoms, constituting the hot stage, the prominent phenomena consisting of great heat of skin; severe headache and giddiness, often accompanied by delirium; a frequent and full pulse; a dry and furred tongue; nausea and vomiting, generally of bilious matter; sense of pain at the epigastrium, and tenderness on pressure, with signs of pulmonary congestion, great dyspnœa, a feeling of oppression at the chest, cough, and a livid color of the countenance. The urine is often scanty, high-colored, and loaded with lithates; but it is passed in increased quantities during the remissions.

The remissions usually occur in the morning, and have a duration generally of ten or twelve hours. The principal exacerbation generally takes place towards the evening, and continues for the greater part of the night, though sometimes the paroxysm lasts for twenty-four hours, or even thirty-six hours. The disease may run on for about fourteen or fifteen days, unless shortened by proper treatment, and then terminate rather abruptly in an attack of sweating, or its symptoms may merge into those of low fever. The period of convalescence is usually short, except some organic mischief has occurred, in which case considerable time may elapse before a restoration to health is effected, the debility being kept up by night-sweats, sleeplessness, dyspepsia, hypochondrias, neuralgia, jaundice and even dropsy.

Complications. — The extreme severity of some cases, the depressed condition of the nervous and vascular systems, with defective secretions, the great exhaustion at the termination of a paroxysm, collapse, convulsions, or delirium, passing into drowsiness and coma, cerebro spinal meningitis, often with

great gastric irritability, or with bronchitis, pneumonia, or with hepatitis, jaundice, diarrhœa, typhoid symptoms predominate. The chief causes of the complication are great depression of the nervous system, with powerful epidemic influences, malaria, improper treatment.

As a rule the fever either terminates in recovery in one or two weeks or in some of its numerous complications.

The diagnosis is important. A continued fever with distinct remissions, but when its complications take place, other morbid states supervene.

Treatment. — The principal indications to be followed are nearly the same as in intermittent fever. Begin treatment with an emetic of equal parts of green lobelia and boneset in infusion. This should be preceded with copious drinks of tepid water and potash bi-carb., thorough emesis, subsequently an alcoholic vapor bath; then unlock the bowels with either some saline purge, as citrate magnesia, compound powder of podophyllin; then rest in bed and the general treatment of fever at the same time. It must be remembered that as the febrile exacerbation is of longer duration, of greater intensity than in intermittent, so that there is more fear of structural lesion of brain, liver, spleen, stomach, our object should be to control the fever effectually, so, as soon as the emetic, cathartic and bath have done their work, begin with drop doses of tincture of veratrum and gelseminum every half hour until the excitement has completely moderated and the pulse has subsided to 72°, headache and other symptoms greatly ameliorated. Then begin with anti-periodic remedies to shorten or break up the exacerbations, as

℞.—Sulph. quinine or bebeerine,
Prussiate ferri, āā, grs. xij.—*Mix.*

Make sixteen powders.

Immediately after the remission a powder every three hours, taking care to omit as soon as the cold stage sets in. At the next remission we resort again to anti-periodics, and so on, until it is certain that the febrile phenomena have entirely disappeared. During the febrile stages controlling the fever with veratrum and gelseminum; cholagogues, if the bowels are confined; emetic of lobelia and boneset if the stomach is irritable; if there be diarrhœa or restlessness give teaspoonful doses of

℞.—Comp. syrup rhubarb and potass., ℥iv;
Bromide potass., ℥ss;
Bromide ammonia, ʒij.—*Mix.*

A teaspoonful as indicated, with some stimulating applications over the abdomen.

The diet should be light and nutritious. The complications of remittent fever should be treated very cautiously. If there

is much cerebral derangement, active purgatives, heat to feet, head shaved, stimulating or evaporating lotions applied. Aconite may prove beneficial if there is great drowsiness, dry cups to nape of neck, bromide of potassæ, as already suggested. If there is low delirium or exhaustion, free stimulation and nourishment; if cerebro-spinal irritation make its appearance, secretions active, irritating plaster to nape of neck, preceded with cups; internally aconite, calabar bean, bromide potassæ. In the interim give anti-periodics, as for instance:

℞.—Sulphate quinine, grs. xv;
Scutellarin, grs. xx;
Cypripedin, grs. xxv.—*Mix.*

Make six powders: one every two hours.

As soon as the paroxysmal form of fever is removed very little treatment is necessary. Tonics, as either the wine bitters, compound tincture tamarac, or hydrastin, should be given.

The bilious type requires very nearly the same treatment, with the exception that the force of the poison seems to be spent on the liver, so there is more apt to be brown-coated tongue, nausea, vomiting, jaundice, diarrhœa and other bilious symptoms, a condition where leptandrin, nitro-muriatic acid, phosphate of soda, anti-bilious physic and other remedies that stimulate that organ should be given and the fever managed as above.

Remittent bilious malignant fever, is a type that simple remittent sometimes assumes. The great heat, frequent respirations and pulse, jaundice skin, irritable stomach, with dark charcoal hue on the tongue, all indicate extreme prostration, with blood poisoning. Energetic treatment, as in the simple and bilious form. Antiseptics, as a tablespoonful of fresh brewer's yeast in a glass of milk three times daily, or a decoction of wild indigo weed, or sulphite soda, to arrest the molecular change, the putrid tendency or corpuscular death, with powerful stimulants and anti-periodics.

Bilious and malignant remittent require in all cases energetic treatment. The emetic, the anti-bilious purge and alcoholic vapor, followed by rest in bed, sponging frequently, and full doses of the green root tincture of gelseminum, say from five to ten drops every half hour, until the circulation is controlled, and then follow with quinine and prussiate of iron in doses to meet the condition of vital depression and malignancy of the attack. The dose of the gelseminum, quinæ and iron must be in all cases in proportion to the condition of the locality, the virulence of the poison, the shock to the patient, and on no account must stimulants and antiseptics be spared.

YELLOW FEVER.

This disease prevails endemically in tropical climates. It is an acute and very dangerous fever, accompanied with jaundice, severe headache and vomiting of black matter, infectious and contagious; male sex much more obnoxious to the morbid poison than the female.

Causes.—Malaria and paludal poison acting upon broken down constitutions, by intemperance, excess. Persons not acclimatized more obnoxious to the action of the poison than others.

Symptoms.—Often ushered in suddenly, with languor, loss of appetite, giddiness, headache, mental depression, at other times coldness of the surface or distinct rigors, followed by fever which continues for a few hours. In other cases, again, there is prostration, no febrile reaction, stupor, coma, convulsions soon taking place. If there is fever it becomes aggravated at night; pulse quick; skin hot, dry; eyes congested, painful; face flushed; headache distressing, commonly confined to one temple; pains everywhere, but especially marked on the back, limbs, large joints; great irritability of the stomach; extreme tenderness on pressure; sense of tightness about the heart; nausea; vomiting persistent; retching intense; thirst and a desire for cold drinks; urine scanty and of a dark red color; constipation; stools free from bile; distressing restlessness; mental anxiety; sleeplessness, even delirium. About the second or third day the severity of the symptoms diminish; patient feels better; face slightly jaundiced; skin becomes moist, and there are copious bilious stools. If the case is favorable convalescence becomes firmly established, more frequently improvement of a short duration. After twenty-four hours the tenderness of the epigastrium is aggravated; jaundice increases and spreads over the body; tendency to stupor; coma; low muttering delirium; pulse feeble, intermitting and so slow that it does not average thirty pulsations per minute; tongue foul, dry, brown-coated, charcoal hue, which changes to a raw beef appearance; embarrassed respiration. Hiccough, thirst, nausea, vomiting, are persistent. If these symptoms do not yield, grumous blood is vomited; urine entirely suppressed; skin dark brown; dark colored blood effused under the skin in patches, or it exudes from the nose, gums, arms, vagina; most offensive, tarry looking stool. The urine is either suppressed or smoky looking, loaded with albumen and tube casts. Indeed, a copious renal secretion is a most favorable indication. The fever in women always causes the catamenia to appear, even if the normal menstrual period has ceased.

The usual duration of the fever is from three to five or seven days. If the sixth day elapses without the occurrence of

black vomit or suppression of urine, there are great hopes of recovery, but, if all other symptoms are absent and one of those present our prognosis is very unfavorable. The mortality under the old practice was dreadful, death usually occurring from exhaustion, uraemia or apoplexy.

Pathology.—The special poison of yellow fever first appears to affect the liver, then the stomach, spleen, kidneys and brain. The change that takes place in the liver is acute, fatty degeneration, the walls of the stomach thickened and vascular, with lesions, spleen enlarged, friable, kidneys congested, brain apopleptic.

Prophylactic measures are, a high standard of health, an avoidance of all excess, ease and comfort; a rigid abstinence from all alcoholic beverages, fatty or saccharine substances; rigid attention to daily bathing and correct sanitary measures; flannel next the skin; no late hours; sleep in apartments well ventilated and in the upper stories; acclimatization. Every safeguard should be scrupulously observed.

Treatment.—The indications for treatment are very numerous, but the urgent symptoms should be met promptly. The first thing that usually attracts attention is the irritability of the stomach, so that a stimulating emetic is demanded.

℞.—Pulverized green lobelia, grs. xx;
" blood root, grs. xxv;
" capsicum, grs. xxx.—*Mix.*

Infused in half a pint of water for half an hour.

Before giving let the patient drink tepid water with bicarb. soda, then give the above in small quantities and repeat until thorough emesis is the result. After the emetic an alcoholic vapor bath, followed by brisk friction. Then put the patient to bed and administer the following:

℞.—Sulphate quinine, grs. xx;
Chloride sodium, grs. xxx;
Capsicum, grs. xxv.—*Mix.*

Make six powders and give one every three hours. Simultaneous with these begin the administration of the tincture of the green root of gelseminum in five drop doses every half hour. Give it carefully and cautiously along until its true physiological effects are manifested—double vision; thorough relaxation; diaphorsis; refreshing sleep; an abatement of every symptom of fever. An equilibrium once established, simply continue the gelseminum at longer intervals of time, say every two or three hours. The tincture of the green root is the only form to be used, each dose generally in a little water. On no account should the tincture of the dried root be used.

In conjunction with the green root tincture of gelseminum, which is our best remedy in yellow fever, the quinine formulæ

should be continued, but if it does not seem to agree well, the oil of bitter almonds be given in its stead in small doses every two or three hours. That owes its therapeutic properties to its containing hydrocyanic acid, a powerful stimulant to the brain.

Under the full doses of gelseminum the circulation is effectually controlled and rest procured, and usually there is no need for morphia, cypripedin, scutellarin. Still, warm poultices, frequently changed, should be applied over the stomach, bowels, liver, and hot bricks to the feet and legs. A capsicum plaster along the spine is of great advantage. The bowels should be moved with tablespoonful doses of neutralizing mixture and a few grains of leptandrin or enemata. If the above is not sufficient, give compound powder of jalap and senna in suitable doses. If the nausea and vomiting is persistent, tablespoonful doses of the following:

℞.—Vinegar, Oss;
Common salt, ʒj;
Capsicum, ʒij.—*Mix.*

If the disease do not yield to gelseminum, or oil of bitter almonds, then try salicin, quinia, prussiate ferri, bebeerine. The diet should be simple, but very nutritious, as beef essence, arrow root, barley water, best of nourishment. From the incipient condition of the fever and all through it, recumbent posture, well ventilated room, strict cleanliness. If stimulants are required, neither alcohol or ammonia should be given; capsicum and camphor should have the preference. Tincture of green root of gelseminum is so beneficial that it meets the indications precisely.

The general points with regard to bathing in fever should be strictly observed, and convalescence should be carefully guarded with tonics and anti-periodics.

RELAPSING FEVER.

The name of *relapsing* or *recurrent fever* has been bestowed upon this infectious disease, owing to the fact that at a certain period of the convalescence there is a relapse of all the symptoms.

Epidemics of it have been frequent all over the world, in periods of famine and destitution, and in cities where sanitary laws are not observed.

The symptoms commence abruptly with rigors, frontal headache and muscular pains, while soon febrile reaction sets in and we find great heat of skin, anxiety of countenance, intolerance of light and sound, a white tongue and a full, rapid pulse. Complaint is made of urgent thirst, and often there is pain at the epigastrium, with vomiting of a bitter bilious fluid. When night comes on the symptoms become aggravated, giving rise

to much irritability and sleeplessness. As the disorder advances there is also constipation, scanty high-colored urine, sometimes jaundice, and increasing prostration; but just as matters seem to be assuming a threatening aspect, on about the third or fifth day, a profuse perspiration breaks out over the whole body, the fever disappears and the patient is left almost free from the disease, though weak. The convalescent of course fancies that his troubles are over and that tonics and nourishment will soon restore him; but the apyretic interval is short, for about the seventh day from the commencement of the disorder there is an abrupt relapse, a repetition of all the symptoms in a graver form, week by week this goes on, each attack leaving the patient weaker and weaker till on the sixth or seventh week he either succumbs to the poison or it terminates in recovery.

Troublesome sequelæ sometimes delay recovery, such as muscular weakness, œdema of the legs and feet, boils, or ophthalmia. When relapsing fever recurs in pregnant women it has a greater tendency than many acute disorders to cause abortion or premature labor. It is often fatal and frequently death takes place during the progress of the fever, from sudden syncope. No special lesion can be detected upon making a post-mortem examination, but often the liver is discovered to be enlarged from congestion, and still more frequently the spleen is found considerably increased in size.

The *treatment* is very simple. Begin with an emetic of lobelia, alcoholic vapor bath, and open the bowels with a mild cholagogue; rest in bed; the ordinary treatment of fever observed; beef essence, farinaceous diet. If there is much irritability give

℞.—Extract hyoscyamus, English, gr. j;
Opii, pulv., gr. ⅛.—*Mix.*

As often as indicated. If prostration is great give stimulants The fever should be controlled with:

℞.—Water, ℥iv;
Tinct. gelseminum (green root),
Tinct. veratrum,
Tinct. aconite,
Spts. nit. dulc., āā, ℥j.—*Mix.*

Give as indicated to subdue febrile excitement, besides the following every three hours:

℞.—Quinine,
Hydrastin,
Iron by hydrogen, āā gr. i.—*Mix.*

The action of the skin should be promoted by compound tincture serpentaria. The greatest possible attention should be paid to nursing, all unfavorable symptoms watched and met with promptness and decision.

TYPHUS FEVER.

This is a contagious fever and arises solely from animal miasma. It is generally produced by over-crowding in ill-ventilated abodes, or ships, or hospitals, or prisons, and when once generated it prevails epidemically. Its duration is from fourteen to twenty-one days.

This fever has a period of incubation varying from a few to twelve days, then a stupid, dull aspect; heavy rash makes its appearance; the skin becomes dry, heated, extremely sallow; great thirst; most obstinate constipation; the stupor becomes extreme; great prostration; towards evening symptoms are much aggravated; there is also the peculiar rash incidental to the disease, which makes its appearance and consists of a true measly eruption, appearing at first in irregular spots of a dusty or mulberry color, disappearing on pressure, first on the face, chest, &c., and remain permanent till the end of the fever. They may be accompanied by or become converted into petechia. In some cases they are altogether wanting.

The symptoms characteristic of the first week are: The stupor; profound lethargy; deafness; noises in the ears; the conjunctiva injected; the measly eruption; the obstinate constipation, never diarrhœa; tongue dry and brown; the patient lies in a stupor, but wakeful; he dozes or sleeps, but is not refreshed; temperature, 104°; pulse, 140; respirations, 40; urine greatly diminished in quantity; urea increased; chlorides absent; sometimes albuminuria; occasionally complete suppression, with uræmia.

In the second week the characteristic symptoms are, great prostration, muscular twitching, delirium. Approach of convalescence gradually begins about the fourteenth day. The most common complications are bronchitis, pleurisy, pneumonia, diarrhœa, suppuration of the parotid gland.

A fatal termination usually takes place from the twelfth to the twentieth day. There can be no difficulty in the diagnosis of typhus and typhoid fever. The dullness, stupor, measly eruption, injected conjunctiva, color of skin, constipation, tongue, pulse, are all peculiar to typhus, and are in remarkable contrast to the clearness of intellect, the absence of the eruption, the brilliancy of the eye, the diarrhœa.

Whenever typhus fever prevails there should be the most thorough hygiene, cleanliness and ventilation and powerful disinfectants used. The patient, if possible, should be placed in a well ventilated apartment, and a vessel with chloride of lime or some disinfectant kept constantly present, and, if the weather permits, a fire in the room.

If the patient is seen in the incipient stage, give an emetic of lobelia and eupatorium, and repeat, if necessary; then

thoroughly cleanse out the bowels with compound powder of senna and jalap and bitartrate potassæ—one drachm of each to the dose—an active purge; then a vapor bath, keeping the bowels open with small doses of the neutralizing mixture, and the body should be sponged every three hours with tepid water, medicated with nitro-muriatic acid; cold to the head; water or beef essence, impregnated with hydro-chloric acid as a drink. This acid has a most salutary effect upon the blood as well as in the whole secreting system, a powerful renewer of life, a preventive to the rapid metamorphosis that is going on under a terrible destructive animal poison.

For the purpose of restoring the assimilative functions of the stomach, producing an intermission, making an effort to mitigate or abort the disease, we are partial to the following, combined in various proportions: Sulphate quinine, eupatorium, scutellarin, gelsemin, prussiate iron, carbonate ammonia. If there is great irritability, large doses of hyoscyamus. The only nourishment is brandy and milk; the former to prevent change or waste, the latter as food; nursing should be continued steadily both day and night.

The recumbent position should be carefully observed; if there is retention of urine the catheter should be used.

Our best remedies during the stage of convalescence are, the mineral acids, hydrastin, gold thread, wine bitters, phosphorus, glycerine.

TYPHOID FEVER.

An endemic fever; infectious and contagious; of a strong nervous type.

Causes.—The predisposing cause, extreme nervous prostration; the exciting cause, effluvia from decomposing organic matter. Besides, excessive mental strain, or exhaustion of that part of our organism seems capable of producing within the body itself idiopathically this fever; it may be however that mere climatic agencies, as solar heat, over-work, chills, damp, operate in a special manner in the United States, where all these elements are perfect; this fever is the one indigenous to our soil, climate and mental condition The effect of this poison is mainly on the nervous system, and its prevalence is greater than many suppose. Those mysterious languors, headaches, lassitudes, &c., unclassified, unnamed, and often unpitied, which distress patients and puzzle physicians, only exhibit the presence of a virus, poisoning the nervous system, which in numerous cases nature eliminates or overcomes.

Symptoms.—This fever is usually preceded by a stage of incubation, in which languor, lassitude, debility, slowly make their appearance, with headache, nausea, deranged secretions

and chilliness. The rigor recurs from time to time at uncertain intervals; then pain in the head, back, calves of the legs. This aching all over is most prominent where we have tissue with sensitive nerves in it, indicating a diseased state of that tissue. Slowly and insidiously the rigors increase, so that the patient feels more acutely the premonitory symptoms; feels very languid, exhausted, uneasy, with indefinable sensations. There may be vertigo, deafness or epistaxis; great headache; intolerance of light; thirst; loss of appetite; nausea; great weakness; pallor of the skin; features sharp; nostrils pinched; dry buff leather tongue, sharp pointed; a quick, small, wiry pulse; fever; tendency to diarrhœa; weary and exhausted. At night the heat of skin, restlessness and thirst increases. The expression of the countenance is most significant.

These symptoms slowly become aggravated; tongue brown and as dry as a chip; sordes on the teeth; emaciation from an imperfect renewal of tissue; continuous destruction—defective supply. The solid constituents of the urine increase, then there is a tendency to diarrhœa—interstitial death; rapid metamorphosis of body. About the sixth or seventh day of the fever a characteristic rash makes its appearance on the chest or abdomen in the shape of rose-colored dots. These spots hardly exceed a line in diameter. They are few in number, circular, disappear on pressure, and when pressure is removed return, but fade away in a few days, often to be replaced by others—true petechia; but this eruption is often altogether absent, not a single spot on the patient. Sudamina also often appears on the neck, chest, abdomen, about the end of second week, when the skin is warm and covered with sweat.

There may be numerous other symptoms present, as violent delirium; spasmodic contraction of the muscles; picking at the bed clothes; subsultus; hiccup; tinnitus aurium or deafness; muscular pains; debility; occasional attacks of epistaxis. If the ulceration reaches the stomach, tongue becomes red at the tip and edges; papillæ elevated; the abdomen is enlarged and tympanitic; tender on pressure; gurgling in the right iliac; diarrhœa, which generally increases towards the end of the second week, so that there are frequent stools containing blood. This diarrhœa exhibits a corpuscular blood death—a visible sanguinous break down. Blood can also be detected in the sputum, in the exudation on the gums (sordes). Occasionally we have serious attacks of hemorrhage from the ulcerated patches of Brunner and Peyer; danger of ulceration penetrating the coats of the bowels, and perforation, with peritonitis and death. There are other complications that after take place. Those are chiefly nervous prostration or some pulmonary affection, as bronchial catarrh, pleurisy, with effusion and pneu-

monia. The latter is the most common and most to be dreaded, and easily to be recognized by the flush on the right cheek; cough; rusty spit; dullness on percussion on the base of right lung. During convalescence a venous murmur can be detected in the neck, and an inorganic systolic bruit in the heart, same as in anæma, which quickly subsides on nourishment.

Duration should be from two to three weeks; still, some cases are prolonged to the fifth or sixth week.

Diagnosis.—The history of the case; the insidious mode of attack; the nervous prostration, with ringing in the ears or deafness; epistaxis; rapid and great emaciation; sharp pointed features; sunken eyes; pinched nostrils; mental condition unusually acute or keen; dry, buff leather tongue; sordes on the teeth; irritation; inflammation; ulceration of the glands of Brunner and Peyer; of the small intestines; diarrhœa; petechia; sudamina.

Morbid Anatomy.—Nature evidently tries to eliminate this poison from the system through the glands of the bowels, hence the inflammation and ulceration of these glands the result of the fever. It is true there is frequently congestion of the brain or its membranes; ulceration of œsophagus and stomach; enlargement or friable condition of the spleen; but these changes are not essential elements of this fever. The two lesions which are invariably present are inflammation of the glands of Brunner and Peyer. The alterations in the agminated glands or Peyer's patches are the most marked in the groups of glands which are nearest the ileocæcal valve. If the case has terminated fatally at an early stage we may merely detect a swollen condition of the mucous membrane over the diseased patch; or, we may perhaps find the typhoid deposit more or less copiously effused into the solitary glands, as well as into the tissue of Peyer's patches. But death generally happens at a later period, toward the end of the third week, and then we find that the patches have undergone ulceration, the fever product having been transformed into a brownish slough, which has become detached and has left a cavity or ulcer of a size varying from a pea to a florin. Perhaps one or more of these ulcers, instead of cicatrizing, may have been immediate cause of death, owing to their extension until perforation has happened and allowed the escape of the intestinal contents into the peritoneum. The mesenteric glands in the neighborhood of the patches are very generally enlarged and softened, and occasionally they have been seen in this condition when the intestinal lesion has only been very slight.

Treatment.—We must, in order to be successful, appreciate the true condition. We must bear in mind that the typhoid

fever poison is not the disease. It is the partial death which this agent has caused that is the disease. It is that which chiefly demands our attention. We must ask ourselves, Is vitality depressed, and where can aid be rendered? If the patient is seen early we perceive that the organs of digestion are arrested and the stomach should be emptied with a stimulating emetic. Its effect on the brain is salutary. The skin is hot and dry and calls for artificial moisture; there is deficient perspiration and evaporation. Then sponging the entire body should be resorted to several times daily, followed by brisk friction with the dry hand. At this early stage we are often able to stimulate the depressed vital forces that the patient recovers without running through the tedious process of a fever, hence dry cupping over the nape of the neck, shoulders, abdomen, is excellent. The stimulus is reflected to the brain, and it may be repeated once or twice daily. Then the tincture of the green root gelseminum should be freely given until heat, respiration and pulse are lessened. In connection with this, one of the following powders should be administered every two hours:

℞.—Sulph. quinine,
Prussiate ferri, āā, grs. xij;
Capsicum, grs. xxx.—*Mix.*

Make six powders.

Nourishment should be liberal. Beef tea and milk, perfect rest in recumbent posture, and, to appease the appetite for drink, a tea of boneset. On no condition must there be a cathartic given. With the above treatment we can frequently prevent or abort an attack of typhoid fever. The above treatment, however, is only proper the first three or four days of the fever.

If unable to repair the shattered vital forces, and so break up the fever, we must prepare for the general management of the fever for three or four weeks. Everything should be done to restore lost energy.

The best ventilated apartment should be selected for the patient, and antiseptics exposed therein. Bed should be placed in the middle of the room, head due north, in harmony with the terrestrial magnetic law. The bed-clothing should be either silk or flannel. The nurse should be young and vigorous. The practice of engaging elderly ladies to nurse the sick, or permitting them to sleep with them or near them, is highly deleterious. The reflex emanations from one to the other is prejudicial. We have a good illustration of this in children being sickly and puny who sleep with the aged. There is a decided law of assimilation. We become like each other in all things.

The tincture of aconite should be administered in suitable doses to control the circulation and keep moisture on the skin.

A few grains of quinine should be daily given to stimulate the vital forces.

The patient should be kept rigidly in the recumbent posture, and on no account permitted to get up. Heat and moisture, that is, a warm flaxseed poultice should be kept over the abdomen day and night, and warm bricks to the feet. The patient should be bathed three times daily which should be followed by brisk friction with the dry hand, and then afterward bathed with olive oil. Milk or beef tea should be administered regularly day and night every few hours. No fruit or solid food allowed. No cathartic should be ever administered—enemas only. Sleep must be procured, for which purpose try the following: A hop pillow below the head. If that does not answer the purpose, give

℞.—Ext. hyoscyamus, grs. xij;
Opii, pulvi, grs. ij.—*Mix.*

Triturate in a suitable quantity of sugar of milk and divide in twelve powders. Begin early in the evening and give one every hour until sleep is procured. Repeat every night, if it operates favorably. If it does not, try the following

℞.—Camphor water, ℥iv;
Bromide potass., ʒiij;
Potass. bicarb., grs. xxx.—*Mix.*

One teaspoonful as above. If this does not act favorably, give a few grains chloral hydrate. If this does not succeed try the following

℞.—Camphor water, ℥j;
Sulph. morphia, gr. i;
Potass. bicarb, grs. x.—*Mix.*

A teaspoonful every two hours as above.

Sleep is indispensible in health and disease. Independent of its restorative action, the secondary process of digestion is carried on under its influence, and especially is it necessary in such fevers as typhoid. In order to stimulate the mucous membrane of the stomach and bowels, and thereby promote assimilation, we have found the following excellent:

℞.—Bayberry, pulverized,
Poplar bark, " āa ℥j;
Capsicum, " ℥ss;
Boiling water, Oj.—*Mix.*

Infuse for twenty minutes, cool, and give in tablespoonful doses. Frequently this acts as a local alterative to the ulcerated bowels and mucous membrane. Keeps the tongue clean.

If thirst is great, gum arabic water, marsh mallow tea, or a few drops of dilute phosphoric acid added to water seems to fortify the system against the action of the poison and may be given in all cases of typhoid fever with efficacious results.

If there is great fœtor, a tablespoonful of brewer's yeast added to milk, may, with great advantage, be given twice a day; or, if this is not procurable, a decoction of wild indigo weed.

If there is diarrhœa, it must be at once checked by

℞.—Pulverized opium,
Tannin, āā, grs. x;
Aqua cinnamon, q. s.—*Mix.*

Make fifteen pills; one after every motion of the bowels. If there is tenesmus, tincture opium and starch by the rectum.

If there is prostration, with tremor, low muttering delirium, irregular pulse, brandy should be administered in quantities sufficient. The remedy should be commenced at the proper time and liberally given, so that the nervous system should not feel the destructive metamorphosis going on.

As a general thing there are few remedies that act upon the ulcerated glands of the bowels, and in the ordinary run of cases, where perfect rest and good nursing is attended to, little is demanded. Besides the bayberry, turpentine has a good effect in doses of from ten to fifteen drops three times a day, in mucilage, on or about the tenth or twelfth day, for two days. Mineral acids are also invaluable—a few drops in water. Attention to the state of the bladder is most important; suppression of urine. All complications should be watched and vigorously met. Guard carefully against pneumonia, which is the common sequel, for nothing is more discouraging than to have the patient upset by anything whatever.

During convalescence greater care will be required than after other forms of continued fever, since any irritation applied to a cicatrizing ulcer in the ilium will possibly affect it unfavorably and re-excite that morbid action, which may end in perforation. Tonics are to be carefully given, none being more suitable in the beginning of convalescence than some preparation of bark and bayberry. The return to a generous diet must be very gradual; no solid food allowed until the tongue has become clean and moist, the pulse soft, and till all feverish excitement has vanished, until which time, also, the patient should neither be allowed to leave his bed, nor even to sit up much in it.

SPOTTED FEVER, OR EPIDEMIC CEREBRO-SPINAL.

This fever is caused by some peculiar, unknown epidemic or meteorological poison which attacks patients of all ages of devitalized constitutions.

It has appeared over the entire world at different periods, and sometimes seems to assume an endemic form and prevail with great virulence.

It comes on slowly and insidiously, preceded by an undetermined period of incubation followed by rigors and a fever which last but a few days—five to seven. The prostration or coma is extreme; head and heels thrown back; often livid or purple spots over the body; sometimes absent, otherwise skin remarkable for its pallor, flush on cheek. Our prognosis of this fever is doubtful.

Besides common post mortem appearances we have decided congestion, redness, effusion of serum in and around the medulla oblongata and cervical portion of spinal cord. Blood also is extremely fibrinous.

It is easily recognized by the insidious mode of attack; by the coma; by the head and feet being extended backward and the livid spots on the skin; by the violence and short duration of fever.

If seen early the ordinary treatment by emetics, cathartics and diaphoretics is admissible; arterial sedation, with aconite and veratrum, sponging. Diet, beef essence. Active stimulus over the cervical portion of spinal cord, either with cups or iodine, or cantharidal collodion, or ice, or with the actual cautery, iron heated to a white heat, followed by poultices. Secretions kept rather active. Then our great dependence in treatment is upon the action of large doses of bromide potass. and tincture of Calabar bean.

The poison, which, in a few days, so often extinguishes life, operates as a powerful blood poison and a powerful irritant to the cerebro-spinal axis. Now, if we can diminish or suspend the impressibility of the medulla with external stimulation—internal with bromide potass and Calabar bean—the patient will recover, and speedily. To an adult such doses as the following every two hours:

℞.—Camphor water, ℥ss;
Bromide potassa, ʒss;
Tincture Calabar bean, ʒss;
Bicarbonate potass., grs. v.—*Mix.*

Any complication should be treated on general principles, and, if the patient can be carried over seven or eight days, recovery can readily be established upon general tonic treatment. An invaluable drug in the stage of convalescence is a decoction of skull-cap.

SURGICAL FEVER.

Fever is defined to be a condition of imperfect reaction—a salutary effort of nature at elimination or repair; *Idiopathic*

fever, which is caused by a poison operating within the body, either inhaled or generated within; *symptomatic*, or *surgical*, that which depends on some local injury, carried by an irritation, reflected to the brain.

Surgical fever, since the introduction of anæsthetics, has become a very mild form of fever, the shock being abrogated or almost exclusively done away with.

The cause of surgical fever is some local violence, something that depresses the vital powers, as an injury or amputation. In this form we may have simply a mild type of fever—languor, lassitude, debility, pain in the head, back, calves of legs, high heat, frequent respirations and pulse, whence it is termed *inflammatory*; but if the patient is irritable, restless, peevish, sleepless and the injury is on nerves or veins, we term it *irritative fever*; if it occurs in paroxysms, like ague fits, which condition seems to be blended with all operations upon organs contained within the cavity of the pelvis, it is termed *intermittent*; if the vital forces are very low, if we have profuse sweats, morbidly clean tongue, febrile exacerbations, we term it *hectic;* if the powers of life are lower still, we may have a condition of *typhoid.*

The treatment of these different types of surgical fever must be upon general principles. We must control the circulation effectually with arterial sedatives. We must enforce hygiene and nursing, supporting the patient carefully and well. Watch and guard all points as they arrive.

1. In the simple or inflammatory form, rest, veratrin, bathing, nourishment.

2. If of an irritative type, anodynes, as extract hyosciamus and opium.

3. If intermittent, anti-periodics, as quinine, bebeerin, prussia ferri, salicin, gelseminum.

4. If a condition of hectic supervene, stimulants give nourishment, aromatic sulphuric acid and quinine to arrest sweats, cr infusions of mild diaphoretics.

5. If typhoid symptoms, treat according to the general indications of that fever.

In all cases of surgical fever the grand point to aim at is to blunt the impressibility of the nerve centres; in this way the severity of the fever is greatly mitigated. It is therefore important all through to give liberally of anodynes and arterial sedatives. A constructive, or building up treatment is the essence of good practice.

ERUPTIVE FEVERS.

The eruptive fevers are continued fevers, with the addition of an eruption. The diseases of this class are small-pox, measles and scarlatina.

They bear a strong resemblance to some diseases of the skin, but as they are due to the presence of a miasm taken into the system and afterwards affecting special parts, the mode of classifying them under fevers is the proper course to pursue.

These fevers, then, have a common character, a certain period of incubation, a certain time elapsing between the poison being inhaled and the establishment of the fever, a time, also, during which the patient's health is apparently unaffected. The fever, when it makes its appearance, is of an inflammatory or continued type, runs a defined, prescribed course. They are also attended by an eruption which runs through a regular series of changes, and they affect the individual not more than once in a lifetime.

They arise in all cases from a specific contagion; their progress cannot be stayed or cut short, but their severity can, in all cases, be mitigated or abridged by appropriate medicines, or modified by hygiene, by the most thorough nursing and attention to certain rules.

Small-Pox.—Variola, a continued infectious fever, attended with an eruption. Due to the absorption of a specific poison. There are several grades or types, varying in intensity and virulence according to the amount of the poison absorbed, and vital tonicity of the patient. This poison gains access to the body by the salivary glands of the mouth.

Chicken-Pox.—A varicella or trifling infectious form, almost peculiar to infants and children. This form runs through all its phases in from six to eight days. Sometimes, if the vital forces are low, it runs the usual course. It consists of an eruption of pimples, which on the second day become converted into transparent vescicles, surrounded by slight redness. Rash commences on the shoulders and back, and afterwards affects the scalp, sparingly seen on the face. About the fourth day the vescicles form small scabs, which rapidly dessicate. Very little,

DISEASE.	INCUBATION.	ERUPTION APPEARS.	ERUPTION FADES.
Measles.	10 to 14 days.	Fourth day of Fever.	Seventh day of Fever.
Scarlet Fever.	4 to 8 days.	Second day of Fever.	Fifth day of Fever.
Small-Pox.	12 days.	Third day of Fever.	Scabs form on the Ninth and fall off on the Fourteenth day.

if any, constitutional disturbance; very little fever. It never occurs but once in the same person; has a short incubation, four days; not liable to small-pox afterwards; not, however, positively so.

The only treatment required is small doses of the neutralizing mixture (aconite and asclepin), sponging with alkaline wash, and, during convalescence, elixir cinchona et ferri, gold thread, golden tincture, tonic bitters, iron, &c.

SMALL-POX.

This disease has properly four stages: *incubation*, twelve days; *primary fever*, three days; *eruption*, appearing on the third day of fever; scabbing on the ninth or tenth; falling off on the fourteenth, and secondary fever.

Symptoms.—The period of incubation or latency, lasting twelve days, is succeeded by the primary fever, which is ushered in by lassitude, headache, fever, vomiting, (often persistent); pain in the back and loins, calves of the legs; stupor; mental depression; rigors; heat of skin; pulse 130; temperature in axilla 100° to 103° Fahr.; tongue coated brown; urine scanty; feel the skin about this period and a gritty feel is communicated to the fingers. These symptoms last for about three days, and on the third day we have an eruption of pimples or papulæ, which in a week inflame and suppurate. In a large proportion of cases we have a similar affection of the mucous membrane of the nose, mouth and throat; swelling inflammation of the subjacent cellular tissue. If the vomiting is persistent, the pain in the back, loins, calves of the legs, is severe, with marked nervous irritation, they are precursors of a severe attack.

On the third day of the fever the eruption of pimples or papulæ appear in nearly the following order: First on the face, neck, wrist, then on the trunk, and lastly on the lower extremities. A gritty feel is communicated whenever the skin is touched. This is observed about the fourth day. The papulæ ripen with pustules, suppuration being complete by the ninth day, at which time the pustules break and crusts or scabs form, and in four or five days more these scabs fall off.

From the moment of infection to the start of the fever, (12 days), the patient may apparently enjoy perfect health. If small-pox virus is introduced under the skin the disease is mild and the period of incubation is but seven days; but this practice is illegal and contrary to the rules of medical jurisprudence.

The severity of the disease bears a direct relation to the quantity of the eruption, which is an index to the amount of poison absorbed. If the pustules are few they remain distinct,

separate, but, when numerous, they run together, coalesce, and, thus united, they lose their circular form; hence we have a natural division into distinct and confluent—the distinct being seldom attended with danger, the confluent being seldom free from danger. The eruption on the face may be confluent in a large proportion of cases, although it may be distinct and scanty elsewhere; still, if these coalesce, they are confluent. We meet with cases, however, where they are very numerous, but do not coalesce. In confluent cases, symptoms of malignancy and putrescency are not uncommon, which render it a formidable affection.

The grand point of difference between the distinct and confluent forms is that the symptoms of the latter are more intense and violent; the eruption is out earlier, the eyelids swell more, the parotid gland is affected, salivation, general œdema; the mucous membrane becomes involved; the nose, mouth, throat, larynx, are the seat of the eruption; tongue, palate, &c., covered with vesicles; such troublesome complications as erysipelas, phlebitis, glossitis, pleurisy, pneumonia, ulceration of the cornea, suppuration of the ear. But perhaps the greatest difference between the two is the secondary fever, which is slight in the distinct, intense and hazardous in the confluent. It generally appears about the eleventh day of the disease or eighth of the eruption, and occasionally proves fatal, the system being overwhelmed by the virulence of the poison. No contagion is so powerful, so positive, so intense, as the poison of small-pox. Infection is present all through the case, from the beginning of the latent period to the disappearance of the last crust or scab. One attack perfectly exhausts the susceptibility of the system to all future influence of the poison, as a rule.

Diagnosis.—The history of the case, the period of incubation and fever, the white conjunctiva, the pain in the loins, the gritty feel of the skin, nausea, vomiting, are quite distinctive from all other fevers.

Treatment.—If the disease is recognized in its early stage, it can be very greatly mitigated, not exactly abated, but rendered extremely mild. This can be effected in the stage of incubation by daily emetics of compound powder of lobelia, alcoholic vapor baths, secretions regulated, and by drinking freely of a tea composed of equal parts of composition powder and pitcher plant.

The former stimulates and cleanses the poisoned mucous membrane of the stomach; the latter acts as a diuretic, diaphoretic, and by its alkaline properties neutralizes the virus in the blood. The pitcher plant is pre-eminently prophylactic.

If we fail, then we must bear in mind that the fever is a salutary effort of nature to eliminate the poison—an effort that

must be energetically aided, the fever controlled with tincture of veratrum and compound tincture of serpentaria in sweet marjoram tea. If constipation prevails the neutralizing mixture is our best laxative. The patient should be sponged three times a day with an alkaline wash in which mustard is incorporated. Keep up the vital powers by stimulants—milk punch, beef tea, milk. Watch carefully complications. No depletory remedy is admissible where we have a terribly prostrating poison active. Patient should be kept quiet in bed, in a well-ventilated room, free from carpets, curtains, bed-clothing; shirt changed daily; sponge promptly. A disinfectant should be employed in the room. Diet—milk punch, arrowroot, beef tea, gruel, ripe fruit. As a drink give freely of a tea composed of equal parts of composition and pitcher plant. This is the best treatment. The more pitcher plant and composition the patient drinks the milder the disease becomes, the quicker he recovers. The pitcher is the only known remedy that neutralizes the poison in the human body, and it would seem to do this by certain chemical properties. If the pustules be tardy in filling or maturing, beef essence, milk punch, white of egg, are excellent. These can be aided with either small doses of macrotin or quinine.

Warm drinks must in all cases be given. *No cold water, or ice, or ice cream, nor ice in any form*, should be applied to the patient. All complications energetically met, never using debilitating remedies.

For secondary fever — neutralizing mixture, pitcher plant, aconite, asclepin. If there is diarrhœa, hematoxylon, gelsemin, quassia, nourishment, beef tea soup, cream, raw eggs, alcoholic stimulants to prevent depression and arrest putrescency.

For sloughy or gangrenous sores—elixir cinchona et ferri, et phos., mineral acids, hydrastin, milk, essence of beef, air cushions.

To prevent pitting, smear the face well over with sweet oil, wear a mask and carefully exclude the atmospheric air, olive oil and camphor, glycerine and rose-water, equal parts, lime water, puncturing the pustules, collodion, gutta percha and collodion, tincture iodine, water dressing, oxide zinc ointment, black salve.

MEASLES.

Rubeola, a continued infectious fever, preceded by sneezing, watering of the eyes and nose, complete catarrh, accompanied by a crimson rash and often attended or followed by inflammation of the mucous membrane of the organs of respiration.

Measles are divided into two grades by some, but this division is uncalled for, being merely different degrees of intensity of one affection.

Symptoms.—After a period of incubation, varying from ten to fourteen days, there is lassitude, shivering, fever and catarrh; the conjunctiva, Schneiderian membrane, mucous membrane of the fauces, larynx, trachea and bronchi, become much affected; swelling of the eyelids, suffused eyes, watery, intolerant of light; sneezing; dry cough; hoarseness; difficulty of breathing; drowsiness; great heat of skin; tendency to delirium; frequent, hardened, rapid pulse; tongue white coated. The eruption comes out at the end of the third day, seldom earlier, often later. It consists of small circular dots, or spots, like flea-bites, which gradually unite into blotches of a dingy red color, slightly raised above the skin. The rash first appears on the forehead and face, and gradually extends downward. It begins to fade in the same way, first on the forehead, &c. It produces no marked desquamation, which is the characteristic of scarlatina. Diarrhœa often sets in on the rash declining. It is usually salutary. The fever does not subside on the disappearance of the eruption, nor does the severity of the attack depend upon the quantity of the rash. The contagion of measles is strong, being powerful through the latent and active form of the attack.

Pulmonary complications—laryngitis, cancrum oris, severe otitis, epistaxis, acute tuberculosis and desquamative nephritis.

Treatment.—Confine the patient to a warm, airy apartment in bed; enjoin thorough hygiene; have him sponged every two or three hours with alkaline wash, warm, or warm vinegar and water; then prescribe aconite and belladonna, a sweet marjoram or saffron tea, or asclepias or crawley; keep up mild diaphoresis. If the eruption is tardy give either a tincture serpentaria or carb. ammonia. Diet—milk, beef tea, mucilaginous drinks, neutralizing mixture. If the cough be troublesome give ipecac, senega and belladonna. If there is debility, brandy and cream, cinchona, iron, hydrastin, nourishing food, warm pediluvia, and limbs rubbed with dry mustard.

SCARLET FEVER.

This is an infectious, contagious, febrile disease, characterized by a scarlet efflorescence of the skin and mucous membrane of fauces and tonsils, commencing about the second day of fever and declining about the fifth, and almost invariably accompanied by inflammation of the throat and its glands. It is essentially a disease of childhood, of a fatal type, occurring, like measles and small-pox, but once in a lifetime.

There are three types of this fever, three different grades of intensity of one affection, depending solely upon the amount of the poison inhaled and the power of vital resistance of the patient.

They are thus classified: *scarlatina simplex*, where the skin is mostly affected; *scarlatina anginosa*, in which both skin and throat are implicated, and *scarlatina maligna*, in which all the force of the disease seems to be spent upon the throat and nervous system.

Symptoms.—In *scarlatina simplex* there is a latent period of from four to six days, after which we have fever, lassitude, rigor, headache. On the second day, eruption appears in the form of numberless white dots of a bright scarlet hue, which rapidly diffuses itself over the entire body. This eruption terminates by desquamation of the cuticle, which begins about the fifth day. This is merely a scurf on the face and trunk, while on the hands and feet large flakes of cuticle are detached. While the efflorescence is spreading over the entire body, the mucous membrane of the mouth, fauces and nostrils become affected; the tongue at first is covered with a white fur, through which the red, elongated papillæ project, but as this fur clears away it becomes clear, preternaturally red and of a strawberry color.

In *scarlatina anginosa* the symptoms are more violent; more headache, more stiffness of the neck, greater redness and tumefaction of the fauces, uvula, palate, tonsils, and covered with an exudation of coagulable lymph. The eruption is delayed to the third or fourth day; comes out in scattered patches. With its fading on the fifth or sixth day the fever and inflammation of the throat begin to abate. Severe inflammation of the serous and mucous membranes is to be dreaded. This variety of fever in a strumous subject often assumes a more aggravated form, being accompanied with an acrid discharge from the nostrils. Cases once in a while occur where there is no rash at all.

In *scarlatina maligna* the fever assumes a malignant or typhoid form. Great cerebral disturbances, terrible prostration, low, muttering delirium, sordes on teeth, fœtid breath, dark incrustations of coagulable lymph over the uvula, tonsils, and the throat gangrenous; the cervical glands seriously implicated.

The rash is still later in coming out, but disappears again in a few hours, and may or may not appear again; very often fatal termination about third day. This disease is one of extreme danger, and it is only patients of strong vital power that can weather the storm.

Sequelæ.—The poison of scarlatina has such a deteriorating influence upon the blood corpuscles that patients afflicted with the disease are very liable to have their health permanently impaired and become afflicted with many forms of disease dependent upon a deteriorated nervous system and imperfect elaboration of the blood, as scrofula in all its myriad forms, renal affection, with albuminous urine; dropsy, about twenty-

first day of the serous cavities; ursenia, diseases of the scalp, acute rheumatism, cardiac inflammation, scarlatinal vaginatis, hydrocele, &c.

Numerous though the complications of scarlatina be they have been greatly aggravated by an absurd, irrational treatment. The remedies used have been highly deleterious—prejudicial to the general elimination of a poison.

Treatment.—As a general rule the successful management of all cases of scarlatina simplex and anginosa is very simple. If there is much nausea, a mild emetic, followed by warm bath, warm diaphoretic teas, as sweet marjoram. Patient should be kept in bed in a warm room 65° to 75°. Very fine clothing, so as not to irritate the skin.

The fever should be controlled with small but repeated doses of digitalis. This stimulates the brain, astringes the whole venous and arterial system, prevents exosmosis, acts as a diuretic. To allay the irritability of the throat, belladonna should be given in small doses all through the case, a saturated solution of chlorate potassa, from one-half to one teaspoonful every three or four hours, or it could be given in this form:

℞.—Water, ℥iv;
Chlorate potass.,
Muriatic acid, āā ℥ij.—*Mix.*

A teaspoonful in sweetened water as a drink every three hours.

Milk and lime-water, beef tea, as diet. Sponging should be very delicately performed; all complications carefully watched. No carbonate of ammonia or iron should be given. Those remedies irritate the kidneys and are productive of dropsy. After sponging the body it is often very advantageous to bathe the patient with olive oil. It serves numerous purposes, promotes nutrition, soothes the inflamed surfaces, ameliorates the general condition.

If he eruption does not strike out well give comp. tinct. serpentaria; the bowels regulated with neutralizing mixture. If there are spasms or convulsions give the anti-spasmodic tincture, as bromide potass. No dropsy will take place under the digitalis, belladonna, chlorate potass., and comp. tincture serpentaria treatment. If met with from other practitioners the cure is usually doubtful, still treatment should be on general principles.

In the malignant form no treatment is of much avail, still we should persevere with diaphoretics, stimulants and antiseptics. There is a strong tendency in the medical profession to aggravate the type of disease, still no one is entitled to pronounce it a cure of malignant scarlet fever unless we have a fearful state of depression, decided aggravation of all symp-

toms, fetor of breath, dark hue on tongue, enlargement and suppuration of the glands of the throat, suppurative discharges from nose, eyes, lungs, ears, eruption of a purplish color. Usually terminates fatally on third day.

The most common complication is anasarca, serous infiltration of the cellular tissue, dropsy of the three great cavities. It is true the patient may have been exposed to cold, and the escape of the poison through the skin checked, the force of elimination is thus thrown in the kidneys, producing congestion, obstruction and dropsy. But this renal affection is so rarely present where digitalis, chlorate potass., belladonna, bathing, &c., are used judiciously in treatment, that we are led to inquire whether the carbonate ammonia, brandy, iron, used by the old empirical physicians are not the source of the difficulty, whether they do not irritate, arrest urea, or retain it in the kidneys and thus give rise to dropsy. Under the old treatment dropsy comes on early, begins with chilliness, fever, headache, often vomiting. Face becomes puffy; general œdema. Urine becomes scanty, dark, smoky appearance and contains albumen in large quantities.

In the treatment of dropsy, great good is derived from digitalis in decoction, in administering one of the following powders night and morning:

℞.—Podophyllin pulv., grs. x;
Nitrate potass., ℥j;
Bitartrate potass., grs. iij.—*Mix.*

Make ten powders.

A tea of parsley root is excellent. It is good practice here to give iron.

℞.—Tincture iron, gtt. x;
Potassa nitrate, grs. iij;
Camphor water, ℥ij.—*Mix.*

To be given at a dose.

The diet should be generous to a fault, warm baths, heat over loins, flannel clothing, &c. A more rational mode of treatment, such as we have endeavored to lay down, is imperatively demanded by the present age. The old school treatment is pre-eminently disastrous to all who suffer. Better by far is the wet sheet, or no treatment at all, than this pernicious practice. Free elimination by the skin is the point to aim at.

ERYSIPELAS.

This disease is caused by a peculiar miasm, a specific poison that is generated in the system of a patient from some abnormal condition; it is also generated by over-crowding, want of ventilation and sanitary measures, and when once generated is both infectious and contagious.

The peculiar poison, whatever it may be, germ, animalcula, or fungi, has the property of contaminating the blood and destroying its hæmatin, hence the absence of iron in that vital fluid.

After the inhalation of the miasm there is a period of incubation varying from three to seven days, during which time all the symptoms of absorption of a deleterious poison are manifested—pain in the head, back, legs, chilliness, rigors, sore throat, general constitutional disturbance, arrested secretions, brown tongue, nausea, vomiting, constipation or diarrhœa, chlorides diminished in urine, often albumen. If on the face, great cerebral disturbance.

The local development of the disease is in the form of a peculiar and characteristic inflammation of the skin or subcutaneous areolar tissue. The redness is livid, momentarily disappears on pressure, diffused, wide-spreading, hot, swollen, and the pain is of a burning or tingling character. Any part of the surface is liable to be attacked. The common seat is the face, called *idiopathic* erysipelas; and if it occurs elsewhere, as the result of a wound or scratch, *traumatic* erysipelas.

The danger is to be apprehended from an extension of the inflammation to the brain or its membranes, or to the fauces, or from direct failure of the vital powers. Poison of erysipelas is identical with the poison of puerperal fever.

Successful treatment in all cases is the following: An active emetic, to start with; thorough vomiting; lobelia is the best emetic given, with bicarbonate of soda; follow this with a thorough cathartic, comp. powder of jalap and podophyllin; an alcoholic vapor bath. Then control the circulation with aconite and veratrum in an infusion of asclepias; if the vital powers are impaired, comp. tincture serpentaria. Having put the patient upon this treatment, then give twenty drops of the following, in a little water, every three hours:

℞.—Muriated tincture ferri, ℥j;

Sulphate quinine, grs. xx.—*Mix.*

Anodynes at bedtime, so as to obtain sleep. Confine patient strictly to bed in a well-ventilated room. Diet, light—milk and eggs, beef essence. If any indications of depression—sinking of vital power—give equal parts of the fluid extract of prickly ash and brandy. Establish convalescence upon vegetable tonics.

Locally paint the erysipelas blush with either tincture iodine, veratrum, gelsemin or lobelia, and over it collodion; if it is the phlegmonous variety, no remedy can excel the sulphite of soda in the proportion of five grains to the ounce of water; saturating cloths with the same, keeping them constantly moist, and covering with oiled silk; a favorite domestic application is a decoction of elder flowers, both local and internal.

DIPHTHERIA.

An epidemic and contagious disease, depending upon a specific poison which primarily acts on the nervous system, as is shown by the vital depression, loss of power, and secondarily on the blood, and characterized by the exudation of false membranes on tonsils and throat.

The peculiar morbific poison seems to find a favorite sphere of action among strumous, syphilitic, psoric, or other broken down constitutions.

It is caused by some unknown epidemic poison, and when the poison once affects a person it is propagated by contagion or infection.

There is an undefined period of incubation, followed by rigors and a continued fever, pain in the head, back, calves of the legs, general derangement of the secretions; tongue coated brown, dry, dark hue at root; accelerated circulation; sore throat; stupid, drowsy; often delirium, variable in its duration, always attended with danger.

The force of the poison seems to be spent upon the mucous membrane of the throat, and fauces, oftentimes tongue, cheek. Little white specks, like blisters, make their appearance here and there, isolated, white. By and by they coalesce in several or one large patch, which in a few days fills up with serum; a little later it becomes greenish or gangrenous, forms a large patch like a false membrane. It may break down or be expectorated in a mass. Throughout the formation of this small membrane the breath is remarkable for its fetor, and there is great danger of suffocation.

In other cases the symptoms are ushered in with violent vomiting of a thin, yellowish, white matter, of extremely offensive character, and perhaps purging of a like fluid. This is usually followed with prostration and stupor. The skin is hot, pulse 100 to 140; tongue brown, dark hue; great thirst—drink taken with greediness.

The odor of the breath is very characteristic and peculiarly offensive. It is infected by a specific zymotic poison operating on the secretions of the part affected, as well as the blood and nervous system.

The appearance of the throat (the tonsils, soft palate, back of pharynx), presents in some cases a white, shining appearance, a tenacious fluid hangs from the velum to the tongue, and the same gelatinous substance covers all the back portion of the throat.

After a few hours the condition of the patient changes, the stupor passes off and delirium takes its place; high fever; quick breathing; shrill voice; cough; croupy symptoms; neck swollen and flushed; tongue coated, first in whitish spots, which conglomerate and form one thick plastic deposit.

If remedies do not act and the case progresses, the delirium subsides, the vital forces fail, choking and suffocation come on; the sufferer tears at his neck with his nails and tries to open his mouth; retains power of swallowing; purpuric spots on the extremities, muttering delirium, convulsions and death.

The diphtheric poison, when once introduced into the human system, has two special and peculiar affinities, one to the nervous system and the other for the blood, and through that agency to the mucous structures.

Diphtheria has a tendency to invade the respiratory passages, the nasal fossæ, the larynx and the trachea. Its characteristic feature is the effusion of the peculiar plastic fibrinous material, in appearance resembling wash leather, thrown out in spots, which quickly coalesce, and when united gradually increase in consistency and thickness, firmly attached to the mucous membrane beneath, and if forcibly removed a new patch instantly forms and spreads to all the surrounding parts. When this membrane separates and begins to decompose, the breath becomes horribly offensive. Its disappearance may be followed by ulceration, sloughing, gangrene or resolution.

Diphtheric patches have been detected on various parts of the mucous membrane, as the conjunctiva, vagina, rectum.

The peculiar action of this virulent poison on the blood is to destroy its fibrine, hence hemorrhage is not uncommon, from the nose, fauces, bronchi, purpura; albuminuria, death from exhaustion, hemorrhage, gangrene, asphyxia; embolism, sometimes a complication. Recovery under the best treatment is slow and tardy. There is generally persistent anæmia or leucocythœmia. The secondary affections are flabby heart, nerve affections, paralysis, neuralgia and amaurosis from exhaustion.

It can be easily recognized from scarlet fever by the coma, tongue, vesicles forming on the fauces, and formation of the false membrane.

Pathology.—A terrible poison destroys the blood discs and causes diphtheric patches on all the mucous membrane of the body.

Treatment.—If seen in the early stage there can be no doubt of the utility of an emetic of compound tincture lobelia. This is never indicated later. A spirit vapor bath, a general sponging every three hours with water medicated with hydro-chloric acid. Diet—essence of beef, white of egg, cream, wine and beef tea, brandy, and, if the patient can afford it, champagne and ice. The pulse must be kept at seventy-two, with aconite and belladonna; if that fail, belladonna and veratrum. Put the patient upon tincture ferri chloride and alternate with chlorate or permanganate of potass.; for a drink, wine whey. If, however, a clotty condition of the blood is suspected, alka-

line remedies, as ammonia, potassa, iodide potassa, sulphite of soda; large doses of lactucarium should be given to induce sleep, and if depression is threatened rely on stimulants; if hemorrhage, iron. If there is great putrescency, give yeast and milk. Locally to the throat apply nothing but a piece of fresh beef or plain dressing, as all applications there are useless. At the commencement I have found inhalation of acid vapor excellent, ʒv acetic acid to Oss water. For the exudation the inhalation of bromine or bichromate of potassa or sanguinaria is most excellent.

Painting the exudation with a mixture of equal parts of tincture iodine and iron, once daily, has a good effect. Keep up with the inhalation every two hours. If the patient is able to gargle, then gargles of sulph. hydrastin and baptisin, chloride sodæ, carbolic acid gargle. No violence should be used, as anything that detaches the exudation is injurious.

Patient should be kept rigidly in bed in the recumbent position; temperature of apartment seventy-five, to be kept moist by some antiseptic vapor, as the permanganate of potass., chlorine, bromine, moist atmosphere; bowels to be opened by enemas of beef tea and sweet oil. If there is suppression of urine, belladonna; if swallowing is prevented, beef tea enemas; tracheotomy is often performed when exudation obstructs the larynx, but with no success.

As soon as the acute affection is controlled, salt water baths, hydrastin, baptisin, quinine, iron, nux vomica, phosphorus, faradization; very generous blood elaborating diet; otherwise treat on general principles.

Diphtheric patches are frequently met with on the mucous membrane of the fauces, as a sort of subacute or chronic affection. Unquestionably the best treatment is to paint the part, if within reach, with nitric acid, then use gargles of chlorate of potassæ, alternated with decoction of bayberry and golden seal. Then put the patient upon alteratives and tonics. A good alterative in those cases is the comp. syrup of yellow dock and iodide potass; a tonic, a comp. tincture of cinchona and nitric acid. The comp. hypophosphites of lime, soda and iron, are invaluable.

In all cases, stimulants should be applied to the throat, externally, and the general health improved by all possible means.

DISEASES OF THE BLOOD.

Owing to the constant *activities* of all the structures and organs of the body, there is a continual waste of the tissues, which requires to be compensated for by a corresponding supply of aliment.

The blood is the vital fluid—the grand nutritive papulum of all tissue; but, it can only supply nourishment to the system at large, by its suffering a diminution in quantity, and becoming deteriorated in quality. The former of these losses is adequately met when a liberal supply of food is provided, granting that the digestive apparatus does its work in converting the same into blood; the latter by the respiratory act whereby the impure venous blood is converted into arterial at the expense of the oxygen of the air. A description of the various changes which the food undergoes before its transformation into blood would extend this article to an undue length; moreover our object is simply to specify the leading properties and constituents of the vital fluid, so that we may the better comprehend the true nature and causes of these diseases to which it is obnoxious.

We may, however, remark that after the earlier stages of the digestive process, the papulum having passed through the stomach, it reaches the small intestines, particularly the duodenum, where being acted upon by the bile and pancreatic secretion is elaborated into chyle. The chyle has to be conveyed into the system by absorption, and the vessels engaged in this process are the absorbents. Absorption includes not only the nutrient material from the alimentary canal, but, also that process by which portions of the living tissues are themselves either removed from or absorbed within the body. The absorbents consist of certain blood vessels, venous capillaries and the lymphatic vessels, and glands. Lymph is a transparent, transuded portion of the blood. The lacteals are the lymphatic vessels of the small intestines. The lymphatic glands are rather hard pinkish bodies, and vary in size from that of a hemp seed to that of a pea. The lymphatic vessels pass through the glands, and are situated almost everywhere throughout the body, but especially in the skin and mucous membrane. They are both deep and superficial; but they ultimately run toward the root of the neck, and unite in two main trunks, which terminate in the venous system; thoracic and lymphatic ducts.

The thoracic duct is dilated at its commencement—receptaculum chyli. It is formed by the union of lymphatics from the lower extremities, the intestines, stomach, spleen, pancreas, kidney and liver.

The receptaculum chyli generally on second lumbar vertebra, to the right of the aorta. The thoracic duct passes behind the arch of the aorta, crosses the œsophagus, ascending to the root of the neck, and there curves downwards and outwards behind the blood vessels, and opens into the angle formed by the union of two large veins. The lymphatic duct is about one inch long, and terminates on the right side. Lymphatic glands are abundant in arm pit, groins, neck, &c.; those in pelvis are lacteals abundant in mesentery.

The veins of the intestines that act as absorbents unite with those coming from the stomach, spleen and pancreas—portal vein which enters the liver. These vessels and thoracic duct have valves—the duct having two at its entrance into the veins.

The lacteals first exist in the villi of the intestines, unite and reunite until they enter the receptaculum chyli. The chyle alters in its composition on its way to thoracic duct. Thus, in the different lacteals from intestines to mesenteric glands, fat in the chyle exists in maximum quantity, albumen medium, chyle corpuscles few or none, and fibrin is scarcely formed. In the efferent lacteals from the mesenteric gland to the thoracic duct—fat in medium quantity, albumen in maximum quantity, chyle corpuscles numerous, but imperfectly developed, and fibrin in medium quantity.

In thoracic duct, fat in minimum quantity, albumen medium, chyle corpuscles numerous and well developed, and fibrin in maximum quantity.

Formerly, the lymphatic system was thought to convey waste matter out of the system; but now rather regarded as one grand assimilating or blood forming gland.

Death of the tissues does not necessarily imply their destruction; indeed an animal may as well secure nourishment from its own dead part as from the dead body of another animal. Whilst therefore the matter that has undergone too complete a disintegration to be again employed as nutrient material is carried off by the excretory process, that portion which is capable of being again assimilated may be taken up by the lymphatic system.

Miasmatic and contagious diseases are propagated by absorption. In disease life is prolonged by the absorption of fat; so also in hybernating animals.

The proper function of the lymphatics is to pick up any particles not required in one place, and carry them back into

the circulation, and from thence to be sent round to where they are required, or to be expelled from the body.

Fibrin is the most exalted form of vitality, most animalised of all the constituents of the blood, and it is interesting to observe that it is scarcely formed, or existing in only a very minute degree in the chyle, until it reaches the thoracic duct where the fibrin increases to its maximum quantity. The chyle at length reaches the venous circulation. But from whence the venous blood? A considerable portion of the oxygen of the arterial blood is consumed by uniting with the hydro-carbonaceous matters which enter the blood vessels from the refuse matters of the tissues. This consumption of oxygen occurs in the *systemic* capillaries (the *pulmonary* capillaries are engaged in the exaltation of venous into arterial blood). These consist of ramifications of the arterial and venous systems, which are termed their peripheral extremities, *i. e.*, the capillary vessels are the connecting link of the arteries and veins.

The circulation of the blood is mainly secured by the action of the heart, which consists in the alternate contractions and dilatations of the muscular walls of its auricles and ventricles. There is a respiratory circulation as well as a systemic, and by it all the venous blood which has returned from the body is transmitted to the lungs, and brought back again to the heart previous to its being sent forth for the nourishment of the tissues at large. In a 100 vol's of venous blood there are only five of oxygen and 25 of carbonic acid gas; in arterial blood there are 10 of oxygen, and 20 of carbonic acid gas. Carbonic acid may be formed from the respiratory elements of food, which, as they enter the blood become oxidized; the changes of the constituents of the blood itself is attended by the formation of carbonic acid; but its presence in any considerable quantity is mostly owing to the mutability of the tissues, this arising from their nervous and muscular activity. The exchange of oxygen and carbonic acid in the capillaries is partly physical and partly chemical. The law of the diffusion of gases is physical; thus two gases of different densities and having no chemical affinity the one for the other will mingle, even when separated by a porous septum, if, at least, they have no affinity for the septum. But we have an illustration of chemical affinity in respiration, *i. e.*, the venous blood has a powerful affinity for oxygen, hence, the impure blood readily unites with it in the pulmonary capillaries. The carbon and hydrogen in the lungs unite with the oxygen, and yield in exchange carbonic acid and water; hence, *expired* air is not only surcharged with carbonic acid, but is more freely saturated with moisture than the inspired air. Animal heat is produced by these chemical changes.

The temperature of the blood is about 102° Fahr., being 2° higher than that of the tissues. This union of oxygen with carbon and hydrogen, maintains the temperature of the body intact, and augments nervous force and electricity. Blood as it flows in the vessels of living tissues appears a colorless fluid, containing minute particles mostly red, or the blood, and the lymph-corpuscles or cells. The fluid is named liquor sanguinis.

The vital fluid as it courses through the body is a rather thick and heavy fluid; of bright scarlet color when it comes from an artery; deep purple, when from a vein. Its specific gravity at 60° Fahr. is on an average 1055, water being reckoned at 1000. If it varies much in specific gravity, it indicates a morbid condition; 1050° to 1059° is about the range compatible with health. Its temperature is usually 100° Fahr., slightly alkaline, and emits an odor similar to that of the skin or breath, but fainter. In climates of high temperature arterial blood is nearly as dark as venous. The specific gravity of men's blood is higher than that of women's, owing to the greater number of red corpuscles in the former, and for the same reason also greater in the robust than in the feeble.

Coagulation of Blood.—About ten or fifteen minutes after blood has been drawn and allowed to rest, it gradually clots or coagulates, having the consistence of a soft jelly. Soon after the clot has formed, drops of transparent yellowish fluid begin to ooze from the surface of the clot; but this fluid collects on the upper surface of the clot, then all around it, and at length the clot now diminished in size, floats in this fluid or serum.

Fibrin is the coagulating substance, sometimes called coagulating lymph of the blood, and by it alone is the contraction of the clot due; the coagulation is truly a process of organization.

The coagulation of fibrin is very similar to the effusion of lymph in inflammation. It coagulates spontaneously in the same manner; and it is not improbable that the lymph of inflammatory effusion is the fibrin of the blood, modified by disease.

The human red blood corpuscles are circular flattened cells, about 1.3000 to 1.4000 of an inch in diameter. The majority of these are uniform in size, but some are larger than the rest, are paler and less circular; the differences are connected with the development of the blood corpuscles. Besides the red there are white corpuscles, not nearly so numerous as the red, only being one to fifty; only during disease the proportion may be as high as one to ten. They are circular, nearly spherical, about 1.2500 of an inch in diameter. They would seem to be formed of some white substance, which refracts the light, and contains granules.

The principal stages of development of the human lymph or chyle corpuscle into the red corpuscle is a subject of deep interest, and practical importance in relation to disease; they are developed from the lymph and chyle, but new corpuscles never appear to be formed from the germs of old ones. Accordingly, when a corpuscle is past its perfection it degenerates, and very likely liquefies.

Just as the blood yields its materials for the maintenance and repair of the several solid tissues, and for secretions, so are new materials supplied to it in the lymph and chyle, and, by development, made like it.

That such assimilation is both highly minute and precise, may readily be inferred from several circumstances; only to mention one may suffice. The insertion of vaccine matter obviously induces a morbid condition of the blood; however minute the virus, it alters, in some way, the whole of the blood. Such a change, seemingly slight at first, is long maintained, for a second insertion of the virus may have no effect; the blood no longer amenable to its influence, because the new blood, formed after the vaccination, is similar to that altered by it. Hence also the persistency of the morbid states of the blood in syphilis and other chronic diseases.

The assimilation of the blood is likely secured by the formative power which the blood possesses in common with the solid tissues.

Before treating of the diseases to which the vital fluid is obnoxious, we append a succinct table of its leading constituents:

Composition of healthy blood in 1000 parts.

Water,	784.
Oxygen, Carbonic acid, Nitrogen, dissolved in the fluid.	
Blood cells, Haematin, } constituting the red corpuscles,	131.
Fibrin,	2.2.
Albumen,	70.
Phosphate of soda, lime, magnesia and iron, Sulphate of potash, Chlorides of sodium, potassium, silica, &c.,	6.
Fats—margarine, oleine, seroline, cholestrine and phosphuretted fats,	1.3.
Extractive matters, and traces of urea, creatine, &c.	5.5.
	1000.

ANÆMIA.

Deficiency of red corpuscles in the blood, poverty of blood. The red globules, instead of existing in the proportion of 130 per 1000 parts of blood, as in health, are reduced to 80, 60, 40, or even less. The liquor sanguinis is also deficient in albumen, but may contain an excess of salts. Although this deficiency exists in anæmia, there is never found any degenerated or abnormal or devitalized substance, as in cancer or struma, there is only a deficiency of blood discs. The absent globules have not relapsed into a lower form of life. A microscopical examination of the blood will decide as to the ratio of corpuscles.

Symptoms.—The absence of the blood corpuscles gives us a defective supply of the materials of growth and nutrition. This defective supply weakens the vitality of all the manufacturing and excreting viscera, for their machinery needs continual repair. Hence, in anæmia, a pale, waxy, blanched appearance of the mucous membranes; hence, the feeble pulse, weak, flabby heart, the want of appetite; hence, the liver is sluggish, inert, and some of the bile pigment, which should flow by the proper channel, is retained in the circulation, exudes and stains the skin. The kidneys may also, through debility, imperfectly eliminate the urea, and we may have a serious train of symptoms, or this debility may be so great as to permit a passage of the albumen through them.

Aortic bellows murmur *bruit de diable* in jugular veins, which is in proportion to the diminution of the corpuscles, and is continuous when the corpuscles are below 80 in the 1000, due to the quick ventricular contraction of the heart with thin blood. This same thin watery blood has not only a marked effect upon the heart, but upon the growth of the thyroid gland, which becomes greatly enlarged, with a remarkable prominence of the eyeballs, all of which, the *goitre*, the *weakened* heart, the *protrusion of the eyeballs*, may be traced to the same motive cause. Attacks of fainting, palpitation and dyspnœa, œdema, dropsical effusions into the pleura, pericardium or peritoneum, amenorrhœa, occasionally fatal syncope. Indeed, every symptom is characteristic of profound debility, owing to a want of red discs in the blood.

Anæmia is caused by a variety of circumstances which impoverish the blood, as mental derangement, care, disappointment, which arrests the activity of the assimilating viscera; hemorrhage, exhaustive discharges, starvation, diseases, poisons.

Diagnosis.—Anæmia is caused by any circumstance that tends to impoverish the blood, as hemorrhages, exhaustive discharges, certain diseases. Chlorosis is by some obscure cause operating on the nervous, generally originating in reflex uterine irritation. In anæmia the deficiency of the red corpuscles is pathognomonic; in chlorosis, the centres of life are depressed,

nervous depression, exhaustion; hence, the progress of cure is always slow, but progressive.

Treatment.—The aim in treatment is to introduce as quickly as possible the largest amount of nitrogenous food, iron, chlorine and phosphorus into the system, so as to raise the standard of the vital fluid. Beef, eggs, milk, oysters, then iron, to supply the anticipated new growth of red discs with their metallic constituents. A soluble form of iron is the best.

Pyrophosphate in solution, teaspoonful thrice daily; or,

℞.—Vallet's mass, ʒj;

Extract nux vomica, grs. vij.—*Mix.*

Make twenty pills. One three times daily.

Chlorine can be supplied by giving the terchloride of carbon in five-drop doses every four hours.

Chlorine water may be tried, but if neither succeed quickly put the patient at once upon hydrochloric acid in six-drop doses every three hours. A hydrochloric acid bath, or sponging the body with water, acidulated with hydrochloric acid, poured on beef cut up in small pieces—one pint of the water to two pounds of beef.

Chloride of sodium is a most important remedy in anæmia—it supplies the deficiency of salts. It is a powerful aid to treatment, to the building up of the body, the restoration of the devitalized fluid. It may be given internally and as a bath.

As the end of all sound medication is to build up and tone, we would give phosphorus in sufficient doses in a soluble form, two or three times daily. This is a decided indication for this remedy in all cases of debility. Constipation can never be overcome by purgatives. Their exhibition here is irregular, destructive. We would stimulate the nervous energy by nux vomica, a tonic stimulant, and elicit in every case a response, a peristaltic action.

To aid in restoring the deficiencies, chemical food; to give increased tone and more rapid absorption of food, cinchona, in the form of comp. tincture, combined with nitro-muriatic acid, ℥ij of the former to ʒj of the latter; gentian and hydrastin, pepsin, hypophosphates, permanganate of potass., inhalation of oxygen, nourishing food, milk, raw eggs, brandy and egg, poultry, glycerine and phosphorus, mineral waters, abundance of fresh air, moderate exercise, warm clothing, thorough hygiene.

HYPERÆMIA.

Plethora or fullness of the blood consists either of an excessive quantity of the vital fluid; or of a superabundance of the red globules. There is also an increase of the fibrin. It is caused by overfeeding or stimulation, want of exercise, the blood being directly fed by the chyle; free living is the most common cause. The normal waste of tissue, is also retarded by alcohol, by a sedentary mode of life, and a lymphatic temperament is produced.

When the blood becomes over rich in red corpuscles, it is plainly indicated by a distension of the capillaries on the cheeks, lips, mucous membranes, by a full, strong, resistant pulse, by a turgid appearance of the veins, by vertigo; muscæ volitantes ringing in the ears, full sensation about the throat.

The *treatment* of plethora must depend on a restricted diet, or on the employment of non nutritious substances; in the avoidance of all stimulants; in abbreviating the hours of sleep; in the use of active exercise in the open air and sunlight. Daily bathing, followed by brisk friction of the skin; secretions kept rather active. Hepatic stimulants like podophyllin and potassæ are very beneficial, efficacious, if there is a rapid tendency to obesity, check off the supply, increase the waste by stimulating the emunctories of the body, by increasing the vital metamorphosis.

LEUCOCYTHEMIA.

This may be defined to be a morbid state of the blood, in which the white corpuscles are greatly increased in number, while the red are much diminished.

The red globules are small round discs suspended in a colorless fluid called plasma, liquor sanguinis, or serum. In anæmia there is a deficiency of red globules; in health they exist in proportion 130 to 1000 parts of blood; whereas in anæmic patients, they are often as low as 40 in 1000. In plethora the red globules are increased to 141; whereas in leucocythemia the red globules are greatly diminished, white vastly increased.

Scarcely any condition should be mentioned that may not influence the vital fluid. It may be emphatically asserted that any change of health, temper, emotion, food, air, or variation in functions, exercises its effect upon the blood. If from any cause we have an unhealthy state of that fluid, the simplest wound will ulcerate, eruption appear, scrofula, scurvy, or some other morbid condition of that fluid be engendered.

Unhealthy food deranges the digestive function, and poisons the circulating fluids. The long continued use of some articles of food produces disease. An excessive use of vegetable acids deteriorates the blood; eating freely of fresh animal food increases the fibrine and richness of the blood, and predisposes to disease. Excess in eating and drinking is the source of a large amount of disease. An imperfect action of the kidneys, skin and liver is one of the principal causes of disease. Perfect health requires a full performance of all the functions of depuration. If we have a diminution of the red corpuscles, we have anæmia; if we have depression of the nervous system, with uterine derangement, chlorosis; if we have the lymphatic system, or the spleen disordered, we have the elaboration of the blood corpuscles almost entirely white. A white-cell condition of the blood, then, is no doubt more especially to a morbid condition

of the spleen—that organ which acts as a safety valve in equalizing the circulation, and which, with the lymphatics, exercise such an important agency in the elaboration of that vital fluid. In this morbid state the red corpuscles are greatly diminished; hence the anæmic pallor, emaciation, debility, disordered circulation, depression, hemorrhage from nose, lungs, stomach; jaundice, anasarca, sudden death, rupture of heart.

It is a sequel of malarial poisoning; the spleen in the stage of rigor is subjected to great distension. This repeated engorgement impairs its proper function; the second stage of malarial poisoning takes place, in which the blood becomes clotty or fibrinous, so that it stagnates in the weakened interstitial structure of the spleen, thus its structure is lost. It becomes hypertrophied, caked, and thus fails to raise the standard of the white corpuscles to red; hence the blood disease.

Pathology.—A drop of blood from a prick in the finger, placed on the slide of the microscope 250 diameters, shows the yellow and colorless corpuscles are at first seen rolling together; the excess in the number of the latter being at once recognizable, and becoming more evident as the colored bodies get aggregated together in rolls, leaving clear spaces between them filled with the colorless ones.

The blood glands are very commonly found enlarged in leucocythemia, especially the spleen, liver and lymphatics; less frequently the thyroid body and the suprarenal capsules are affected.

In the treatment everything that will aid in toning and bracing up the patient will be of utility. Nourishing diet, stimulants, salt water bathing, sea air, warm clothing. The hypophosphites are very valuable remedies, given in alternation with comp. tincture cinchona, and the mineral acids. Iron, on account of its excellent tonic properties, most invaluable, but in all cases we should be guided by the symptoms present.

PIARRHÆMIA.

Miikiness of the serum or fatty blood is met with in diabetes, alcoholism, disease of the liver and kidneys, especially in Bright's and Addison's disease.

The presence of free fat and molecular albumen in the blood may also be the result of digestion, pregnancy, lactation. In the process of digestion, the lactiscence of the serum begins about two hours after the ingestion of aliment and continues for a few hours. The serum is found turbid, opulescent, a condition, however, only transitory, and due to the absorption of fatty matter, formed into an emulsion by the pancreatic juice, and absorbed as such in the duodenum. It is entirely due to the presence of fat globules, and molecular granules of albumen. The chyle renders the serum of the blood turbid, and this tur-

bidity lasts until the insoluble fatty matters enter into combination with the free soda of the blood. This condition is often the pathological result of disease.

Various explanations have been offered as to the occurrence of fatty blood in disease. Some attribute it to passage of unaltered chyle into the circulation; others that the fat is set free in the blood for want of a free alkali; while another class maintain, that it is a fatty degeneration of the albumen of the blood, while others insist that it is dependant upon a new combustion of fat. Never do we find it existing as an independent affection, invariably associated with kidney or hepatic affections.

GLUCOHEMIA.

A saccharine condition of the blood—a condition in which we have sugar present in all the secretions of the body. This may be due to various causes, as in certain depressed conditions of the stomach we have the starchy elements of the food converted into other compounds and absorbed into the blood. Sugar is a normal secretion of the liver, but if there is an irritation of the eight pair of nerves at their origin in the fourth ventricle, sugar is generated in such abundance that the oxygen in the lungs is incapable of burning it up; hence it is thrown back into the system and eliminated by the tears, saliva, sweats, stools, urine.

In health the sugar formed by the liver passes into the hepatic veins, the inferor vena cava, the right cavities of the heart, and thence by the pulmonary artery to the lungs where it is consumed; but, when irritation exists the sugar is in excess and the lungs are incapable of using it.

The irritation may be in the liver or brain, but more frequently in the stomach, the irritation being reflected by the pneumogastric to the brain, from thence transmitted to the liver, causing it to secrete sugar or a glucogenic substance.

URÆMIA.

When, from any cause, the functions of the kidneys become impaired or suppressed, urea is no longer eliminated by these organs, it consequently accumulates in the blood, producing what is termed uræmia.

Uræmic poisoning or intoxication denotes the accumulation of urea in the blood and the transformation of this salt into carbonate of ammonia. This poison acts upon the brain or spinal cord, or both, giving us stupor or coma, stertorous breathing or epileptic convulsions. Uræmia may arise from any depressed condition or structural disease of the kidneys. In pregnancy and parturition it may arise from pressure of the uterus, producing renal congestion. It may also be due to poisons in the blood, irritating the kidneys.

The convulsions are not due to urea in the blood, but to its being transformed (under some peculiar ferment) into carbonate of ammonia.

Uræmic poisoning may be due to retention of urine in the bladder or pelvis of the kidney, and its decomposition. Either in or out of the bladder urea is readily transformed into carbonate of ammonia.

Uræmic intoxication is easily distinguished by attention to the following points—the urine is albuminous, scanty or of a low specific gravity; œdema of the cellular tissue. Fits are preceded with delirium, headache or giddiness, pupil fixed, dilated, breath ammoniacal, skin emits a uriniferous odor—renal disease; and if these are not sufficient, paint a portion of the skin with cantharidal collodion. From the blister so produced take the serum and evaporate it. The crystals of the urea are easily recognized under the microscope.

In the special treatment of uræmia we should attempt to purify the blood by stimulating the skin and intestinal canal. The alcoholic vapor bath, with the copious administration of diaphoretic teas. Our best cathartics are elaterin, podophyllin, jalapa. We should also give remedies to neutralize the carbonate of ammonia in the blood; benzoic acid, in five to ten grains three times daily, is very valuable for this purpose, otherwise the case should be treated upon general principles.

ACHOLIA.

An arrest of the functions of the liver, so that matters from which bile is formed accumulate in the blood, producing toxæmia. It is a condition that is very apt to arise in all diseases of the liver, as acute atrophy, inflammation, impermeability of the bile, ducts, cirrhosis, cancer, fatty degeneration, nutmeg liver, &c.

Symptoms.—Peculiar and varied state of the nervous system, excitement, delirium, convulsions, typhoid prostration, coma, hemorrhage from nose, stomach and bowels, ecchymosis, jaundice.

Treatment.—Active purgation, comp. powder podophyllin, leptandrin, jalapin, eunoymin, benzoic, nitro-muriatic acid, hydrochlorate of ammonia, counter-irritation over the liver, with nitro-hydrochloric acid; baths of same.

ICHORRHÆMIA.

Commonly known as pyœmia, a morbid state of the blood, caused by the introduction into it of ichorous or putrid matter, which is usually followed by several constitutional disturbances, as well as the inducing suppuration in important organs.

Ichorrhæmia is particularly dreaded by obstetricians and surgeons, since it not unfrequently is the cause of very danger-

ous symptoms after parturition (*puerperal fever*) and surgical operations. It may display itself in more ways than one. Thus, in some cases, the patient seems to be so immediately and deeply affected by the morbid matter that he dies before any local phenomena can be developed. In a second class, the intensity of the poison seems to be exerted upon the liver or the mucous membrane of the intestinal canal; in the one case nature appearing to make efforts at elimination by the discharge of a large quantity of dark bile, in the other by a severe attack of diarrhœa or dysentery. Then there is a third state of cases where the serous membranes bear the brunt of the poison, and we have pleurisy or pericarditis or peritonitis, or the cutaneous surface is the part affected, and we find erysipelas or a more or less copious eruption of boils. And again, there is a fourth class in which profuse suppuration ensues, giving rise to *secondary* or *metastatic* abscesses in the lungs, liver, joints, eyes, &c.

Among the various forms of suppuration, is that caused by inflammation of the cellular tissue. From punctured wounds in dissections some animal poisons are very virulent, such as the poison of erysipelas, puerperal peritonitis, gangrene, inflammation. The bites of venomous reptiles and insects, also the poison of a bite from an enraged man, produce grave, nay, serious results. The poison thus absorbed gives rise to inflammation of the cellular tissue and absorbents generally of the wounded part. The lymphatic glands become implicated. The skin over the affected part is pale, tissue shining, while the swelling which occurs communicates a boggy feeling to the touch. These inflammations are attended with severe rigors, extreme restlessness, great pain, and prostration. They are often fatal, either in a few days or weeks. Death is preceded by delirium, fetid perspiration, jaundiced skin, constriction of chest, stupor, coma. The effluvia emitted from the dead body may cause extensive toxæmia by acting upon puerperal patients. Our prognosis in purulent absorption is very unfavorable.

In the treatment, the powers of life should be well sustained —an attempt made to purify the blood, and full incisions made over affected parts, followed by poultices of charcoal, capsicum, yeast.

Strong beef tea, free stimulation, with brandy, anodynes to subdue pain. Elimination of the poison by frequent sponging, acting freely upon the liver with podophyllin and hyosciamus. Yeast should be given freely in milk, all symptoms closely watched and met.

In all wounds or bites of animals, ligate above and below the part, suction, apply warm water to encourage free bleeding, followed by touching it with caustic potass, then a poultice of lobelia and stramonium.

EMBOLISM.

A highly fibrinized condition of the blood is apt to be created by certain conditions and particular diseases. This peculiar condition is often developed during pregnancy and labor, we meet with it also in croup, diphtheria, scarlatina, typhus, erysipelas and other diseases. The use of ergot during parturition is productive of the disease. In this condition there is a strong disposition for the blood to clot, either on the walls of the blood vessels or the interior of the heart, and often these fibrinized coagula are carried forward by the circulation, and block up some particular vessel or vein. There is no part of the body exempt from having these clots arrested in their peripheries; they are a frequent cause of sudden death after labor, rupture of the heart taking place.

In a *post mortem* examination of cases of patients who have died from this condition, fibrinous specks or patches have been detected on the walls of the vessels, and large coagula found in the brain, lungs, heart, liver, &c. The diagnosis of the disease is often difficult, and the symptoms are very variable.

The object of the treatment is to keep the patient alive by proper support, and to render the blood more fluid by alkalies —resolvents—they lead to solution of nitrogenous tissue; perfect rest in the recumbent position; this is undoubtedly the most important indication of treatment. Then irritability should be allayed, vital power supported; diet, milk, eggs, soups, and to meet the pathological condition of the blood, the following remedies should be given:

In the sesqui-carbonate of ammonia we have an excellent agent, it possesses the properties of all other alkalies, and in addition excites the heart and circulation. This agent freely diluted should be administered. The mineral acids should be carefully avoided as they favor coagulation. The patient should be supplied with plenty of fresh air, and the most rigid quietness in both mind and body observed; *bromide ammonium* when a deposition of fibrine has taken place; *sulphate of soda* valuable in the tedious convalescing stages of fever where this condition is suspected; *permanganate potass* has a like effect over the morbid condition; *sulphate quinine* is chiefly of value as a tonic.

SCROFULA—TUBERCULA—STRUMA.

Synonymous terms used to designate a species of blood disease, in which the red corpuscles are smaller than what they are in health, in which the white corpuscles are increased in number, where the blood is more plastic and albuminous. It is a form of blood disease with which over two-thirds of our people are affected, and in our present abnormal condition of civilization is fearfully on the increase. The correct

definition of this condition is an impaired vital force, an enfeebled nervous system, under which we have blood elaborated in the body, feeble in all the elements of life; a defect in the organic cell; blood defective in life, in its organizable capacity, liable at any time the circulation is excited to be effused in weakened structures, and once thrown out its watery portions are absorbed, its more solid portions aggregate together into round masses that are called tubercle.

The causes of this deterioration of the nervous system may be either hereditary or acquired. The most prominent of the hereditary causes are incompatibility of temperament and of race—the marriage of blood relations. The sameness of location, absence of sunlight, produces scrofula. Races are perfectly incompatible, the stock produced not being essentially hybrid, still lower than either of the parents. There is also a decided incompatability in ages; wherever the paternal member exceeds the maternal by over 15 years, the offspring is strumous. Parents may possess the diathesis, and transmit it direct to their children. Besides, the use of tobacco, alcohol, drugs if deleterious, acting on parents, impairing their brain forces, will generate this diathesis in their children. If the diathesis in the parents be extreme, a condition of non-procreation will be the result, for an impure human breed cannot be sustained beyond a certain point. There is no such thing as a morbid race; the evil arrests itself in non-production. Besides these, monotony of life, depressing passions, excessive mental and physical exertion, will deteriorate. Town life, factory labor, syphilitic taint, mercury, creates a lower grade of life; menstruation and sexual intercourse during pregnancy, will cause a struma. This condition may also be acquired after birth by any kind of irritation, as teething, worms, diarrhœa, acidity of stomach, improper hygiene and dietitic management may depress the vital forces of a child, create a scrofulous habit, a lower stratum of mental life—menstruation during nursing is a fruitful source of this condition.

Irritation of the organs of generation, either male or female, is preeminently productive of a lower grade of brain life. The irritation is passed directly to the brain, and a depreciation is the result.

Meagre food, a climate non-indigenous to the individual, the depressing effect of novels, romances, sensational literature, immoral atmosphere radiating around and penetrating the tender tendrils of our youth, produce it.

When it exists it modifies and influences any disease with which the patient may be attacked; indeed it predisposes to morbid conditions and renders them more persistent and intractable.

A question naturally suggests itself: How do we know this condition of constitutional debility, defective vital force?

If the patient is of a sanguine temperament the hair is dry, the skin is remarkably fair and thin, showing the blue veins wandering underneath it, and presenting a peculiar contrast between red and white; eyes light blue or dark, characterized by great delicacy and vivacity; muscles soft and flabby. If of a bilious temperament the aspect is dull, sluggish; eyes gray or hazel; disposition heavy and listless. In both temperaments a protuberant condition of the eyeballs; skin thin and easily raised from the structures beneath. All the natural functions are liable to be performed irregularly; digestion is feeble; tongue coated, red on its tips and edges; appetite deficient; abnormal cravings; bowels torpid; skin dry; blood thin, watery; action of the heart and arteries feeble. As a rule puberty is either early or retarded; sexual passion strongly manifested, a species of hyperæmia of the organs of generation —a deficiency of life in every structure of the body. The diathesis may remain latent in the system and the patient pass along to a good old age and die without any manifestation of disease, unless some lowering agency, some condition of irritation or depression should occur.

If this condition of irritation should arise from any cause or any other condition, which gives evidence of nervous depression, there is an accelerated pulse, and as the disease gains a foothold the patient experiences flashes of heat, burning and tingling of the face, soles of the feet, palms of the hands, and you will observe that it is toward evening's approach that these symptoms are well marked. There is an increased action of the heart—more frequent respirations—all pointing to an impairment of the life forces. And this general condition of depression usually aids the local irritation. They generally act or exist simultaneously.

Although we believe the primary cause of consumption to be a deficiency of brain structure—a defect in the organic brain cell—thousands of ignorant physicians believe that the cause is a particle of some foreign matter, a parasite taken into the body. Others again believe that it is a disease of the pancreas, caused by a deficiency of the pancreatic secretion, a failure to digest the fatty portions of the food in the duodenum, hence the patient dies or starves for want of food in the system.

Those two latter theories can easily be refuted. If it was caused by a parasite why did it not exist in all ages of the world and in all nations?

The insufficient amount of pancreatic secretion can be easily explained on the principle of a deficiency of life in the fountain-head—the brain. All the organs must suffer when there is a lack of power in this organ, hence indigestion, torpid

liver, impaired function of the skin, obstruction of the kidneys, &c.

A more intelligent class have endeavored to explain the primary condition as being confined to the stomach.

Now, when there is weak digestion, food is retained a long time in the stomach. Fermentation takes place, and acids are formed. These act as depressents, impairing the elementary molecules of the blood, rendering it feeble in all the essential elements of life, hence the body is imperfectly sustained and disease commences its ravages. We claim that in ninety-nine cases out of a hundred the first cause exists in the brain. The effect of brain depression is this morbid condition of the stomach.

The true condition, then, we believe to be a deficiency of brain elements, a want of more nerve force, an exhausted condition of that tissue and vitality in the nerve cell. Believing in this theory, what do we find in the poor, unfortunate sufferer? We find a feebleness of vital force; every structure, every tissue of the body is destitute of nerve vigor.

To prevent this wide-spread disease, mankind must learn the immutable laws of life, then its cause will be abolished. Abolish poverty, filth, vice, drugs, poisons, everything that degrades humanity.

Treatment.—In accordance with our theory of tubercula, the primary condition being essentially one of nerve depression, the morbid condition of the blood being produced by this defect, it is of primary importance to resort to means both moral, religious, sanitary, dietetic and medicinal. Of the influence of moral and religious surroundings in promoting a higher grade of intellectual or brain development, not even the most skeptical can doubt. So with sanitary science, that which teaches us to guard against those surroundings that have a tendency to destroy us. Late hours, fatigue or over-work should be avoided. Flannel clothing should be worn next the skin, and daily ablutions should be the rule, followed by brisk friction to the surface, using for this purpose a coarse towel, rubbing and drying the surface thoroughly.

The city in the winter, and the highlands in the summer, are the best locations for residences.

The secretions should be strictly attended to, and kept regular. The acidity of the stomach should be neutralized by some appropriate remedy, and a diet easily digested, rich in the elements of blood, as rare broiled beefsteak, eggs, oysters, milk, farinaceous food, ripe fruit, &c.

There should also be a special as well as a general medical treatment. The special treatment should be directed as much as possible to the amelioration of symptoms, the general, to a truly curative management.

The special treatment, then, should consist in energetically treating symptoms as they arise. The wasting of the structures of the body merits early attention. Good diet will do much; inunction of olive oil into the entire body every day is of great value; it supplies fat, aids combustion in the lungs, and the careful rubbing in, performed by a vigorous person, all have a salutary effect in imparting a renewal of life to the patient. The rubbing should be continued till the skin fails to absorb the oil. The rubbing should never be done by the patient, but by some other person in robust health.

The flashes of heat and cold, the febrile exacerbation, claim early attention, as they clearly indicate nerve depression; these symptoms call for the administration of aconite, cinchona, digitalis, &c.

The pulse and heart should be carefully kept slightly below a normal standpoint. This prevents effusion taking place into the structure of any tissue.

The falling of the hair, and night-sweats, being but indications of debility, they should be boldly met with quinia, aromatic sulphuric acid, &c. We should use alteratives judiciously to endeavor to change the base or constitution, such as comp. syr. stillingia, yellow dock, tag alder, frostwort, corydalis, iodide potass., and when using an alterative treatment we should give tonics, a class of remedies that promotes digestion, assimilation, that constructs or builds up.

Now the general treatment with which we propose to meet the great loss of brain power, impoverished blood, general depression and nervous debility, and one that we have experimented with for a number of years with a degree of success that is truly astonishing, is the following:

℞.—Comp. syr. hypophosphites lime,
Soda, iron, Oj.

Dose.—A teaspoonful every three hours.

The hypophosphites fulfil a remarkable indication of the treatment of tubercula. They seem to feed the brain with new life and new vigor. They supply histogenetic material to the whole system. The nutrition is rapid and is manifested by an improvement of vital force.

If this theory of struma could only be accepted by the profession much good could be done, many valuable lives saved.

CARCINOMA.

A morbid condition of the blood in which the blood corpuscles are altered in shape; elongated, oblong, spindle-shaped, heart-shaped, every variety of shape except globular.

Characterized by a peculiar cachexia, dirty yellow hue of the skin, pearly conjunctiva, contracted features, emaciation, loss of strength and energy, mental irritability, which

increases with the progress of the disease, and at the same time augments the primary local change. A true blood malady not a local parasite as some claim. The causes of this disease may be hereditary, or it may be acquired; in the *former* case parents may transmit the diathesis to their offspring; in the *latter* case it may be acquired by anything that depreciates the nervous system.

Civilization creates certain evils which affect the human family, and some of them create a rapid deterioration of vital force.

Venereal excesses, mercury, &c,, create a predisposition in their victims to a morbid condition. Also a certain dynamic condition of the ganglionic system of nerves, which presides over the whole process of nutrition.

Sameness of location, incompatibility of temperaments, and causes that engender scrofula, may also be prolific of this disease. Nerve depression, as indicated by languor, lassitude, debility, all the functions of the body imperfectly performed, brain and blood seriously implicated, stools clay colored, bowels constipated, urine scanty and high colored, full of cancer cells; skin, dry and harsh; dyspeptic symptoms, loss of flesh, nausea, vomiting, diarrhœa, prostration, exhaustion, followed by death.

The exciting cause of cancer is some local irritation. When this is present, depression of the part, exudation follows. In the plasma thrown out, abnormal cells from the blood, true cancer cells are exuded, causing an infiltration or thickening or tumor.

This infiltration from its very earliest formation is characterized by pain paroxysmal in its character; if few cancer cells are present pain is not frequent nor intense; if there is a great aggregation of cancer cells, pain intense, frequent, but in all cases *sharp*, lancinating.

The proportions of the various substances in cancer vary with the modes of distribution, and the different tissues in which this morbid material is developed, and also with the temperament and other concurrent circumstances to which the patient may have been exposed. At the commencement of the disease, the structure of the organ in which it is seated, retains for a time its usual aspect and color, being altered merely in volume and density, especially the latter; but, as the disease advances, the proper tissue of the organ becomes more obscure, and verges nearer to that of the morbid mass.

The local disease having progressed to a certain point excites inflammation, ulceration and destruction of the part; this results partly from pressure, partly from a process of disintegration and decay, and partly from the inherent nature of the cancer cell, which possesses the elements of death within itself; the diathesis being essentially a retrogressive one, with death stamped upon every element of human life.

Disorganization usually commences in the centre of the cancerous mass, which is also destroyed by an ulcerative process. Now, the disease makes rapid progress, in consequence of the additional contamination of the blood by the morbid matter absorbed from the ulcerating part; a considerable portion of this matter is absorbed, implicating the lymphatic glands, and vitiating the whole solids and fluids of the body. The powers of life rapidly sink, the soft structure of the body becomes cachexied, and the constitutional contamination increases. Cancer is met with chiefly in glandular organs, because they are more liable to irritation or arrest of function. It is also common in parts previously diseased, or that have received some violence, but no part of the human body is free from its ravages or deposit.

Diagnosis.—It is of great importance to be able to distinguish between this disease and various others, for which it is liable to be mistaken. Thus, simple induration has frequently been mistaken for cancer. The local symptoms are, a separable tumor or infiltration, which alters or changes the original texture of the organ or part in which it is seated, with a tendency to invade the surrounding tissues, to extend to the nearest lymphatics, and ultimately usurp the whole part.

Pain is a characteristic symptom; it is of a lancinating and intermittent character, there being intervals between the attacks of pain resembling a needle or a knife, and, if in the chest or abdomen, pain anterior and posterior is diagnostic of the disease in all cases; cancer cells can be detected by the microscope, in the urine, at a very early period.

Varieties.—*Medullary*, or brain cancer, or what is a more appropriate name, acute cancer, is characterized by an excess of cancerous cells.

Scirrhus, or hard or stone cancer, chronic in character, and characterized by a predominance of fibrous tissue, and few cancer cells.

All other varieties are but modifications of those two, but named from their fancied resemblance to certain substances, or from the incorporation of certain ingredients in their structure, viz:

Epithelial, or cancroid, containing an excess of epithelial cells, usually met with where skin and mucous membranes meet.

Melanosis, or black cancer, characterized by an excess of cells, and a large amount of black pigment.

Hæmatoid, or fungus hematodes; this has an excess of blood free or inclosed in blood vessels.

Osteoid cancer occurs in bone or where bony material predominates.

Lardaceous, where fat is infiltrated in abundance through the cancerous deposit.

Colloid cancer or gelatine form, where there is an excess of gelatinous material.

Keloid cancer, when leathery patches take place on the skin.

The pathological characteristics of cancer are such as clearly separate it from every other morbid growth. There are tumors of various kinds, which constitute diseases only from the position in which they are found, their compound elements being the same as those of the healthy tissues of the body; thus, fat, cartilage and bone, which, when occupying their proper places, are essential to the perfection of the animal system, by occupying a position in which they are out of place form swellings which it may be absolutely necessary to remove; but cancer is a growth which has no counterpart in health, the very existence of its cells, wheresoever their location, at once sufficing to constitute disease, and more than this, while their growths simply interpose themselves among the proper tissues of the part in which they may be found, cancer is distinguished by its power of converting such tissues into its own peculiar substance, and therefore of increasing at the expense of the healthy structures, among which it is evolved, and which often diminish until they can no longer be recognized.

Prognosis of cancer is favorable, under good treatment, if the lymphatics are not involved; if they are implicated its tendency is toward death.

Treatment.—The treatment of cancer by the knife or caustic cannot be too highly condemned or deprecated; a successful mode of treatment is one that will act as a tonic to the brain, and a purifier of the blood; the nervous system must be built up, new blood formed, and the old diseased blood eradicated from the system. This must be done several weeks before any attempt at removal should be made; and when the removal of the tumor is decided on, it must be done by a plaster, one that will produce no irritation whatever; no knife or caustic should touch the part. We must depend upon a more scientific course of proceeding, one in harmony with nature. The grand indications of treatment, are to build up the centres of life, to maintain its power by tonics, nourishing food, pure air, warm clothing, stimulate the secretions, provide invigorating mental occupation, allaying pain, neutralizing offensive discharges, and in removing the tumor or infiltration.

If good common sense is observed the success of treatment will be good, simple, salutary and curative.

To keep the liver in good working condition, we are partial to the following pill:

℞.—Podophyllin, grs. v;
Leptandrin, grs. xx;
Hydrastin, grs. xxx;
Ext. nux vom., grs. viij.—*Mix.*

Make 20 pills. One at bed time.

This rectifies the abnormal condition of the liver and bowels and stimulates the stomach. Every other day inculcate a bath of nitro-muriatic acid or iodine, such as the following which makes an excellent bath:

℞.—Nitro-muriatic acid, lbs. ij;
Water, galls., lx.—*Mix.*

This is alterative, tonic and cholagogue. Under its uses, the sallow, cachectic aspect quickly disappears; rapid improvement takes place in every case.

When using the iodine bath, always make it strong enough to stain the skin slightly.

The patient should wear the flannel next to the skin, and should take moderate exercise in the open air. Diet should consist of animal food, game, milk, cream, raw eggs, oysters, vegetable phosphates.

In addition to the baths mentioned above, an occasional salt water bath, or a vapor sulphur bath may be advantageously used.

After having attended to the principles of hygiene, dietetics, and moral surroundings of the patient, remove all apparent causes that produce a degeneration of human stock, as monotony, &c., and then begin with the following treatment, which seldom disappoints, if rigidly carried out.

Use the following as an internal remedy:

℞.—Chlorate carbon,
Yellow dock, lbs. ij;
Bitter sweet, lbs. ij;
Comfrey, lbs. ij;
Dandelion, lbs. ij;
Mandrake, lbs. j;
Blue flag, lbs. j;
Tag alder, lbs. ij.—*Mix.*

Let all the herbs be good and fresh; then grind fine and mix the articles together; place the whole twelve pounds in a convenient vessel, cover them with alcohol of 96 per cent., macerate for four weeks. Then transfer the whole to a displacement apparatus, and gradually add alcohol until five pints of the alcoholic tincture has been obtained, which retain and set aside. Then continue the percolation with water as long as it exhibits a sensible amount of medicinal properties with alcoholic taste; continue the displacement with water, until it has no taste. Boil down these two solutions (all except the alcoholic tincture) so that it will make thirty-two pints. To these two solutions combined, add thirty-two pounds of refined sugar and dissolve by heat, carefully removing any scum which arises as it comes to the boiling point; and if it exceeds thirty-six pints, evaporate to that quantity with constant stirring. Then remove from the fire, and when nearly cold, add the four pints of reserved

alcoholic tincture; to the above, when it cools add two ounces of chlorate of carbon; the remedy is then ready for use.

Put the patient at once upon the alterative; commence with teaspoonful doses, and gradually increase to a tablespoonful every four hours; let it be taken upon an empty stomach in a few tablespoonsful of water.

Its action is a powerful stimulant to the glandular system; on the glands of the throat it is extremely active, and the dose should be regulated by its action. It quickly eliminates the cancer cells from the blood, and rids the system of it. The cancerous growth is retarded, the diathesis arrested, and will disappear in a very short time.

The remedy owes its principal virtues to carbon, which is a vivifying agent to the brain, an agent that increases the vital element of the blood.

To relieve pain, the carbon in most cases is sufficient. If it has not time to act, to cut off the mal-nutrition, then the sensibilities must be blunted by subcutaneous injection of morphia, or by the administration of henbane, or conium, or Indian hemp. If morphia is given internally, let it be given with an alkali to increase the activity of the mucous coat of the stomach, as

℞.—Aqua cinnamon, ℥ij;
Potassa bi-carb., grs. xx;
Morphia sulph., grs. ij.—*Mix.*

Dose.—A teaspoonful, as indicated. But if the carbon acts well, there is no need of anodynes, for usually in 24 or 48 hours after this treatment is commenced all pain *ceases.*

If the tumor is small the best plan is to absorb it; for this purpose it is well to have on hand stramonium or phytolacca ointment. These should be prepared from the green plant and made by the physician himself. Then make as follows:

R.—Stramonium oint., ℥j;
Muriate ammonia,
Iodide potassa, āā, ℥ij.—*Mix.*

Spread on leather and apply twice daily.

If it is desirable to hasten absorption substitute the phytolacca ointment for the stramonium, persevere with the internal remedy.

The removal of the local growth should be performed with great care and caution. It is quite unnecessary to stimulate, much less we irritate. Removal in all cases should only be resorted to after the patient has been several weeks under the constitutional alterative. By this method the nutrition or cell supply is cut off and we have nothing to remove but a morbid mass—an inert body—so that much is gained by this seeming delay. The following makes an excellent plaster:

℞.—White oak bark,
Blue flag, āā, lbs. ij.—*Mix.*

Place all in a boiler, cover with water and boil, keep adding water so as to cover them; boil ten or twelve hours, strain, then evaporate to the consistency of molasses. After it is cold add one ounce of chlorate of carbon to the pint. Another

℞.—Phytolacca,
Red oak bark,
Yellow dock root, āā q. s.—*Mix.*

Make as the above. Another

℞.—Red clover,
Phytolacca,
Sorrel, āā, q. s.—*Mix.*

Fresh plant, cut fine, moisten and place in a press, press out the juice, evaporate to the consistency of molasses and add the carbon above. If possible, let all the ingredients be fresh; the red clover, poke and sorrel, in bloom.

If the cancer is open the application of either of these will remove it without any pain or loss of blood.

If the cancer is close, put the patient under the influence of an anæsthetic; map out the part to be removed, then apply pure nitric acid for a few minutes until the skin assumes a yellow aspect and add fluoric acid, to either of the extracts, and apply. The amount of fluoric acid to be added will depend upon how rapidly you desire extraction.

The carbon and fluoric acid seem to have a special affinity to the cancerous mass; they are truly and essentially *antidotal.* They can be relied upon in every case where they are applied. They should be applied twice a day. The growth will drop out in a few days and leave a beautiful healthy sore. The addition of the fluoric acid and the chlorate of carbon is truly a great discovery; or you might use the following

℞.—Chlorate carbon, grs. x;
Chloride zinc,
Blood root, āā ℥j.—*Mix.*

Let a plaster be made and apply, first brushing over the part with fluoric acid, somewhat diluted.

The cavity, after the tumor drops out, is not as large as one would expect, and it usually presents a nice, clean, healthy appearance, secreting pus, and requires very little local treatment, but the application of adhesive strips to stimulate granulations, and the applications of the stramonium ointment. If any exuberant granulations sprout out, touch them with the fluoric acid.

If, however, the wound looks unhealthy or filled up with roots, keep its cavity filled with the clover and oak bark extracts, very slightly acidulated with the acid; as soon as it changes poultice with a detergent poultice of cranberries, or the charcoal and yeast poultice, or elm poultice with ley, or the

carrot poultice. These may be followed with lotions of permanganate and chlorate of potassa in glycerine. As a general rule of practice the stramonium ointment is the best dressing.

Cancer of the uterus is unquestionably the most difficult to manage and the most hopeless. Put the patient first of all upon the alterative with the chlorate of carbon for two or three weeks, so as to change the character of the system. Cut off the supply from the tumor, then begin and introduce cotton, saturated with the following

℞.—Aqua, ℥iv;
Chlorate carbon, ʒij.—*Mix.*

Change frequently and apply.

After this has been used for one or two weeks, follow the local treatment up with some of the formulæ given with the fluoric acid. The vagina must be carefully protected by a gutta percha or rubber speculum so as to prevent injury to the adjacent parts.

In some cases where the carbon has been carefully used before the fluoric acid, the latter can be applied in good strength, and for several hours successively, carefully guarding the adjacent parts. In this way if the entire cancer cannot be removed on the first application, it may be done so piece by piece, following it right up.

In minor infiltrations we can apply the acid greatly diluted in any vegetable extract suited to the peculiarities of the case.

With the remedies given above, cancer of the womb is amenable to treatment; indeed the more decided cancerous growths or formations, situated in the neck or lip, can be eradicated either before or after ulceration. The earlier the disease is discovered and active measures are taken, the better the patient's chances for recovery. No evil can accrue even if the infiltration is simple, for it is the best treatment under all possible conditions. Each case will require a special treatment.

VENEREAL DISEASE.

This disease is due to a poison generated by promiscuous sexual intercourse. Wherever this is loose and varied, and especially when limited to a few women among many men, there it will break out with all its virulence. It has evidently existed in all ages and in all nations, and is apparently the result of a violation of divine law. When once generated it is capable of being propagated in any of its stages, by actual contact, and transmitted to the offspring.

It is a poison when it once gains access to the human body that is capable of producing the most terrible ravages, and even death.

The blood is poisoned; its corpuscles are diseased, indented, and break down rapidly; waste being greater than renewal.

It is a dual poison, possessing two different degrees of intensity. *One*, a poison of low intensity, incapable of impairing the molecular growth of the blood; *the other*, a poison of high intensity, always affecting or poisoning the vital fluid, causing systemic syphilis. Both poisons create specific inflammation of mucus surfaces; follicular inflammation of the true skin—a pustule or pock. The former is designated gonorrhœa or clap; the latter a chancre or pock.

GONORRHŒA.

This term is applied to inflammation of the mucous membrane of the urethra, generally beginning at the anterior portion, attended with a contagious mucus or muco-purulent discharge.

The cause is a specific virus venereal matter, coming in contact with the part; still leucorrhœa, menstrual discharge, strains, or blows, may excite a mild type of inflammation, which passes off in a few days.

True gonorrhœa is due to the action of specific poison depressing the part; it may be the poison of low intensity, or it may be the one of great intensity; both forms produce a gonorrhœa.

The symptoms of both grades of the poison are identical. No true distinctive mark but inoculation, scratch the thigh of the patient, and apply a little of the pus; the character of the sore so produced will reveal the type of the virus—the grade of the poison.

A period of incubation varying from 24 to 48 hours after illicit intercourse, sometimes longer, varying with the power of vital resistance on the part of the patient, an itching desire to urinate frequently, heat, fullness and redness of the orifice, slight glairy discharge like white of egg, which soon becomes muco-purulent, great scalding during micturition, pain in the groin, irritability of bladder, weight and dragging in the testicles.

These symptoms are liable to numerous complications, as *chordee*, *painful erections*, *balanitis*, *hemorrhage from urethra*, *retention of urine*, *abscess in groin*, *prostatitis*, *orchitis*, *cystitis*, *gonorrhœal ophthalmia*, *and rheumatism*.

Treatment.—This is obvious; if the patient is seen early, the first two days an effort should be made to abort the inflammation. If possible this should be tried by injecting the urethra, after urinating, with an injection of sulphate of zinc, five grains

to the ounce of water; if this fail then the patient should be placed upon the regular treatment. In selecting a treatment for gonorrhœa, we must, above all things, use stimulants to the mucous membrane. Internally there is very little use in the administration of such sedatives as aconite, cannabis indica, gelsemin.

We prefer a stimulant such as the following

℞.—Comp. syr. stillingia, ℥iv;
Balsam copaiba, ℥j;
Iodide potass. grs. xxx.—*Mix.*

A teaspoonful three times daily. As soon as the discharge begins to abate, give only twice daily.

Injections should also be used, such as a decoction of hydrastis or gold thread, or permanganate potass, one to three grains to the ounce of water. The addition of sulphate of morphia to any of the above is excellent.

The patient should be instructed to use the injections only after urinating.

With the above treatment cases get well in from three days to a week. The condition of bowels, kidneys and skin should be attended to and corrected. It is to be understood also, that the stillingia used be prepared from the crude roots, and not from fluid extracts.

The following prescription, which is so generally used by old physicians, is not near so good as the above:

℞.—Mucilage acaciæ, ℥iss;
Balsam copaiba,
Tinct. cubebs,
Oil sandal wood, āā ℥j;
Spts. nitre dulce, ℥jss;
Tinct. iodine,
" opii, āā gtts. xxx;
" lavendula comp., ℥ss.—*Mix.*

Dose.—A teaspoonful every three hours.

Bowels well regulated with salines, unstimulating diet, plain water for a drink, perfect rest in the recumbent position, and every night, one hour before retiring, give the following as a dose:

℞.—Bromide potass, ℥ss;
Lupulin, grs. v;
Gelsemin, grs. ss.—*Mix.*

With this treatment, the case will terminate inside of one week, without any of the complications which are so common under the old mode of treatment by copaiba, cubebs, nitrate potass., buchu, &c.

For the Relief of Painful Erections or Chordee.—I have found a mixture of a tablespoonful of camphor water, half a drachm of bromide potassium, and ten drops of the tincture of the green root of gelseminum—a positive remedy.

For the Relief of Scalding.—Warm baths, buchu, and nitrate potassæ.

For the Balanitis.—Wash every two hours with strong solution of permanganate potassa, and give drop doses of com. tincture of gelsemin, every hour.

For the Hemorrhage from the Urethra.—The application of cold, gelsemin and erigeron, are our best remedies.

For the Retention of Urine.—Warm bath, suppository of belladonna, gelsemin, muriated tincture iron.

For Bubo.—If in the early stage, rest, free secretions, and the application of the following with pressure:

℞.—Stramonium ointment, ℥j;
Iodide potass., ʒiij;
Muriate ammonia, ʒij.—*Mix.*

Or, an ointment of iodide of lead, or the green plantain leaves; but, if well advanced, and suppuration inevitable, large warm emollient poultices, and as soon as fluctuation is detected, free incisions, and counter incisions, so as to get it to granulate from the bottom.

For Orchitis.—This seldom occurs, unless cubebs and copaiba have been given, or the discharge has disappeared suddenly. It is best treated if due to a metastasis of the inflammation, by injecting the urethra with sesqui-carbonate of potassæ, and thus attracting the inflammation from the seat of the testicle; if not due to that cause, the application of cold, as

℞.—Hydrochlorate of ammonia, ℥v;
Nitrate potassæ, ℥iij;
Aqua, Oss.—*Mix.*

Saturate a piece of linen with it, and cover over with oiled silk. Rest in the recumbent position; free secretions; keep pulse at 70, with veratrum and gelsemin. Another good local application in an acute attack is

℞.—Aqua, distillata, Oss;
Muriate ammonia, ℥ij;
Tincture iodine, ʒi.—*Mix*

Apply as above. For the induration, the result of inflammation, the following is excellent:

℞.—Ointment phytolaccæ,
Stramonium, āā ℥j;
Iodide potass., ʒiv;
Muriate ammonia, ʒv;
Iodine, grs. x.—*Mix.*

Spread on muslin, and apply compression and suspensory bandage, regulate the secretions, and iodide potass internally.

For Prostatitis.—Control febrile symptoms thoroughly with gelsemin, regulate the secretions, and over the perineum apply the following ℞.—Tincture aconite and belladonna, chloroform, āā, on a compress, covering over with oiled silk; or, instead of

this, benzine or lobelia, iron, otherwise a most thorough alterative course should be enjoined, irisin, gold, iodine, alnuin.

For the Cystitis.—Our best remedies here are gelsemin and fluid extract buchu, warm fomentations over region of bladder, perfect rest, secretions regulated with saline diuretics. If the case runs a chronic course, weak injections of nitric acid into the bladder once a day, mineral acids and iodine internally.

For the Gonorrhœal Ophthalmia.—The application of gonorrhœal matter to the conjunctiva excites a violent form of inflammation, which runs a rapid course. It is best treated by an emetic, comp. powder lobelia, followed with an alcoholic vapor bath, active secretions, then place the patient under the influence of gelsemin and veratrum. Drop into the eye a few drops of solution of atropia, gr. j to ℥i, water, thrice daily, and every two hours inject under the lids lotion of permang. pot., (grs. v to ℥j); a piece of muslin saturated with the same kept constantly applied over the eye. Treatment thorough both day and night; patient kept quiet, free from light or sound. If the febrile symptoms run high, active counter-irritation to nape of the neck.

For the Gonorrhœal Rheumatism.—There seems to be erroneous opinions in the minds of the profession as to the cause of rheumatism, occurring during acute gonorrhœa. This disease can only be developed, like every case of rheumatism, from the presence of lactic acid in the blood; an acid generated during the process of imperfect digestion—mal-digestion. The presence of this is indispensable as a predisposing cause of rheumatism, and a depressing cause may excite it, provided acidity exists. This is clearly demonstrated from the acid urine and perspiration.

If this is granted, the treatment is plain; alkalies, diuretics and diaphoretics; give the following:

℞.—Wine colchicum, rad., ℥i;
Quinine, grs. xx.—*Mix.*

Half a teaspoonful bi-carbonate soda thrice daily, and comp. tinct. serpentaria to allay pain and excite perspiration. If the case does not give way promptly, iodide potass, macrotin.

GLEET.

Gleet—Is often a sequel of gonorrhœa, when that has continued for a long period, in a scrofulous or debilitated patient, and is chiefly characterized by a transparent mucous discharge, with no scalding or pain. There is often an irritable condition of the bladder or its neck, or of the prostate, causing the patient to micturate frequently, sometime pain in perineum.

Gleet is due to a variety of circumstances, as stricture, debility of the mucous membrane of the urethra, contraction, &c.

If due to permanent or organic structure, mechanical dilation for a period of months; if due to contraction, bougies smeared with belladonna ointment; if due to relaxation, astringent injections; it there is general debility in the parts, with irritation about the prostate neck of the bladder, then warm baths, suppositories of belladonna, fluid extracts of buchu, uva ursi, hydrangea, alnuin, stillingia, iodine, gold, &c., counter-irritation of the under surface of the penis, and over the region of the kidneys. In all cases there is more or less constitutional debility; tonics are the remedies. *Muriated tinct. iron, twenty-drop doses* every three hours is excellent; *comp. tinc. cinchona* and *nitro-muriatic acid; phosphoric acid* and *glycerine;* nux vomica, salt water bathing, nourishing diet.

Gonorrhœa in the female is much more easily controlled, there being fewer of the complications to contend with. It consists of inflammation of the urethra, vulva, vagina, and canal of cervix uteri.

The best treatment consists in vaginal injections, or lotions of permanganate potassa every three hours; hip baths, saline cathartics, rest, and the ordinary doses of the ordinary gonorrhœal prescription.

CHANCRES.

All physicians who have been engaged in extensive city, clinical or hospital practice, will agree with me in the following statement.

There are two grades, types, or species of the syphilitic poison; one mild and non-infecting; the other of great intensity; always producing constitutional symptoms.

If the virus of either is applied to the mucous membrane of the urethra, we have a gonorrhœa, either of a non-infecting or infecting type.

If the virus of either is applied to the cuticle, a specific ulcer or chancre is the result, corresponding to the character or grade of the virus which gave its origin. Thus there are two varieties of sores, the hard and soft.

1. *Simple, Soft, Non-indurated Chancre*, belongs to the virus of low intensity, never capable of contaminating the constitution. The following are the peculiarities of these ulcers; the inoculation of some part with the specific virus sets up inflammation, and a vesicle is formed, which in about a week (if not disturbed) will break, and leave a sore scooped out, and well defined in its character, discharging a profuse quantity of pus, soft to the feel if grasped between the forefingers and thumb. If simple dressing is applied to such a sore, and ordinary cleanliness is observed, it will heal in a month or six weeks; the secretions are abundant, purulent and inoculable. Instead of one there are generally three or four; extremely liable to complica-

tions, as inflammation of the lymphatics of the groin, phagadenic ulcers, &c.

Effective cauterization by caustic potassa or nitric acid will destroy the ulcer, and change it from a specific to a simple sore, which will readily heal in a week or ten days under the restorative influence of white oxide zinc ointment or elder-flower ointment.

In scrofulous patients, the soft or non-infecting chancres, frequently take on a horse-shoe shape, and are termed serpigenous. The ordinary treatment is not effectual here; we must administer a thorough alterative course, tonics and good diet. No good is obtained by cauterization, for the true character of the sore will appear again and again until the tubercular condition is modified by alteratives; so instead of using nitric acid or caustic potassa, the following should be used.

℞.—Tincture iodine, ℥j;
Iodide potassa, grs. xxx.—*Mix.*

Paint sore every two days and dress with stramonium ointment.

If the habit is gross, the patient living in an ill-ventilated abode, improper diet, and all other hygienic laws are violated, or where the constitution is terribly depressed, from whatever cause, this form of chancre may become phagadenic. When this happens, the sore is irritable, exquisitely painful, ragged edges, eating and spreading irregularly.

Then our mode of treatment is obvious; complete destruction of the sore, afterward dressing with an ointment of opium, or sprinkling on sulphate morphia, and then some bland dressing, thereby effectually blunting the sensibilities of the patient with anodynes.

The cause of the phagadenic ulcer should be well appreciated; it is frequently the result of a broken down condition of the vital powers.

Treatment.—Nourishing food, stimulants, thorough hygiene, cinchona, hydrastis, iron, phosphorus, are the most efficient remedies; a yeast poultice is also valuable.

2. *Indurated Hunterian, True or Infecting Chancre.*—This form of chancre is due to the contact with the poison of the highest intensity, and invariably results in constitutional syphilis, unless the vesicle is aborted or proper constitutional treatment quickly enforced and strictly carried out. The following is the usual course of this form of sore; the virus is applied to some part of the glans penis during connection or otherwise; inoculation takes place, inflammation is excited; a vesicle forms, which, in about eight days, breaks and reveals a sore, presenting an appearance as if a portion of the tissue was pinched out; the secretion scanty and thin; grasp it between the finger and the thumb, it feels as if there was a piece of cartilage

in its base; there is never more than one, unless a hard and soft chancre co-exist, which may result from the patient having connection with two women, one suffering from the grade of low intensity, the other from the grade of high power, the true syphilitic poison. The sore or incrustation, aborted by the application of the caustic potassa before the eighth day, will fail to affect the system.

It will heal in from four to six weeks, and the induration gradually disappears in a few weeks, and secondary symptoms show themselves in about six months, sooner or later, according to the vigor of the constitution. In this form we seldom have the complications enumerated under the soft.

The treatment of indurated or infecting chancre is plain, consisting of complete destruction of the sore; if this can be accomplished before the eighth day, there will be little danger of constitutional contamination; if subsequently, little is to be gained, only to destroy the character of the sore. My favorite caustic is caustic potassa; although if the patient will submit to it, excision of all the indurated portion by the knife is the most positive plan; whichever is adopted, anodyne dressing, as sulphate of morphia, and powerful active constitutional treatment for the elimination of a poison.

The period of incubation of the vesicle is eight days, and of the poison from a few weeks to six months, although this will depend greatly upon the integrity of the vital powers of the patient.

The mode of absorption is evidently by the veins to the lymphatics, hence the lymphatics of the groin are in a state of induration, resembling small bullets.

What is the progress of an indurated chancre? Constitutional infection ensues; indeed, it is analogous to vaccination. The vaccine virus is not directly absorbed so as to affect the constitution; it passes through a peculiar process in order to produce a constitutional effect; a pustule must form ere the systemic effect is secured.

The sequences of an infecting chancre are perfectly similar; the virus, placed in contact with the glans penis, produces an indurated chancre, from which the system becomes contaminated.

The natural progress of the pustule (syphilitic or otherwise) is lessened or even destroyed by rubbing, scratching, burning, or excising it; by any such interference we are likely to deprive it of its constitutional infection; or cauterize the vaccine pustule during the first few days of its course, and no effect will be produced. Contrariwise, allow an infecting chancre to take its course undisturbed, systemic disease will be established within six months, assuming that no treatment be adopted *pro tempore*.

SYSTEMIC SYPHILIS.

An inoculation with a genuine syphilitic pock or pustule, (indurated species) or from the pus of a secondary ulcer, either on skin or mucous membrane of the mouth, or even the miasma from affected patients, are capable of impressing upon the living organism this fearful disease. The poison is taken up directly into the blood by the veins, and constitutional contamination takes place at once if the vital forces are feeble; if, however, the individual is in the average condition of health, a period of six months may intervene before constitutional symptoms exhibit themselves; and where the patient possesses a high standard of vitality, the poison may be kept in abeyance for years.

During the period of latency, the infected person may not experience much that will attract his attention; he may feel weak, languid, exhausted, complain of depression, heats and colds, headache, pain in the chest, and there may be pain in his bones at night; nocturnal pain is most significant. In all cases the absorption of the syphilitic poison impairs vital force, operates in many a mysterious way, in irritating vital organs, as the brain and spinal cord, ulceration of soft and hard structures of the body, degeneration of the organs of procreation, impotence, sterility, &c.

These premonitory symptoms are followed by unmistakable ones, huskiness of throat, post cervical glands enlarged, feeling like bullets, pain and tenderness in the sternum, falling off of the hair, loss of the eye-brows and eye-lashes; syphilitic iritis; discoloration and crumbling of the nails, with inflammation and ulceration about the roots of the nails; ulceration of the mucous membrane of the mouth, tongue, lips, larynx; disease of the periosteum and bones. All the secondary symptoms show nature making an effort to eliminate a poison, the syphilitic fever, the headache, eruptions.

If nature tries to eliminate the poison by the skin, an inflammation of that gland results, and an erythema and roseola, or urticaria, and this the first stage of inflammation, may give us the results of that process as eczema, ecthyma, herpes, lichen, psoriasis, and of the scrofulous tubercula.

Those skin affections are easily known by their brown or copper color, and by their lack of sensibility. This is different from all eruptions, the syphilitic poison stains the tissue, blunts the sensient cutaneous nerves; it is an eruption that exhibits deep seated changes in the entire organism, the blood being charged with a poisonous element.

If nature makes an effort to eliminate the poison by the mucous membrane of the mouth, fauces, bronchi, then it begins with a dry husky condition of the throat, which, if examined,

appears copper colored, and lacks sensibility; follicular ulceration takes place, and the ulcers maintain this peculiar characteristic.

If the osseous or bony structures of the body are feeble, nature may excite an inflammation in them for the purpose of elimination. If the periosteum is the tissue, serous effusion, the formation of round or oval swellings, called nodes; if the bones proper, thickening caries or necrosis is the result.

The pock is the primary condition; the secondary affection, inflammation of the soft structures; the tertiary, when the bony structures are implicated.

Treatment.—With proper constitutional treatment, all cases of syphilis recover; but no patient is safe or can expect recovery, if mercury, antimony, or arsenic, be used in treatment; those accursed drugs never can eliminate or antidote such a terrible animal poison.

We have other means more in harmony with nature; our treatment embraces two essential points, constructive and alterative. The patient should eat the best food his circumstances will afford, as eggs, milk, broiled beefsteak, cream, &c., and no stimulants; flannel clothing, daily bathing, and once a week a sulphur or Turkish bath, exercise, country air; indeed, every means that are calculated to build up. Tonics should be given to promote an appetite, and digestion; and to stimulate and restore vital force, any good tonic may be given. Our chief dependence is placed upon the action of the following vegetable alterative:

℞.—Comp. syr. stillingia, ℥iv;
Iodide potass., ʒij.—*Mix.*

Dose.—One teaspoonful three times daily for one week.

℞.—Comp. syrup yellow Dock, ℥iv;
Tincture iris versicolor,
" phytolacca, āā ℥i.—*Mix.*

Dose.—As above.

℞.—Comp. syr. of frost wort, ℥iij;
Tincture kalmia,
" corydalis, āā ℥j;
Iodide potass., ℈ij.—*Mix.*

Dose.—As above.

The cancer alterative operates well in syphilis, and should be given for a week occasionally. Besides the use of those indigenous remedies which are pre-eminently eliminative and curative, it is a good plan to administer one of the following powders morning and night.

℞.—Chloride gold et soda, gr. j;
Sugar of milk, ʒiij.—*Mix.*

Make 30 powders.

Administer gold one week, the following, chloride of platinum, same proportions; these two metallic agents stimulate the glandular system, and at the same time are eliminated and produce no structural disease of bone or liver like mercury; nor any ulceration of mucous tissue like arsenic. All cases of constitutional syphilis are easily and effectually cured by vegetable agents.

As the human organism is so obnoxious to the law of habit, no one remedy should be used longer than one week.

If the force of elimination seems to be spent on the throat, inflammation and ulceration of that structure, we must hold on to our vegetable alteratives, as above, still we could combine,

℞.—Tincture phytolacca,
" iris versicolor,
" macrotys, āā ℥j;
Iodide potass., grs. xxx.—*Mix.*

Fifteen to twenty drops every three hours.

It acts decidedly on affected parts; all ulcers should be touched occasionally with nitric acid and gargles of chlorate potass, decoction of bayberry, golden seal or gold thread used three or four times daily; no deviation from the use of the alteratives above mentioned.

Baths, alkaline or otherwise, according to the condition of skin; no ointments or lotions are admissible, still, we need not administer the stillingia formula, if the eruption on the skin is well maintained.

For affection of bones or nodes no special treatment is necessary; the judicious use of iodide potass, in five-grain doses, three times daily, in either a decoction of dulcamara or tag alder or corydalis, is unqestionably good. Iodine or sulphur baths also should be occasionally given.

Infantile Syphilis.—This may be hereditary or acquired; if hereditary, the infant may be born apparently healthy-looking, with its skin a dull color, its features contracted like an aged person.

Within a month after birth, symptoms of coryza set in, cough, difficulty in nursing, dryness of mouth, voice shrill, ulcerations about mouth and throat; afterwards the parts around the mouth, nostrils, buttocks, arms, become copper-colored, fissured and excoriated. Vesicles make their appearance upon the skin resembling pox, which rupture and give us sores of every describable form, copper-colored. Great wasting and weakness. Then disease of important organs, as amyloid disease of liver, tubercular lungs; succeeded, it may be, by emaciation, and a senile appearance of the countenance; snuffling or obstruction of the nose; enlargement of the glands; general cachexia, terminating in death.

For the arrest of this wide spread disease, a virus which saps and dwarfs humanity in its very bud, legislation is imperative; license, weekly inspection, and the most stringent legal measures, are necessary to prevent its presence in every family in our land.

HYDROPHOBIA.

A disease usually brought on by inoculation with the saliva of a rabid animal, and generally appears in from twenty to sixty days after the bite, although well-authenticated cases are recorded where the virus has remained latent in the system for years, when, from some depressing agency on the system, the disease made its appearance.

The bitten part, when the disease is about to break out, assumes a livid and swollen appearance, and has a burning sensation, or shooting pains dart from the seat of injury. A little later, rigors, lassitude, great depression, anxiety, watchfulness, irritability, giddiness, eyes red, brilliant, sensitive to the light, uneasy sensation in the stomach, constriction of the chest, difficulty of deglutition, oppressed respiration. As the malady progresses, spasm of the pharynx and larynx, a viscid saliva is secreted, which compels the patient to be continually hawking and spitting; intense dryness of the mouth and throat, with unquenchable thirst, which he cannot allay on account of the spasmodic contractions that are excited whenever drinks are presented to him. The skin is hot and dry, the respiration becomes more and more difficult, the voice changed, pulse unchanged, the body affected with tremors or spasmodic twitchings, indescribable pains extend up the spine to the head, and latterly the countenance becomes pale, haggard, eyes sunken, palpitation of the heart, muttering delirium, inclination to bite, the greatest anxiety and uneasiness, sinking of the pulse, loss of voice, clammy sweat, convulsions and death.

The poison when it comes in contact with the human system, acts as a poison to the nervous system, and the irritation speedily affects the cord and medulla oblongata, when the heart, lungs, diaphragm, brain, suffer, and a continuance of the morbid action on the living fabric quickly destroys its vitality.

Hydrophobia never can be mistaken for tetanus; the character of the intellect, of the face, peculiar pain at the pit of the stomach, the spasm, &c., are points well defined.

Treatment.—The only perfect safety to one bitten by a rabid animal is immediate and total excision of the part. Forcible suction is also good; ligation above and below the wound aids in preventing absorption. If excision cannot be performed, complete cauterization is the next best thing, with the caustic

potassæ, followed with vinegar, then a poultice of lobelia and stramonium. This mode of treatment undoubtedly lessens the danger of this horrible disease. As an additional precaution give a strong decoction of skull-cap alternated with carbonate ammonia.

Few remedies have so far been discovered for the cure of hydrophobia. The profession depend chiefly upon skull-cap, ammonia, calabar bean, belladonna, lobelia, musk, valerian, &c.

In treatment, we must recognize the action of a terrible destructive poison on the nervous system, so great that spasm and delirium are incessant. Reflex excitability of the medulla oblongata, intense. Remedies must be given to suspend the action of the poison.

Lobelia is a partial antidote, and should be the first remedy tried; give it on the first appearance of the symptoms, repeat dose after dose until the system is completely prostrated, and the patient unable to move a limb. This is a powerful but safe remedy, and with the subsequent remedies is specific to this, the most dreadful of all animal poisons.

Having accomplished this much, give half a tea-cupful of a very strong infusion of skull-cap every hour, and from twenty to thirty grains of carbonate ammonia as often. Insulate the bed, and apply a strong current of electricity to the patient, as follows: Positive pole in a large sponge, electrode to the cervical portion of the spine, negative to the region of stomach, a continuous current for several days; this is excellent for suspending reflex excitability. If no improvement, inhalations of chloroform or subcutaneous injections of atropia should be resorted to, and that invaluable drug, the calabar bean, should be promptly tried. Calabar bean in doses of from ten to thirty drops every half hour, until it affects the nervous system so positively that the pupil contracts to a pin point. This is an invaluable remedy, and we should never overlook it.

Belladonna is directly the opposite in therapeutic power to the calabar bean; it is excellent to suspend the impressibility of the medulla oblongata, besides its special action on the laryngeal and pharyngeal nerves are points not to be overlooked.

If, with these remedies, the patient can be carried along a few days, then Indian hemp, aconite, quinine, iron, phosphorus would be appropriate remedies.

The great object in treatment when the disease is once established, is to suspend the action of the nervous system by some of the above remedies, trusting that the effects of the poison may cease before the vital forces are exhausted.

GLANDERS.

Nothing is easier than to produce putrid disease among animals by a neglect of the ordinary laws of health. The blood is capable of acquiring toxical properties from putrid miasma, inhaled by the respiratory apparatus or by direct inoculation. The poison once generated and introduced acts as a ferment, so that we quickly have the development of a peculiar train of symptoms.

By the operation of the principle of catalysis one substance may be brought to so act upon another as to develop in it latent powers and properties not hitherto seen. This is the character of the blood poison *glanders*, which is a malignant disease, infectious and contagious in its character.

This specific blood poison is generated by placing animals in conditions that depress their vital forces, as bad food, imperfectly ventilated stables, &c., and when these primary causes are operating or creating decided depression of the vital force, cold, over-exertion, &c., will quickly excite the morbid condition; shows itself in the nasal cavities; the latter where the lymphatics are involved, the former most frequently due to direct inoculation of the Schneiderian membrane; the latter due either to inhalation or to an abrasion on the extremities coming in contact with glanderous matter.

The reception of this poison in all its forms by the human subject creates the most profound depression, languor, lassitude, debility, pain in the head, back, calves of legs, dry brown tongue, arrested secretions. If the virus spends its force upon the mucous membrane of the nose, we have inflammation, ulceration of that membrane with an offensive glairy discharge; the ulcers scooped out in appearance, and afterwards the whole lymphatic system becomes involved; if the poison gains admission through a scratch, or obtains an ingress by the mucous membrane of the bronchial, the lymphatic system becomes implicated.

The only treatment with which I have had abundant success is the following: An emetic to commence with of comp. lobelia powder, followed with a vapor bath and active cathartic, cauterization of the inoculated parts, then repeated syringing with a lotion of permanganate of potassa every three hours, and early opening of all abscesses.

Internally a teaspoonful dose of a saturated solution of sulphite of soda every two or three hours, keeping up active diaphoresis with asclepias or diaphoretic powder. The sulphite of soda is a specific remedy, checks the fermentation quickly, and is the only remedy to be depended on in treatment. Under this remedy I have never failed in the worst cases of glanders. The diet should contain the elements of blood,

as juice of beef, white of egg, milk. If there is any prostration, xanthoxylin and quinine. If the permanganate does not act well, an excellent disinfectant wash is:

℞.—Carbolic acid, ℥ss;
Glycerine, ℥iv.—*Mix.*

Inject the nostrils every two hours, and it should be applied to all abscesses.

RHEUMATISM.

An abnormal condition of the blood, in which we have a free acid present; in which also the alkaline constituents are diminished.

The predisposing cause or defect is impairment of the nervous system; the exciting cause, the generation of acid in the stomach, which is taken up into the circulation and circulates as a free acid in the blood.

A feeble nervous system gives us a sluggish stomach; digestion is retarded; food ferments; acids are evolved; the principal being lactic acid, which is either eliminated or taken up into the circulation, irritating all depressed structures, but by preference the synovial, fibrous, serous and osseous.

In healthy digestion, the starch of the food is converted into lactic acid, which combines with the oxygen to form carbonic acid water, in which state it is excreted by the lungs; but where the peculiar defect in the nervous system exists, the lactic acid accumulates in the blood, often to a great extent. An abnormal mode of life, the use of tobacco, whiskey, an excess of starchy or saccharine matter, are prolific causes. It may also originate in gastric catarrh or dyspepsia; and in sameness of of diet and location; cold, damp, exposure to vicissitudes of temperature, injuries, simply act as depressants, and render the part suitable for the action of the acid irritant.

There are several forms; *acute* when of short duration and accompanied with fever; *subacute* when there is no fever; *chronic* when of long duration, not accompanied with fever, nor much pain.

The principal symptoms are intense acid diathesis, acid breath, saliva, sweat, urine, and, if the bowels are loose, acid stools,—almost all food that is taken into the stomach is at once converted into acid; a perfect perversion of nutrition.

In the acute form these symptoms are followed by restlessness and fever, with stiffness and aching in the body; parts that have become depressed by cold or damp, or injury, are extremely painful, and in a short time swelling and great tenderness and great constitutional disturbance supervene.

When the disease is established the patient presents a pitiable spectacle of helpless suffering. He is very restless, yet dare not or even cannot move; the pain in the affected joints is so

agonizing, that the weight of the bed-clothes can barely be borne; the skin is generally bathed in sweat, of a disagreeable acid or sour odor; the pulse is full, bounding and quick; there is constipation; the tongue is moist but furred; the saliva is acid; and the urine is high colored, scanty, of high specific gravity, very acid, and loaded with uric acid, or more frequently with urates. It has lately been shown that the deposits formerly regarded as consisting of urate of ammonia, have a variable composition; being made up of the urates or lithates of lime, potash and soda.

The characteristic feature of this disease is the tendency to metastasis, pain flying from one weakened tissue to another, leaving as vitality is restored, the heart and its membranes solely under the control of the brain, and as the latter organ receives the terrible shocks arising from mental depression, pernicious habits, narcotics, smoking, drinking, &c., we are very apt to have irritation there, and of a severe form, if the patient has been subjected to cardiac depression; such a condition must be looked for.

Rheumatic fever may also be complicated with bronchitis, pleurisy, pneumonia, or irritation of the brain and membranes, although the most dreaded complication is the heart.

The diagnosis is based entirely on the extreme acid condition of the blood, deficiency of alkalies. The irritating action of the lactic acid on depressed white fibrous tissue, or fibro-serous membranes, which enters into the formation of joints, sheaths of muscles, tendons, pericardium, membranes of brain and bone, may be serious in its character. The erratic form of the pain is due to the continuity of the structure involved.

Pathology.—A superabundance of lactic acid which is carried by the blood over the entire body.

Treatment.—The treatment of acute rheumatism is somewhat varied, still there are certain indications that should be observed in all cases. We might begin with an emetic, cholagogue, cathartic, and vapor bath. Then the patient should be put in blankets, and have a flannel shirt—no cotton or linen permitted near the skin; all painful parts should be wrapped in wool, and the most perfect rest enjoined; nothing seems so conductive as warmth to the skin. The local irritation is an injury to nutrition, and is in a great measure compensated for by constant warmth,—no alternations of heat and cold.

The fever should be controlled by tincture of veratrum and aconite. The acid condition should be neutralized by administering twenty-grain doses of bi-carbonate of potassa every two hours; if there be pains in the bones, two grains iodide potassa should be given with each dose; as a rule alkalies should be persevered with for several days at least; the acid should be neutralized; the deficiency of alkalies should be restored to the body.

All physicians will agree with me that potash snortens and alleviates the condition; rapid relief follows its use, and in large doses it should be given for a few days. Iodide potassa is also of signal service.

Pain must be relieved; for this purpose opium should be given in doses proportionate to the degree of pain. The patient must feel no pain; pulverized opium is the best, for rheumatic pericarditis brooks no delay; cup and apply dry heat over region of heart; raise the standard of vitality there.

Wine of the root of colchicum should be given in fifteen-drop doses, sufficiently often to keep the bowels open; one or two free evacuations a day are beneficial. If the skin keeps dry, keep up perspiration with comp. tincture serpentaria; macrotys should always be given either in small or large doses, according to the urgency of the case; it prevents abnormal changes in digestion, and strikes at the generation of acid. The diet should be chiefly farinaceous; milk and lime water. Beef, sugar, fat, beer or any alcoholic stimulant must be avoided, as they are at once transformed into lactic acid and other substances which readily disagree with the stomach.

The treatment then which we deem essentially the best in acute rheumatism is: perfect rest in bed, in blankets, circulation controlled with sufficient doses of veratrum opium to relieve pain; serpentaria to keep up perspiration; a scruple or more of bi-carbonate potass, every two hours, to neutralize acid and supply alkali; if the patient is plethoric, or urine loaded with lithates, colchicum; if the serpentaria fails to keep moisture on skin, alcoholic vapor bath; all through the acute stages, and subsequently in convalescence *macrotys*—few remedies ameliorate so much; if there is cardiac irritation, stimulants over heart, and small doses of digitalis; the only local remedy of intrinsic value, is simply wrapping the affected parts in wool.

The treatment of the subacute form being the same as the acute, only that there is no necessity for the use of veratrum.

Chronic Rheumatism.—May be a sequel to the acute, or it may come on independently of any previous attack. The fibrous textures around the joints, or the fibrous envelopes of the nerves, or the aponeurotic sheaths of the muscles, fascial tendons, periosteum, &c., are the parts affected. It receives different names from the location of the irritation, as neuralgia if it attacks the nerves; lumbago, when the muscles of the loins are affected; sciatica, when the sheath of the great sciatic nerve is affected; pleuradynia, when the plura and inter-costal spaces are affected. In any case there is, at first, little constitutional disturbance; but the sufferer is constantly annoyed, and his existence made miserable from chronic pains, causing him to be restless at night, and destroying all comfort during the day. In some instances the pains are worse at night, being

aggravated by the warmth of the bed; in others, warmth affords the greatest relief; the former is usually the case when the blood is circulating a poisonous material through the system, as in venereal rheumatism, or in that due to derangement of the digestive organs and secretions; the latter, in rheumatism of an erratic kind, dependent on cold, &c.

The diagnosis of chronic rheumatism is usually easy, the malnutrition, the acid diathesis; wandering pains attacking the fibrous structures; metastasis, when the standard of vitality is raised; a correct diagnosis is important, so as to carry out a judicious treatment.

In the management of this condition the general health should be improved, flannel clothing, and avoid exposure to cold or damps, comfortable surroundings, cold douche or shower baths; watch the diet, no saccharine matter or beef; neutralize acids; enjoin rest; give macrotys above all things, to improve brain force. There are several other special remedies which give relief, such as the following:

℞.—Comp. syr. stillingia, ℥iv;
Iodide potass., ʒiss;
Tinct. macrotys,
" colchicum, āā ʒiij.—*Mix.*

From a half to a teaspoonful every three hours.

Excellent combination of remedies may be prepared of the following: a decoction of dulcamara and iodide potass.; sassafras and iodide potass; sulphur, nitrate potass and phytolacca; iris versicolor and iodide potass.

The alkaline waters of some natural springs act well on the system. Local applications to the affected parts often give relief; in pericardial irritation, a plaster prepared from the expressed juice of the poke-root, or belladonna, gives great relief; the external use of sulphur is productive of good; dry cupping or acupuncture, often gives decided relief from all pain; a liniment of oils of stillingia, solidago, is excellent; also one of oil turpentine, hemlock, sassafras, origanum; an alkaline liniment.

GOUT.

This disease depends upon an increase of lithic acid in the blood, owing to an excess in primary digestion; besides there is also an excess of soda, which unites with the lithic acid, and produces a compound known as lithate of soda, which exudes into the cellular tissue, and constitutes tophaceous deposits.

The generation of this acid in the system would seem in some cases to depend upon some hereditary taint; aside from this, high living, want of exercise, use of acids or agents that undergo acetous fermentation, as ale, wines, excess, irregularity,

may be enumerated as exciting causes. In all cases the defect is in the primary elaboration of the food, so that gastric or intestinal derangement, impaired appetite, furred tongue, acid or bitter eructations, are invariably present.

On an analysis of the blood in gout we find the globules in their normal proportion; the fibrin is increased in quantity; the specific gravity of the serum is lowered; but the most important point is that it contains lithic acid in the form of a lithate of soda.

The exudation of this lithate of soda generally occurs on the smaller joints, as the ball of the great toe, and when exuded the parts become swollen and very sensitive. The parts around become œdematous, numb or prickling, and there are nightly exascerbations of increased pain and fever, which subside in the course of from seven to ten days, and leave the patient with a debilitated and œdematous limb.

Over stimulation which produces exhaustion induces gout; the use of wines, beer, over rich food, depressing mental influences.

The diagnosis is simple. In gout, the blood is impregnated with lithic acid, in rheumatism this is absent; gouty inflammation is attended with the deposition of urate of soda in the affected parts; gout attacks the small, rheumatism the large joints; the deficiency of life in gout is more decided than in rheumatism.

In the treatment of gout the diet is of great importance; it should be very light, chiefly amylaceous, and all alcoholic stimulants carefully avoided. The only treatment is colchicum and alkalies in alternation.

Colchicum is prompt in its action and beneficial when given in doses so as to act on the bowels slightly; it speedily moderates the inflammation and arterial excitement, mitigates the severity of the pain. If the symptoms are not acute, still the colchicum acts specifically in small doses, increasing the excretion of urea. An excellent formula is the following:

℞.—Wine colchicum, rad., ℥i;
Sulph. quinine, grs. xx.—*Mix.*

Half a teaspoonful, repeated as indicated, and alternate with some alkaline salt.

Carbonate of lithia possesses remarkable therapeutic properties, being one of the most soluble salts of uric acid that is known.

Benzoic acid should be given after meals in order to prevent the formation of the tophaceous concretions.

Phosphate of ammonia decomposes the insoluble lithate of soda, and creates a demand for them, which leads to absorption of those elements from the tissues where they have been deposited.

PURPURA.

This is a disease of the blood, in which there is a degeneration or breaking down of the red corpuscles and a morbid state of the capillaries, which causes them to rupture on soft or loosely constructed surfaces, as mucous membranes; the escaped blood flows away in a fluid state; where a tougher structure prevents their escape, as in the external skin, it forms purplish or black spots, or extravasations, a true ecchymosis; in parenchymatous tissue, as brain, lungs, liver, kidneys, it may constitute hemorrhage.

The true pathology then is: disease of the red corpuscles, loss of function in the capillary vessels, rupture of their coats; any part of the body is obnoxious to its pathological condition.

This latter form presents hemorrhagic phenomena, identical with those belonging to scorbutus. Extravasation in both affections is liable to occur beneath mucous and serous membranes into serous cavities, and within the parenchyma of organs.

These two affections are, however, nosologically distinct; in purpura there is an absence of that fungus like swelling of the gums, which characterizes scorbutus. The latter affection prevails as an endemic, the former occurs in isolated cases. There is more depression of vital powers in scorbutus than in purpura; also swelling of the muscles and stiffness of the joints seldom occur in purpura. Purpura, when occurring alone, is not a serious affection, but purpura hemorrhagica implies danger from the same causes as scorbutus, *i. e.*, loss of blood and extravasation into serous cavities, the brain, lungs.

Symptoms.—Preceded by lassitude, faintness, pains in the limbs, accompanied with marked debility and depression of spirits; frequent and feeble pulse; heat and flushing of the surface, with perspiration. Subsequently, the patient becomes sallow and emaciated; œdematous swelling of lower extremities. The duration of the disease is very indefinite, limited to a few days, or even prolonged for years. It occurs at all ages, but especially from the period of puberty upwards.

Causes.—Any influence calculated to depress the vital powers, as sedentary occupations; residence in confined and crowded houses; insufficient or deleterious food; overwork, and the various causes which generally lead to an impairment of the general health.

Treatment.—I have succeeded most rapidly in curing purpura by the use of the mineral acids. A few drops of hydrochloric, two or three times a day, in alternation with large doses of the muriated tincture of iron.

Diet.—Milk, eggs, animal food, to the exclusion of all vegetable acids. The action of turpentine and hydrastin is excellent. I have used the following formula:

℞.—Glycerine, ℥iv;
Tinct. digitalis,
Acid, phosphoric, dil., āā ℥iij.—*Mix.*

A teaspoonful three times a day. The action of the digitalis in this formula is to diminish the area of the circulating system. Under its use the artery becomes smaller, the pulse wave is narrowed, and hemorrhage ceases.

All hemorrhagic conditions are effectually controlled by digitalis; it is a tonic to the brain, astringes the whole arterial and venous systems, and together with rest, nutritious food, mineral acids, seldom fails to cure all cases.

Its action must be watched, it does not accumulate, but when given its action is permanent, and as every dose adds to its results, so its administration should be gradually diminished as the case may indicate.

SCURVY.

This disease almost invariably attacks the inhabitants of northern latitudes, and seldom appears within or near the tropics, owing to the great abundance of fruits and vegetables. It often prevails in the navy and army, partly from want of cleanliness, but still more from want of sufficient supply of fresh vegetables.

Its existence has been attributed to the absence of *potash* in the food, and there are circumstances highly confirmatory of such being the case. All bodies known as antiscorbutic, as fresh meat and vegetables, milk, lemon-juice, &c., contain a large amount of potash. Scorbutic patients recover speedily when a few grains of potash are added to their diet.

The *salts* of potash also, as the nitrate, chlorate, &c., are well-known antiscorbutics.

Symptoms.—The earliest and perhaps the best marked symptoms are observed in the countenance; the face is pale, and may be bloated; the eyes and lips have a dirty hue; the features somewhat depressed; the gums are swollen, spongy, livid, and bleed when but slightly irritated, and the breath is offensive. The patient complains of lassitude and debility, and pains in lower extremities, not unlike those of rheumatism; his limbs are feeble, his joints stiff, and he is averse to any kind of exertion. Difficulty of breathing; skin dry and harsh, sometimes rough, resembling the goose-skin appearance; but the skin is sometimes shining with patches or spots of brown, blue, black or livid hue; these patches are first seen on the legs and thighs, but generally soon extend all over the body, excepting the face; and the disease continuing the legs and feet become œdematous.

If the cause continues, these symptoms increase in severity; the gums become more tumid and livid; the breath more offensive; the pains more severe; and so with respect to the other symptoms. In the later stages there are often hemorrhages from mucous canals, and the loss of blood is often so great as speedily to sink the vital powers of the patient.

In these stages, too, the alvine evacuations are disordered, being frequent and offensive, and the disease may pass into a sort of scorbutic dysentery. The pulse is but little altered until the latter stage has set in. The appetite not much impaired, sometimes even greater than in health; the memory and other mental faculties, are but little affected.

In cases of the severest type, there is a tendency to *swoon*, when the least motion may occasion fatal syncope. This is essentially a blood disease.

It has often been affirmed that salt meat is a great occasion of this malady, but I am inclined to differ from those holding that doctrine. I consider if the meat has been of good quality, and fresh when salted, and when used of a quality entitled to "good salt meat," that it is no more productive of the disease than fresh meat.

Prognosis.—This is usually favorable, unless at sea, where the cause cannot be removed.

Causes.—Improper food, cold and humidity, impure air, complications with other diseases; the state of the mind, as depressing passions, &c.

Pathology.—The blood is deficient in red corpuscles, but abounds in fibrin; common post-mortem appearances are, deficiency of blood in the abdominal viscera, extravasation of blood into the subcutaneous cellular tissue, ecchymosis on the surface of the dependent parts, nodes, &c.

Blood in scurvy: water, 849.9; solid constituents, 150.1; fibrin, 6.5; albumen, 84.0; blood corpuscles, 47.8; salts, 9.7.

Healthy: Water, 788.8; solid constituents, 211.2; fibrin, 3.3; albumen, 67.2; blood corpuscles, 133.7; salts, 6.8.

Treatment.—The dietetic treatment of scurvy rests upon the fact that protein is the basis of albumen, fibrin, casein, and these constitute the essential elements of all the tissues.

Wholesome animal and vegetable food—abundance of the latter—consisting of potatoes, turnips, carrots, parsnips, cabbages, cauliflowers, radishes, water-cresses, celery, lettuces, mustard, asparagus.

Limes, lemons, oranges, apples and others of a sub-acid quality. The greater number of antiscorbutics may be preserved by *pickling* with vinegar, which retains their virtues for a considerable length of time. The firs are among the very best antiscorbutic agents, such as spruce fir, common fir, &c.; hence, spruce beer is excellent. Tar water, vinegar, and

as before hinted, all the preparations of potash, are of the greatest service in the treatment.

When associated with anæmia, the recumbent position must be maintained and the circulation controlled by digitalis.

We have proved nitro-muriatic acid, phosphoric acid, sulphur, iron, cinchona, hydrastin and rhus radicans, to be efficient agents, acting as powerful auxiliaries to the sanative influence of a properly selected diet.

The cure will be more or less speedy, according to the nutritious quality of the food, together with its variety, and according to the free use of fresh vegetables abounding with the salts of potash.

BRONCHOCELE.

This affection is characterized by a morbid enlargement of the thyroid gland dependent upon a strumous or anæmic condition of the blood. The whole gland may be swollen or the centre only, or either side. The swelling is usually unassociated with pain, causes little inconvenience beyond the deformity it produces. In other cases, distressing symptoms are produced by the pressure upon surrounding parts, and respiration and deglutition may be rendered painful and difficult, by the compression of the trachea or œsophagus. It is very prevalent among women, not very common among men. It is a true hypertrophy, and is divided into three forms, according as the vascular, glandular or connective tissues, are involved.

1. *Vascular Goitre* is common, consisting merely of congestion, engorgement from suppressed menstruation, masturbation, gonorrhœa, amenorrhœa, &c. This gland is profusely supplied with blood vessels, and is liable to take on congestion from very slight causes. Vascular goitre often terminates in the rupture of a vessel, and the effused blood may be absorbed or may form the base of a calcareous deposit.

2. *Glandular Goitre* consists in an abnormal development of the glandular capsules distended by a gelatinous fluid.

3. A transformation in the structure of the thyroid tissues into a calcareous or chalky transformation.

Symptoms.—The whole gland may be swollen, or only the centre, or either side of it. Frequently, no inconvenience but the deformity. In other cases, constitutional symptoms, anæmia, palpitation, mental depression, dyspepsia, difficult respiration and deglutition from pressure of tumor, together with irregularity of uterine function, as scanty menstruation, profuse leucorrhœa.

Causes.—Either some calcareous or chalky base from which some particular spring or rivers flow—magnesium limestone, more frequently, however, it is due to irritation reflected from the organs of generation to the medulla oblongata; a depres-

sion of the nerves that supply the thyroid is the result, congestion and enlargement follow, when some of the pathological changes take place.

Treatment.—If possible, remove the patient from the affected neighborhood. Under all circumstances the disease is easily influenced by proper remedies, and the use of means over these glandular enlargements is often truly astonishing. Iodine is our best remedy. Its best powers are displayed in causing the absorption of the products of the exudation, and of capsules in process of transformation; either iodide potass., iodide ammonium, iodide iron.

If it depends upon anæmia or irritation of the pelvis, those conditions must be removed. Internally we have derived great benefit from phytolacca, iris versicolor, belladonna, aconite, podophyllin, tag alder, in small doses.

Bromine is also serviceable. Bromide potass or ammonium, glycerine. To tone and strengthen, good diet, thorough hygiene, salt water

Locally.—Iodine, muriate of ammonia, phytolacca, pressure.

CRETINISM.

A strange disease, a sort of idiotcy dependent upon an abnormal condition of the blood; it may be characterized by an imperfect formation or development of body, accompanied by diminutive stature, malformation of the head, which is flat at top and spread out laterally; mental imbecility, countenance vacant, devoid of intelligence, physical deformity in various degrees, mouth gaping, tongue protruding, the saliva flowing, bronchocele, brutalized habits, squinting, deaf muteism, blindness.

This disease has never appeared in the United States, although it is common in the low gorges of the Alps in Europe, and depends for its origin in *endemic causes*, which are found in filthy abodes, where the air is stagnant, where the sun never strikes, where the water contains certain deleterious ingredients, calcareous and other mineral substances in solution; and when these causes exist, together with certain co-operating agencies, as poverty, bad food, sensuality, and all forms of degradation, we find this form of physical and mental deformity present. Incompatibility of temperament may also be a cause.

Although this singular disease can be developed by those causes, we have the satisfaction of knowing that an impaired human breed cannot be sustained beyond a certain point; that procreation ceases.

The only course of treatment so far successful in these cases has been removal from the predisposing and exciting

causes; judicious moral control, careful mental training, pure mountain air, plenty of exercise, nourishing food, the various preparations of phosphorus and iron.

HEMORRHAGIC DIATHESIS.

Is a peculiar constitutional defect, and consists in a want of contractibility, more especially upon a want of fibrin in the blood, so that the slighest wound bleeds, and an oozing is very apt to take place from the smooth surface of mucous membrane; hence hemorrhages are apt to take place from nose, bronchi, stomach, kidneys, uterus. This fluid condition of the blood, irrespective of any special disease, seems to depend upon some constitutional defect; patients of light hair, white skin, are victims of it; also it is occasionally present in some persons of a highly sanguine temperament.

It may be hereditary or acquired. It may be suspected if there is occasional febrile exascerbation, either with hemorrhage or ecchymosis, particularly if they possess these characteristics.

The treatment consists in giving good food, mineral acids, cinchona, iron, &c.; all operations upon this class of patients should be carefully guarded against.

FATTY AND AMYLOID DEGENERATION.

Chronic disease, intemperance, residence in a tropical climate, malaria, and everything that retards the decarbonizing functions of the liver, may give rise to the presence of oil globules in almost any tissue of the body; on muscular structure if unused or overworked, and also upon the coats of arteries we often find it deposited; the proper muscular coat of the uterus frequently affected. In drunkards, the proper structure of the liver is invariably usurped by fat, so are the kidneys.

Amyloid or starchy degeneration is frequently met with, but its causes are more obscure than the former; it has, however, been detected in great abundance in the liver and kidneys, and its properties are analagous to real vegetable starch; it has been found in brain, blood-vessels, lungs, glands, and all over the body.

Whatever the particular substance may be, however, the important fact remains, that in the so-called amyloid, or cellulose degeneration, we have a remarkable constitutional disease, which generally invades several organs at the same time, and renders them incapable of performing their functions. The patients gradually assume a cachectic, broken-down appearance; they lose flesh and strength; dropsy often supervenes; the urine gets albuminous if the kidneys be affected; diarrhœa

sets in when the digestive tract is involved, and in spite of remedies death soon takes place.

When the liver, spleen, or kidneys are the organs affected, an unpracticed eye may fail to detect the alteration in structure, unless there is an extreme amount of disease. But when, for example, we incise a liver where the process of amyloid degeneration is far advanced, a feeling is communicated like that experienced on passing a knife through a piece of wax; while the cut surface presents a semi-transparent appearance. The gland is also increased in size; it has some resemblance to a fatty liver, though its increased weight distinguishes it; a sense, on handling, is given like that received from a lump of wax.

POISON OF SUBJECTS.

Whenever life ceases, a change takes place in the bodies of all animals, the tendency of which is to reduce them to the simple materials—original constituents; water, carbonic acid, ammonia and earths. During the process of this change, a number of complex substances are liable to be formed, which have a most deleterious effect if introduced into the blood of living animals. They are known as septic poisons, and they produce in the living body the same state of decomposition as they are undergoing themselves. They usually consist of gaseous emanations, faint, sickly, nauseous; putrid, deleterious gases, which are absorbed into the blood; the skin and bronchial mucous membrane, are the points of ingress; they are eliminated by the skin and mucous membrane, without any alteration of their sensible qualities. Their elimination by the gastro-intestinal mucous membrane is the chief cause of the diarrhœa so common among medical students.

Dissection Wounds.—The most important consequences of wounds inoculated with the septic poisons from a subject, are inflammation of the lymphatics, and diffuse inflammation of the cellular tissue. This description of wounds gives rise to a great variety and complication of symptoms. In some cases, the poison having gained access through a wound into the blood, we have symptoms of constitutional contamination, as manifested by the rigors, headache, vomiting, pulse frequent and sharp, tongue coated, great restlessness and despondency. In other cases we may have a pustule on or near the wound; the pustule may be unattended with pain, but there is usually a most excruciating pain in the shoulder of the affected side, with fullness of the axillæ and neck; a doughy swelling on the side of the trunk, often extending from the axilla to the ilium; this soon assumes an erysipelatous redness. The symptoms become aggravated; breathing difficult; pulse

quicker and quicker; the tongue brown, dry, tremulous; mental distress, appalling, soon delirium; countenance haggard; the skin yellow; and the patient gradually expires.

In another class of cases we have this order of things reversed, the patient dying of the precursory fever before sufficient time has elapsed for the appearance of the local disease. In another class of cases we have diffuse cellular abscess in the remote parts; in another class of cases, we may have the lymphatic vessels affected with all the other symptoms of the peculiar depressing effects of the absorption of a poison. These different phases, the result of dissecting wounds, are unquestionably due to the absorption of poison, it acting in different degrees of intensity, according to the vital powers of the patient. As a general thing, the disease most frequently arises from fresh subjects; the most dangerous poison is destroyed by putrefaction. The most deadly virus is that contained in the bodies of women who have died of puerperal fever.

Treatment.—The indications clearly are, to support the nervous system in its state of depression, to eliminate the poison from the blood, to relieve pain, tension, and promote the discharge of pus or sloughs.

As soon as the patient is noticed indisposed, after a wound from dissection, it is highly advisable to begin treatment. An emetic of the comp. powder of lobelia, following this with drinking freely of composition tea; free emesis. Then give the patient an alcoholic vapor bath, continuing free diaphoresis for some time. After these, give an active dose of podophyllin, and fluid extract of senna; active purgation. This course of treatment should be followed by large doses of sulphite of soda, alternated with the permanganate of potash and comp. syr. stillingia, with iodide potass. Sponge the entire surface every three hours; keep the kidneys, bowels, all the great emunctories open, and neutralize the septic poison by appropriate remedies. Thorough hygiene should be the rule—good blood; elaborating diet should be given, and as soon as the patient can be removed, fresh country air; and convalescence established on tonics, &c., &c. The most rigid attention to the case is necessary.

The wound should at once be cauterized, with caustic potassa, followed with poultices of slippery elm and lobelia; if the poison is taken in by a scratch or cut, inflammation of the veins is apt to follow; they become red, cordy, extremely painful. It may be arrested at the elbow, or proceed up the arm to the axilla, and doughy swellings form on the side, suppuration is rapid, absorption of pus, and death.

The veins in those cases should be emptied by applying a few leeches over them; free bleeding, encouraged by warm water; then the skin over the veins should be painted freely with creo-

sote, and the whole arm enveloped in an alkaline poultice, composed of slippery elm, bi-carbonate of soda, and tincture opium. Large doses of pulverized opium should frequently be administered, so as to blunt the impressibility of the nervous system to the local irritation.

Nurses and washerwomen should exercise the greatest care, especially with reference to the lochia or cleansing of ladies in child-bed—they should be careful of abrasions or fissures about the hands or finger nails.

BITES OF RABID ANIMALS.

The preliminary treatment of a bite from a venomous or a rabid animal is nearly the same. Apply a ligature above and below the wounded part, sufficiently tight to prevent absorption. Then either cup or excise the wounded part; then wash the part thoroughly with tepid water; then apply caustic potass to the wound, taking care to destroy every portion touched by the teeth of the animal; then wash freely with vinegar; after which dry the wound and sprinkle on sulphate of morphia, and over and above all a poultice as follows:

℞.—Saturated solution of sulphite of soda, ℥v;
Pulv. elm, q. s.—*Mix.*

To make a poultice; to be applied and changed every four hours.

The poison of venomous reptiles and rabid animals has a special affinity to the nervous system of the human subject, so that we have a peculiar train of nervous symptoms; pain in the wounded part radiating in the course of the nerves; also swelling, redness and lividity; faintness, rapidity and feebleness of the pulse; bilious vomitings; dyspnœa; profuse cold sweats; jaundice; delirium; convulsions.

Now, these symptoms are best controlled by stimulants that suspend sensation; as large doses of brandy, or ammonia, or scutellarin; thorough intoxication, if no other remedies are at hand. Our best remedies are: ten grains of carbonate of ammonia every hour, with large draughts of an infusion of scullcap; if none of these are at hand, give large draughts of brandy until profound intoxication is produced; enough must be given to suspend the impressibility of the nervous system. The most common kind of reptile indigenous to our country is the snake, which is found all over; its bite is rarely fatal. The poison apparatus consists of a gland placed by the side of the head, a duct, and a fang or pointed curved tooth, moulded in the form of a tube.

INFLAMMATION.

This is essentially a vital or nervous depression of the affected part or organ.

Causes.—Anything that has a tendency to diminish vitality—as heat, cold, poison, mechanical violence, chemical action; these being the most frequent depressors of the vital force. It is characterized by swelling, heat, redness and pain.

The condition present in all inflammations, or local fevers, is simply that of nervous depression.

The blood vessels owe their contractility to the nerves that supply them; the nerves being depressed, their *tonicity* is impaired, the blood rushes in, and we have congestion, molecular excitement, perversion of nutrition, heat, rapid oxidation of tissue, great waste, red blood circulating where only white blood was wont to be distributed.

Pain is only a sign of vital depression, or of a deficiency of vitality. It differs somewhat both in kind and degree, owing to the variety of the function and anatomical structure.

Nerve tissue being the most vital—most highly organized—it is the most resisting, and so the most difficult to depress; but when so affected, the most tardy of recovery.

The pain is intense, out of all proportion to any other pain; *peculiarly* so if in the brain, and aggravated by noise, motion, light or heat.

If the serous membrane be depressed, the pain is sharp, lancinating; if the mucous, a sensation of soreness or rawness; if in bone, dull and deep-seated; if in cellular tissue, throbbing; and in skin, burning and tingling.

Pain may not be experienced in the affected part, but reflected to a part at a distance; as, in inflammation of the kidneys, the pain is at the orifice of the urethra; in irritation of the hip-joint, there is pain in the knee; and in inflammation of the liver, pain in the right shoulder.

It should always be remembered that pain is frequently referable to either *contiguity* or *continuity* of the affected structure. The *heat* of inflammation is caused by deficient evaporation, perversion of nutrition, molecular excitement, rapid oxidation, and metamorphosis of structure.

The congestion and redness are due to the loss of contractility of the blood vessels, whereby their walls becoming loose or lax—the blood rushes in, and the minute capillaries being

also relaxed, *red* blood circulates where *white* should be flowing; there is besides more or less effusion.

This deficiency of the vitality of a part, occasions a corresponding diminution of its function, which may be evinced by an alteration in the chemical character of its secretion; thus the normal secretion elaborated by all glands in health is alkaline, but when depressed an *acid* secretion results. Inflammation likewise changes the *structure* as well as the function of the affected part.

The predisposing cause of inflammation is an impairment of the vital forces; the exciting cause irritation, or anything that acts as a depressor.

Inflammation has but one *genuine* termination—resolution or recovery—the subsidence of the inflammation, and the restoration of the part to its original condition; but besides this there may be one or other of the following terminations or effects, viz.: 1. Effusion of serum, especially in serous tissue. 2. Hemorrhage, or an effusion of blood from vascular structures. 3. Effusion of lymph, which repairs or produces adhesions or thickening. 4. The breaking down of lymph, the formation of pus. 5. Ulceration. 6. Gangrene or mortification.

Inflammation may be either acute or active; subacute, chronic or passive. Acute, when it sets in and runs its course *rapidly*, symptoms well defined, and accompanied with fever. Subacute, similar to the acute, only the vital forces resist the local irritation, and there is no fever.

Chronic, either a sequel to the acute, or it may come on *per se*. In patients of low vitality it progresses slowly and insidiously; symptoms not well defined; no fever; and has a tendency to terminate in thickening or effusion of serum.

Permanence is characteristic of inflammation. The true condition is nervous depression of a part—the organic nerves; hence the impairment of the normal contractility of its blood vessels.

The correct treatment of all inflammations is the administration of arterial sedatives internally, and stimulants locally. Such remedies as aconite, veratrum, gelseminum, digitalis and cinchona tend to equalize the action of the heart and arteries by imparting tonicity to the brain; and by blunting the impressibility of the nerve centres, equilibrium is established. Locally the most powerful stimulants should be applied.

Besides the foregoing treatment, strict attention should be directed to hygiene—rest, diet, sponging, diuretics, diaphoretics and evacuants.

Effusion of Serum.—Serous membranes are peculiarly liable to such a morbid condition, as the periosteum, membrane of the brain, the pleura, and peritoneum; the cellular tissue is also

obnoxious to serous effusion, and constitutes œdema or dropsy; which is rather a mechanical effect than a diseased condition. Serous effusion, being a result of inflammation, our object in treatment should be to get rid of the depression. Put the patient under the influence of digitalis—a decoction, best form as a diuretic, but to astringe the blood vessels and so prevent effusion, the tincture is preferable.

This should be followed by diuretics, diaphoretics and hydragogue cathartics.

The following are the best known formulæ for dispelling the effusion:

℞.—Mandrake, pulv., grs. iij;
Nitrate of potash, grs. vi;
Cream of tartar, ℥j.—*Mix.*

Take at a dose, dissolved in water, and repeat, so that there may be three evacuations *per die.*

℞.—Tr. iron, gtts. xx;
Nitrate potash, grs. xv;
Camphor water, ℥j.—*Mix.*

Take at a dose night and morning.

Elaterin 1-12 of a grain once or twice daily will induce free copious watery stools.

Should these fail give five grains of iodide potassium in a tablespoonful of comp. syr. stillingia three times a day. Alcoholic vapor bath every other day, and flannel next the skin.

Effusion in the arm or leg constitutes œdema, pits on pressure; then rest, elevation, compression by rollers, friction, electricity, shampooing, simultaneously with the other treatment named.

Hemorrhage.—Another result of inflammation, may occur prior to or during the activity of the inflammation; or the inflammation may so terminate.

Vascular organs are peculiarly liable to hemorrhage—as the lungs, stomach, bowels, kidneys, bladder, urethra and uterus.

Thorough arterial sedation should be persevered with, together with rest and external stimulation. If the *lungs*, large doses of veratrum viride; if the stomach, rectum, kidneys or uterus, tincture of the green root of gelseminum or digitalis.

Then a special class of styptics should be resorted to, as, if from the bronchial mucous membrane, salt, iron, gallic acid, digitalis, and matico. If from the stomach, capsicum, salt, gelseminum. If from the kidneys or uterus, gelseminum, aconite, gallic acid, erigeron.

In all wounds the vessels should be tied—still there are minute capillaries that often bleed—then exposure of the bleeding surface to the air, elevation, pressure by bandages, cold, perchloride of iron, matico, spider web.

Effusion of Lymph.—A common termination of inflammation; may occur in active inflammation, but more apt to occur in low grades of inflammation, as the chronic, generally unattended by much heat, swelling, pain or redness. It produces thickening or adhesion, infiltration, or induration.

Adhesion of serous membranes causes infiltration or induration of glands, &c.

The surgeon aims to procure union of all wounds by an effusion of lymph, and for this purpose, and with such a view, he removes all foreign bodies, brings the edges of the wound into perfect apposition with metallic sutures, applies dry dressing; and observes that there are no symptoms of acute inflammation existing. Effusion of lymph for the repair of wasting structures can only occur when the vital forces of the patient are at par. Should the effusion of lymph cause adhesions between serous structures, we must resort to alteratives and absorbents, say—

℞.—Comp. syr. stillingia and yellow dock, ℥iv;
Iodide potassium, ʒj.—*Mix.*

Teaspoonful three times a day.

Apply unremittingly the irritating plaster over the adhesion.

The same treatment is suitable where the glands are enlarged or infiltrated with lymph, only in addition apply locally green plantain leaves with phytolacca, stramonium, belladonna, and potassa, which is an efficient resolvent of lymph; here shampooing, friction, or electricity are of but little avail. Where lymph remains effused in or upon any structure, it is apt at any time, should the vital forces of the patient become feeble, to break down, and form an abscess.

The Formation of Pus.—When lymph is effused in acute or chronic inflammation, and as it breaks down, the patient is seized with rigors; the pain becomes throbbing or beating in character, the heat diminishes, the congestion and redness disappear.

The abscess points, softens in the centre, and becomes pyramidal in shape; it fluctuates, and discharges itself, or art is brought to its aid. If the lymph has been thrown out and thickening ensue, it may break down at any time; thus the rigors are the precursory symptoms in softening. Lymph thus broke down constitutes pus. There are numerous varieties of pus, as:

1. Healthy or laudable. 2. Serous, when containing serum. 3. Sanious, when it contains blood. 4. Curd-like or cheesy, met with in scrofula. 5. Mucopurulent, when it contains mucus mixed with purulent matter. 6. Lardaceous, if like lard. 7. Specific, when it contains a specific poison, as in syphilis; and 8. Putrid, when dark and offensive.

The accumulation of pus in any cavity, or structure of the body, constitutes an abscess, which may be acute or chronic; invariably a result of inflammation.

To aid suppuration—the breaking down of lymph—heat and moisture in the form of a well-made poultice, should be applied to the part and renewed every three hours.

The best poultices are those made of flaxseed meal, slippery elm, chick-weed, clover tops, wild indigo weed; they should be light, fine, moist and hot.

They should be continued until the pus fairly breaks down; afterward the abscess opened, and the poulticing continued until the abscess has been thoroughly discharged, when a lotion or ointment should be applied.

Simultaneously with the breaking down of the lymph, nature begins to throw out granulations in the bottom of the abscess, this lymph becomes organized with blood vessels and nerves; another layer is effused, the same result occurs, and such a process is repeated until the surface is reached, when a white milky scum makes it appearance, which gradually overspreads it.

The process of throwing out the lymph and its becoming organized is termed cicatrization, and when the new cutis (which is the milky scum) completely covers it, then a *cicatrice*. It is frequently a point of the utmost importance to determine whether suppuration has occurred. If it happens on a surface from whence matter is discharged, the physical characters of the secretion generally suffice; but when occurring in deep-seated parts, the discrimination of even the most experienced surgeon may fail in forming a correct diagnosis.

Gangrene.—When inflammation is about to terminate in gangrene, pain suddenly ceases, the redness becomes of a livid color, the congestion soft and flaccid, and *crepitates* when pressed upon, from the fact that it contains the products of putrefaction; the pulse becomes small, wiry and frequent.

A typhoid condition supervenes, features become small, contracted; and very soon terminates in death.

The gangrenous part may be a portion of skin, mucous membrane, vessel, bone, or any other individual texture, or several structures may be involved simultaneously.

The term "slough" is employed to denote the death of a portion of the soft parts, and that of exfoliation or "sequestrum" to a dead portion of bone.

In gangrene, where yet the parts retain a certain degree of vitality, the object should be to restore the healthy actions, and thus avert the occurrence of mortification. While generally inflammation runs a regular course from a mild form to one more severe, reaching at length to mortification of the affected part, yet in not a few instances it is no easy task to

trace any marks of severe inflammation antecedent to the occurrence of gangrene itself. This is particularly observable in such cases as ligature of a main artery, in cardiac affections, or where occurring in old age.

It is, therefore, of the first importance, in the treatment of gangrene, to ascertain its cause.

If the gangrene occurs in a limb, an effort should be made to stimulate a line of demarkation between the living and dying part. Such a line usually makes its appearance in the form of a red blush, which soon raises into a blister; this soon ruptures, forming a line of ulceration, with a furrow. The line of demarkation is best secured by applying a poultice composed of capsicum, yeast, charcoal or wild indigo weed, and administer stimulants and antiseptics, as brandy, quinia, yeast, &c.

In the treatment of all cases of inflammation, the most decided treatment should be inculcated; internal and local stimulation should be the rule, so as to prevent the process of dying (gangrene) or complete death (mortification) taking place.

DISEASES OF

THE NERVOUS SYSTEM.

THE BRAIN.

The brain is the nervous centre in which reside consciousness and power over the voluntary movements of the body.

It consists of masses of *gray* and *white* nervous matter, technically called vesicular and tubular neurine. When these are blended together, the mass is called a *ganglion*, from which proceed prolongations of the tubular matter—nerves—and are conductors of impressions to or from the vesicular neurine.

The number and size of these ganglia, vary with the powers of the animal. In the lowest forms of *mollusca*, there is but a single ganglia, from which arise all the nerves of the animal.

In the common slug, we have the cephalic ganglia so united as to form one bilobed mass or brain, just above the œsophagus.

In the *articulata*, the brain consists of two cephalic ganglia

over the œsophagus; there are also two nervous cords, one on each side of the body, but connected with each other.

But what concerns us, is the *human brain*, which is the most complicated of all, and is divided by anatomists into four parts —the medula oblongata; the mesocephalum or pons varolii; cerebellum, and the cerebrum. Then there is the spinal cord, with its thirty-one pair of nerves. Before referring to these, let us first glance at the *membranes* of the brain and spinal cord. The cerebro-spinal axis is protected by three membranes: 1. An external fibrous membrane, the *dura mater*, which closely lines the interior of the skull, and forms a loose sheath in the spinal canal. 2. An internal cellulo-vascular tunic, the *pia mater*, which accurately covers the brain and spinal cord. 3. An intermediate serous sac, the *arachnoid*, which covers the internal surface of the dura mater, on the one hand, and is reflected over the pia mater on the other.

The outer surface of the dura mater adheres to the bones, and forms their internal periosteum. The connection between the two, greatly depends on blood vessels and small fibrous processes, which pass from the one to the other. But though this membrane extends through the vertebral canal, it does not adhere to the bones—the vertebræ—but only forms a loose sheath around the cord—*theca*. The vertebræ are supplied with an independent periosteum.

The fibrous tissue of the dura mater is divisible into two distinct layers, which at numerous points separate from each other and form channels—sinuses, which serve as canals for venous blood.

The dura mater also furnishes three strong membranous partitions, which are simply duplicatures of its inner layer.

One descends vertically in the median line, occupying the longitudinal fissure between the two hemispheres of the cerebrum—falx cerebri; the second arches across the back of the skull, between the cerebrum and the cerebellum—*tentorium cerebelli;* and the third portion is situated below the tentorium, forming a vertical partition, passing down between the hemispheres of the cerebellum.

Upon the external surface of the dura mater, and little pits on the inner surface of the bones, are seen numerous granular-looking bodies, known as the pacchionian glands. Not found during infancy, and generally increase in number as life advances; but sometimes are wanting; and animals have no corresponding structure. However regarded they are not granular in their nature.

The *pia mater* is a very delicate cellulo-vascular membrane. It especially serves as a *nidus* for the blood vessels, and, unlike the other tunics, it dips into all the sulci; it is also prolonged into the ventricles, and there forms the velum interpositum and choroid plexuses.

On the spinal cord the pia mater presents a different structure from that on the brain, and from this circumstance, has been named *neurilemma of the cord;* it is thicker, firmer, less vascular, and more adherent to the subjacent nervous matter.

The Arachnoid Membrane.—A delicate serous membrane; consisting of a parietal and visceral layer—the former adheres closely to the dura mater; the latter is not uniformly nor closely adherent to the pia mater. The interval between the two spaces is the subarachnoid space. This space is wider and more apparent in some parts than others.

At the *base* of the brain the interval is wide, and extends over the pons and the interpeduncular space as far forward as the optic nerves; around the cord the space is also of considerable extent.

Cerebro-spinal Fluid.—This is a very tepid fluid, occupying the subarachnoid space. The quantity existing in the brain and spinal canal varies from two drachms to two ounces. Its function is purely mechanical; it is advantageous that such delicate structures should be surrounded by a fluid medium. It is rapidly secreted and readily absorbed; and thus being susceptible of changes in quantity, it may admit of variations in the amount of blood circulating in the vessels of the brain and spinal cord.

Blood Vessels of the Brain and Spinal Cord.—The arteries of the brain, and part of those of the spinal cord, are derived from the internal carotid and vertebral arteries. Whilst the main branches of the arteries are situated at the base of the brain, the principal veins tend toward the upper surface of the hemispheres, where they enter the superior and inferior longitudinal sinuses.

The Nervous System.—This consists of a central and a peripheral part, the former embraces the cerebro-spinal axis; the latter comprises all the nerves in the body. Another subdivision is that by which all the nerves are subdivided into a cerebro-spinal and a sympathetic system.

The cerebro-spinal axis is situated in the skull and spinal canal respectively; it is symmetrical in its form and structure throughout, consisting of two lateral halves, which are joined together by fibres of nervous substance, forming the commissures of the brain and spinal cord.

The cerebro-spinal nerves are distributed to the skin, the organs of the senses, and to the voluntary muscles. They are attached in pairs to the cerebro-spinal axis, and are generally symmetrical on the two sides of the body.

The sympathetic or ganglionic nerves, on the other hand, are chiefly destined for the viscera and blood vessels, whose *motions* are *involuntary* and sensibility obtuse; their ganglia are much more numerous and more generally distributed.

The cerebro-spinal is usually designated the nervous system of animal life, as by it are performed the various functions with which the mind is more directly connected—those connected with sensation and volition, and all mental acts referring to sensible objects.

The sympathetic portion of the nervous system is named the nervous system of organic life. It extends from the cranium to the pelvis, from either side of the spinal cord; its nerves, with ganglia, proceed to the viscera in the thoracic, abdominal, and pelvic cavities.

Both by its distribution and its peculiar mode of action, it is less connected with the mind, either as sensiferous or as receiving the impulses of the will; but more connected with the processes of organic life, than is the cerebro-spinal system.

Still, it is well to remember, that the differences of the two systems are not essential; their actions differ rather in degree and object than in kind or mode.

This may be inferred from the circumstance, that in the lower animals all the nervous functions are performed by one system, which corresponds with the cerebro-spinal of the vertebrata; and even among the vertebrata many of the functions which in the warm-blooded animals are controlled by the sympathetic nerves, are, in fish, under the control of the pneumogastric cerebral nerves.

We have stated that the brain consists of both gray and white matter, or vesicular and fibrous. Both of these are essential to the construction of even the simplest nervous system. The vesicular structure is generally collected in masses, and mingled with the fibrous; the masses constituting the *nervous centres* where nervous force is generated, and in which are accomplished all the reflections, and other modes of disposing of impressions when they are not simply conducted along the nerve fibres.

The fibrous nerve matter besides being connected with the nervous centres, form *per se* the *nerves* of communication connecting the nervous centres to the several parts of the body for the purpose of conveying nervous force to them, or of conducting the impressions made by stimuli to the nervous centres

The nerve fibres are simply conductors of impressions; these impressions may be variously diffused or reflected from their natural course in the nervous centres.

Nerves frequently anastomose with each other and form plexuses: *e. g.*, the brachial plexus consists of the last four cervical and first dorsal nerves. The *termination* of nerve fibres in the parts which they supply is called the *peripheral;* the other, the *central.* The gray, or *vesicular* nervous substance, is composed of nerve corpuscles, and are only found in the nervous centres, or the brain, spinal cord, and the various ganglia.

The nerve fibres when they enter a nervous centre gradually become finer, and enter into connection with nerve corpuscles. The exact relation and connections of the two distinct kinds of nervous matter is a subject of deep interest and practical importance, and implies a full microscopic description of the anatomy of neurine structure which is foreign to our object—that being to present to the reader merely the outlines of the nervous system as an introductory to a fuller description of its diseases.

The Functions of Nerve Fibres.—They either serve to convey to the nervous centres the impressions made upon their peripheral extremities, or parts of their course, and thereby the mind, through the medium of the brain, may become conscious of external objects; or to transmit impressions from the brain and other nervous centres to the parts where the nerves are distributed.

Such impressions may be either such as excite muscular contractions, or influence the secretion and other organic functions. Those nerves which convey impressions from the periphery to the centre are centripetal or afferent nerves, or if referring exclusively to cerebro-spinal nerves, nerves of *sensation*; and those which transmit central impulses to the muscles are named centrifugal, efferent or motory nerves. Nerve fibres appear powerless in generating force, in order to *action* they require to be stimulated—nerves of sensation are stimulated by external objects acting upon their extremities, and the nerves of motion by the will, or some force generated in the nervous centres. But all things that can disturb the nerves from their passive state act as stimuli.

Thus, all stimuli, whether the internal organic, or the inorganic—as the chemical, mechanical and electric, when applied to parts endowed with sensation, produce sensations; and when applied to the nerves of muscles, excite contractions.

In reference to the functions of nervous centres it should especially be considered that impressions made on them may be *communicated* from the fibres that brought them to others, either by transference, diffusion or reflection. An instance of that of transference is—where there is pain in the knee from hip disease; here the impression made by the disease on the nerves of the hip joint is conveyed to the spinal cord, and from thence transferred to nerve fibres of the knee joint.

The doctrine of reflex action has an intimate bearing on nervous affections; we will here only mention three things that are requisite for its manifestation: 1, centripetal nerve fibres, to convey an impression; 2, a nervous centre to which it may be conveyed, and in which it may be reflected; and 3, one or more centrifugal nerve fibres, upon which the impression

may be reflected, and by which conducted to the contracting tissue. Reflex actions are essentially *involuntary*.

Spinal cord is a cylindriform column of nerve tissue, presenting the usual characters, *i. e.* composed partly of gray matter, which is cell-like in structure, and partly fibrous and white, which is situated externally, and forms the greater portion of the cord; the gray matter occupies the central portion, and is so distributed that on the surface of a transverse section of the cord, it resembles two crescentric masses united by a narrower portion or isthmus.

It consists of two symmetrical halves united in middle line by a commissure, but separated anteriorly and posteriorly by a vertical fissure; the posterior is deeper, but not so distinct or wide as the anterior. Each half of the cord, especially above, is marked on the sides by two longitudinal furrows, which divide it into three parts: known as anterior, lateral or middle, and posterior. The anterior roots of the spinal nerves spring from the groove between the anterior and middle columns, and the posterior roots in front of the groove between the lateral and posterior columns; there being a pair of roots corresponding to each vertebræ, and on either side.

The fibrous part contains continuations of innumerable fibres of the spinal cord, which either issue from it, or enter into it. That the fibres of the roots of the spinal nerves do not pass up to the brain is highly probable, and that they end in some part of the cord. Did they so pass, the thickness of the cord would increase correspondingly from below upward; but such is not the case, for the upper part of the cervical portion of the cord is actually smaller than the lower part. The points where the cord is enlarged, quite correspond to the parts where the large nerve roots of the various plexuses are situated. The posterior roots are composed entirely of sensory fibres, and the anterior roots of motory fibres.

If the three posterior roots of the nerves distributed to the hind extremity be divided on the left side, and the three anterior roots of the corresponding nerves on the right side, the left extremity will be deprived of sensation, the right of motion. The spinal cord is capable of conducting impressions or states of nervous excitement. Through it, the various impressions made on the peripheral extremities or other portions of the spinal sensitive nerves are conducted to the brain, where only can they be perceived by the mind.

So, also, regarding the stimulus of the will, applied to the brain, is capable of affecting the muscles supplied from it with motor nerves. When any part of it is destroyed its communication with the brain is necessarily interrupted, and impressions on the sensitive nerves given off from it below the point where injured, cease to be propagated to the brain, and the

mind, moreover, loses the power of voluntarily exciting the motor nerves that proceed from the portion of cord thus isolated from the brain.

It is well known that in paraplegia there is loss of sensation and voluntary motion in the lower part of the body, owing to destructive disease or injury of a portion including the whole thickness of the cord. Yet, from experiments, it has been demonstrated that if the lower portion of the cord preserves its integrity, that the various parts of the body supplied with nerves from it, though cut off from the brain, will, notwithstanding, be subject to the influence of the cord, and will indicate its other powers as a nerve centre. Even where the brain and medulla oblongata are removed, irritation of either posterior column of the upper end of the cord will cause general movements of muscles, the impression being conveyed across to the anterior columns and roots, for the movements do not happen if the anterior roots are divided.

Again, if one-half of the cord be divided at a certain part, and the other half at a certain distance from that part, impressions may be conducted through the intermediate portion of the cord from one side to the other.

Second, The spinal cord as representing an aggregate of many nervous centres, has the power of communicating impressions from fibre to fibre.

That transference of impressions occurs in the cord, and not in the brain, is observed in diseases of the hip, where the pain is felt in the knee rather than in the hip itself; this was formerly mentioned.

The occurrence of movements under the influence of the spinal cord, independently of the will, is well illustrated in the acts of swallowing, in which a portion of food carried by voluntary efforts into the fauces, is conveyed by successive involuntary contractions of the constrictors of the pharynx and muscular walls of the œsophagus into the stomach. Such contractions are excited by the stimulus of food on the spinal cord and medulla oblongata, and thus regulated through the motor nerves of these parts. Centripetal nerves of the pharynx and œsophagus being conducted to the spinal cord and medulla oblongata, and thence reflected through the motor nerves of those parts.

Similarly the involuntary, even unfelt, contraction of the sphincter ani is secured even in deep sleep, but ceases when the lower part of the cord is destroyed, and cannot be maintained by the will.

The influence of the spinal cord on the sphincter ani, already mentioned, resembles a common reflex action in being involuntary, but differs in being nearly constant. In this respect it resembles that condition of muscles called *tone* or passive con-

traction. Now this tone of all the muscles of the trunk and extremities depends on the spinal cord just as the contraction of the sphincter ani does. If an animal is killed by injury or removal of the brain, the tone will remain and the limbs feel firm for a time afterward; but should the spinal cord be destroyed, the sphincter ani relaxes; all the muscles likewise become relaxed.

The medulla oblongata is the cephalic prolongation of the spinal cord, connecting it with the brain, and is larger than any portion of the cord. It also consists of columns which are pyriform, enlarging as they proceed toward the brain.

Traced upward, the fibres of the anterior pyramids pass through the inferior part of the pons varolii, from the lower part of the crura cerebri, and are distributed in the substance of the cerebral hemispheres. External to each anterior pyramid is the olivary body. Behind the olivary body is a tract of fibrous matter—the *lateral tracts;* these are interesting in that the facial nerve merges through them, and derives from them its connection with the motor portion of the medulla oblongata and cord.

But it is the less important that we should give a detailed description of its anatomy, for it affords but little insight into its physiology. It is, however, known that nerves of similar function arise from both the cord and medulla oblongata. Thus, from the anterior pyramids, and their continuation in the crura cerebri, arise the motor third, and sixth pairs of cerebral nerves. From the groove between the anterior pyramids and olivary tracts (a groove continuous with that from which all the motor nerves of the spinal cord emerge) arises the motory hypoglossal nerve; and from continuous processes of the cord, known as the lateral and anterior columns, arise the motor facial and fourth nerves, and from the front of the restiform tracts, which is continuous with the groove between the posterior and lateral columns of the cord, arise the roots of the sensitive glosso-pharyngeal and pneumogastric nerves. In functions, the medulla oblongata chiefly differs from the spinal cord in the importance and extent of the actions that it governs. As a conductor of impressions, it has a wider range of function than any other part of the nervous system, for all impressions passing to and fro between the brain and the spinal cord, and all nerves arising below the pons, must be transmitted through it. As the spinal cord transmits *motor* impressions in its anterior and sensitive along its posterior columns, so with the medulla oblongata.

The decussation of numerous fibres of the anterior pyramids, crossing to the opposite side, render it probable that the motory impressions from the brain pass across to the opposite side, and occasion cross paralysis as it is termed.

The *crura cerebri* are the chief conductors of impressions to and from cerebrum, and division of one of them produces singular effects on the movements. These are likely due to the interruption of the voluntary impulses from the cerebrum. The movements of an animal are more disordered when the cerebellum is removed and the cerebrum is left, than when both are removed; showing, in the latter case, that the voluntary power is weak but not disordered; in the former, that it acts with full strength but with disorder.

The *corpora quadrigemina* are homologous with the optic lobes in birds. Destruction of one of them produces blindness of the opposite eye. The deprivation of sight is not only because it contains the continuations of the optic tracts, but no less because it or rather both of those bodies are the organs in which the mind perceives the sensation of light.

But little would be gained by extending our description of the various processes, &c., of the cerebrum, for that could add but little to our knowledge respecting the proper function of the cerebrum. We have already stated that the functions of the medulla oblongata and spinal cord, are only concerned with involuntary and unconscious movements; but above the medulla oblongata, the pons, and other organs are capable of being excited by the will to orderly movements. These, however, cannot be regarded as organs of the higher faculties of the mind. Agreeably, we find that an animal deprived of the cerebrum has merely sensations, and can only act by instinctive impulse and habit. From this, it may be more than conjectured that the cerebral hemispheres are only engaged in the higher mental acts, and it is indisputable that the intellectual powers diminish a corresponding proportion to the diminution in size of the cerebral hemispheres.

The evidences that the cerebrum is the organ of the mind are numerous; but some of the more obvious are briefly these: 1. Any severe injury as concussion, or sudden and severe pressure by apoplexy of the cerebral hemispheres, frequently deprives a man of all his mental faculties. 2. In propo - tion as the mental faculties are developed, the greater the size of the cerebrum as contrasted with the rest of the cerebro-spinal system. 3. No other portion of the nervous system sustains any corresponding proportion to the development of the mental faculties; and 4. Congenital deficiencies in the one are associated with corresponding impairment of the other.

But what *are* those functions of the *cerebral hemispheres?*

As far as has yet been determined we may briefly reply, that they consist of those organs by which the mind, 1st, perceives those clear and impressive sensations which it can retain and judge of. 2. Performs those acts of will, which require a deliberate determination. 3. Retains impressions

of sensible things, and reproduces them in subjective sensations and ideas; and 4. Manifests itself in its peculiarly human emotions and feelings, and in its judgment, memory, and others of a like class.

The cerebral hemispheres, as the organs of the mind, should not perhaps be regarded as if they were single organs, of which all parts are appropriate for the exercise of each of the mental faculties; but rather that each faculty has a special portion as its proper organ.

Constituents, and their average quantities of cerebral structure;

Water,	75½
Albuminous matter,	7
Adipose,	11½
Salts (containing 1½ phosphoric acid),	6
	——100

The Cranial Nerves.—These were formerly classified into twelve pair, which number is still retained by some; the more frequent arrangement adopted, is that which embraces them in nine set. The latter is the one we prefer. We are only induced to name them by the consideration that they include those names concerned in *special sensation.*

The first pair is the *olfactory*, distributed to the Schneiderian membrane, or mucous membrane that lines the nasal cavities.

Second pair is the *optic* nerve which pierces the sclerotic and choroid coats at the back of the eyeball, expands and terminates in the retina of the eye.

Third pair is the *motor* oculi. This is the common motor nerve of the eyeball, and supplies all the muscles of the orbit except two—the superior oblique and external rectus not being supplied by it.

Fourth pair or pathetic nerve is the smallest cranial nerve, and is only distributed to the superior oblique muscles of the orbit.

The fifth pair or trifacial nerve, the largest cranial nerve. This is the most complex of all the cranial nerves, and its distributions are very numerous and diverse. A nerve of special sense (taste) of common sensibility (touch) to the face, forehead, eye, nose, ear, and the mouth; also supplies motory filaments to the masticatory muscles.

The ophthalmic nerve is the first division of the fifth nerve, and gives off numerous branches, as *lachrymal* and *frontal*, &c.

The superior maxillary is the second division of the fifth pair; it leaves the skull by the foramen rotundum, and terminates in branches to the upper lip, the nose and the eyelid. It gives off the spheno-palatine branches, which are deeply situated between the pterygoid process of the sphenoid and the superior maxillary.

In cerebral apoplexy, the loss of motion is always on the opposite side from that on which the effusion of blood has occurred. But why that the loss of sensation should likewise occur on the side opposite the injury or disease of the brain is not so satisfactorily determined, for there is but little decussation of the posterior fibres. As a *nervous centre*, the medulla oblongata is more important to the maintenance of life than any other, for from it alone issues the nervous force necessary for the performance of respiration and deglutition.

Repeated experiments have demonstrated that life may continue for a considerable time, with the respiratory movements remaining nearly intact even when the brain is gradually cut away. Life may also continue when the spinal cord is cut away in successive portions from below upward as high as the point of origin of the phrenic nerve, or in animals without a diaphragm even as high as the medulla oblongata.

Injury and disease in men prove the same as experiments on animals; thus injury to the medulla oblongata has produced instantaneous death, and through injury of it or that portion of the cord connecting it with the origin of the phrenic nerve that death so frequently results in fractures or displacements of the upper cervical nerves.

The principal centripetal nerves engaged in respiration are the pneumogastric, which indeed convey the most acute impression of the necessity of breathing.

The extensive connection which belongs to the medulla oblongata as the centre for the respiratory movements is shown by the fact that impressions by any of the ordinary stimuli readily induce respiratory movements; thus dashing cold water on the face, irritating the nose, the pharynx, œsophagus, stomach or intestines, produce movements illustrative of this.

But the medulla oblongata is also the centre of impulses, by which the muscles of the palate, pharynx and œsophagus, produce the co-ordinate movements necessary for deglutition. It is also interesting to observe that the part of the medulla oblongata which acts as nervous centre, may continue to discharge its function, after the part of which it is only a conductor has ceased to act, when, from ether or chloroform patients breathe very well, though they may be so insensible and derived of voluntary motion that we cannot suppose the medulla oblongata conducts either to or from the pons or any other part of the brain.

The *pons varolii* or meso-cephalon is principally composed of transverse fibres connecting with the hemispheres of the cerebellum; but it has longitudinal fibres which connect the medulla oblongata with the cerebrum.

As a conductor of impressions, it may be regarded as the continuation of the medulla oblongata to the cerebrum and cerebellum.

As a nervous centre, the pons is the first or lowest portion of the encephalon, where, when the rest of the brain is removed, the mind may have sensation of impressions or exercise the will. When all above the medulla oblongata is removed from a warm blooded animal, it seems absolutely insensible, and completely deprived of voluntary power; it only breathes, and has reflex movements of the trunk and limbs. But experiments have demonstrated that where the pons and medulla oblongata have been left, sensibility may be elicited, also movements indicative of purpose and will.

Cerebellum.—Formed of hemispheres from fibres, which are combined in a *crus cerebelli.* These fibres are derived from three sources: 1. The restiform tracts of the medulla oblongata. 2. The *middle crus* or peduncle; and 3. The superior crus, together with a mass of gray matter—the *corpus dentatum.*

The Physiology of the Cerebellum.—This may be considered in its relation to sensation, voluntary motion, and the higher faculties of the mind.

It may all be cut away without inducing pain. But if any of its crura be touched or restiform tracts of the medulla oblongata, acute suffering is produced. No irritation of the cerebellum would seem to produce movements of any kind; indeed the cerebellum belongs neither to the sensitive nor the intellectual apparatus; neither does it seem to be the source of voluntary movements; but is related to the motory apparatus, being the organ for the co-ordination of voluntary movements, or for the excitement of the combination of muscles.

There are many, however, who hold that the cerebellum is the organ for the *perception* of muscular sensibility, and the circumstance of the close connection subsisting between the cerebellum and the posterior columns of the cord, to say the least, makes such a theory plausible. The influence of each half of the cerebellum is directed to muscles on the opposite side of the body, and for the proper ordering of movements, the actions of its two halves invariably be mutually balanced and adjusted.

Cerebrum.—It is connected with the pons and medulla oblongata by its two crura or peduncles; and with the cerebellum by the superior crura of the cerebellum, also by the valve of Vieussens, a layer of gray matter, which is placed between the superior crura, and extends from the inferior vermiform process of the cerebellum to the corpora quadrigemina of the cerebrum.

The third and largest divison of the fifth nerve is the inferior maxillary. It sends branches to the tongue, external ear, lower teeth, and the muscles, mucous membrane, and integuments about the lower maxillary bone.

The first and second divisions of this nerve are purely sensitive; its third division is both motor and sensitive; the lingual branch of the fifth, is a nerve of special sense of *taste.*

The Sixth Cranial Nerve is exclusively distributed to the external rectus muscle; and from the action of that muscle it has been named "abducent nerve."

The Seventh Cranial Nerve comprises two nerves having a distinct origin, distribution and function One of these is the facial, divided into two parts by anatomists—the first comprising the portion from its origin to its entrance into the parotid gland; the second to its termination.

From its origin, it is inclined outward with the auditory nerve to the internal auditory meatus; within the temporal bone it gives off numerous branches, as also when it passes through the styloid foramen. In the substance of the parotid gland it divides into two primary branches—these are the temporo-facial and cervico-facial. Names generally indicative of its distribution.

The facial is the motor nerve of the face, and is freely connected with the three branches of the fifth, with the glosso-pharyngeal, pneumogastric as well as with the auditory, the sympathetic and spinal nerves.

When the facial nerve is divided or paralyzed, the loss of power is manifested not only in the muscles which it supplies, but the functions of the organs of the special senses are likewise impaired.

In paralysis of this nerve the orbicularis palpebrarum being powerless, the eye remains open through the unbalanced action of the levator palpebræ, and the conjunctiva; but the senses of hearing and taste may also be impaired.

The Auditory Nerve.—The special nerve of the sense of hearing, and is distributed exclusively to the internal ear; generally named the *portio mollis* of the seventh, from the softness and fineness of its component fibres. It consists of two divisions as it enters the labyrinth of the ear—one for the vestibule and semicircular canals, the other for the cochlea.

Most frequently several impulses on the auditory nerve concur in the production of the impression of sound; and if the intensity of the impulses is sufficiently great, sounds may be audible which result from the succession of 24,000 impulses in a second.

The power of perceiving the *direction* of *sounds* is not a faculty of the sense of hearing itself, but rather an act of the mind, judging on previously acquired experience; from this, as well

as other difficulties relating to the *direction* of sound, ventriloquists take advantage.

The Eighth pair of nerves, composed of three distinct nerves,—the glosso-pharyngeal, pneumogastric, and spinal accessory.

The two former are attached to the medulla oblongata, and are somewhat similar in their distribution to the commencement of the alimentary canal; the third or spinal accessory is distributed exclusively to muscles; differs also in origin; it arises from the spinal cord.

The glosso-pharyngeal nerve is distributed to the tongue and pharynx. It contains motor fibres, those of sensation, and also those of the sense of taste.

Considerable discussion has been elicited by the question, which is the nerve of taste—the lingual branch of the fifth, or the glosso-pharyngeal? From all that can be gleaned, it may be answered that they are both nerves of this special function.

Pneumogastric nerve or par vagum; more various in its distributions, and influences a greater variety of functions than any other of the cranial or spinal nerves. It is distributed to the pharynx, epiglottis, glottis, larynx, œsophagus, heart, lungs, stomach, and liver. It has a decided influence on the respiratory movements.

The motions of the œsophagus are dependent on motor fibres of the pneumogastric, and also excited by impressions made upon sensitive fibres of the same. Its cardiac branches are one of the channels through which mental emotions are transmitted to the heart. Each pneumogastric is connected with the spinal accessory, glosso-pharyngeal, facial, and hypoglossal; also with some spinal nerves; likewise with the sympathetic, in the neck thorax and abdomen.

Spinal accessory arises from the cervical portion of spinal cord, and passes through foramen magnun; afterward passes out of the cranium along with the pneumogastric; it is distributed to the sterno-mastoid and trapezius muscles. In the skull it receives funiculi from the side of the medulla oblongata. Respecting the *ninth pair*, or hypoglossal, we need only remark that it is the *motor* nerve of the tongue.

The Spinal Nerves.—There are thirty-one pairs—8 cervical, 12 dorsal, 5 lumbar, 5 sacral, and 1 coccygeal. The proportion of white and gray matter is about equal in the dorsal nerves; the cervical have about two of gray to one of white, and the lumbar about 1½ to one.

The preponderance of the gray over the white in the cervical region especially, is just what we might have anticipated. It is the brachial plexus that is the origin of those nerves that are distributed to the hand and fingers, where the sense of touch is pre-eminently acute; but that plexus is derived from the cervical nerves.

As introductory to the description and treatment of nervous diseases, it was deemed expedient, as an accessory to an accurate acquaintance with this multifarious group of disorders, to refresh the memory of our readers by furnishing them with an epitome of the nervous system itself.

INFLAMMATION OF THE BRAIN.

This may take place as the result of some depressing passion, but more frequently of some accident or injury. In the former case it is termed *idiopathic*, in the latter, *symptomatic*. In the one case it is slow and insidious in its approach; in the latter, it usually comes on about six or seven days after the accident. Its symptoms and progress are very variable, sometimes sudden and violent, quickly terminating in destruction; in other cases slow, insidious, even unsuspected, until active symptoms develope themselves.

After the brain has received the shock there is a period of incubation very variable in its duration, during which the patient becomes irritable, restless, peevish, sleepless, complains of heats and colds, burning in the skin, secretions arrested, great lassitude, disturbance of the mental faculties; and there is a characteristic pain in the forehead, which is aggravated by noise, light, heat, motion, excitement, intolerance of light, pulse slow, want of appetite, tongue dry, coated white and brown.

These premonitory symptoms become more intense daily, when, if the inflammation is going to take place, the patient is seized with the most violent rigors, followed by burning heat of skin; pulse hard and frequent; strong pulsations of the carotid and temporal arteries; headache intolerable and throbbing; eyes suffused; face congested; tongue dry, brown; bowels obstinately costive; stomach rejects everything; secretion and excretion arrested, because the functions of the brain are impaired. In addition, violent delirium, coma, paralysis; pupils contracted; and if these are not speedily relieved, the third stage follows; then the pulse becomes slow, oppressed, strabismus, low delirium, convulsions, suppression of urine, general palsy, rapidly usher in death. Rigors, followed by squinting, dilated pupil, stertorous breathing, coma, palsy, are indications of an unfavorable termination.

If the inflammation extends to the cortical substance and membranes of the brain, early derangement of the intellectual faculties, irritability, constant agitation; if the medullary substance, chills, headache, convulsions, early lassitude, &c.

The predisposing causes are, plethora, stimulants, excessive exercise; exciting causes are, concussions, blows, fractures, mental emotion, metastasis of rheumatism, gout, erysipelas, suppression of some discharge.

If the membranes and surface of the brain be inflamed there will be greater pain, a stronger disposition to delirium and convulsions. In inflammation of the cerebral substance there is an early tendency to coma and palsy.

The medullary substance of the brain is merely the passive servant of the cineritious substance, the conductor of its commands to the muscles; the gray substance presides over intellect; the white, over movements.

Inflammation of the brain may terminate in any of the ordinary results of inflammation; effusion, induration, suppuration, abscess. Chronic inflammation of the brain is often very insidious and difficult of diagnosis; the occurrence of local palsies and a peculiar change in the urine is a positive diagnostic symptom; it possesses a low specific gravity of 1010, without albumen, a remarkable diminution of coloring matter, of urea, chlorides, alkaline phosphates, &c.

The diagnosis of inflammation of particular spots of the brain cannot be relied upon by any precise symptoms. Pain in the head, intolerance of light, vomiting, drowsiness, coma, slow, then rapid pulse, succeeded by jactitation and convulsions before death, indicate that the inflammation is on the surface. If nausea, vomiting, are the earliest symptoms, the inflammation has its origin in cerebral pulp; if the attack begins with convulsions, the inflammation has started from the arachnoid; but, as a rule, symptoms are variable and insidious.

If this condition of depression cannot be overcome, the inflammation is most likely to terminate in effusion of blood into the structure of the brain, which constitutes red ramollissement.

Treatment.—On the earliest approach of symptoms, the chief aim of all treatment should be to restore the proper vitality of the organ. The patient should be placed in an apartment free from noise, heat or light, in bed, head and shoulders well elevated. The head should be shaved, and tepid water kept constantly applied. He should be cupped freely over the shoulders and nape of neck; mustard should be applied to the feet and legs, and heat to the feet; an effort should be made to excite an action of the skin with an alcoholic vapor bath. A powerful cathartic should then be administered, and every precaution taken to insure its action, such as

℞.—Comp. powder of jalap, grs. xv;
Podophyllin, gr. i;
Croton oil, gtt. j.—*Mix.*

Make a powder and give often, so as to have the bowels moved frequently—free purgation is the rule. The moment the condition is diagnosed begin with the administration of the tincture of veratrum, given in three-drop doses every fifteen minutes; give until the pulse, heat and respirations dimin-

ish, persevere with it until the pulse reaches 60. Then hold at this point for 72 hours or longer. Another important indication is to procure sleep. This must be done at all risks; for this purpose it is well to begin at 4 P. M., beginning with one grain of the extract of hyoscyamus, and one-eighth of a grain of opium, pulverized. The whole to be finely powdered, and given, to repeat every hour till 8 P. M., when, if the patient is not asleep, let the dose of hyoscyamus be doubled, and even gradually increased to five grains, but not to increase the opium. In no case must opium or morphia, or chloral hydrate, be given. If the circulation can be thus controlled and sleep procured an important point is gained. Then persevere, watching carefully the progress of events. This preliminary treatment should be persevered with, little food except cracker-water or gruel administered. An excellent prescription to give the patient at this point is the following:

℞.—Camphor water, ℥iv;
Bromide potass, ℥j;
Bromide Ammonium,
Potassa, bicarb, āā, ℥ij.—*Mix.*

Dose.—From half to a full teaspoonful every three hours.

Just at or prior to the fever leaving begin with small doses of belladonna and aconite; the best results follow. Belladonna has a specific action upon the cortical substance, the tubercula quadrigemina, and the membranes, in removing congestion. I have also often found it advantageous to combine it with lobelia. In numerous cases of inflammation of the brain I have derived the greatest benefit from the green lobelia—a grain in pill form given every two hours—prefer it in pill form on account of its slower absorption, and being less likely to excite nausea. Lobelia is a depressant and sedative, has a positive revulsive effect in all brain engorgements; it diminishes the number of respirations, controls the action of the heart, and abates cerebral inflammation. With these and like means, we would subdue inflammation, and, if possible, avoid its terminations; we would establish a cure upon a cautious use of phosphorus, iron, nux vomica, quinine, counter-irritation, alteratives, iodide and bromide potass., change of air, a cautious use of food and stimulants.

Acute inflammation of the brain in children has precisely the same symptoms as in the adult, with the exception that it runs its course with more rapidity. The shock is greater because in them the skull possesses but one table; there is no intervening substance to resist the shock; there is no diploetic structure as in adults, consequently the lesion falls upon the brain directly.

On account of the extreme impressibility of children to reflex irritation, there must be no very active external stimulation; we may shave the head, and apply tepid water, but

no cups; instead of mustard sinapisms to the feet and legs, simply dry mustard in the stockings; instead of free purgation, which is so salutary in adults, we need only have the bowels moved daily; instead of administering large doses of tincture of veratrum we give aconite and belladonna, and bromide of potassium to procure sleep. The nervous system of our people is developed at the expense of the physical. The law of reflex action is powerful, consequently this change of base in cases of children.

Chronic inflammation may be an independent primary disorder, or it may follow an acute attack.

Its symptoms are much diversified; pain in the head, aggravated by noise, light, heat, motion. There may be slight swimming in the head, specks or spots before the eyes, ringing in the ears, unsteadiness of gait; peevish, irritable, sleepless; heats and colds, great mental disturbance or depression, pallor of skin, anxious expression of the features, arrested secretions, hesitation in speech, stammering, stiffness of muscles, loss of appetite, irregularity of pulse; subsequently symptoms more marked, memory fails, senses become impaired, paralysis, general breaking down of the health. Lasts an indefinite period.

It may be caused by anything that will exhaust the brain; as study, grief, sexual excess; stimulants, as whisky, tea, coffee, tobacco, quinine, opium and other drugs.

In the treatment, we should insist upon rest, freedom from all the numerous causes. The secretions should be well stimulated, bowels and skin, the latter with tepid bathing followed by cold shower bath. Tonics should be given to promote an appetite, head kept cool, and stimulants applied to the feet; plain but nutritious food given; an effort should be made to ameliorate the prominent symptoms; sleep should be produced, as in acute inflammation, by repeated doses of the extract of hyosciamus—a *true brain sedative.* The irritability and other prominent symptoms should be controlled with bromide of potass. and ammonia. The burning in the skin, heats and colds, with cinchona, phosphorus, nux vomica, belladonna, aconite, active counter-irritation, and an alterative course of treatment. In all cases stimulants, as tea, coffee, whisky, wine, should be rigidly forbidden, and even all medicines of a stimulating character; no study, no sexual excitement. Bowels should be kept rather free, once or twice daily. The kidneys should also be looked to. After the symptoms have fairly yielded to rest, quietness, sleep, alteratives and bromine, then the comp. hypophosphates of lime, soda, iron, should be given in small doses; if those do not seem to ameliorate symptoms, the water or tincture of phosphorus; then the secondary action, that is, minute doses of the following remedies should be given; quinine, nux vomica, rhus radicans.

If convalescence cannot be obtained, then the inflammation will be very apt to terminate in white ramollissement or softening.

Induration of the Brain is the result of hyperæmia or inflammation, and it causes loss of memory, confusion of thought, derangement of mental powers, loss of appetite, desires, affections, passions, and paralysis.

Softening of the Brain is usually ushered in by severe and persistent pain in the head, attacks of vertigo, diminution of intellectual powers, especially the memory, embarrassment in answering questions, depression of spirits, tendency to shed tears, twitching of the limbs with pain or numbness, desire to sleep after meals, hearing and seeing impaired, insensible, dilated pupil. If the result of inflammation, it is termed acute ramollissement, (*red softening*) painful cramps, stiffness, contractions; paralysis with spasm not uncommon; permanent contraction of flexor muscles; mind weak, vacillating; intermitting pulse; vomiting; constipation; retention of urine, with uriniferous odor; paralysis of sphincter ani; coma; death common after fifty.

The portions of the brain affected are often of the consistence of cream; the corpus callosum, septum lucidum, fornix, and the cerebral substance around the ventricles, are most frequently the seat of this softening.

White Softening is the result of cerebral anæmia, the opposite of the inflammatory form. Common in drunkards and aged persons; caused by insufficiency of supply of blood to the brain, owing to disease of the cerebral arteries, or obstruction by fibrinous clots, or ossification. It is slow, insidious, in its progress, failure of memory is early, drowsiness, œdematous condition of the whole body, imperfect articulation, loss of energy, absence of pain. White softening attacks most frequently the gray matter of convolutions, at base, optic thalami, corpora striata.

Softening of Cerebellum is attended with fixed pain at the back of the head, amaurosis, hemiplegia or paraplegia, tottering gait, vertigo, convulsive agitation, dullness of hearing, aphonia, eccentricities of conduct.

Tumors, tubercular deposits, syphilitic growths, hydatids, are often found in the brain, and their existence is very obscure; headaches, sickness, giddiness, mental depression, confusion, partial paralysis, epileptiform convulsions.

Prognosis.—Ramollissement of the brain, if treated by depleting remedies, is invariably fatal. If the coats of the blood vessels have undergone fatty or earthy degeneration, our prognosis is unfavorable. If the case is obliteration of some particular branch, other vessels may restore and maintain the normal circulation, and a cure may result. But in the large proportion

of cases recovery never takes place, the palsied limbs are never restored, their temperature falls, they become œdematous, strength declines, and after an indefinite period existence terminates.

Treatment.—In all these cases begin treatment by adopting every means to build up the strength of the patient. Diet, above all things, should be generous to a fault—animal food, wine, tonics, a stimulating plan of treatment. All the symptoms are those of urgent debility, slow pulse, fainting, fits, slow anæmic debility, and call for everything that can uphold the patient's strength, consistent with the degree of digestive power that he may possess. If there is evident prostration, ammonia, caffein, xanthoxylin, quinine, calabar bean, are our best remedies. The slow pulse and alarming syncope are invariably relieved by wine and tonics. Nux vomica often produces a decided improvement. It may be alternated with phosphorus with excellent results. Iron, quinine, belladonna, may be given with success.

TUBERCULAR MENINGITIS.

Irritation reflected from any portion of the body to the cerebro-spinal axis depreciates the nervous system so much that a tubercular or scrofulous diathesis is engendered. This condition may have been hereditary or acquired by teething, worms, bad diet, drugs, irritation of bowels, cholera infantum, &c. When this irritation is carried on for a long time, we have irritation of the brain of a tubercular character, tubercular meningitis.

It only can occur in a highly strumous child, comes on very slowly and insidiously, marked at first by a marbly whiteness.

Malassimilation, abnormal condition of the bowels, often chop spinach stools, great irritability, screaming when lifted or brought near the fire or light, sleepless, eyes partially open when asleep, wakes up with a scream without any apparent cause, moans, grinds its teeth, is often delirious, often cough, short, dry; peevishness, intolerance of light and sound; headache, giddiness, and other warnings of cerebral congestion; together with fever, presenting exacerbations or remissions. The skin is hot, appetite capricious, sometimes bad, at other times voracious; the tongue heavily coated, breath offensive, nausea, vomiting; the child is drowsy, still, very restless as the inflammation progresses, the symptoms become aggravated. The child will now lay quiet in bed, its countenance is expressive of anxiety and suffering; alternately white and flushed—its eyes listless, eyebrows knit, and is annoyed by light, noise, heat, headache, weariness, sleeplessness. The pulse is extremely rapid, often nearly 200, but after several days becomes irregular and diminishes; slight exertion causes an accelera-

tion, stupor and heaviness come on. There is squinting; the patient lies on his back, occiput and heels thrown back, becomes insensible, perhaps pricking with tremulous fingers at nose, lips, or bed clothes, convulsions often occur, sometimes paralysis, while, at the same time, urine and fauces passed unconsciously. If no effort at recovery takes place, the drowsiness passes in profound coma, from which it is impossible to rouse the child; the pulse becomes more feeble; extremities cold; a clammy sweat breaks out over the entire body, or the child may become comatose suddenly, and immediately after it is attacked with paralysis and death.

It is a condition of uncertain duration, several weeks, often months, very rarely met with in adults. Its most common termination aside from recovery is hydrocephalus, still some cases terminate in tubercular shrinking or deposits in various portions of the brain which give rise to epilepsy, chorea, &c.

Morbid anatomy, traces of inflammation of the membranes of the brain, more frequently serves effusion everywhere. A deposit of tubercule on the cerebral substance, often decided appearance of softening.

Treatment.—The greatest care and discrimination is necessary in the management of a case of tubercular meningitis. The patient is intensely strumous, consequently no depleting plan of treatment is admissible. The child should be kept in bed, a room free from noise, light, head should be bathed with an alkaline wash morning and night, followed by an unction of olive oil. The feet and legs should be encased in stockings, partially filled with dry mustard. The hair should be cut, and the following cooling evaporating lotion kept applied to the scalp.

The bowels should be kept open with the neutralizing mixture and leptandrin. An effort should be made to control the circulation with aconite, given frequently and in small doses. If the case can be watched closely by the physician, belladonna and tincture of green root gelseminum should also be given, but the administration of the last two drugs should be solely given under close watching. The following mixture is excellent:

℞.—Camphor water, ℥iv;
Bromide potass., ʒss;
Bromide ammonium, ʒij;
Tinct. calabar bean, ℥ss.—*Mix.*

S.—From half a teaspoonful to one teaspoonful given every three hours.

Bowels should be kept open while on the above, and if the case does not seem to yield, from half a grain to a grain of iodide potass should be given, all sources of irritation should be removed, but no counter work, as a blister, should now be resorted to. If due to teething, scarify the gum of the teeth.

HYDROCEPHALUS.

It is a well attested fact, that the nervous system, in our present abnormal condition, is being developed at the expense of the physical; also, that a tubercular diathesis is greatly on the increase, and that the latter is due to improper marriages, depraved passions, bad food, drugging, and to the presence of irritation in the body.

Children who possess this scrofulous habit, have deficient vital forces—are feeble in vegetative power—their blood is highly albuminous—the corpuscles do not attain their ordinary size, hence, when we have an irritation, effusion is often rapid. The extreme impressibility of the nerve centres, the cerebro-spinal axis to irritation, from teething, worms, diarrhœa, cholera, inflammation, burns, &c. Reflex irritation, excites inflammation not only of the medulla oblongata, but of the membranes of the brain, and as a result, serous effusion often takes place in tubercular meningitis. When the effusion is likely to take place in tubercular meningitis, the following symptoms are usually present: Strumous diathesis, malnutrition, great peevishness, extreme restlessness, short dry cough, intolerance of light and sound, headache, giddiness; occasional febrile condition, with exacerbations and remissions; appetite very variable, secretions arrested, furred tongue, offensive breath; when asleep he moans or groans; eyes partially open; awakes in alarm or with a scream, rolls head in the pillow.

These symptoms may last a week, when the little sufferer becomes drowsy, inclines to be quiet, alternate flushing and paleness of the countenance; face pinched, expressive of suffering, brows knit, sleeplessness, weariness, headache, pulse irregular, 120 to 80. Often a remarkable remission of symptoms, but the improvement of short duration. Stupor and heaviness, squinting, convulsions, paralysis, urine and fœces passed involuntarily. The disease, in this way, may pass on for ten or fourteen days, the patient passing into the most profound coma. Pulse becomes feeble, extremities cold—the case terminates in paralysis or convulsions.

The opthalmoscope is a powerful aid to diagnosis in tubercular meningitis before convulsions set in. It exhibits peripheral congestion of papilla, distortion of retinal veins, with varicosity of the same.

In order to prevent effusion taking place, the patient should be carefully nursed, bathing inculcated—circulation efficiently controlled with aconite and digitalis; patient should be kept very quiet; sleep procured with bromide potass and ammonia. The secretions kept very active, good nourishment; iodide potass should be given in small doses. Occasionally hydrocephalus is met with, in some cases, as a congenital affection, but generally associated with cerebral disease.

When effusion takes place, the head attains great size; the unossified sutures yield readily to the pressure of the fluid, bones are thin and transparent, meninges thickened; sometimes the effusion is uniform throughout the scalp; sometimes more in one side than another; the quantity varies from a few ounces to some pints.

It is often a sequel of scrofulous inflammation, sometimes congenital, emaciation, ravenous appetite, small face, large globular cranium, head drops helplessly on one side, imbecile, irritable and peevish; extreme sensitiveness to light or noise; often epileptic fits, muscular weakness, rolling eyeballs, often strabismus or amaurosis, headache, nausea, constipation, dark-colored offensive stools. If not relieved, we have stupor, pallor, slow pulse, dilatation or contraction of the pupils, picking of the nose and lips. If remedies act, the symptoms subside, appetite returns, muscular power returns, emaciation diminishes. If the case is about to terminate unfavorably, excessive prostration, rapidity of pulse, paralysis, coma, convulsions.

Treatment.—As the primary cause of tubercular meningitis and hydrocephalus is the scrofulus diathesis, the treatment should be directed to changing or modify that abnormal condition. An enfeebled condition of the vital forces is the starting point; this deteriorated state of the nervous system, renders the elaboration of the blood imperfect—hence the diathesis, so that infants born with this impress stamped upon them, should be strengthened as much as possible; nourishing food, juice of meat, plenty of milk, bathing, salt water baths, friction to skin, flannel clothing, pure air, sea side, phosphorus and glycerine.

If the effusion has occurred, it must be removed by acting on the bowels, kidneys and skin. We can give with decided advantage the following

℞.—Podophyllum, grs. ij;
Nitrate potass, grs. ij;
Bitartrate potass, grs. xxx.—*Mix.*

Give twice daily.

℞.—Comp. syr. stillingia, ℥iij;
Iodide potass., ℥ij.—*Mix.*

A teaspoonful thrice daily. Other remedies, iodine, colchicum, digitalis, potassa, gold, irisin, chimaphilin, ampelopsin, alnuin, &c.; and during convalescence, phosphorus, iron, lime, permanganate potass.

APOPLEXY.

The higher the grade of civilization, the greater is the tendency to cerebral disease; this is most remarkably illustrated in the great increase of morbid states of the brain in the present day. It would seem to wear out sooner than it was wont. This is especially true of a morbid condition known as apo-

plexy. The excitements incidental to a highly civilized state, are more disastrous than the torpor of a semi-civilized condition to intellectual longevity.

Apoplexy is truly a state of coma, occurring suddenly from pressure within the cranium. There is a sudden loss of sensation, thought, power of voluntary motion, with more or less disturbance of respiration and circulation.

Symptoms.—It is generally preceded by giddiness, pain, and swimming in the head, ringing in the ears, particularly in stooping; a feeling of weight and fullness of the head, noises in ears, deafness, double vision, repeated epistaxes, nausea, numbness in the limbs, loss of impairment of mental faculties, great mental depression, incoherent, taking drowsiness, indistinct articulation, partial paralysis of a limb, or the muscles of the face or eyelids.

A diminution or loss of sensation, more or less complete of motion. Comatose condition, depending upon pressure on the brain, either from turgescence of its vessels, or extravasation of blood. The general prognosis is unfavorable, especially when it occurs after the age of thirty-five. When apoplexy is accompanied with a full hard pulse, flushed face, it is called apoplexy sanguinea; when with a feeble pulse, and pale countenance, and evidences of serous effusion, serous apoplexy. The symptoms vary according to the extent of the effusion, and the part of the brain in which the extravasation is located. If the fluid is so situated as to make pressure upon the hemispheres, there will be a sudden loss of consciousness, coma, and stertorous respiration; when the effusion occurs near the base of the brain, there is no coma or loss of consciousness, but loss of speech and paralysis.

Causes.—Hereditary peculiar conformation of body, sedentary habits, stooping positions, high living, protuberant abdomen, large heads, sanguine temperaments, short, thick necks, disease of the kidneys, heart or cerebral vessels, intemperance.

It may terminate in three ways. First, it may pass off, and leave the patient well; second, it may terminate in incomplete recovery, mind being impaired, and some parts of the body paralyzed; third, or it may terminate in death. The predisposing cause of cerebral hemorrhage is previous disease, and consequent brittleness of the arteries.

The pathological appearance of the brain, seldom gives evidence of disease; but extravated blood is discovered in the ventricles, or pons varoli, or to a large amount, in the centrum ovale magnus, or in the sack of the arachnoid, or there may be a copious effusion of serum into the ventricles or beneath the arachnoid, with or without cerebral softening.

That form of apoplexy which is fatal without leaving any traces, is nervous or simple apoplexy; the other, sanguineous

apoplexy or cerebral hemorrhage; in third, nervous apoplexy, leave indelible marks. Apoplexy in parturient women frequently results from embolism. It is often impossible, during life, to distinguish the different varieties. It usually begins in three forms:

1. Patient falls suddenly down, deprived of sense and motion; lies like a person in a sleep; face flushed; breathing stertorous; pulse full, not frequent, but below the natural standard; sometimes convulsions, or rigidity, or contraction of the muscles of the limbs, usually on one side.

2. Sudden pain in the head, pallor, sickness, faintness, often vomiting; frequently the patient falls to the ground in a state of syncope, coma; occasionally, instead of falling, the pain in the head is accompanied by a slight and transient loss of consciousness, then headache, with heavy oppressed feeling in the head, which terminates in forgetfulness, coma, from which recovery is rare. Clot of great size is generally found in the brain.

3. In this variety we have all the symptoms of cerebral hemorrhage, paralysis of one side, loss of speech, but no loss of consciousness. The paralysis leads to coma, or it may remain or pass off, and the patient recover; or it may pass off, and death occur suddenly in a few hours afterward, or some days, or it may terminate in another attack of hemorrhage.

Apoplexy has well-marked characteristics; its duration varies in all cases from a few hours to as many days. Complete or total unconsciousness, pulse generally small at first; but if the patient rallies, strong and full as the sufferer emerges from the shock; it is usually slower than natural, often intermitting; respiration slow, embarrassed, often accompanied with stertor, frothy saliva from the mouth, and in bad cases, body covered with a cold clammy sweat; face pale, eyes dull and glassy, with dilation of one or both pupils, according as pressure is on one or both sides of the brain; teeth firmly clenched, power of deglutition lost or impeded, stertorous breathing, bowels torpid, or motions passed involuntarily; involuntary micturition or retention of urine, until bladder overflows, causing urine to be constantly drippling away. When the patient recovers incompletely, more or less, paralysis of the limbs remain.

Treatment.—The most profound judgment should be exercised in treatment; if the patient is seen during an attack, we must, if possible, obviate the tendency to death; for, if there be coma, the pulse full, hard or thrilling; if the vessels of the neck are engorged; if the face is flushed, turgid, apply ligatures at once over the extremities in both axillas and groin. If the patient can swallow veratrum and belladonna, to bring the pulse to 65°; cup freely and unsparingly back of the neck, over both clavicles, and apply mustard and oil of capsicum to both limbs,

and throw up enemas of flaxseed tea, podophyllum, jalapin and turpentine, per rectum. If there seems a perfect arrest of peristaltic action, and the patient can swallow, try large doses of compound powder of senna and jalap, or a few drops of croton oil. This may be given if he cannot swallow; head shaved, and cold applied to it; pounded ice in a bladder; all articles of dress should be speedily removed, as tight collars; head should be well ventilated; patient placed in a cool, well ventilated apartment. But if the patient is found in a state of syncope, with a feeble, almost imperceptible pulse, cold clammy skin, a sighing respiration, then our course of treatment would be different. We would then give belladonna and capsicum; apply stimulating applications to the extremities, and if the stomach was overloaded, a stimulating emetic of lobelia and capsicum; bleeding never admissible. Treatment should be actively kept up, and if recovery takes place, the greatest possible care to prevent a second attack. Strong remedies, great excitement, either mentally or physically, should be avoided. Simple, nutritious diet, daily bathing, shower bath, active kidneys, free condition of the bowels, and acids, wines for a drink; avoid all fermented liquors—otherwise a treatment same as for chronic inflammation of the brain.

Prophylactic Treatment.—If there is a predisposition to this disease, the patient should be guarded against bodily exertion, venereal excitement, alcoholic or stimulating drinks, heavy meals, violent mental emotion, exposure to the extremes of temperature, constipation, straining at stool, stooping, tight neck-cloths, tobacco, tea, coffee, hot baths; plain diet, plenty of acids, bed-room cool, well ventilated, sleep on straw or hair mattress, exercise in the open air, shower bath every morning with cold water. If there are giddiness, epistaxis, headache, throbbing of the arteries, belladonna and aconite, with an active purge; warm pediluvia, containing mustard and capsicum; a vegetable diet, with a judicious use of acids.

CONCUSSION OF BRAIN.

A concussion of the brain is usually caused by a jar, blow, fall, or some mechanical injury, or it may be some depressing passion.

Concussions are much more frequent than is generally supposed; the shocks or jars of vehicles, railroad cars, exciting emotions, prevented desires, depressing passions, blighted affections, &c. Certain drugs have extraordinary depressing effects, as large doses of quinine, phosphorus, cause disturbance of the vascular structure of the brain. The best treatment is perfect rest; this must be absolute, so that the delicate structure will be perfectly quiescent. If there are symptoms of headache, belladonna and bromide of ammonia are most appro-

priate, given in alternation in small doses, next cannabis indica and hyosciamus, watching the case closely, and meeting symptoms as threatened.

DELIRIUM TREMENS.

Alcohol when taken into the stomach produces irritation of that organ. It is taken up into the circulation, excites or inflates the red corpuscles of the blood; it retards the eliminative function of the liver, kidneys, skin—it is a true arrester of change, or waste. It may excite the cerebral functions, but this is followed by a corresponding state of depression. The alcohol circulating as a free agent in the blood, has a special affinity to the brain; it irritates that organ, induces chronic inflammation in it, thickening is produced; induration takes place by the lymph being effused within its substance, and also by the chemical constituents of the whiskey—atrophy follows, in this condition there is an inadequate supply of nourishment, from the fact that the blood cannot permeate through the atrophied indurated mass, so that a *true anæmia of the brain is the result.*

This is the condition present in all cases of delirium tremens, besides there is no organ in the entire body free from the destructive effects of the terrible poison.

In chronic alcoholism the moral and intellectual faculties are blunted; degeneration is stamped upon all tissues; the fountains of life are deteriorated, humanly dwarfed in its very form and features. There is chronic inflammation of the liver; fatty degeneration of liver and kidneys; a usurpation of muscular structure by fat; a want of equilibrium exists between the gray and white matter of the nervous system, as a result there is a tremor all over; the tongue is very tremulous, large, flabby, white-coated, very moist, and when told to put it out, he is unable to do so, but thrusts it out. The breath is sour, and possesses a chloroform odor, from the imperfect combustion of saccharine elements in the lungs. The skin is white, soft, velvety, and sour smelling.

The brain suffering from toxæmia is greatly depressed, as is manifest by the headache, and also by the depression of the minute filaments of the optic nerve branches that supply the aqueous humor and choroid, so much so that the vessels of those structures become varicose, and when the brain looks at the external world, through the optical instrument, the eye, it sees the varicose vessels, which are mistaken for objects in the external world; it is no hallucination, it is a true pathological condition. Head often cool and moist; pupil contracted; conjunctiva pale; mental derangement; even the expression of the countenance is wild; eyes fixed intently upon some imaginary object; constant endeavors to avoid them; motions sudden and

rapid; tremor of the hands, limbs and tongue; tongue flabby and moist; pulse nearly natural; constant desire to move about; inability to concentrate his thoughts for any length of time; perfect inability to sleep; mind wandering and delirious; general appearance of debility; sleeplessness incessant; appetite absent; constipation; delirium aggravated toward night; incessant talking; constant tremor and twitching of muscles; great prostration; remarkable diminution of phosphates. All these symptoms depend upon an anæmic condition of the hemispherical ganglion.

The pathology of this affection is induration, anæmia, and atrophy of the brain. The indications of treatment are very plain. We must subdue the undue excitement of the nervous system, which is rapidly wearing out the vital forces. We must support the exhausted vital powers by stimulants and food; and we must purify the system from the alcoholic poison. A partial arrest of the functions of the brain by this poison, causes an arrest of the organs of secretion and elimination; then the body becomes a poison to itself; the excretory functions are imperfectly performed; the urine is no longer secreted freely; urea, which is a poison in itself, accumulates in the blood; the bile accumulates; there is a general poisoning of the system.

To meet this condition, I have derived most salutary results from mild emetics to begin with, of equal parts of the fluid extracts of lobelia, boneset and capsicum. After the action of the emetic, a general warm alkaline bath; then put the patient to bed, and give him stimulants in alternation with gelsemin, and plenty of liquid, nutritious food.

All stimulants except alcohol, here, are beneficial. I am partial to capsicum in from twenty to thirty-grain doses every three hours; our best diffusive stimulant in anæmia of the brain. Generally after the first dose the patient falls into a refreshing sleep. Alternate the capsicum with gelsemin. This drug is best given in the form of a tincture of the green root. It should be given in small doses, frequently repeated, which has a decided effect in removing the induration and allaying the tremor. Capsicum has a direct influence on the gastric expansions of the vagi, and through them upon the cerebro-spinal centres. The phenomena of the disease point to the simultaneous existence of stimulation and paralysis, of opposite portions of the nervous system. The capsicum and gelsemin have decided advantages over all other remedies. Chloral hydrate is invaluable in all cases of chronic alcoholism: 1. To procure sleep. 2. To stimulate and relax the induration of the brain and aid nutrition. The best mode of administration of the chloral hydrate is to add 15 grains to a teaspoonful of sweetened water, and repeat every hour or two until good sleep

is procured. To meet then the true pathological condition capsicum, gelsemin and chloral hydrate are unsurpassed. If, however, sleep cannot be procured, and the patient is wild or delirious, then hypodermic injections of sulphate of morphia, one-quarter of a grain to half a drachm of water should be given, probably best used over the deltoid muscle. Fluid nourishment, beef tea, milk. Apartment should be kept quiet and dark. All sources of mental irritation to be promptly removed; cold affusion, cold shower-bath are useful during convalescence. Other remedies I have frequently used in delirium tremens, but never with so much success as the above remedies.

Bromide of ammonia is also a good remedy. *Nux vomica* is excellent during the stage of convalescence. Belladonna is best adapted to those cases where the habit is plethoric and the face flushed. *Stramonium* and *hyoscamus* are well adapted to cases of great irritation; chloroform internally may always be used with advantage. *Cimcifuga* is well adapted to those cases of nervous excitement with threatened spasm. Digitalis in large doses acts like gelsemin, but not nearly so beneficial. Indian hemp excellent in the convalescing stages. The best preventive is lobelia, given at any time. It stimulates the whole system, equalizes the circulation, promotes deranged secretion.

COUP DE SOLEIL.

This condition is attributed to two causes: 1. To a direct want of serum in the blood, the watery constituents being drained off by a high degree of dry heat. 2. To direct depression of the nervous system, hence the functions of the eliminating organs, as the lungs, liver, kidneys, skin, are imperfectly performed. The blood is imperfectly oxidized, drained of its serum; it has a tendency to coagulation in the coats of the vessels, in the brain and heart; the bowels are confined, liver torpid, secretion of urine greatly diminished.

This clotty condition of the blood and direct depression of the nervous system, gives rise to faintness; a craving for water, heat and dryness of skin; great nervous depression, vertigo; tightness across the chest; quick pulse, then small and feeble; heart's action becomes violent; stupor, face pallid, vomiting, coma, great dyspnœa, contracted pupils, congested conjunctiva; action of heart intermittent; and, just prior to death, dilatation of pupils, gasping respirations or vomiting.

The symptoms are often very variable, languor, lassitude, stupor, and, perhaps, a sudden seizure. Recovery is very apt to be retarded, paralysis and insanity often a sequel.

The greatest good is to be derived from water in the treatment of this condition, wrapping the patient up in blankets or sheets wrung out of tepid water, keeping them constantly

moist, so that the skin may have an opportunity of imbibing water to supply the agent that is demanded in the blood—copious enemas of tepid water. *Water is our most reliable remedy;* tepid water to the head.

If the stomach is coated, an emetic of comp. tincture lobelia, and let him drink freely of tepid water, with bicarbonate of soda, and then give remedies to increase the solubility of the blood. Ammonia in some form; elixir valerinate of ammonia; muriate or bromide of ammonia.

Move the bowels with ten grains of leptandrin and one drop of ol. tiglii. As soon as the patient can swallow, give him half-teaspoonful doses of sesquicarbonate of ammonia, freely diluted with water, as this is our best remedy for exciting the heart and circulation, as well as rendering the blood more soluble, being perfectly antagonistic to clotty blood. If there is stupor, keep up with the water treatment and alkali, and, if no improvement, cup the spine, nape of neck, over the shoulders, and apply counter-irritation, brisk friction to the entire surface. If we need a stimulant, use carbonate of ammonia; artificial heat, if necessary; mustard sinaprisms to the limbs, and, if the case gets along well, treat the same as in phrenitis.

Prophylactic Measures should be adopted where such a terrible affection is suspected. The one most important is an abundant supply of plain cold water, and a rigid avoidance of alcoholic drinks. Clothing to be adapted to the temperature, free, easy, comfortable.

INSANITY.

Derangement of the intellect is one of the greatest calamities that can befall the human mind. In its highest condition of development, the nervous mechanism has a three-fold operation, namely: Objective ideas, which arise in external facts; subjective ideas, which exist in registered impressions; impressional ideas, as abstract truths.

An impression made upon either of the senses is conveyed by a nerve connected with it to one of the ganglia at the base of the brain, and upon the vesicular contents of this the change is made. These impressions on the ganglia are transferred to the mind proper, and form an integral part of it, constituting the faculty called memory, and it is the disorders of this process that pass by the name of insanity.

It is impossible to define insanity; it is a general term used to express the mental condition opposed to sanity. Its early indications are a total or partial perversion of the intellect, the chain of ideas is broken, producing incongruous combinations, which are at variance with reason or common sense. Insanity appears in various aspects, according to the cause producing it, and the part of the brain affected. Cerebral affections are slow

in developing themselves; the symptoms that should excite alarm are, headache, giddiness, mental confusion, irritability, loss of temper, carelessness about usual occupations, weariness of existence, intense desire for sleep, lethargy; and the first intellectual faculty that gives way is the memory, strangeness of conduct, defective articulation, impairment of the senses, abnormal condition of the stomach, obscure thoughts, frightful dreams. Insanity is sometimes complicated with paralysis or epilepsy.

When complicated with epilepsy, the conduct of the insane is often outrageous and ferocious; when paralysis appears with mental disease, it increases as the power of the mind diminishes. No form of insanity should be recognized but that form of mental unsoundness, the product of disease.

Paralytic lunatics seldom live more than one or two years from the beginning of the attack. It usually commences at the tongue, then the arms and legs. Epileptics seldom live long.

There are different forms of insanity, the one frequently merging into the other.

Mania.—This consists of entire perversion and derangement of the intellectual faculties. The patient seizes upon some topic and passes from one to another; ideas abundant, but erroneous; absurd wandering, manners violent, excited, mischievous. The intellect is deranged on all subjects; the moral faculties are perverted; he is ferocious, unnatural; hatred, rage, quarrelsomeness, desire to do mischief. At the same time the patient is conscious of his identity, but the mind operates through a diseased organ—shouting, laughing, reciting for hours together, weakness, exhaustion, emaciation, want of sleep, aversion to food, incontinence of urine. Sleep is an indication of recovery, desire of food, with a diminution of agitation and delirium.

Puerperal Mania—is a form common to women after delivery, usually occupies about four or five days. It commences with restlessness, insomnia, pain in the head, and an arrest of the secretion of milk, sometimes no fever; in other cases febrile exacerbation, debility, prostration from hemorrhages, tedious labor, some morbid poison that has depressed vital power, the delirium is often violent.

In the treatment of those cases, the secretions should be stimulated; green lobelia should be given in appropriate doses in pill form; sleep should be procured by three-grain doses of extract hyoscyamus every two hours. Hypodermic injections of sulphate of morphia; the powers of life should be well sustained by good nourishment, and the general irritability subdued with bromide of ammonia and potassium. The patient should be effectually controlled.

Monomania—is characterized by partial insanity upon some particular subject, which constantly occupies the thoughts to the entire exclusion of everything else. Mind may be vigorous, ideas few but erroneous, not under control. The manners of the patient are in accordance with predominant ideas. A false principle is seized upon, which is pursued logically, and from which legitimate consequences are deduced. In some cases the reasoning power is unimpaired, but not wholly lost. There are numerous varieties of monomania.

Dementia.—That condition in which weakness of intellect, induced by accident or age, is the prominent feature—mind feeble; ideas confused, vague, wandering; memory much impaired. Patients are ignorant of time, place, quantity, quality, and quickly forget; undecided, childish, silly. Patients with this form have neither affections nor aversions. Great restlessness, excitement. Scarcely any control over the bladder or rectum; latterly, complete paralysis.

Idiocy.—Due to a congenital imperfection of the brain, so that the mind is not developed, ideas are few and simple, manners foolish, transient bursts of passion; vacancy of countenance; articulation and gait imperfect; often blind, deaf, mute.

Causes.—Insanity is always associated with disease of the body; must be in exact proportion, harmony being nature's immutable law. In some cases it is hereditary, depending upon some peculiar form of organization, but most cases occur when the brain has reached its highest activity, and liable to be over excited by hard study, dyspepsia.

The most common cause of insanity is, the various inflammatory conditions of the brain. The different effects of inflammations are a very frequent cause of insanity; marriage of blood relations, syphilis, drunkenness, tobacco, opium, quinine, sexual excesses, masturbation, blighted affections or passions, perverted religion, grief, anxiety, distress, injuries upon the head, poisons, want of sleep, over exertion, mentally and physically, hereditary predisposition, defective nutrition of the brain. The more advanced the civilization of any community, the more abundant are the diseases of the brain.

Pathology.—Insanity depends upon depressed vitality, which depression manifests itself in the cerebral mass—a deficiency of vitality being the exciting cause. That when the cerebral mass suffers from a deficiency of vitality, it loses its static equilibrium, its nervous energies, its tone—a softening process frequently takes place, patches becoming creamy.

Treatment.—A most important consideration is rest of mind and body, change of scene and occupation, proper amount of sleep. The greatest possible attention should be paid to the functions of the skin, kidneys, alimentary canal; removal of

any disease, as an abnormal condition of the skin or sexual organs. Our best prophylactic agents are:

Phosphorus in some form or other is indicated in every case. *Stramonium*, *henbane*, *belladonna*, *Indian hemp*, *iron*, nourishing food, milk, stimulants, change of air and scene.

It should ever be borne in mind, that when the brain is diseased the secretions and excretions are arrested, consequently large doses of medicines must be given, in order to obtain results. Another point to bear in mind is, that no depleting remedies can be tolerated. All other diseases should be carefully removed, as skin affections, rheumatism, uterine disturbances, syphilitic taint, gastric and intestinal obstructions. A nutritious diet is highly indispensable; warm clothing, out-door occupations and amusements, cheerful occupation.

Sleep should be procured by sedatives. Healthy evacuations to be obtained from the bowels by vegetable alteratives. The general health must be improved by tonics. Baths are always attended with excellent results. The nicest judgment is required in all cases, and it must be strictly borne in mind, that no depleting course of treatment can be tolerated; it must be essentially constructive—our object is to restore and maintain the bodily functions. The medical treatment should embrace tonics and alteratives, secretions well regulated.

For procuring sedation of the brain, bromide of ammonia, chloral hydrate, extract hyosciamus; for aiding nutrition, phosphorus, iron, cinchona to promote molecular growth.

CEPHALALGIA.

Headache is of common occurrence, being a prominent symptom of vital depression, and also of irritation reflected to the brain. The pain is to be carefully distinguished from poisons in the blood, as rheumatism, syphilis, malaria and anæmia.

The principal varieties of headache are: 1. Congestive or plethoric headache, associated with a fullness of the cerebral vessels, redness of the face, a sense of pulsation in the ears; muscea volitantes, in stooping, constriction of throat, &c.; free living, drinking, sedentary habits, torpidity of the liver and uterus, &c. 2. Bilious headache may arise from derangement of the liver, brought about by some excess in food, diet, indigestion. Tongue coated brown, breath offensive, flatulence, nausea. 3. Nervous headache, due in most cases to debility or exhaustion, like all affections of the nervous system, recurs periodically; not necessarily due to malaria, as women are more subject to it, especially those who suffer from exhaustion in any way associated with hysteria. We have a peculiar headache, confined to a single spot, known as the clavus hystericus, because it resembles the driving in of a nail into the head.

Headaches, as if there was a band around the head, scalp falling off, or post cervical headache, are common in dyspepsia and liver disease.

As a general rule, the more highly civilized a people, the depressing effects of town life, late hours, and inattention to the laws of health and hygiene, irregularity of living, torpid bones, pernicious diet, light and nutritious; our best remedies are bromide potass and calabar bean, with veratrum. Holding the hands above the head has a tendency to control the cerebral circulation. In bilious headache, the best relief is afforded with cholagogues, as podophyllin, leptandrin, nux vomica, with tonics to aid the liver. Nervous headache is best relieved with stimulants, tonics, exercise in the open air, extract hyosciamus, iron, phosphorus, scuttellarin and cypripedin.

Headaches in all cases indicate a deficiency of life, and with a normal secretary system, constructive remedies should be our choice.

MYELITIS.

This is excited by cold, damp, wounds, contusions. It is very apt to terminate in softening.

The symptoms of this uncommon affection are, constant and severe pain in the back, increased by motion; spasmodic contractions or rigidity of the muscles, followed by paralysis, fever, arrest of the secretions. In pure myelitis there is pain, muscular rigidity, and paralysis of motion and sensation. In the early stage increased by heat, as the application of a hot sponge.

If the cranial portion of the cord be affected, deep-seated head-ache, convulsive movements, inarticulate speech, lock-jaw, difficult deglutition, spasmodic breathing, irregular action of the heart, some form of paralysis. If above the origin of the phrenic nerve, death may occur from cessation of respiratory movement.

If the inflammation be limited to the *cervical* portion, difficulty of swallowing, impossibility of raising the head, difficulty of breathing, pricking, or a sensation as if pins and needles in the upper extremities.

If the *dorsal* region be the seat of the disturbance, we have pain over the affected part, numbness in fingers and toes, convulsive movements of trunk, paralysis of trunk and lower extremities, pulmonary and cardiac disturbance.

If the *lumbar* region, paralysis of the limbs, retention of the urine, paralysis of bladder, involuntary stools.

Treatment.—Free cupping along the spine, followed by the irritating plaster, and active purgation with podophyllin, jalapin, constitute the essential part of treatment, with a perfectly equalized circulation by veratrum, aconite and belladonna.

The bladder to be looked carefully after, and to be emptied by the catheter. Then the patient should be put upon large doses of bromide potass, in comp. syr. stillingia, from ℥ss to ℥i every four hours.

Softening of the spinal cord is the most common lesion, probably more frequently met with than atrophic degeneration.

The symptoms of this condition are, numbness in the extremities, a sense of coldness, pain in the back, local tenderness on pressure, and gradual loss of sensation in the limbs. If the *anterior* columns only are softened, motor paralysis prevails; if the posterior columns, sensibility is impaired or destroyed.

Recovery from spinal softening is rare, and only to be attained by thorough and rigid treatment. The most unfavorable symptoms are decided paralysis, involuntary urination and defacation, with alkalinity of the urine, with an immense amount of phosphates. The only treatment that is available is the administration of the different preparations of phosphorus, tonics and support. Passive exercise, as riding in a carriage, sailing, salt water bathing, frictions to the surface of the body, bracing tonics, good diet. Stimulants, carefully regulated, if they do not cure, will retard the disorganization.

SPINAL MENINGITIS,

Or inflammation of the membranes of the cord. This is usually caused by blows, falls, shocks, concussions, cold, damp, exposure, rheumatism, gout, &c., or it may be associated with morbid states of the cerebellum or cerebral membranes.

The symptoms are acute pain of a burning character extending along the spine and stretching into the limbs, aggravated by motion and pressure, very much resembling rheumatism; rigidity, or tetanic contraction of the muscles of the neck and back, amounting to opisthotonos, paralysis of the lower extremities, which gradually extends upwards as the effused serum increases in quantity; a sensation of constriction in neck, back, abdomen, suffocating sensations, retention of urine; priapism; obstinate constipation. This inflammation may terminate in resolution or effusion of serum or lymph, or suppuration.

Cerebro-spinal meningitis may arise from the same causes as inflammation of the membranes of the cord; it is, however, often due to the effects of a poison epidemic, as in spotted fever, or in some morbid poison generated within or without the body. So we have it as a sequel of some fevers, and occurring endemically where overcrowding, ill ventilation, overwork, privation, exist.

When this affection takes place, it should be treated actively with dry cups to the cervical portion of the spine, fever controlled with aconite, secretions regulated with large doses of bro-

mide of potass in alternation with calabar bean, remedies that will diminish the irritation; otherwise, the case should be treated on general principles.

SPINAL HEMORRHAGE.

Apoplexy of the cord, or paralysis from effusion of blood, is very rare; still, it may take place from blows, falls, over-exertion, inflammation, degeneration of the coats of blood vessels, disease of vertebræ. The effusion may take place at any part, and in a small or greater degree; it may be at once fatal, or it may terminate in softening of the cord.

The symptoms will depend upon the seat of the effusion: acute and sudden pain in the back and head; convulsions; difficult breathing, skin pale and cold, heart's action depressed, no loss of consciousness; effusion into the substance of the cord produces sudden paralysis in all parts supplied with nerves below its seat. The object of treatment is to try and check the effusion of blood by rest, the application of ice to spine, and the administration of bromine, ergot, calabar bean, &c.

TUMORS.

Paralysis may arise from tumors pressing upon the cord, producing atrophy. These tumors may consist of tubercle, cancerous deposits, cysts, exostosis, &c. Those growths are usually slow in their approach, consequently the symptoms come on slowly, not being manifest till the presence is exerted. Paralysis of motion precedes that of sensation. There is usually pain over the seat of growth; cramps, convulsions, movements of the limbs and the feet, that there is either a mercurial syphilis, scrofulous or cancerous cachexia, present.

The treatment must be chiefly constitutional, as alteratives comp. syr. stillingia and iodide and bromide of potass; irritating plaster to spine, a generous diet, friction, shampooing, electricity, &c.

HYDRORACHIS.

An abnormal collection of water within the spinal column. It produces pressure and atrophy of the cord, effusion of serum takes place at the cervical portion of the spinal column in cerebro-spinal meningitis, in tetanus, and causes death in a few days. The term hydrorachis is, however, applied to large effusions that take place congenitally, or are associated with an absence or cleft condition of the vertebræ. In such cases, one or more fluid tumors are found over the cervical, dorsal or lumbar vertebræ, generally the latter, that communicate with the medulla spinalis. The arches and spinous process of the vertebræ are often deficient. The treatment should consist in improving the general health, good diet, ton-

ics, comp., hypophosphates iron, lime, &c., a gentle pressure may be applied carefully.

Concussion of the spinal cord may be caused by any that will depress, as mechanical violence; the action of poisons.

Symptoms will vary very much. Collapse, with loss of consciousness, tingling all over, feeling of pins and needles, difficulty with sphincters, starting at night, difficulty in walking. Rest in bed; the application of belladonna the entire length of the spine, watching all the symptoms carefully.

SPINAL IRRITATION.

The medulla oblongata is properly the seat of reflex action, but that all the nerves originate in the spinal cord, have a connection more or less with the medulla, is also true, so that the cord throughout its entire length may properly be termed a reflex centre. That all irritations throughout the body are carried to the origin of the nerve that supplies the organ; that an analagous form of irritation is set up there, which gives the true condition, which can be detected by pressure, or by the sponge of a battery. That this irritation, when once set up, remains even after the morbid condition is removed, keeping up a condition very similar to organic disease. This morbid condition is usually the result of some pre-existing disorder, such as hysteria, uterine irritation, protracted leucorrhœa, disordered menstruation, gout, rheumatism, or chronic disease, attended by nervous exhaustion, or some irritation reflected.

Symptoms.—There is pain in the spinal column, brought or increased by pressure or percussion, and generally complicated with neuralgia, spasmodic or paralytic affections, involving nearly all the organs and viscera of the body. The pain is increased by muscular effort, as a sudden movement or rotation of the spine by a jerk, the least concussion, or by taking a false step in walking. When the irritation is in the dorsal portion, it is frequently referred mainly to one side, generally the left, and is only felt below the mammæ,—usually a feeling of constriction about the thorax, or of suffocation, or accelerated action of the heart, with spasmodic cough. If the lumbar region is the seat, there will be spasms and constriction in the abdomen, hypogastrium and pelvis; numbness, cramps, and excessive tenderness, and in severe cases, paralysis in the lower extremities, with constipation, retention of urine, irritability of the bladder and uterus, with disordered menstruation.

Spinal irritation of the cervical portion is less frequent. When it occurs as high as the occiput it is accompanied with neuralgic pains in face or neck, with partial deafness, difficulty of swallowing, loss of voice, or even of speech,

aphonia, suffocative cough, and altered sensibility; partial paralysis, coldness and numbness of one or both hands, pricking sensations. The pains and spinal tenderness may shift from place to place.

The change in spinal irritation is in the capillary circulation—of the cerebro-spinal axis; of the ganglia of the sympathetic or posterior spinal nerves, and of the fibrils of the nerves themselves, acupucture on both sides of the spine, followed with the irritating plaster. The administration of bromide potass, in the comp. syr. caulophyllin, is invariably attended with the most happy results. Ergot, calabar bean, belladonna, exercise a most beneficial effect.

SPINAL CURVATURE.

Unless when produced by caries or anchylosis of the vertebræ, spinal curvatures may be divided into three varieties, viz:

1. Posterior curvature, or excurvation.
2. Anterior curvature, or incurvation.
3. Lateral curvature.

In *posterior curvature* the conversity is directed backward or outward, and is generally limited to the cervical and dorsal regions, but may extend to the upper lumbar vertebræ. This is often caused during infancy by the nurse lifting the child under the arm-pit, whereby the ribs are pressed inward, and the spine and sternum are forced outward. Slighter forms are sometimes produced in young persons from shortness of vision, and the habit of stooping while either reading, writing or working; or even in aged persons, from the intervertebral cartilages becoming thinner and less elastic than during the prime of life, and in such cases, the curvature extends lower in the spine. Whenever the curvature is considerable, the anterior part of each vertebra has become thinner and more flattened, particularly in the centre of the curvature, and consequently the transverse processes, and still more, the spinous processes, are more separated than in the natural position; the posterior ligament is also more or less stretched. The diameter of the chest, from right to left, is lessened whenever the ribs are laterally compressed, and the sternum is thereby pushed outward, assuming a similar position to the dorsal spine. In other cases, the sternum follows the direction of the dorsal vertebræ, the ribs being curved outward, and the diameter of the thorax diminished between the spine and sternum.

When the lumbar vertebræ are implicated, the angle formed by this portion of the spine, with the direction of the sacrum or pelvis, is marred, the brim of the pelvis becoming horizontal, as the spine and direction of the pelvis are nearly in the same axes.

In posterior curvature, both the capacity of the thoracic and abdominal cavities, and the position of the viscera are affected —the one diminished, the other displaced.

Anterior Curvature—(Incurvation of the spine). This form is very rare, and generally occurs in the lumbar regions, in persons who, in early life, have brought their lumbar muscles into very active use. Occurring otherwise, it may give a singular prominence to the abdomen, and, if seated near the pelvis in females, it presents the appearance of pregnancy, or of ovarian disease. When it affects the dorsal vertebræ, it causes great deformity of the chest.

Lateral Curvature is by far the most common variety, and usually appears between the ages of ten and twenty. More frequently met with in the upper and middle classes, than among the poor and hard-working. Whether this form happens to be slight or very great, they are but seldom completely lateral, but are commonly associated with more or less of the posterior curvature. Whenever the deflections of the column are considerable, the usual rotation of each verterbral are exposed to the greater pressure toward the centres of the concavities, and diminished pressure at their convexities. The result will be compression of the more yielding tissues, and impaired rotation at the more flexed parts, and the intervertebral tissue is compressed and thinned. The bodies of the vertebræ are more or less affected, becoming atrophied in these sides, and present a rhomboidal appearance; the articulating processes are greatly altered in the part where the curvature is greatest; they become atrophied and absorbed in the concavities, whereas the spinous processes becoming more prominent, being protruded in the convexities.

Serious are the consequences when this form of curvature is very great; for the passages between the vertebræ for the nerves and blood vessels are contracted in the concave, and enlarged in the convex side. The patient endures severe pains, cramps and numbness, and only partial motion of the muscles supplied by nerves on the concave side of the spine; and emaciation ensues. The general result is that the chest and abdomen become more or less irregular and encroached upon; and the various viscera are impeded in their functions. Fortunately, however, the spinal cord seldom becomes much disordered from lateral curvature, unless the bodies of the vertebræ become inflamed or carious; but when that occurs, chronic inflammations, effusions, contraction of muscles, loss of motion, and may be sensation; the spinal cord may be involved, inflammation of the brain, effusion within the cranium, coma, and death may be sad consequents.

The causes of spinal curvature are—the female sex: the age between eight and eighteen; a lymphatic, scrofulous or rickety

constitution; and inherited weakly constitution; a cachectic habit of body, &c.

Best treated with rest in the recumbent position; daily shampooing to the spine, and sponging with salt water; the phosphates of lime, soda and iron, phosphorus, cinchona, hydrastis, iron, nux vomica, &c.

PARALYSIS.

This consists of a partial or total loss of voluntary motion or of sensation. In some cases both are destroyed. It usually occurs without coma, loss of consciousness or derangement of the intellectual powers, unless it be an impairment of memory. Almost invariably follows apoplexy or disease of the spinal cord. Two great classes of paralytic affections are thus recognized: *perfect* paralysis, in which both motion and sensibility are affected; *imperfect* when only one of them is lost or diminished. It may be general when it affects the whole body, or partial, when confined to one portion—hemiplegia or paraplegia; it is termed local when a small portion of the body is affected, as the face and limb. We have also reflex paralysis, depending upon irritation, extending from the periphery to centre, wasting palsy, a prominent symptom of which is a degeneration of the muscles, lead palsy, due to the action of poisonous metal on the muscular fibre.

Disease of the brain, as inflammation, effusion, abscess, softening, induration, tubercular or cancerous exudations; apoplexy, disease of kidneys, epilepsy, chorea, poison of syphilis; also, disease of the spinal cord, as inflammation and its results, atrophy, breach of continuity, or disease of the investing membrane of brain and cord; some lesion or compression of some particular nerve may be a cause of paralysis.

The two grand and predisposing causes of palsy are, exhaustion and poisoning. The exhaustion generally comes from an abuse of sexual passions, excessive mental labor or excitement, and the poisoning is due to syphilis, mercury, lead, bad food, tobacco.

The loss of muscular power and of sensation, in all instances, bear a direct ratio to the extent and severity of the original affection and the part affected.

Reflex paralysis is common in connection with disease of the kidneys and bladder, in teething, in intestinal irritation; and the peculiar feature of this form of paralysis is, that the cause precedes the paralysis, and that no visible alteration of the nervous centres can be detected.

The transmission of the order of the will is effected chiefly through the antero-lateral columns, and a transverse section of these always causes paralysis of the parts below. They con-

vey the impulse of volition, not directly into the motor nerves, but to the cells of the anterior horns, which send out processes in a transverse direction to join them.

Section or disease of the posterior columns alone—the roots being unaffected—causes no anæsthesia, but even the reverse, in the parts below and behind, while disease or injury of the gray matter entirely deprives the corresponding parts of sensibility, so that the conductors of sensitive impressions run to the brain in the central gray matter. The motor of fibres cross in the medulla oblongata; those in the spine make their decussation almost immediately upon their entrance into the gray matter, so that disease or injury of one-half the cord will cause paralysis of the same side of the body, but anæsthesia of the opposite side.

Hemiplegia.—Brain lesion is most invariably the cause of this affection, either an apoplectic clot, a tumor, or softening, owing to the decussation of the anterior of pyramids of the medulla oblongata, lesion of one side.

It appears suddenly, but not always with a loss of consciousness; the patient loses the power of motion, and more or less sensation of one side. In complete cases, the parts involved are the arm and leg, the muscles of mastication, and one-half the tongue. In protruding the tongue, it is carried to the affected side; the palsied cheek hangs, but the eye can be opened or shut at will. The third, fifth and ninth nerves, are especially apt to show implication by a disturbance of the actions under control. Facial nerve or portio dura of seventh pair seldom involved. If the third nerve be involved, dropping of upper eyelid, dilated pupil, divergent squint; often anæsthesia. Mental faculties often deranged, tendency to shed tears, forgetfulness and misplacement of words.

Hemiplegia may be attended either by rigidity or relaxation of the muscles. If there is decided relaxation in cerebral paralysis, it is probable that white softening or atrophy from embolism of the brain is the lesion, with or without a clot; if there is early rigidity an apoplectic clot may be suspected. Rigidity occurring late is due to an atrophic state of the muscles. If the muscles take on atrophy, owing to a want of nutrition, the case is very hopeless. If there be flexion of fingers into palms of hands, also a very unfavorable indication. If recovery is about to take place, improvement first visible in leg; when the arm regains power before the leg, prognosis unfavorable.

Treatment.—If the patient is young and vigorous, a most active course of treatment should be pursued, so as to diminish pressure on the brain; cupping the nape of the neck and shoulders; mustard from the extremities to the knee, hydragogue cathartics and veratrum, to keep the pulse between 65° and

70°. Where softening is apprehended a more cautious course of treatment should be pursued. Rest, regulation of the bowels, counter-irritation with dry cups, and the irritating plaster to the upper part of the spine, with frictions with tincture of capsicum to the affected parts, are measures of utility. There are two remedies that must be carefully avoided in cerebral paralysis, and these are the different preparations of nux vomica and electricity.

In this form of paralysis, especially if it depends upon the presence of a clot or coagulum, and the patient is over forty-five, rhus radicans and the preparations of potassa are our best remedies.

In those cases where we have paralysis of the facial muscles and organs of speech, with plethora, rhus and iodide or liquor potassa, meet the indications precisely.

Belladonna, *Stramonium*, *Cannabis Indica*, cause a diminution in the calibre of the vessels of the brain and spinal cord, and also diminish the reflex power of the spinal cord.

Ergot acts very nearly in the same way. Sulphur also is a valuable remedy. Iron in the form of the pyrophosphate, phosphorus, hydrastin, good food, friction several times daily to the affected parts.

Paraplegia.—Palsy of the lower half of the body. There are two varieties: 1. Cases where there is diminished amount of blood in the cord, or that due to disease of spinal cord or its membranes, and that caused by peripheral irritation.

In both forms it begins slowly and insidiously, with weakness and numbness, or tingling of the feet and legs, and pain in the back, then loss of sensibility, and motion becomes partially or entirely lost. The muscles are either relaxed or contracted. The lesion of the spinal cord produces paralysis of bladder and sphincter ani, so that we have decomposition of urine. In some cases the involuntary movements and spasm of limbs very distressing. Decided deterioration of general health.

An important point to arrive at in paraplegia is a correct diagnosis, whether we have an increased determination of blood in the cord or the opposite condition.

Where we have an increased determination of blood, there is irritation of motor nerve fibres, as convulsions, cramps, twitching, priapism, with irritation of sensitive nerve fibres, as itching, pricking pains, abnormal sensations of cold or heat, and also an irritation of vaso-motor or nutritive fibres, as wasting of muscles, bed sores, alkaline urine, pain over the seat of inflammation, where a feeling of heat is experienced.

These cases require to be treated by special remedies; local dry cupping, followed by the irritating plaster; if inflamma-

tion be clearly made out by the symptoms, as pain, cramps, muscular twitchings, rigidity, avoid nux and electricity, but give ergot freely. This remedy diminishes congestion of the cord or its membrane. Its special primitive action is on the spinal marrow. Belladonna has the property of removing congestion of the cord, given internally and applied locally. Bromide potass is a most reliable remedy, positive in its action upon the cord and membranes, in removing congestion. If the congestion has terminated in effusion, iodide potass is one of our most powerful remedies to excite absorption. Sleep should be procured by large doses of henbane, or conium, or Indian hemp. Opium must never be used, because it increases the determination of blood to the cord. Otherwise, nutritious diet, and, above all, the nutrition of the limbs should be promoted and maintained by shampooning with stimulating liniments. But if we have paraplegia, due to a want of blood in the cord, a want of nutrition, anæmia of the cord, as in white softening and reflex palsy, then an opposite course of treatment should be pursued; food of the most nutritious quality, so as to manufacture blood, and cause an increased quantity to be sent to the cord. The patient should lie on his back, with head and shoulders well elevated.

Probably there is no remedy so valuable as phosphorus, for the presence of this agent imparts to the nervous matter its vitality. It acts curatively by replacing the constituent that is deficient. Nux vomica, quinine and hydrastin, are important remedies, because they increase the amount of blood in the cord, and can always be alternated with phosphorus with very decided results. Iron, in the form of hypophosphate, is very valuable; glycerine and phosphorus, sulphur baths, vegetable tonics and diffusible stimulants, as capsicum, xanthoxylin, &c.

Electro magnetism may be used here with advantage, for when properly applied, and persevered with, it will aid a cure remarkably.

In some forms of paralysis, a controlling power can be exercised by means of heat and cold applied to different parts of the back, over the circulation in the brain and spinal cord, and ganglia of the sympathetic, and, through the agency of these nerve centres, in any other organ. In this way reflex excitability or excito motor power of the cord, and contractile force of the arteries in all parts of the body, can be modified or influenced. To lessen the excito motor power, ice applied in the ice bag over that part of the spine on which we desire to act. Hot water and ice alternately will increase the vitality. It must, however, be strictly borne in mind with reference to reflex paralysis, that, while we are relieving the loss of power, the cause must be removed, whether it be worms, psoric condition, irritable gums, or excitement in any distant part.

Reflex Paralysis.—In this form we find purely a morbid impression from injury or disease in one part of the body, transmitted along a nerve to a nerve centre, and then overwhelming or paralyzing it.

The causes of reflex paralysis are very numerous; almost all forms of disease, as irritation of the kidney, bowels, uterus, the presence of poisons. The removal of the cause, and the general treatment of an ordinary case of paralysis.

Hysterical Paralysis usually depends upon some congestion or irritation of the uterus or ovaries. It is mostly of a hemiplegic character. It is best treated with tonics, good nourishment, hip baths, cold water injections, bromide of potass, in comp. syr. partridge berry, elixir valerianate ammonia, scutellarin, anti-spasmodics.

Diphtheritic Paralysis.—This is not uncommon after an attack of diphtheria. The poison that produces this terrible disease affects both the nervous system and the blood, and exercises such a deteriorating effect on the blood as to cause leucocythæmia, and on the nerve centres, a like damaging effect, paralysis. Whether the immediate cause of the paralysis is the peripheral lesion of the nervous terminations, or the toxæmic influence upon the nerve centres of the poison of diphtheria, is a matter of dispute Loss of sensibility and motion is common. It may last a few weeks, or even months, but the patient almost invariably recovers from it. It requires iron, phosphorus, nux, capsicum, rhus radicans, scutellarin, hypophosphites, passive exercise, stimulating frictions with tinc. capsicum, shampooing, change of air, sea bathing.

Syphilitic Paralysis is usually diagnosed by the history of the case, symptoms of syphilis, and, in all cases, is best treated by iodide potass, in comp. syr. stillingia, gold, irisin, alnuin, and daily sulphuret potassium baths.

Mercurial Palsy.—This is now comparatively rare, since the non-progressive portion of the medical profession have pretty much discarded mercury in the treatment of disease. How common it was before the liberal spirit of Beach emancipated our predecessors history can tell. At the present time we meet with it among workmen who are exposed to the fumes of mercury—glass platers, barometer makers; and among the dupes of allopathic sectarianism. Tremor is a predominant symptom, a peculiar agitation of the voluntary muscles, increased when volition is brought to bear upon them. In bad cases, articulation, mastication, and locomotion, are performed with difficulty. Delirium or mania is not uncommon; use of hands almost entirely lost; debility, extreme restlessness, skin a brown, dry color; gums sore, teeth black and decayed.

Early withdrawal from the influence of the cause, and the continued use of the iodide potass, with sulphur baths, nourishing food, tonics, &c.

Lead Palsy.—Considerable time of exposure to the influence of lead is necessary to cause paralysis. Workers in the manufacture of white lead, plumbers, painters, type founders, are prone to suffer. It appears frequently to exercise its paralyzing effects upon the circular muscular fibres of the intestines, producing lead colic; also upon the extensor muscles of the forearm, producing "wrist drop." If it last some weeks the muscles waste away; a blue line is observed along the gums; pain precedes the paralysis, and also from the recovery from it. The contractility of the muscles to the electrical test is either greatly diminished or lost.

The only true curative remedy that we possess, is the iodide potass, in doses of five grains, three times daily, with sulphuret potass bath. This acts as an eliminant of the lead accumulated in the system; vegetable tonics.

Wasting Palsy.—Progressive muscular atrophy, or paralysis from a granular and fatty degeneration of muscular fibre. We may have muscles of the whole body losing their power, and wasting away to nothing—a pure degeneration, with loss of volume, power of voluntary muscles, without any diminution of intelligence or sensibility. Insidious in its attack, it may last from a few months to some years. It is impossible to say whether the spinal cord lesion is primary or secondary; exhaustion, exposure, fever, sunstroke, falls, hereditary tendency.

The best treatment seldom benefits. The best remedies are those that improve the digestive apparatus; phosphorus, hypophosphites, soda, lime, sulphur baths, friction to the affected parts, local faradisation to the affected muscles, and the general treatment of paralysis.

Paralysis Agitans.—This torm is characterized by uncontrolable agitation, a continued shaking—at first confined to the hands, arms, head, and gradually the whole body becomes affected.

Involuntary tremulous action, with a remarkable diminution of muscular power, and a propensity to bend the head forward, and to pass from a walking to a running gait, with senses and intellect unimpaired are the true condition present.

The disease progresses slowly but surely, until it becomes so violent as to deprive him of sleep, and even of carrying food to his mouth; body bent forward, chin on sternum, urine and fæces pass involuntarily, and slight delirium comes on. The treatment of paralysis agitans has been extremely unsatisfactory. The morbid condition progressing onward in spite of all remedies.

Progressive Locomotor Ataxy.—A peculiar form of paraplegia, produced by sexual excesses, exhaustion, rheumatism, gout; common in males about the middle period of life. The lesion present in well marked cases, is atrophy and disintegration of the nerve fibres of the posterior columns of the spinal cord; also degeneration of the cerebral nerves, and various lesions of the gray substance of the cord.

The distinctive attributes of this form of paralysis is the total absence of co-ordinating power; the sensibility of the feet becomes blunted, so that the patient loses his balance, and has an uncertain tottering gait. If the patient shuts his eyes, he falls down, and if with them open, reels as if drunk; mind unaffected. In some cases there may be more or less paralysis of the second, third, fifth, sixth, seventh, and some portions of the eighth cerebral nerves; hearing usually good, difficulty in swallowing, strabismus, double vision, sometimes incontinence of urine, a sensation as if there were pins and needles, with numbness in the lower extremities; progress of the disease slow, from six months to ten or twenty years.

Treatment is very unsatisfactory, but to hold the disease in abeyance, give nourishing diet, animal food, eggs, brandy and milk, phosphorus, iron, nux vom., valerian.

EPILEPSY.

In order to appreciate this subject thoroughly, it is highly important to understand the various causes that give rise to spasmodic action. Irritation conveyed to the cranio-spinal axis, may be reflected in four directions: 1. Upon a musculo-motor nerve, causing contraction of a muscle or muscles. 2. Upon a sensitive nerve, giving rise to neuralgia. 3. Upon a vaso-motor nerve, producing a secretion or an alteration of nutrition.

Under the first head we may class all causes of eccentric irritation, as the vomitings of pregnancy, the convulsions of dentition, the cough of gastric irritation. Under the second head, we have irritation reflected on a sensitive nerve, as neuralgia from a citatrix, or structure, or carious tooth, headache from gastric irritation. When the irritation is reflected upon a vaso-motor nerve, we shall have contraction of the blood vessels supplied by it. Excitation of the motor nerves of a gland, in a full state of activity, will check its secretion by cutting off the supply of normal blood. The nervous centres are merely glands, generating or elaborating nerve force from the blood. The nerves being merely ramifications or tributaries to carry it to its destination; consequently any cessation of nervous activity may be produced by contraction of their blood vessels by reflex excitation. From this cause we have

loss of consciousness, paralysis, anæsthesia; sudden contraction of the arteries of the brain proper by an irritant reflected, appears to be the starting point of an epileptic fit. The pallor of the face, which appears as the patient falls, results from the same cause. The same irritation falling upon the laryngeal, cervical and respiratory muscles, brings them into a state of chronic contraction, thus impeding the arterialization of the blood; hence the purple hue which succeeds the primary pallor of the face, and the general clonic convulsions through the frame. In a very slight fit, the cerebral arteries alone feel the irritation and loss of consciousness, without convulsions. A still less degree of contraction merely gives rise to vertigo.

The characteristics of an epileptic fit are, a sudden loss of consciousness and sensibility, with tonic convulsions, lasting a few seconds, and followed by clonic spasms of involuntary muscles. The termination of the fit is succeeded by exhaustion and coma, fits recurring at regular intervals.

The symptoms of epilepsy are extremely variable. Sometimes we have premonitory symptoms, as headache, giddiness, ringing in the ears.

Aura epileptica or pricking sensation extending from the extremities to the head, creeping up the arms or back, a feeling like a current of wind, chilblains, drawing inward of the thumbs toward the palms of the hands, and a sensation of fullness in the head; but more frequently the fit occurs without any warning; cadaverous pallor of countenance, with a shriek or scream, immediately after which the patient falls to the ground senseless, and violently convulsed. Convulsive movements continue violent, usually more marked on one side of the body than another; the face and eyes are distorted, the tongue is often bitten, stertorous or difficult breathing, skin cold and clammy, perhaps involuntary micturition or defecation, vomiting, pulse weak, frequent and irregular. After the paroxysm has subsided the patient usually sleeps profoundly, and for a day or two remains languid, with headache.

The average duration of a fit is from two to three minutes; sometimes lasts as many hours. It may occur at any age; most common in the young. Its predisposing causes are, hereditary taint, strumous diathesis, marriages of persons who are incompatible by temperament or consanguinity. It is usually embraced under two forms, *idiopathic* and *symptomatic*.

Under the *idiopathic* form we class various affections of the brain, and defective nervous organization of the cranium, lesions of the meninges, extravasation, exostosis, &c.

Under the *symptomatic* form we rank irritation in the alimentary canal, as indigestible matter, worms, irritation reflected or propagated to an irritable brain, from any cause; derangements of the organs of circulation, stimulation exces-

sive, hemorrhoids, suppression of menses, wrong modes of living. In scrofulous subjects, retrocession of an eruption may excite it. Venereal excesses, masturbation, pregnancy, fistula, delivery, &c., are often causes; but in all, the irritation is radiated to the medulla oblongata to produce this variety.

Two forms: Idiopathic. or centric epilepsy, symptomatic or eccentric epilepsy. The former induced by disease within the brain or spinal marrow, irritating the excitor nerves or the medulla oblongata, induce epilepsy often of an incurable type; the latter takes its origin in the excitor nerves of the true spinal system, involving the axis of this system and its motor nerves in their turn.

The pathological condition of the brain in epilepsy is that of enormous congestion of the substance, vessels and membranes of that organ. Indeed the first morbid action present in the disease is a determination of blood to the brain, which expends itself on the secretion of that nervous power, which, in a state of health, is employed by the brain to convey volition to the muscles. This excessive secretion is carried off by the motor nerves, and from its quantity and excess, produces excessive action of the muscles. We can better appreciate this if we for a moment take into consideration the mode by which particular determinations of blood are made to particular parts of the body. The middle or muscular coat of the arteries, in a state of health, contracts with each systole of the ventricles of the heart, just sufficiently to give firmness to the wall of the vessel, so that the force of contraction is not lost on a yielding surface; for, if this middle coat does not contract or only imperfectly contracts, then the force of the heart dilates the tubes, and produces congestion. Now, it is supposed that a determination of blood to the head arises from a deficient contraction of the muscular coat of the capillaries of the brain, preceded by some excitement of the heart. The reason that the brain suddenly and entirely neglects to perform its duty seems to be some defective innervation from the sympathetic nerves, whose office is to regulate the coats of the arteries, so as to produce secretion. Some authorities attribute the fault to the cortical substance of the hemispheres of the brain rather than in the central ganglia.

The great increase of epilepsy is no doubt due to the eating of indigestible articles, uterine irritation, masturbation, drunkenness, syphilitic disease, mercurial poisoning, psoric or skin affections, &c.

Treatment.—The symptoms are those of a sudden explosion of accumulated nervous energy. From the periodical character of the fits, it is inferred that the accumulation of nervous energy goes on for a definite time in the brain and spinal cord, till an explosion ensues upon the muscles of voluntary motion,

which are thrown into violent action, and by these means the accumulation is exhausted. The explosion is followed by languor, coma or prolonged sleep—all signs of an exhausted nervous energy.

Many measures have been proposed for preventing the gradual accumulation and sudden explosion of the nervous energy, constituting epilepsy, as abundance of exercise, daily bathing, plenty of fresh air.

Treatment during a fit should be directed chiefly to protecting the patient. All his clothing should be loosened, so that the blood may have free circulation to and from the head, and all parts of the body. A cork, or some soft substance, should be placed within the teeth to save the lips and tongue from being wounded by the spasmodic movements of the jaws. The patient should be placed in bed, and restrained so that he does not commit any personal injury. If the attack is preceded by an *aura*, the tying of a ligature just above the part where it commenced will often prevent it. The head should be well elevated, and cold effusions applied; air should be freely admitted around him. If the fit lasts, I have found a subcutaneous injection of one-fourth of a grain of sulphate of morphia, in solution, in the nape of the neck, or over the deltoid muscle, attended with most excellent results in rousing the patient instantly up.

During the intervals, and to cure, we should improve the general health with good diet, exercise in the open air, daily bathing, &c., and in all cases we would suspend the explosion of the nervous system with large doses of the bromide potass, in doses of from ten grains to a drachm, two or three times daily, and continued until we effect a cure by other means. Such a formula as the following:

℞.—Camphor water, ℥iv;
Bromide potass, ℥j;
" ammonia, ℥ss;
Potass, bicarb, ℥ij;
Tinct. calabar bean, ℥i;
Belladonna, gtts. xxx;—*Mix.*

Dose.—A teaspoonful every three hours.

If the disease depends upon exostosis on the interior of the skull, or upon some organic disease, we can do little but mitigate its severity; but when it is clearly connected with causes that give rise to reflex irritation, or to syphilitic, mercurial, or other morbid conditions of the blood, our treatment is attended with decided results.

For controlling the fits, no remedy can be compared to the use of bromide potassa; it is as nearly specific as any remedy can possibly be, in removing irritation or congestion from the brain and spinal cord, and is indicated in every case for con-

trolling and keeping in abeyance the convulsions. This is all; we do not claim for it curative results. An excellent vehicle for administering the bromide is some one of our alterative syrups. Then treat it according to the cause.

If caused by fright or other mental emotions, such remedies as belladonna, stramonium, hyoscyamus, caffein. The two first remedies should be given in large doses until dilatation of the pupil is effected.

The hydrocyanate of iron may be used in this form of epilepsy with success; begin with half a grain night and morning, and increase. Analine and calabar bean also valuable in this form. Ice to the spine is a powerful means to produce reflex contraction, and even the alternate use of cold and heat.

If *caused by indigestible substances, and other agents irritating the alimentary canal*, an emetic of comp. powder lobelia, a cathartic of podophyllin and jalapin, followed with tonics, as cinchona, hydrastin. Turpentine, male fern, oil pumpkin seed, santonin, chelonin, valuable where worms are the cause.

In infantile epilepsy, where we have direct irritation of the medulla oblongata, from irritation of gums or bowels, the cause must be removed, and the irritation of the cerebro-spinal axis subdued with bromide, and the application of cold to the spine. If there is periodicity, quinine, prussiate of iron, gelsemin, and podophyllin.

If *caused by masturbation or excessive venery*, we must rely chiefly on cinchona, phosphorus, hydrastin; diminishing sexual desire with gelseminum and coco erythoxylon. Phosphate of quinine and hydrastin are useful where there is great waste of tissue—brain substance.

The best form of bath in epilepsy is the nitro-muriatic acid bath. It is a well attested fact, that in all forms of epilepsy there is an excess of alkalies in the system, and this exercises a very deleterious influence in preventing the elimination of products, which give rise to additional irritation. Acid baths and acids internally will aid other treatment.

If *caused by suppressed menstruation*, apiol, betin, cotton root, sabina, iron. If any kind of displacement exists, it should be rectified by the proper means.

If *caused by the poison of syphilis, mercury, scrofula, or psoric taint*, iodide potass, sulphuret potass, baths, irisin, gold, platinum, rumin, stillingia, and a general alterative and tonic course.

In diagnosing *true* epilepsy from the *feigned*, the following points will be guiding landmarks: In feigned epilepsy, the patient does not fall violently, but falls deliberately to avoid injury. Eyes closed, but pupils contract to the stimulus of light; tongue never bitten; face red, congested, instead of being pale; skin is healthy; blow snuff into the nostrils,

patient sneezes; a proposition to apply the actual cautery to the spine effects instant and permanent cure.

CATALEPSY.

This remarkable disease of the brain and nervous system, is characterized by a sudden deprivation of sense, intelligence and voluntary motion; the patient retaining the same position during the paroxysm as that held at the moment of the attack, or in which he may be placed during its continuance. Seizure may last a few minutes, several hours or days; seizures inter mittent, without regard to regularity of periods. There may be premonitory symptoms, as headache, mutability of temper, yawning, tinnitus, vertigo, palpitations, slight spasm of mind, confusion of senses; but generally it occurs suddenly. The eyes are fixed, either open or shut, pupils dilated. Restoration or recovery occurs suddenly, accompanied with sighing, pain or confusion in the head, with no recollection of what has occurred. No efforts to restore consciousness are effectual. Nervous and hysterical women are most liable to its attacks.

Catalepsy differs from ecstacy, somnambulism or clairvoyance, in its being associated with a diseased condition; the other states being produced by voluntary effort. Absence of mind—a mild form of catalepsy; mesmerism and spiritualism, also a species. There is little danger in the large proportion of cases. It may, however, end in apoplexy, insanity, or softening. It is often associated with some organic affection of the brain, as a tumor. Predisposing causes may be anything that diminishes vital power and increases the susceptibility of the nervous system—depressing passions; hereditary debility; intense mental debility; intense mental labor; nervous exhaustion of scrofula; mercury, syphilis.

Exciting causes are, violent mental application, mental emotions, fright, terror, suppression of menses, ovarian disease.

Treatment.—This must be alterative, tonic and hygienic, and be directed by the general principles which govern us in the forms of disease with which it is associated. Specially I have derived the most satisfactory results in this diseased condition, from the alternate use of hot and cold water poured on the nape of the neck from a height; the exhibition of phosphorus, quinine and iron, in alternation with five-grain doses of the calabar bean.

CHOREA.

This disease is recognized by a want of control of the muscular nerves over the motor, in the waking state, which gives rise to irregular, tremulous, and ludicrous movements of the voluntary muscles. It occurs for the most part in girls of feeble con-

stitution, of irritable, nervous temperament, between the ages of six and fifteen; it is met with more rarely in boys.

The commencement of this disease is usually manifested by nervous depression and irritability. The involuntary motions begin by slight twitching of the muscles of the face, then other muscles become affected—one or more limbs. Features curiously twisted and contorted; vacancy of countenance; articulation impeded; temper very irritable; appetite very irregular; often constipation. Generally one-half of the body more affected than the other. Irregular action ceases during sleep. The disease may last for years, and produce no bad results. In other cases, the intellect may become impaired. Some cases are attended with difficulty of respiration, disorder of the heart, rheumatic fever, &c.

Cause.—It is supposed to originate in a want of harmony between the gray and white matter of the cord. The existing or external causes are, anæmia, teething, worms, dyspepsia, skin eruptions, retarded catamenia, constipation, cold, insufficient food, excessive loss of blood, pregnancy, diseased bladder or uterus, mental emotion, as fear, strumous diathesis.

Treatment.—In the treatment of all cases of chorea, a complete change of habits, occupations, and the fresh air of the country, abundant exercise, plain but highly nutritious diet, are indispensable. The exciting cause must be got rid of, whatever that may be. The whole nervous system, in this disease, is in a highly impressible condition, so that the smallest amount of peripheral irritation will often establish such a want of harmony as to develop the peculiar condition in all its intensity. Put the patient, in all cases, upon the bromide potass, in doses sufficient to control the spasmodic action.

℞.—Comp. syr. sanguinaria, ℥iv;
Bromide potass, ʒss;
" ammonia, ʒiij;
Bicarb. potass, ʒij;
Tinct. calabar bean, ℥j;
" cimicifuga, ʒij.—*Mix.*

S.—In teaspoonful doses, and then meet the case according to the cause. Regulate well the various secretions, bowels, skin and kidneys; and if retarded menstruation be the cause, give apiol and betin, alternated with iron, quinine and hydrastin; if worms, santonine, male fern, oil pumpkin seed, followed by purgatives and tonics; if caused by fright or terror, or mental distress, stramonium, belladonna, macrotin, strychnine; if constipation be the cause, the following I have found valuable:

℞.—Extract podophyllum,
Collocynth, C., āā grs. iss;
Nux vomica, gr. ss.—*Mix.*

Repeat as indicated. If debility is the cause; rest, phosphorus and iron.

The great object in a rational treatment is to get rid of the cause, keeping the involuntary movements in perfect abeyance by 3ss doses of bromide of potass. I have also, in a few cases, found the sulphate of analine of great value. Macrotin is very valuable where uterine irritation exists. Electricity, where there is anæmia or debility of the nerve centres. Indian hemp has a peculiar influence on the nervous tissue, and aids a restoration of the want of equilibrium.

Counter irritation on each side of the spinal column, with the acupuncture needles, has a most salutary effect.

If rheumatism is suspected, colchicum, dulcamara, cimicifuga, quinine, alkalies, and the following bath: water at a temperature of 96°, sixty gallons; sulphuret potassa, thirty drachms. Shower bathing is very advantageous, free ventilation, cleanliness, daily frictions of the skin, warm clothing, wholesome nutritious diet.

TETANUS.

Of all diseases of the nervous system there is none so terrible or so hopeless, as tetanus. The power of the medulla oblongata to receive irritation from a distant point, and to have it indelibly fixed there, is an interesting study. A nervous branch or twig, bruised or irritated at some peripheral point, the irritation at once communicated to the nerve centres, gives rise to irritation, an irritation reflected by an efferent or sentient nerve to the medulla oblongata, setting up an analgous irritation there of sufficient intensity, which is transmitted back by the motor nerves that supply the muscles, hence this spasm.

This condition is the standing point, and gives us the true characteristics of the disease, in the form of long continued contraction, or spasm, of some or all of the voluntary muscles. The rigidity of the muscles is continuous, a tonic spasm or spastic contraction, and so termed in contradistinction to clonic spasms of convulsions, where there are alternate contractions and relaxations. These spasms are excited from the irritation imprinted on the central point.

There are numerous varieties, but it is sufficient to arrange them under the head of traumatic and idiopathic. When it depends upon the latter condition of the system, it is much more hopeful than when the result of a wound. The symptoms are almost identical with those produced by the poisoning with strychnine. The cause in every case is irritation propagated to the spinal cord, which irritation gives rise to congestion, inflammation and effusion. There is no doubt but that depression of the vital forces is a predisposing cause.

Symptoms—Are extremely variable, but generally it sets in with great suddenness, and the muscles of jaw and throat

become first affected. Patient complains as if he had taken cold, throat slightly sore or stiff, and a feeling of stiffness, soreness and uneasiness soon increases rapidly, extending to the root of the tongue, causing difficulty in swallowing. The temporal and masseter muscles gradually get involved, *then we have trismus or lock-jaw* occurring. When the disease proceeds, the remaining muscles of face, trunk, extremities, become implicated, spasms never entirely cease except during sleep, aggravated every fifteen minutes or so, increasing every recurrence, lasting but a few minutes, and then partially subsiding. When the strong muscles of the back are most affected, they bend the body into the shape of an arch, so that the patient rests upon head and heels, a condition known as opisthotonis. If the body is bent forward by strong contraction of the muscles of the neck and abdomen, it is termed emprosthotonos. If the muscles are affected laterally, so that the body is curved sideways, it has been termed pleurosthotonos.

The frightful suffering caused by tetanic spasms, it is impossible to describe; face pale, bloodless, brows contracted, skin covering forehead corrugated, eyes fixed, prominent, sometimes suffused with tears, nostrils dilated, corners of mouth drawn back, teeth exposed, features fixed in a grin, respiration performed with difficulty and anguish, severe pain at sternum, great thirst, increased agonizing attempts at deglutition, pulse feeble and frequent, skin covered with perspiration, patient cannot sleep, or if he dozes it is only for a few minutes at a time; with all this suffering intellect remains clear and unaffected, obstinate constipation. Death occurs between three and five days, partly from suffocation, partly from exhaustion.

Treatment.—When called in to a patient afflicted with this disease, the best thing to do is to put the patient under Thompson's third preparation of lobelia, if he can swallow teaspoonful doses every few minutes; if the jaws are rigidly fixed pour it between the teeth, and administer it also per rectum; the patient should be put in a warm bath, 97° Fahrenheit, the most active form of stimulation should be applied to the cervical portion of the vertebral column, as the actual cautery, followed with poultices of stramonium and lobelia, or ice in an intestine, moved gradually up and down the spine, or cupping, or cantharidal collodion, followed with the oil of lobelia; the most strenuous, unremitting efforts should be used to procure relaxation of the muscular system; everything depends upon obtaining this result; this once gained must be maintained by the administration of the remedy at less frequent intervals, then a cathartic should be administered, and the compound powder of jalap and senna, adding to each dose one drop of croton oil. After the action of the purgative, the following should be given at a dose every two hours: Cam-

phor water, two drachms; bromide of potassium, half a drachm; bicarbonate of potassa, grs. v.—*Mix.* In alternation with this give large doses of tincture of calabar bean, from half a drachm to a drachm; the bromide of potassium and calabar bean diminish the impressibility of the medulla oblongata. They remove irritation by sedation, prevent effusion by their astringent action, and when given as above, produce a quasi suspension of this part of the nervous organism. They must be continued all through the case, and for sometime after the patient is apparently well; the diet should consist of nutritious drinks, sleep should be procured by the administration of large doses hyosciamus, opium, chloroform. Ether, chloral hydrate, are contra-indicated in the treatment of tetanus, because they increase the polarity of the cord. If the case can be carried along five or six days on the above treatment, our prognosis becomes favorable, for under a general tonic and alterative treatment the patient generally recovers.

If it has originated from traumatic causes, the wound should be carefully attended to, all irritating substances removed, the nerve, if lacerated or tore, divided, and poultices of stramonium applied, healing the wound on general principles. There is no use dividing the nerves high up in the limb, no use in amputation, for when the irritation is stamped on the medulla oblongata it is permanent, so the true treatment is to diminish the irritation of the cerebro-spinal axis all through. Lobelia freely, simply to the point of emesis. After the paroxysms are effectually broke, aconite, belladonna, phosphorus.

Besides the above acute form, common in adults, we have a variety that occurs in children at birth, caused either by cutting the umbilical cord by some blunt instrument, or by irritating agents applied after division. Where the symptoms are well marked recovery is rare.

Puerperal tetanus may make its appearance either during or subsequent to labor-pressure of the head upon the sacral plexus of nerves, which irritation is reflected to the medulla oblongata, causing rapid changes there, which irritation is transmitted to the motor nerves that supply the muscles, hence rigid spasm. In a class of cases, pure tetanic spasm; in another class, same condition associated with congestion, apoplexy.

The plan of treatment is to deliver as rapidly as possible, then push Thompson's third preparation to relaxation. Bromide potass and calabar bean. Active stimulation to nape of neck, free purgation. If it assumes an epileptic form, subcutaneous injections of morphia, one-fourth of a grain to the injection. The most active treatment that the nature of the case will warrant should be inforced in any case.

NEURALGIA.

An inflammation of a nerve; pain intense, shooting, occurring in paroxysms.

Neuralgia or inflammation of a nerve—a condition of vital depression of a nerve—a want of life—may be caused by anything that will depress or devitalize a nerve, as cold, damp, exposure, poison of rheumatism, gout, syphilis, scrofula, mercury, lead. It may attack all the nerves of the body, but the nerves of the head, trunk, or extremities, are most obnoxious to its attacks. Different names have been given to it according to its location. The most common seat of neuralgia is the first, second and third branches of the fifth pair of nerves, and in the portio dura. When the branches of the fifth pair are affected, *tic douleureux;* certain nerves about the head, *hemicrania;* sciatic nerve, *sciatic.*

Neuralgia is a true inflammatory condition of the nerve, and the cause may be central in the brain or spinal cord, or peripheral and reflected. It is a morbid condition, common in all periods and countries, more common among females than males.

Tic douleureux, like all nervous affections, is often hereditary, very common among females near or past the middle of life; it is developed by constitutional nervous irritation, as chlorosis, hysteria, mental emotion, grief, menstrual irregularities, debilitating discharges, malaria, affections of the teeth, atmospheric change.

This form is essentially an affection of the terminal branches of the fifth pair of nerves, the trifacial. This nerve arises by two roots from a tract of yellowish white matter in the front floor of the fourth ventricle. It passes forward to the petrous portion of the temporal bone, where it spreads into the gasserien ganglion. This ganglion divides into three main branches: the opthalmic; the superior maxillary; the inferior maxillary. Other nerves often become involved in facial neuralgia. The portio dura of the seventh pair is often affected.

The disease is constitutional, when it attacks the system generally, or some remote part of it, without apparent cause. Local, when seated in or near the affected part, irritated by some foreign substance.

The three branches of the fifth pair of nerves then are commonly affected; if the first or opthalmic branch is affected, we have supra-orbital neuralgia; if the superior maxillary branch, infra-orbital; if the inferior branch is affected, then it is chiefly confined to the dental nerve. Whichever nerve suffers, the torture is extreme, pain occurring in paroxysms, lancinating, burning attacks, generally preceded by derangement of the digestive organs, by dyspepsia, by slight rigors, followed by

heat, often due to dyspepsia; anæmia; renal disease; disease of facial bones; organic disease of the brain; disease of the teeth; malaria.

Hemicrania.—Headache, affecting one side of brain and forehead, a true neuralgia, caused by dynamic disturbance of the fifth pair of nerves. The symptoms are variable, according to the location of the irritation, whether it is in the peripheral or central branch of the nerve. Irritation of the viscera is very prone to cause irritation of the fifth pair. The attacks are periodical, a boring pain felt near the sagital suture; or, it occupies one side of the head, the forehead; the supra-orbital and temporal region, extending to the orbits. The paroxysms often so severe as to cause nausea, vomiting. The patient is very sensitive to light, noise, or a change of temperature. The causes are, nervous, irritable, or hysteric constitution, sedentary labor, indigestion, dormant liver, menstrual derangements.

Sciatica.—Acute pain, following the course of the great sciatic nerve. It extends from the sciatic notch down the posterior part of the thigh to the popliteal space, and often along the nerves of the leg and foot. It may be due to pressure of intestinal accumulations, uterine tumors; but rheumatism, or gout, or syphilis, the most frequent cause.

Treatment.—The treatment of neuralgia is quite extensive, and involves a large list of specific remedies. The first point is the removal of the cause; let it be a decayed tooth, an irritable ulcer, or any source of irritation; rectify the stomach, the liver, the kidneys and skin, by proper remedies. Give a nourishing diet, warm clothing, flannel next the skin, daily baths, friction to the surface, &c., &c. In neuralgia we require the primary action of remedies.

Aconite is a specific remedy for neuralgia, especially of the fifth pair where there is erethism of the vascular system, flushes of heat, congestion of the head.

Belladonna is well adapted to cases of neuralgia of the maxilliary branches of the fifth pair, and portio dura of the seventh pair, and if it does not promptly yield, alternate with aconite.

Coffee is well adapted to the nervous temperament, having a certain physiological action which no other drug possesses.

Lobelia, if the pain is agonizing, accompanied with gastric disturbance.

Rhus tox is valuable, if the pain is teazing, or jerking, or if there is numbness; if it does not act promptly, alternate with conium.

Cinchona, *prussiate ferri* and *gelsemin*, due to malaria; these three remedies are specific.

Veratrum, if there is an excited circulation.

Colocynth is well adapted to bilious temperaments, and may be advantageously combined with podophyllin.

Nux vomica is best adapted to these cases, complicated with spinal irritation, where clonic spasms are frequent.

If the neuralgia has arisen from hemorrhage, cinchona, phosphorus, nitro-muriatic acid.

When the disease appears to be connected with scrofula, exostosis of the bones, chronic cutaneous diseases, mercury, syphilis, then our best remedies are, stillingia, iodine, gold, alnuin, mineral acids.

In neuralgic attacks of the heart, or stomach, or uterus, serpentaria, hydrocyanic acid, pulsatilla.

Cannabis indica is a valuable remedy in weakened or exhausted subjects.

Iron and *phosphorus* are well adapted to those cases of debility.

In all cases the exciting cause must be removed. If the digestive organs are out of order, the neuralgia can often be removed by correcting their unhealthy state; hydrastin, gentian, alkaline remedies, to neutralize acidity. Perhaps there is no cause so common as acidity—the presence of acid in the stomach. Hepatic and intestinal torpor are a frequent cause, and should be overcome by colocynth, podophyllin and cypripedin.

If it occurs in a rheumatic patient, iodide potass, five grains, three times a day, often affords relief. If the paroxysm occurs periodically, give five grains sulphate quinine in a teaspoonful of wine of colchicum, which, with the iodide, will usually cure, and if it resist that, put the patient at once under the influence of gelsemin.

Anæmic patients are benefited by a tonic course; iron, glycerine, phosphorus, strychnine. Give nervous patients valerian, ammonia.

Subcutaneous injections are of great value; atropia or morphia in solution being injected into the subcutaneous tissue over the painful spot. This is often attended with excellent results, and is the only local mode of treatment justifiable.

Local applications can do no permanent good in cases where the pain results from organic change, or from general constitutional causes; probably the best local agent is the following: R.—Aconite, tincture; belladonna, tincture; chloroform, equal parts, kept applied over the affected part; or an ointment aconitina. grains ii to a drachm of lard, covering over with oiled silk to prevent evaporation.

Neuralgia is purely a nervous affection, and is often influenced in susceptible patients by means calculated to make a strong impression on the mind of the patient; and, hence it is that galvanic rings, electric chains, mesmeric passes, Homœo-

pathic globules and other applications which, like these, act more on the mind than upon the body of the patient, occasionally benefit, and sometimes cure.

Sciatica.—This form of neuralgia was formerly considered to include all painful affections of the hip and adjoining parts, whether inflammatory or rheumatic, primary or symtomatic—the pain being referred to the joint, muscles, bones, tendons and nerves. It was, by other authors, regarded as a variety of rheumatism; but though resembling that affection in some particulars, it is now considered to be essentially a form of neuralgia. Its name is derived from that of the sciatic nerve, the largest nerve in the body, and derived from the sacral plexus.

This affection seldom attacks infants or children; persons in advanced life are obnoxious to its distressing influence. It occurs more frequently in females than in males, especially in females during the puerperal states; and those of a nervous temperament, and rheumatic and gouty diathesis, are more liable to it than others.

The sciatic nerve being the largest in the body, it may well be inferred that the slightest interference with it is sure to induce the severest pain. The sacral plexus, from which it arises, are covered on the left side by the rectum or cæcum, is almost certain to exert an irritating influence on the nerve itself. It is covered by a fibrous sheath, and when any morbid action affects it, it is sure, by contiguity of surface, to extend to the nerve as well. But the sciatic nerve imparts motion, as well as sensation; accordingly, when its vitality becomes impaired, a loss of muscular power is the consequence. Again, when you remember that it sends branches, or filaments, to some of the pelvic viscera, including the bladder, you need not be surprised that paralysis of the bladder sometimes is an accompaniment of sciatica. Lastly, consider how it leaves the pelvis—a warm cavity—and passing beyond the border of the pyriformis; it is situated nearer the surface of the body than any other nerve of considerable size, and you will not think it strange that it should sometimes be suddenly affected by changes of temperature.

The empiric and quack may boast what cures *they can* perform without possessing any knowledge of the structure of the exquisite machine, which yet they vauntingly boast they can, however out of order, always repair; whereas the scientific practitioner, conversant as he is with the various parts, whether viewed separately, or as a harmonious unity, like a good engineer, is always at his post, without fuss or noise, and applying his knowledge to maintain the balance of the various wonderful influences and agencies that are constantly in motion in every living being, especially seeking, on scientific principles,

to restore the balance, where disease has upset it, to the normal equilibrium.

From the few points that have been named in reference to the sciatic nerve, its position and function, it can readily be seen that a knowledge of anatomy cannot be dispensed by any gentleman entitled to the name and reputation of a scientific practitioner. Seeing as Eclectics, we are in advance of the antiquated and now declining Allopaths, in respect to the great superiority of our remedial measures, let us be jealous lest we fall behind them in our anatomical acquirements, which department of medical knowledge forms, and must forever continue to constitute the foundation of the temple of medicine—the very root of that tree of life whose leaves are for the healing of nations.

But not to digress further, let us trace the course of the sciatic nerve. Passing down through the space between the trochanter major and the tuberosity of the ischiam, along the posterior aspect of the thigh, to about its lower third, where it divides into two large branches, the internal and external popliteal nerves.

Before its division, it supplies branches to the hip-joints and *muscular* branches to the plexus of the leg. The internal popliteal (the larger terminal branch of the great sciatic) passes down the thigh and over the popliteal space, supplying the kneejoint and calf of the leg; at the lower part of the popliteus muscle, it becomes the posterior tibial, which supplies the deep-seated muscles of the posterior aspect of the leg, the tibialis posticus, flexor longus digitorium, and flexor longus pollicis. The posterior tibial, bifurcating between the inner malleolus and the heel into external and internal plantars, which supply the sole of the foot. Again, the external popliteal (or peroneal) descending close to the margin of the biceps muscle to the fibula, supplies articular branches to the outer side of the knee, and cutaneous branches to supply the integument along the back part and outer sides of the leg to its middle, dividing beneath the peroneous longus muscle into anterior tibial and musculo-cutaneous. The anterior tibial passes beneath the extensor longus digitorium to the forepart of the interosseous membrane, and passing downward, supplies the tibial anticus, extensor longus digitorium and extensor proprius pollicis.

The musculo-cutaneous branch, on the other hand, supplies the muscles on the fibular side of the leg, and the integument of the dorsum of the foot. But there is another sciatic nerve, named the lesser sciatic. It is distributed in the neighborhood of the hip, to the back of the thigh and leg, and one of its branches passes down superficially to supply the integuments of the sides and back of the bend of the knee, and as far down as the middle of the calf of the leg.

Now, if we carefully examine, we shall find that sciatica is especially located at the exact points that we would expect, judging from the course and divisions of the nerve—rather nerves—including the lesser sciatica. Our space will permit us simply to name these: About the tuberosity of the ischium; half way between the ischium and the trochanter major; in the popliteal space; at external condyle of femur; in the course of the popliteal nerve, and at its termination; two inches below the knee-joint, at outer side; outer ankle-joint and heel, and on big toe. From the foregoing it may be observed that the course of these nerves are, for the most part, posteriorly and externally.

Symptoms.—Acute pains, coming on suddenly, but may be preceded by painful pricking, or slight numbness or even chills; stabbing or darting pain, shooting along the course of the nerve like lightning; or violent, lancinating pains, occurring in paroxysms, and augmented by the least contact, and by motion, but unaccompanied with inflammation.

Usually, one limb only is affected; exacerbations of it occur generally in the evening or during the night, but several may take place during the day, with remissions, during which the pain is more dull, and attended by numbness or pricking. The slightest cause may bring on the exacerbation, as motion or exertion, the heat of bed, or mental excitement. The duration of the exacerbations of pain, as well as their frequency of recurrence, is very various, as in other forms of neuralgia; the causes of the affection, the constitution of the patient, and various other circumstances influencing it when the attack has been very severe, or of long continuance; lameness; a dragging of the leg; great emaciation of the limb; a partially paralyzed state of the muscles, and derangement of the digestive organs ensue.

Treatment.—When the disease is complicated with syphilis, or the morbid condition due to the syphilitic taint, the iodide potassium is the most appropriate remedy. If associated with the gouty diathesis, iodide of potassium and vini colchici in combination.

From an extensive practice, where I have frequently met with this disease, I can confidently recommend the following as the best remedies: Iodide potass, et comp. syr. stillingia, macrotin, scuttellarin, bromide potass, nux vomica, belladonna and ergot. The acuputurator along the side and course of the nerve, or a subcutaneous injection to relieve pain.

For neuralgia of the heart, or angina pectoris, antispasmodics to overcome spasm, sulphate quinine, cactus grandiflorus, bromide potass.

For neuralgia of the stomach, oxalate of cerium, bismuth, hydrastin, gentian, capsicum, &c.

DISEASES OF THE ORGANS OF RESPIRATION AND CIRCULATION.

THE LUNGS AND HEART.

The essential organ of respiration is the lungs with the auxiliaries, the mouth, nose, pharynx, larynx, trachea and its ramifications, as also the diaphragm and intercostal muscles. In intimate relation with, and to complete the respiratory function, the circulation of blood is necessary. The shape of the lungs is adapted to the form of the thorax, being narrow above at the apex or root, and expanding downward, coming in contact with the convexity of the diaphragm. The attachment of the lungs, in position, is by the trachea and branches of the pulmonary arteries and veins. The entire organ is enveloped in the pleura, which is reflected from the thoracic walls upon it, and even the heart. The trachea consists of 16 or 20 rings, anteriorly and laterally; cartilaginous, posteriorly. Three-eighths of the circumference, slightly concave and membranous, *possessing resiliency* and adaptation to the œsophagus. As we trace the trachea through the bronchi to its ultimate vesicles, we gradually lose sight of cartilage and the muscular fibre becomes very thin, and is observed only as a delicate, thin, expanded and irregularly-shaped membrane, constituting the air vesicles, capable of allowing the transudation of air and gases, upon the principle of exosmosis and endosmosis. This pervious membrane is not only the continuation of the mucous membrane of the bronchi, but a combination of these with the serous tissue of the blood vessels, which coalesce and unite, forming a homogeneous wall or partition between the circulation of the air and blood, but so wisely constructed as to prevent the exosmosis of blood, but allowing of the free egress of carbonic gas, and the ingress of the vitalizing agent oxygen gas. The ultimate air vesicles are inosculated and pampiniform like a grape cluster, and are in relation with each other,

similar to a honey-comb, having between the external surface of their walls a net work of capillaries. In this arrangement the greatest surface occupying the smallest space, presents itself to the circulation of the blood and air.

The color of the lungs varies at different ages. At birth they are of a pinkish white tint; in adult life, they are of a slate color, and present a mottled appearance; and in old age, they become of a still darker tint. The polygonal markings which are seen on the surface correspond to the outer surface of the lobules already noticed.

The air passages, blood vessels, lymphatics, nerves and cellular tissue, compose the entire bulk of the lungs, and together with the heart occupy the entire cavity of the chest. The lungs are specifically lighter than any other organs of the body, weighing from $2\frac{3}{4}$ lbs. to $3\frac{1}{2}$ lbs. The lungs feel spongy, and crackle under ordinary pressure. The air is with difficulty expelled unless violent compression be used, consequently the lungs, or a portion of them, will float in water. The lungs of a still-born child, however, will sink in water, as they have never inhaled any air.

The opposite currents of oxygen and carbonic acid gas are established in this wise: the whole interior of the air passages, except the minutest vesicles, is lined by a ciliary membrane, accompanied by minute, unstriped muscular fibre; the motion of the ciliary membrane is from the infundibuliform vesicles upwa d and toward, close to the periphery, the larynx and pharynx, carrying along the carbonic gas; whilst the inspired air occupies the centre of the calibre of the air tubes, and thus reaches the vesicles without miscibility, and permeates their membrane, and is incorporated with the blood. It is computed that no less than six hundred millions of air cells are found in an adult man, and that their diameter is from $\frac{1}{200}$ to a $\frac{1}{300}$ of an inch. The manner of aeration of blood is thus The veins return the impure and exhausted blood from all parts of the body to the right auricle, (having received through the chylo-poietic system a supply of newly assimilated, but now oxygenated blood, to compensate for the deficiency occasioned by waste and disintegration), and from the auricle to the right ventricle, hence the blood is forced through the semilunar valves into the pulmonary arteries, which divide into the right and left branches, which divide and subdivide into a net work of innumerable capillaries of about $\frac{1}{1800}$ of an inch in diameter, spread upon the membranes of the air cells, which latter are scarcely $\frac{1}{2000}$ of an inch in thickness, permitting the exosmosis of carbonic acid gas, and the endosmosis of oxygen gas, from the inhaled atmosphere as already described After being properly oxygenated, the blood is returned through the pulmonary veins to the left auricle, from thence to the left

ventricle, and through the aorta to every part of the body. The bronchial vessels supply the parenchyma or proper structure of lungs with blood, while the anterior and posterior plexuses of the pneumogastric and sympathetic nerves at the root of the organ send filaments along the bronchial branches to all parts of the lungs; the thorax is capable of enlargement during inspiration, vertically by descent of diaphragm, and laterally by elevation and separation of intercostal spaces, and elevation of sternum. Respiration may be divided into three varieties, viz: 1, abdominal and diaphragmatic, as it occurs in infants up to the third year, and particularly in males; 2, costo-inferior, in which respiration is effected chiefly by the seven lower ribs, as observed in boys from three years upward to manhood; and 3, costo-superior, where the upper ribs come chiefly into play as seen in females; owing to narrowness of waist (the result of fashion), the female chest expands farther forward than the male, giving it a heaving or sighing motion. The expiratory power is nearly one-third stronger than the inspiratory effort, and the former is always more prolonged in duration than the latter. A healthy normal respiration is performed in the following order, viz: 1, Inspiration; 2, A very short pause; 3, Expiration; and, 4, a considerable pause, occupying about one-fifth of the time required for a complete respiratory act. Expiration is more prolonged than inspiration in adult males, in the ratio of 12 to 10, but in children, females, and the aged, 14 to 10.

The number of respirations in a minute varies according to age. In infants, about 44 per minute; at twenty-one years, about twenty reach their minimum; at about thirty years, being 16 per minute, and increase to 18 up to fifty years. The usual range is from 16 to 20 respirations per minute in healthy adults, and this would be one respiration to 4½ pulsations. In inflammation, hepatization, and phthisis of the lungs, and in certain nervous affections, the ratio may be as 1-3, or even as 1-2 pulsations. The reverse obtains in narcotic poisoning and fevers of a typhoid or adynamic type; the respiration to pulsation being as 1 to 6, or even 1 to 8.

The chief motor nerves are derived from the medulla oblongata and corda spinalis, so that the encephalon and spinal cord as far up as the origin of the phrenic nerve, may be removed without arresting respiration. The excitor nerves, are the pneumogastric, and when these are divided respiration is greatly diminished, but not entirely arrested, consequently other nerves must play a part in the act of respiration. We know that as soon as the air fans the face of the new born infant, cæteris paribus, there is a vigorous inspiratory effort even before the body is entirely born, and the reasonable deduction is that the fifth pair are concerned in this function.

Again, the alternate application of cold and warm water to the face and surface of an asphyxiated child, will frequently stimulate respiratory movements; the dashing of cold water in the face of any one will cause sobbing—a convulsive inspiration. A paroxysm of hysterical laughter, consisting of violent spasmodic expiratory acts, may be similarly arrested. Normal respiration is automatic, but is nevertheless under the control of volition to a limited extent.

The principal motor or efferent nerves concerned in the act of respiration are the phrenic, supplying the diaphragm, the intercostal nerves, the spinal accessory, and the facial, and remotely the superficial nerves in general.

In the respiratory act, the quantity of air is not entirely expelled; a volume of from 75 to 100 cubic inches, is estimated to remain in the lungs, even after violent efforts at expiration. This is termed "*residual air.*" "*Supplemental air*" is that which remains after an ordinary, normal expiration, but which may be displaced at will. "*Breathing* or *tidal air*" is that which can be inhaled over and above the ordinary inspiration by a forcible effort. By a forcible expiration, the *complemental*, *tidal* and *supplemental* air is expelled, (leaving only the residual air in the lungs); the sum of these three quantities representing the "vital capacity," bears a marked relation to the stature. Supposing the vital capacity of a man five feet in height to be 174 cubic inches, then for every inch of height up to 6 feet there would be an addition of 8 cubic inches in vital capacity for every inch of stature. Hence, a man 5 feet 11 inches would have a capacity of $174+(8\times11)=262$ cubic inches. These quantities can be approximately estimated by a *spirometer*. Taking the residual air at 75 cubic inches, and the supplemental air at as much more, the sum will be 150 cubic inches; subtract this from the ordinary capacity, and we have the tidal or breathing volume. Example: height 5 feet 2 inches, $174+(8\times2)=190-150=40$ cubic inches, the average quantity exchanged at each respiration. It may be remarked that the quantity of carbonic acid discharged in respiration is only about $5\frac{1}{2}$ per cent. of the entire volume expired, and that it diminishes inversely with the number of respirations in a minute; here we perceive the necessity of free ventilation, and can also calculate how long a person might remain in a room hermetically closed, and of a certain capacity, with impunity. An ordinary man, when awake, inspires about 500 cubic inches per minute, and when asleep, 400 cubic inches per minute, making an average of 450 per minute. Exertion increases the volume greatly. The quantity of carbonic acid exhaled is liable to great variation, caused by the temperature and moisture of the air, age, sex, muscular development, the nature and quantity of the food, muscular

exercise, sleep and state of health; the quantity of carbonic acid is diminished in sleep, in typhus fevers, and in chronic diseases of the respiratory organs; but is increased in exanthematous fevers (measles, small-pox, scarlatina, &c.), and in chlorosis.

The Circulation.—By circulation we mean the course of the blood from the heart to the capillaries and from them back to the heart again. The organs of circulation are the heart, containing a right and left auricle and a right and left ventricle; the right auricle and ventricle conveying venous blood, and the left auricle and ventricle arterial blood; the arteries carrying oxygenated, replenished and constructive blood, the veins returning effete blood, together with new pabulum which is subjected to a depurative process in its passage through the portal and hepatic circulation, and is returned to the heart, and from thence to the lungs to be oxygenated, and from the capillaries which communicate and connect the arterial with the venous circulation. The blood is propelled from the left ventricle through the semilunar valves into the aorta to all parts of the body, through all the capillary net works. After having served the recuperative and constructive purpose, is returned through the veins to the right auricle, from thence through the right auriculo-ventricular opening, which is guarded by the bicuspid valve in the right ventricle; from this ventricle, through the pulmonary semilunar valves, into the pulmonary artery and its branches, it is distributed to all parts of the lungs, upon the air vesicles, where it becomes oxygenated. (This is the only instance where the arteries convey venous blood and the veins arterial blood.) From the lungs, through the pulmonary veins, the aerated and vitalized blood is returned to the left auricle, and from thence through the left auriculo-ventricular opening, guarded by the mitral valve, into the left ventricle, and from thence, as already described, the blood is again distributed to all parts of the body. The different valves act as flood gates to prevent the regurgitation of blood; the heart is suspended in the thorax by the large arteries and veins, and the latter are attached to neighboring parts, thus keeping it in position. The heart is lined by a serous membrane, the endocardium, which is continued throughout the arteries and veins; another serous membrane, the pericardium, invests the heart; the substance of the heart is essentially muscular; its fibres running longitudinally and transversely, but most of them obliquely. The size of the heart is estimated as about that of the closed fist of the same individual, and its weight has been compared 1.150, or 1.160. The walls of the ventricles are made thicker than those of the auricles, and those of the left ventricle are about four times as thick as those of the right; the amount of muscular tissue

being in all these cases proportional to the contractile power necessary. The larger arteries are accompanied by a single vein, usually inclosed in the same cellular sheath, while the smaller veins have two veins—venæ comities. The superficial veins are found under the integument and communicate freely with the deeper veins. The action of the heart consists of two motions, first, a contraction or systole of the auricles, and second, a corresponding contraction of the ventricles. The contraction of the auricle immediately precedes that of the ventricle, and the systole of each cavity is directly followed by its diastole or relaxation; there is then a brief period of repose, the heart exhibiting little or no motion. At the moment the systole of the ventricles, the apex is forcibly tilted forward against the ribs, which may be felt externally. The frequency of pulsation varies with age. Fœtus in utero, 140 to 150 per minute; new born infant, 130 to 140; second year, 100 to 115; third year, 90 to 100; seventh to fourteenth year, 80 to 90; fourteenth to twenty-one years, 75 to 85; and, from twenty-one to sixty years, 70 to 75. Sex, posture and exercise, as well as motions have great influence on its frequency. Pulsations may be irregular where the number and force of the motions of the heart are unequal; or one pulsation may occasionally be left out, presenting an intermittent pulse. When the volume of pulsation is greater than usual, it is termed a *full* pulse, and the opposite condition, a *small* or *contracted* pulse. The *tension* of the pulse is the property by which it resists compression. When it resists considerable pressure, it is called a *hard* pulse; *but* when it is easily compressed, a *soft* pulse. The strength of the pulse depends chiefly upon the force with which the blood is driven from the heart, but partly also upon the tonicity of the artery itself and the volume of the blood; that the blood vessels possess a property or power to aid in propelling onward the current of blood there can be little doubt, especially the capillary vessels. The probabilities are that the heart is not the exclusive propulsive force which drives the blood to and through the minutest capillaries, and by a *vis* or *tergo* influence sends it coursing back to the heart again; but that some vital force inherent in the coats of the arteries and veins, and in the blood itself, some electrical force perhaps, serves as an adjunct to the systolic force of heart. The venous system contains about three times as much blood as the arterial, consequently the venous blood will move with only one-third of the velocity of arterial blood. On applying the ear to the cardiac regions of a living person in health, two successive sounds are heard: the first is dull and prolonged, while the second is short and sharp. The cause of the first of these sounds has been a subject of much discussion, at least thirty explanations of its mode of production having been offered. The difference

between the *first* and *second* sounds is beautifully expressed (as Dr. Williams has remarked) by articulating the syllables "lubb, dup."

Thus, we have 1, the impulse of the apex of the heart against the side of the chest; 2, the contraction of the muscular walls of the ventricles; 3, the tension of the auriculo-ventricular (tricuspid and mitral) valves; 4, the rush of blood through the narrowed openings of the aorta and pulmonary artery; 5, the collision of the particles of blood with each other, and their friction against the sides of the heart's cavities.

CATARRH.

Inflammation of mucous membrane of some portion of the air passages, characterized by sneezing, watery discharge from the nostrils; increased secretion from the lachrymal glands, slight headache, heavy feeling in the head, chilliness, fever, hoarseness and cough, sore throat, arrested secretions, furred tongue, thirst, loss of appetite, accelerated circulation, lassitude. Different names are applied to it as it affects the Schneiderian membrane; *catarrhal cephalalgia*, when it affects the frontal sinus; *bronchitis*, when the stress falls on the trachea and bronchial tubes. Catarrh, properly speaking, affects the mucous lining of the nose and throat, and is extremely prevalent and intractable. Patients of a strumous diathesis are most liable to this form of disease, hence we find the disease of a low chronic type, and requiring a specific treatment.

In addition to the symptoms mentioned, the discharge from the nostrils may become acrid and saline, producing an eruption of herpes upon the lips, and in a few days the acute symptoms begin to subside; or the disease may pass into a chronic form, and tonsillitis or bronchitis may supervene. If the catarrhal inflammation has been violent in a cachectic patient, ulceration is the result. In its primary condition, catarrh consists in a specific irritation of the mucous surface of the nostrils, extending to the frontal sinus, posterior nares, fauces, throat. The peculiar influence which originates catarrh, affects, primarily, the organic nerves which supply the surface, and through them the system generally. Secretion and circulation in the part are specially deranged. The chief modifications of the disease from the constitutional actions are disturbed, the extent of surface involved becomes greater, and the grade of irritation proportionately increased. Long continued reflex irritation, however, in all cases, depreciates the nervous system and produces a tubercular diathesis.

Treatment.—In an acute attack an emetic of comp. powder of lobelia, followed by a vapor bath, foot bath or Turkish bath. Aconite as an arterial sedative, acting freely on the secretions.

Hot atomized vapors to control the local inflammation; moist warmth is a powerful restorer of the arrested circulation and vital action that we possess; the safest therapeutic agent we have, because it is direct. The warm vapor should be allowed to come freely in contact with the inflamed mucous surface; various remedies may be used for inhalation with good success; I am partial to sulphate hydrastin, or sanguinarin, or permanganate potassa here. They are rapidly absorbed by the mucous membrane. The warm stream softens and relaxes the tissue, and renders it more prone for endosmose. Nothing acts so promptly as the hot atomizer in catarrh. If the disease does not yield, try bromide potass., iodide potass., chlorate potassa, sulph. zinc or iron, in various strengths, as injections.

Chronic Catarrh.—Repeated attacks so devitalize the mucous membrane, that a condition of thickening and ulceration takes place, with a muco-purulent discharge, so that an alterative course is indispensable. Comp. syr. stillingia, irisin, gold, alnuin, bromide and iodide of potass., cinchona, iron, hydrastin, sulphites, also active counter-irritants to nape of neck.

Besides a genial alterative and tonic treatment, inhalations of medicated vapors are highly advantageous, better than douches, because the vapor penetrates the minute follicles of the tissue. During their exhibition the patient should make deep and long inspirations. One application a day is usually sufficient—from fifteen to twenty minutes at a sitting.

The *dose* in the following table is to be added to one ounce of distilled water:

Acidum tannic,	grs. 5 to 80	Myricin,	grs. 10 to 30
Atropia,	grs. ½ to ¼	Potassa, chlorate,	grs. 5 to 10
Baptisin,	grs. 10 to 20	Potassa, bromide,	grs. 10 to 20
Borax,	grs. 5 to 20	Potassa, iodide,	grs. 5 to 20
Cerasein,	grs. 10 to 30	Potassa, permanganate,	grs. 5 to 20
Digitalis,	grs. ½ to 1	Sodium, chloride,	grs. 10 to 40
Extract belladonna,	grs. ¼ to 1	Tincture iron,	min. 5 to 30
Extract conii,	grs. 5 to 10	Sulphate iron,	grs. 1 to 5
Extract cannabis ind.,	grs. 1 to 5	Sulphate, sanguinarin,	grs. 5 to 10
Gelsemin,	grs. 1 to 2	Tincture iodine,	min. 1 to 15
Hydrastin, sulph.,	grs. 5 to 10	Carbolic acid,	grs. 1 to 8
Lycopin,	grs. 10 to 20	Bichromate potassa,	grs. 5 to 10

The best of the above agents is carbolic acid, which stimulates, deodorizes and promotes cicatrization of the abraded surfaces.

Ozæna.—This may be a sequel of catarrh, and if so, the ulceration has penetrated to the cartilages of the nose, but it is more frequently the result of inflammation of the cartilages of the nasal bones, produced by scrofula, mercury, syphilis, and other poisons; its symptoms are analagous to catarrh, with the exception that there is present a fœtid, pungent odor, which

quickly fills an apartment, and is apt to involve the bony structures of the nasal organs.

The treatment is the same as for catarrh, to wit. Nutritious diet, active alterative tonics, with a liberal use of antiseptics.

INFLUENZA.

This disease appears as an aggravated form of catarrh or coryza, but essentially different in its nature. It in all cases arises from a specific cause, a special fungi or germ, that has an affinity to the mucous membrane of nose, fauces and throat, and spreads rapidly as an epidemic, so very rapidly that a whole section of country is often attacked simultaneously. In addition to the symptoms of simple catarrh, we have in influenza an immediate aggravation of all the febrile symptoms, hoarseness, severe cough, either dry and hacking, or hollow and loose, wheezing or difficult respiration, impaired appetite, great soreness and oppression in the throat and chest on coughing, incapacity for mental exertion, bowels constipated or relaxed. The inflammation extends rapidly to the whole bronchial mucous membrane, giving rise to a sense of rawness in the chest, stitching pains, thick, tenacious and semi-purulent expectoration.

Its characteristic symptoms are depression, great watery discharge from eyes and nose, sneezing, frontal headache, nervous and muscular prostration and profuse sweating.

Treatment.—At the start, an emetic of lobelia and eupatorin, followed with a vapor bath, then put the patient to bed in a well ventilated room; put the patient upon aconite and belladonna every hour, and alternate with eupatorium perfoliatum; this latter remedy is an excellent one in influenza. An infusion prepared by taking an ounce of the dried leaves and adding them to a pint of boiling water; a wineglassful of this effusion every half hour; keep steadily on until free diaphoresis takes place, and with this an amelioration of the symptoms perfectly abate; increase the period between each dose, so as merely to maintain its impression.

We need the action also of an active antiseptic, either baptisia tincture or yeast, permanganate potassa, carbolic acid. The need of such remedies is imperative to destroy the fungi.

Lobelia and sanguinaria meet the catarrhal symptoms precisely. Atomized spray of plain water, or medicated with conium, is excellent; hot fomentations to chest.

If prostration is a prominent symptom, support; quinine, xanthoxylin, beef essence, brandy. Convalescence should be established upon phosphoric acid, quinine, iron, hydrastin, nourishing diet, country air.

Epizootic affections resemble influenza in nearly all their symptoms, and are due to a fungi or germ more virulent in

their character than those capable of inducing chronic inflammation of liver, spleen, kidneys, giving us hæmaturia, Bright's disease, leucocythæmia, dropsy and death; active treatment is necessary, febrile action controlled with veratrum—quinine and iron with nutritious diet to keep up vital force—yeast in milk, or strong decoction of wild indigo weed to destroy germ in mucous tissue, and blood fumigations, and inhalations of carbolic acid or turpentine, together with same treatment as for influenza.

EPISTAXIS.

Bleeding from the nose may occur from a great variety of causes, as blows, plethora, great physical exhaustion. It is a symptom of various diseases, as apoplexy, heart disease, renal and hepatic disease, fever, scurvy, purpura, leucocythemia. For the purpose of arresting the hemorrhage, erect posture, removing ties from around the neck, holding both arms above the head, the application of cold to the posterior of the neck, and direct an atomized spray of either of the following into the nostrils; saturated solution of alum, fluid extract matico, tincture of iron in water, a perchloride of iron or tannin. If atomized spray is not at hand, an injection thrown up the nostrils, of the same agents, with an ordinary syringe, answers the purpose admirably. Styptics may also be administered to correct the morbid condition of the blood, as iron, mineral acids, turpentine, erigeron, ergot, ipecac, nutritious diet.

POLYPUS.

This is supposed to originate in some constitutional dyscrasia, such as scrofula. It is generally found protruding from the mucous membrane. Nasal polypus consists of the following varieties: *gray gelatinous*, *red gelatinous*, *white fibroid*, *red fibroid;* and either of those varieties may assume a malignant form.

Polypus of the nose usually commences from an irritation of pituitary membrane, and gradually enlarges until it fills up one nostril and obstructs the other. In other cases, an irritation of some point of the nasal bones may give origin to those growths. The gelatinous are remarkable for their softness, bleeding easily when touched. The fibroid or hard, compact. The malignant may assume any of the various types.

In the nasal passage, polypus gives rise to an irresistible desire to blow the nose; increased mucous discharge; frequent attacks of epistaxis; the sense of taste and smell greatly diminished; dullness of hearing, if it presses on the orifice of the Eustachian tube; articulation indistinct; deformity of cheek; obstruction to tears, and perhaps pressure on brain. The diath-

esis being strong, they are very prone to return after removal. There are numerous modes of treatment, which may be embraced under the following heads, to wit.; excision, ligation, torsion, destruction with caustics.

In he method by excision, there is usually great hemorrhage.

Ligation, tying a ligature round the pedicle or stem, the circulation of the polypus is cut off, and a sloughing process takes place. Seizing the polypus with a pair of forceps, and giving it a partial turn day by day, it will slough off in the course of a few days.

Destruction by caustics is usually accomplished by snuffing some remedy up the nostrils. Sanguinaria Canadensis, finely powdered, snuffed up the nostrils by the patient every few hours will destroy the polypus in a few days. There is less liability to a return of the affection from the use of this drug than any other; indeed, after excision, torsion, ligation, this remedy should invariably be used, so as to destroy the root whence they spring.

A rigid constitutional treatment should be enforced in all cases of polypus, so as to overcome the constitutional defect on which it depends.

LARYNGITIS.

A slight degree of inflammation or congestion of the mucous membrane of the larynx is common as the result of cold; its signs being hoarseness, with a dry, short, harsh cough, and soreness in breathing. Acute laryngitis of a severe grade is rare, that is, inflammation of the mucous and submucous membrane, but when it does occur, the result is often fatal. The inflammation here, it is true, is local; it is a paltry piece of the human mechanism that is attacked—perhaps merely a fraction of an inch—but how terrible the results; congestion first, effusion last, just so great as to prevent as much air getting into the lungs as is needed; and when that is reached, life is in danger.

Laryngitis is almost peculiar to adults of an unhealthy constitution; comes on insidiously; and at the end of some hours, fever, redness of fauces, difficulty of breathing and swallowing; great anxiety; hoarseness; then great loss of voice; spasmodic exacerbations; paroxysms of threatened suffocation; long inspirations; peculiar wheezing sound, as if the air were drawn through a narrow tube; great difficulty of swallowing, especially liquids; cough harsh and brassy; face becomes congested, purple; eyes protruded; great distress; rapid movement upwards and downwards, a perfect heaving, resulting from all the muscles of respiration being brought into powerful action; gasping for breath, drowsiness, delirium, rapidly usher in death.

The danger here is effusion or infiltration of the submucous tissue pushing or swelling out the mucous membrane, and terminating in œdema, glotitis, and suffocation.

The importance of active treatment cannot be too strongly insisted on; and the use of drugs of a definite action—something to act on the little spot which stands between the patient and his life. Immediate relief is indispensable. Three drops of tincture of veratrum and gelsemin every half-hour until profound relief is experienced, and breathing and swallowing relieved. These remedies should be given in a mucilage of elm, in small quantities, and persevered with. Patients who are usually attacked with laryngitis are debilitated, are suffering from deprivation; and an important element in treatment is nutrition. It is true that this does not kill so quickly as the impediment to respiration. We must nourish. If we do not, the patient cannot sustain the depressing influence of the devitalized blood, and is less able to repair the local mischief Enemata of beef-essence, with some anodyne, is well adapted for the purpose of being retained and absorbed.

Solid food is easier swallowed than pure liquids; this is true in all kinds of dysphagia. A greater effort, a spasmodic action, is apt to be induced by the swallowing of fluids, by semi-voluntary pharyngeal muscles.

No debilitating medicines can be tolerated in laryngitis. No remedy that increases waste, destructive metamorphosis, can be borne; no lowering of vitality.

Besides the use of veratrum and gelsemin. as indicated, rest, perfect quietness, a moist atmosphere, temperature 70°, plain cold water to the throat, atomized spray of warm water, or water medicated with hydrocyanic acid. If that does not afford relief, warm spray of stramonium, iodine, or lobelia.

Chronic laryngitis, with ulceration, is not an unfrequent attendant of phthisis; some cases of the latter begin with it, in others it occurs later in the disease. Syphilitic ulceration of the larynx is common as a secondary symptom. An alterative course, medicated baths, atomized spray, are the appropriate remedies.

Chronic Laryngitis.—A very prevalent affection, caused by colds, damp, exposure, exertion; it is also due to various poisons operating in the blood, hence we have it due to syphilis, mercury, lead, tubercula, &c., &c.

The symptoms are cough, expectoration, hoarseness, loss of voice, &c., with ulceration of the mucous membrane of the larynx, fauces, uvula, &c.

The different varieties are recognized by the following marks:

Simple chronic laryngitis by soreness, rawness, redness.

Syphilitic form, by its copper-colored appearance, lack of sensibility.

Mercurial form, by its dingy metallic hue, and peculiar fœtid breath.

Tubercular form, by its white or mottled appearance and diathesis.

The treatment of all forms of chronic laryngitis should be active, and should consist of good nutritious diet; tonics, as quinine, iron, phosphorus, nux vomica, hydrastis; an open sore at the nape of the neck, and inhalations of carbolic acid, chlorate potassa, hydrastis, and gargles of decoctions of bayberry, golden seal, gold thread. It is a morbid condition that requires tact, good judgment, the greatest possible care exercised in aiding reconstruction; hence, country air, freedom from anxiety.

LARYNGITIS CLERICORUM.

This is a peculiar condition of the mucous membrane which lines the larynx and trachea. It often begins as a nervous disease, and more rarely as a follicular disease of pharyngo-laryngeal membrane. In its early stage it is unattended by any organic lesion, but would seem to consist of hyperæsthesia or irritability of investing membrane of the fauces. After a while, congestion, inflammation, or relaxation of mucous membrane of the fauces. After a while, congestion, inflammation, morbid deposits, and ulceration of the mucous follicles.

It is indicated by a complete loss of voice in some cases; in others, it may begin with an uneasy sensation in the upper part of the throat, with an inclination as if there was something to swallow; cough, and the larynx painful on pressure; expectoration of a thin but viscid mucus (occasionally pus); gradual loss of voice; diminution of power; hoarseness towards evening; and gradually merges onward until there is complete aphonia, unhealthy granular condition of fauces, and the mucous follicles are filled with yellow matter. There is often great emaciation, and as the disease progresses, all the symptoms of phthisis pulmonalis, and ulceration, ossification, caries of the cartilages.

The vocal cords were made as a means for us to express our thoughts. The brain supplies the stimulant (the nervous energy), and thus co-operates with the vocal cords in giving expression, and saves us from disease. But if we use the vocal cords by monotonous reading, without bringing the brain as a co-worker, we may create a want of equilibrium—disease. It is thus that this disease is so often found among a certain class of preachers, who read their sermons without a solitary intellectual effort. It is seldom met with among lawyers or stump-speakers, who give their brain to the work, and thus give the muscles of speech additional recuperative energy.

The treatment in the early stage should consist in rest of voice; cheerful mental occupation; the seaside or a change of scene. Our remedies: best of blood-elaborating diet; phosphorus, iron, quinine, and hydrastin, as follows:

℞.—Good brandy, ℥iv;
Sulphate quinine, grs. xxx
Phosphate iron,
Hydrastin, āā ℥iij.—*Mix.*

A teaspoonful every three hours, and alternate with phosphorus and nux vomica. The best local agent is iodine. It has powerful and direct effect or influence in modifying the condition of the mucous membrane, applied by a brush or in the form of spray.

If the disease is confirmed, then a course of alteratives and tonics are demanded. We must put the patient upon

℞.—Comp. syr. stillingia, Oss;
Iodide potass., ℥j.—*Mix.*

A teaspoonful every three hours; and this might be attended with

℞.—Quinine,
Hydrastin, āā. grs. xxx;
Ext. nux vomica, grs. x.—*Mix.*

Make 30 pills.

Gold, glycerine, and phosphorus; permanganate or chlorate potass.; generous diet. The best results follow inhalation of atomized spray of sulphate hydrastin, iodine, nitrate, sanguinarin, carbolic acid.

APHONIA.

Loss of voice, from organic and functional disease of vocal cords, varies in degree from a slight impairment to complete dumbness. The different species are: aphonia, from absence of the tongue; aphonia, from tumor of the fauces, or near the glottis; aphonia, from disease of the trachea; aphonia, from paralysis, or loss of nervous energy, reflected irritation, syphilitic or mercurial, or tubercular ulceration.

They may be embraced under two varieties, *functional* and *organic.*

1. *Functional Variety.*—This form is most frequently met with in females, sympathetic or hysterical in type. Males of an effeminate character, extremely sensitive nature, are also its victims. Uterine irritation, ovarian excitement, leucorrhœa, amenorrhœa, or menorrhagia, generally allied with other symptoms, which indicates its true nature. Patients speak in a whisper for days, weeks or months, until the cause is removed, then the power returns. If it continues long, the vocal cords are liable to suffer from atrophy, or paralysis, become flaccid, powerless.

Treatment.—When functional, should consist in the exhibition of an emetic of equal parts of tincture lobelia, eupatorium and capsicum. Act upon the liver and secretions by

℞.—Podophyllin, gr. ss;
Leptandrin, grs. v;
Ext. nux vomica, gr. j.—*Mix.*

And repeat if demanded.

Follow this with phosphorus, and alternate with one pill every three hours, of the following:

℞.—Ext. nux vomica, grs. x;
Sulphate quinine,
Hydrastin, āā grs. xxx.—*Mix.*

Make 25 pills. If that fails, try

℞.—Strychnine, gr. j;
Camphor, grs. xxx;
Pulv. acacia, ʒj.—*Mix.*

Make twenty powders.

If that fails, we may select from the following: quinine, cypripedin, iron, scutellarin, nourishing food, shower bathing, galvanism, and the daily use of the atomized spray, ammonia in water, in various proportions.

2. *Organic Form.*—This is caused by inflammation produced by the presence of some poison in the system; as syphilis, serous infiltration, ulceration of mucous membrane about vocal cords, as in syphilis; following dipheria, morbid growths in or near larynx; disease of the brain, producing paralysis of muscles of the larynx.

Treatment—Should be adapted to the condition that exists, for cure of inflammation and ulceration about the vocal cords, swabbing the affected part with a solution of sesqui-carbonate of potassa, following this with a wash or gargle of sulphate hydrastin, five grains to the ounce, spray of permanganate of potassa, five grains to ounce of water. If there is swelling, a spray of iodoform or ammoniacal vapor is excellent. A general alterative course should be pursued: comp. syr. stillingia, iodide or bromide potass, phosphorus, glycerin, iron.

APHASIA.

A loss of the cerebral faculty of speech, and the power of expressing thoughts by writing and gestures; a discordance between the gray and white matter of the brain and spinal cord; a simultaneous loss, in a greater or less degree, of the memory of words, the memory of acts, the memory of articulation.

Aphasia is often transitory, as we have occasionally during consciousness in fevers; it may be due to congestion of the brain. It may be permanent, due to softening of the brain, or cerebral hemorrhage, or apoplexy.

Symptoms.—Sudden deprivation of the power of speech; face intelligent; movements of lips and larynx healthy; a consciousness of what is wished to be expressed, but a perfect inability to express words. Aphasic patients may have perfect knowledge.

Treatment.—In cases of aphasia without chorea or hemiplegia, a cure may take place by the use of judicious means. We have probably, in these cases, a jarring, or want of equilibrium between the gray and white matter of the brain and medulla oblongata. Now, if the pupil is contracted, and indicates turgescence, congestion of the brain, I have succeeded well with small doses of belladonna, alternated with half a drachm of the bromide potass, thrice daily, persevered with for months. At the same time some preparation of phosphorus should be given, to promote the nutrition of brain tissue. If the pupils are dilated, if there is anæmia of the brain, calabar bean, in dose of fifteen drops of a saturated tincture, or six grains of the crude powder, may be given with the best hopes of success; still persevering with the phosphorus. I have found, also, alternated use of cold and warm water to the neck, in the form of a shower-bath, to be attended with beneficial results. The irritating plaster to the nape of the neck should be kept constantly applied. Iron, quinine, hypophosphites, fresh air, abundance of good food. If there is no organic difficulty, a cure will probably take place.

If we suspect the poison of lead, mercury, or syphilis, to be the cause, iodide potass should have a fair trial in an alterative syrup, together with baths of the same salt.

In aphasia with apoplexy or hemiplegia, the treatment must be based on the indications. It is true these cases are the most hopeless, but much good can be attained by proper means and special class of remedies.

ASPHYXIA.

This term is generally used to mean suspended animation, produced by the non-conversion of the venous blood of the lungs into arterial. Owing to the supply of air being cut off, the unchanged venous blood of the pulmonary artery passes into the minute radicles of the pulmonary veins, but their peculiar excitability requiring arterial blood to excite them, more or less stagnation takes place in the pulmonary capillaries, and death frequently occurs from this cause, and from the want of arterial blood, and not owing to the venous blood being distributed through the system and poisoning it.

Causes.—Whatever may prevent the renewal of air in the lungs from obstructions, external pressure on the chest, from injury of the pneumogastric nerve, injury of the medulla oblongata, fracture or dislocation of the spine in the cervical

portion, paralysis of the nerves of respiration, deficient irritability of the inspiratory muscles from cold, and suspended animation. The air may be prevented from entering the lungs by mechanical causes, as strangulation, submersion, foreign bodies in the air passages, vitiated atmosphere, deleterious gases.

Asphyxia from Drowning.—The first effect felt by a drowning person is an urgent feeling of anxiety in the chest, the pulse becomes weak and frequent, he struggles, rises to the surface, the pulse becomes weak, the respiration becomes less, the blood becomes more and more of a venous hue. Narcotic poisons acting thus on the brain produce insensibility, loss of voluntary motion, the surface becomes livid; the heart ceases to beat; the sphincters are relaxed; body sinks to the bottom.

Post-mortem Appearances.—Dilated pupils, clenched jaws, semi-contracted fingers and thumbs, paleness of the face, &c.

Prognosis.—Reanimation may be procured from five minutes to three-quarters of an hour after submersion.

Asphyxia from Poisonous Effects of Vapors, as burning charcoal, is generally due to the poisonous action of carbonic acid gas. The symptoms are, intense throbbing headache, with weight and heat, especially about the occiput, strong pulsations and tightness across the temples, vertigo, increased action of the heart, and often violent palpitation, confusion of ideas, partial failure of memory, nausea, hysteric sobbing.

The treatment consists in removing the patient from the vitiated atmosphere; place in a current of cool air, in a recumbent position; apply bottles of hot water to the feet, or stimulants, cold, to the head.

If the vapor is breathed for some time, the symptoms will be noise in the ears, partial or total loss of vision, disturbances of the senses.

Asphyxia from Strangulation.—The first effect of tightening the cord around the neck is the suspension of respiration and engorgement of the brain with blood, then sensibility decreases, epileptic convulsions come on, turgidity, suffusion and lividity of the face and upper part of the body, eyes open, features distorted, sphincters relaxed, hands clenched. If the air is not perfectly excluded, the sufferings are prolonged, engorgement of the head and brain greater. The action of the heart becomes more rapid as the death struggle progresses, and remains after the breathing ceases.

Cause of Death in Asphyxia.—The time required to produce asphyxia in an animal varies according to its physiological condition. The insensibility arises from the deficient supply of blood to the heart and brain, and in the blood not receiving

its quantity of oxygen. When unaerated blood circulates through the body, the action of the heart rapidly falls in strength and frequency till the movements are arrested; venous blood does not stimulate the heart to contract, hence the arrest of the movement of the ventricles; venous blood exerts a positively noxious effect upon the heart, and impairs its irritability.

Asphyxia depends upon accumulation of carbonic acid gas in the lungs, the want of oxygen in the blood, the natural stimulus of living tissue.

Treatment.—Artificial respiration should at once be commenced, then the cautious and moderate application of heat; but the heat without oxygen is powerless. Asphyxia depends upon the want of oxygen to the blood, and consequently the most important remedial measure is its speedy restoration, and this can only be effected by artificial respiration. Galvanism has been tried, but this agent cannot stimulate the heart to action, nor can external heat maintain the temperature of the body if the means of supplying oxygen to the blood be neglected. This is the grand point to observe. Having relieved these, then our attention should be directed to special symptoms. The anæsthesia depends on poisoning of the brain; the panting on respiration of carbonic acid gas; the gasping, upon poisoning of the spinal centres; hence, the importance of carrying patients into fresh air, loosing all the clothes, placing the patient in a comfortable situation. Electricity in the form of a chain battery wrapped round and round the body of the patient with one of the electrodes in each hand, I have found a good agent in stimulating a patient recovering from asphyxia. Otherwise, the treatment will consist in the cautious administration of stimulants and bland nutriment, rest and abundance of fresh air.

CROUP.

Under this term we usually class two different varieties of morbid action—the *first*, the *false*, *pseudo* or non-membranous, comprising under this head the *spasmodic*, *catarrhal* or *inflammatory* form; the *second*, the *true* or *membranous croup*.

1. In simple or inflammatory croup, loud, harsh and wheezing respiration, hoarse, croupy cough, sore throat, some thirst, nightly febrile exacerbations, we have a disease that is remarkable for the suddenness of its attacks. The little patient may retire well, and in an hour be disturbed from a sound sleep with all the alarming symptoms of *croup*, but the *suddenness* of its attack, and the cough bearing no resemblance to the metallic cough of real croup, will afford us a sure indication of its nature.

2. True or membranous croup is ushered in with the ordinary symptoms of catarrh, chilliness, sneezing, sore throat, hot skin, thirst, accelerated, circulation, hoarse voice, impediment in respiration. At an early period the false membrane or exudation may be detected on the tonsils, uvula and pharynx, which gradually increases in thickness and strength, unless the peculiar form of inflammation be arrested. Then as it progresses there is an alteration in the cough, which is attended with a peculiar ringing sound, inspiration prolonged, and accompanied with a more vivid, or crowing, or piping noise, redness and swelling of tonsils and uvula less marked than in tonsilitis, increased fever, breathing becomes more hurried and impeded, depression with weakness and irregularity of pulse. thirst, irritability and restlessness, features expressive of alarm or distress, patient grasps at his neck,or thrusts his fingers into his mouth as if to remove the cause of suffering, nocturnal exacerbations, remissions towards morning. As the disease subsides, cough loses peculiar twang, becomes moist, crowing inspirations become less, ultimately cease. If death is approaching, drowsiness becomes extreme, sleep is uneasy, child starts and wakes in terror, breathing becomes gasping, interrupted suffocation, congestion of lungs, skin cold, covered with a clammy sweat; death coming directly after an inspiration, asphyxia, coma, convulsions, or fatal dyspnœa from thrombosis.

Treatment.—Give aconite, asclepin and veratrum to keep pulse at 70°; then put the patient thoroughly uuder the influence of—

℞.—Sanguinarin, grs. xxx;
Lobelia, grs. xxxv;
Acetic acid, ℥j;
Simple syrup, ℥j.—*Mix.*

Keep away everything from throat, lessen the excessive heat of skin by warm bath and sponging every hour with the alkaline wash.

If the skin be dry, so that the above remedies fail to produce a moisture, wrap the patient up in a blanket wrung out of warm water, and cover all over with two or three dry blankets. If there seems to be a great distress from spasmodic contractions of the laryngeal muscles, belladonna, bromide potass., senega, inhalation of spray of acetic acid, dil., spray bi-chromate potass. of oxygen gas. Diet mild, hygiene thorough, moist atmosphere, never over 70°; control the circulation positively, never allowing it to exceed 70°, and depend upon the acetic acid and blood-root for the destruction of the false membrane.

HOOPING COUGH.

After a latent period of six days, with symptoms nearly analagous to bronchitis, including febrile symptoms, vomiting, and subsequently a peculiar cough, which is spasmodic, and occurs in paroxysms at uncertain intervals; for the patient may be apparently well for hours, until seized with a violent paroxysm of coughing, restlessness from coryza, heat of skin, oppression of the chest. As the fever remits, the cough assumes its peculiar shrill sound or hoop. The little sufferer soon learns when the paroxysm is beginning, and is frightened, and runs to its mother or nurse, or if at night, sits up in bed; a fit of coughing begins and lasts for several minutes. Series of coughs or powerful expiratory efforts, with scarcely any intervals of inspiration; at the close of which, air is taken in by force through the contracted glottis, making a hooping sound, whence the name of the disease. Immediately after the fit the patient regains courage, and soon appears well. The paroxysm terminates in vomiting. There may be several paroxysms a day, or even every hour. In some cases the peculiar hoops may be absent, but the peculiar paroxysmal character of the cough is pathognomonic.

Expectoration is often copious, thick mucus, lymph, and pus. Exhaustion is common, and often fatal. There is often great variation in the symptoms.

Its duration, without appropriate treatment, is seldom less than six weeks; with scientific treatment, a case will be terminated in two or three weeks; it lingers months in some cases.

The cause of the disease is some zymotic or fungoid poison, specific in its character, evidently affecting principally the cervical portion of the spinal cord and pneumogastric nerve. From the symptoms, this seems to be the main seat of its action. The expectoration and febrile symptoms show bronchial inflammation as merely a secondary result. It prevails sometimes as an epidemic. It is extremely contagious; occurs but once in the same person; most frequently met with in children, but this results merely from their susceptibility under exposure.

Treatment.—The indications are, warm clothing, flannel next the skin, nutritious diet, mucilaginous drinks, an equable temperature, daily salt water bathing, and then special remedies to remove irritation or congestion of the cord and pneumogastric nerve. Successful treatment here must be by special remedies to meet that one leading indication. If the case is not seen in its incipiency, an occasional emetic of an acetic syrup of lobelia and sanguinaria is excellent to relax spasm and unload the bronchial tubes from their mucous exudation, and small doses of the same might be useful to aid expectoration. But just so

as the spasmodic character of the cough declares itself, special remedies are indicated.

The following formula is of great value:

℞.—Comp. syr. lobelia, ℥vi;
Bromide potass., ℥j;
Bromide ammonia, ℥iij;
Bicarb. potass., ℥ij;
Tinct. black cohosh, ℥iij;
Tinct. calabar bean, ℥j,
Tinct. belladonna, gtts. xxx;
Hydrocyanic acid, dil., gtts. x.—*Mix.*

From half to a teaspoonful every three hours, all through the case. Its action, prompt, decided.

With these combinations we can cut short the disease. If they do not quickly succeed, give the tincture of macrotys in alternation with belladonna, and if that does not act very energetically, stramonium in alternation with hydrocyanic acid should be tried. The bromide may be relied on in any case, and should be held on to as our sheet anchor, and persevered with above all other remedies.

When hooping cough is treated with the above remedies, we seldom meet with those complications that are so common under other modes of treatment, because the bromide and belladonna controls bronchitis, removes congestion of the head; consequently, we have seldom hemorrhage from the nose, ears, eyes; positively subdues convulsions, absorbs effusion, and maintains nature in perfect harmony. Other remedies esteemed of value are:

Skunk cabbage, excellent, if the child is strumous or lymphatic.

Trifolium often has a wonderful effect in subduing the spasmodic cough.

Capsicum, if there is great depression; an improvement in all cases.

Coffee, excellent, if the paroxysms are attended with much suffocation.

Drosera, if there is great congestion.

Cochineal, if there is congestion of brain.

Nitric acid acts well, being a tonic, and supplies the blood with nitrogen; and removes or neutralizes the excess of fibrin.

In all cases friction to the upper portion of the spine, the application of belladonna, and even counter-irritation may be necessary. Tonics during the stage of convalescence, as cinchona, iron, phosphorus.

We cannot too strongly urge active treatment of hooping cough, in order to prevent emphysema of the lungs, thickening of the muscular fibres of the bronchial tubes, and dilatation of the ventricles of the heart, these being the most common

complications. Congestion of brain may also take place. Dietetics also are important; good nutritious food, especially after a fit of vomiting, flannel clothing; equable temperature; every whim gratified, so that no disturbance take place.

ASTHMA.

A nervous disease whose phenomena depend upon tonic contraction of the circular muscular fibres of the bronchial tubes. Paroxysms induced by direct or reflex mechanism, that is to say, the stimulus to contraction may be central, in the medulla oblongata, or it may be in the pulmonary or gastric portion of the pneumogastric, or in some other part of the nervous system, besides the vagus, and being transmitted to the medulla oblongata by incident is thence reflected by motor filaments.

Asthma has always at the root of it some central nervous irritation, or some peripheral source of it; it may be some latent miasma skin disease, or some organic affection of the chest; other causes are merely exciting causes, as moist easterly winds, atmospheric vicissitudes, electricity in the atmosphere, inhalation of irritating substances, as the aroma of new mown hay, malaria damp, variable climate, incompatability of the individual to the location or country or soil; non-acclimatization or incompatability to a country to which he is not indigenous.

Symptoms.—A fit of asthma is usually preceded either by headache or sleepiness, or by various digestive or other disturbances, as lassitude, pains in the head, back, limbs, loss of appetite, dry hacking cough, depression of spirits. The attack is ushered in suddenly during the night with a sensation of suffocation or constriction about the chest, urgent distressing dyspnœa, aggravated by the slightest movement, inspiration short and strong, while the expirations are long, labored and wheezing, great and rapid movement of the nostrils, countenance livid and bloated, indicative of great distress and anxiety, inclination to retain the erect posture, there is often an intense struggle for breath, the respiration very difficult as if from want of air; chest gets distended to the utmost limit, evidently some obstruction to the entrance and exit of air.

On auscultation, no respiratory murmur audible, but vibrating murmurs, loud wheezings, or shrill whistlings, pulse small and feeble, eyes staring, anxious countenance, lips purple, temperature of surface falls to 82° F., but after awhile the fatigue causes the skin to pour out a most abundant perspiration, and after a period comes relief, cough, with expectoration of little pellets of mucus; paroxysm ceases, and the patient sleeps.

During the interval between the attacks, average good health enjoyed, with quiet breathing. The general conformation of a patient afflicted with this disease is as follows: spare habit, nervous temperament, shoulders rounded, countenance indicative of suffering, cheek hollow, voice hoarse, cough. The interval between the attacks varies from twenty-four hours to twelve months. The disease, like all nervous affections, is often periodic, tenacious, or capricious. It is more common in men than in women. It is often hereditary. Asthma is usually uncomplicated when it is *idiopathic;* when it is *symptomatic* it is usually complicated with or symptomatic of some disease of the nervous system, or alimentary canal, or heart, or lungs, or skin.

Treatment.—If the patient is seen during the paroxysm, give a teaspoonful of the comp. tincture of lobelia every five minutes until relieved. Give an enema of the same to *relax bronchial spasm.* If this does not quickly succeed, give a ʒss bromide potass, and repeat, if there is no relief, in a decoction of eucalyptus globulus.

In the interval improve the general health by tonics, regular mode of living, use of cold shower or sponge bath daily, removal of dyspepsia and other diseases, food easily digested to be taken, then meet the case upon general principles.

The cause must in all cases be removed, the patient placed in a location compatible with his idiosyncracies, and the closest attention paid to the general health. Excellent results will be derived from such a prescription as the following:

℞.—Fluid extract rosin weed, ℥iv;
Bromide potass, ℥j;
" ammonia, ℥ss;
Tincture Calabar bean, ℥j;
" Cimicifuga, rad.,
" Belladonna, āā ℥j;
Hydrocyanic acid, dil., gtts. xjx.—*Mix.*

S.—One teaspoonful every three hours, for one week; then the same prescription might be continued, and the fluid extract eucalyptus substituted for the rosin weed.

The eucalyptus globulus is decidedly an invaluable remedy in asthma. It controls the most obstinate paroxysms; it even prevents an attack, and overcomes the spasm.

Lobelia, rosin weed and bromide potass are probably our best remedies in asthma, and they are specially indicated when the patient complains of a kind of prickly sensation through the whole system, where the nervous system is.

Pulsatilla and *belladonna* are good remedies where the disease depends upon derangement of the uterine organs. Chamomile is excellent where it has followed catarrh. *Depend upon the*

bromide potass and lobelia, and meet other indications by special remedies.

If the mucous membrane about the fauces, is relaxed, resort to an atomized spray of sulphate hydrastin. If digestion is weak, give cinchona and nitro-muriatic acid, or the following pill:

℞.—Hydrastin,
Sulphate quinine āā, grs. xxx;
Ext. nux vomica, grs. viii.—*Mix.*

Make 25 pills; one thrice, daily.

If it is periodic, strike in with the following:

℞.—Quinine,
Prussiate iron āā, grs. xii;
Gelsemin, grs. iij.—*Mix.*

Make 6 powders; one every four hours.

If the cause is disease of the heart, digitalis, cactus, &c.; if the cause is obscure, alteratives, with iodide potass, aconite, belladonna, stramonium, inhalation of oxygen gas. If great nervous irritability seems to exist, cypripedin, Indian hemp, &c.

The irritating plaster should be applied constantly to the cervical portion of the spine.

If there is great irritability, a subcutaneous injection of morphia is attended with decided good, a quarter grain to each injection.

I have derived excellent results by permitting the patient to sleep on a bed insulated from the earth, so as not to allow his electrical forces to become exhausted; simply placing pieces of glass under the feet, and removing it from the wall.

This disease exhibits no pathognomonic physical signs. There is no irritation of the nervous centres, often paralysis of the pneumogastric nerves, so the treatment indicated by pathology is to overcome irritation of the nerve centres.

EMPHYSEMA.

There are two varieties met with; one consisting of enlargement of air cells, atrophy of their walls, from fatty degeneration and otherwise, sometimes fibroid degeneration, a kind of interstitial death, involving a loss of the functions of elasticity and contractility in the tissue affected, extreme softness and delicacy very apt to cause the morbid condition; obliteration of the blood-vessels of the affected part. This form is called vesicular emphysema. The other variety is met with in the form of an infiltration of air into the interlobular areolar tissue, or into subpleural areolar tissue, generally caused by patches of the areolar tissue not having acquired its full power of resistance, or from having lost it by some morbid change, and this is called interlobular emphysema.

Hooping cough, asthma, permanent thickening of the circular venesecular fibres of the bronchi, sudden repeated inspirations, are the cause of the vesicular; whereas fractured ribs, &c., are the cause of the lobular. Both forms produce habitual shortness of breath, occasional paroxysms of asthma, difficulty of breathing and great distress, so that the sufferer is unfit for any active occupation, and also they frequently give rise to disease of the heart and dropsy.

Expiration is the most efficient cause of the dilatation of the air vesicles in emphysema, and the parts most frequently found affected are the apices of the upper lobes, and when we find it elsewhere, the apices and edges being free from it, it is due to the degeneration being local; it is an interstitial partial death, or degeneration of the pulmonary membrane, an abnormally friable tissue. This membrane forms the frame-work of the vesicles, loses its elasticity, and is determined to dilatation by the action of forced expiration.

In all forms of emphysema there is difficulty of breathing on the least exertion, feeble cough, expectoration of frothy mucus, dusky appearance, weakness of voice, stooping gait, loss of strength and flesh; the temperature of the body greatly diminished, remarkably weak and slow pulse, attacks of asthma, arrested secretions. Percussion reveals unnatural clearness and resonance. Auscultation gives indistinct vesicular murmur, or moist rale, same as in bronchitis. Heart sounds feeble; very frequently cardiac displacement; the affected side is unduly prominent and rounded.

The pathology of emphysema shows an increasing loss of vitality in the pulmonary membrane, so that the leading indication in treatment is to increase vitality.

Another point is the observance of the breathing. Expiration is the dangerous and injurious part of breathing, and especially forced and arrested expiration. The patient should carefully avoid all employments that strain the respiratory muscles; everything that makes the patient hold in his breath, such as lifting heavy weights, digging, rowing.

The treatment, then, is restorative, such as will restore vital power, so as to renew the pulmonary membrane, that it may form healthy elastic tissue. Those spots where the walls of the air vessels are broken away, where bullæ exist instead of vesicles, should be filled again with a new growth; may be considered hopeless; but where the form of the lung remains perfect, where the weakened or softened spot is still intact, we should not despair of rational treatment. The best medicine is the healthy blood of the patient's own body, and to make that blood healthy, and capable of making new material, is the rational aim of treatment. For this purpose creative arterial blood should be generated by invigorating diet and attention

to the digestive organs; warm clothing. Our best medicinal agents are phosphorus and glycerine, iron, hydrastin, cinchona; remedies that afford a molecular base to the growth of new tissue. No remedy is so deleterious as that terrible poison, alcohol; nothing is so injurious to degenerative tendencies.

Our next best remedy is lobelia, to diminish the action of the respiratory functions. It calms the distressing asthma. It should be given in moderate and graduated doses, and some alkaline solution with or after it, so as to neutralize acidity, which frequently prevents its acting promptly, or give it in the following form:

℞.—Pulv. green lobelia,
Sulphate quinine,
Ext. hyosciamus, āā grs. xxv.—*Mix.*

Make 30 pills; one every three hours.

Excellent. Stramonium, also, is very beneficial. Quinine has an effect in the same direction. Hydrochlorate of ammonia is often valuable.

If there is an unhealthy condition of the mucous membrane of the trachea and large bronchi, a few drops of turpentine or balsam copaiba have a very powerful effect as restoratives, to induce healthy action into diseased mucous membranes. In those cases a general alterative and tonic treatment should be persevered with.

Some patients are constitutionally liable to the peculiar degeneration that gives rise to this morbid condition. Patients of a leuco-phlegmatic temperament are most obnoxious to it, and in them the degeneration is rapid and acute, and if not checked by tonic treatment, proceeds rapidly to a fatal termination. In patients of a sanguine temperament, emphysema is not common: but if it does not occur, it is less likely to be benefited by iron and phosphorus than in the lecuco-phlegmatic.

BRONCHITIS.

Inflammation of the bronchial tubes is one of the most common forms of pulmonary irritation. It may be acute, sub-acute, or chronic; it may complicate the tubes of both lungs, or only a portion.

Acute bronchitis is a dangerous form of local depression, on account of the frequency with which the inflammation may spread to the vesicular substance of the lung. It is more frequently confined to the large bronchial trunk.

The most prominent symptoms are: fever; a sense of soreness or rawness over the affected part; tightness or constriction of the chest; hurried respiration, with a wheezing or rasping sound; severe cough, and at first no expectoration, subse-

quently free expectoration; at first simply mucus, latterly muco-purulent matter; the lungs are clear on percussion from top to bottom; the pulse rapid, but feeble; tongue coated white; malassimilation; heartache; lassitude; sickness; great anxiety.

Inflammation of the large and medium sized bronchial tubes is attended by less severe symptoms, and is not so fatal as inflammation of the smaller branches, or the termination of the bronchi. This latter form is termed general capillary bronchitis, and is very common in the young or old, rare in adults; it is generally recognized by its tendency to produce asphyxia, by paroxysmal attacks of dyspnœa or orthopnœa, congestion of the surface of the body, cough, irritability, and restlessness. The patient cannot lie down; urine scanty, high-colored, and its specific gravity greatly increased, with traces of albumen; the pulse is regular, but feeble, from 120 to 150; prostration rapidly increases, and we may have anasarca of the feet and legs; while in a more serious class of cases there may be somnolence, muttering, delirium, causing death, a complication greatly to be dreaded, and extremely likely to be brought about by excitement, sudden inspiration, &c., &c. During the process of the inflammation lymph is effused, which is liable to choke up or plug the tube, which, upon a deep inspiration, is liable to descend, and effectually blocks the passage of air into a portion of the lungs. The moment that this occurs, the proper function of the lung is lost, collapse takes place, which is rapidly followed with congestion.

The modus operandi is as follows: Lymph is effused in the bronchi; an inspiration of deep or sudden character drives it downwards; deeper and deeper it goes every inspiration to a narrower point, and thus effectually corks it up; the position of lung beyond becomes collapsed; in rushes the blood, giving us lobular pneumonia, often complicated with emphysema.

On practising auscultation in the early stage of acute bronchitis, before any effusion has taken place, two dry sounds will be generally heard, viz., *rhonchus* and *sibilus;* the former over the large trunk, the latter over the small branches. These sounds are dry, rasping, and indicate that the tubes are narrowed by congestion, that the mucous membrane is swollen and dry. As rhonchus belongs to the large trunk, there is usually no danger; but as sibilus belongs to the small branches or bifurcations and air vesicles, it bespeaks danger. After a time, the inflammation terminates in an effusion of mucus, serum, lymph, a viscid, clear, tenacious sputum, which constitutes the second stage. In this way the rhoncus gives way to large crepitation, the sibilus to small crepitation; more properly speaking, moist rales or rattles. Those sounds are produced by the air passing down the bronchial tubes getting mixed with

the effusion, so that numerous air bubbles keep forming and bursting.

The diagnosis of acute bronchitis is very easy; the fever, sense of soreness and rawness; the stage of congestion, dry in the large trunk, rhoncus, same stage in the branches, sibilus; where effusion takes place in the large trunk, large crepitation; when this takes place in the bifurcations, small crepitation; on percussion, lungs clear from apex to base; no appreciable dullness, unless some of the tubes are corked up with plastic lymph, and collapse and lobular pneumonia present.

The prognosis in all cases is good, provided relief can be afforded. That is, free effusion, copious expectoration by proper remedies; if this is not accomplished, the strength is apt to give way, pulmonary congestion comes on, asphyxia, terminating in death. In favorable cases, the inflammation abates about fourth or fifth day; either terminates in resolution, or passes into a subacute or chronic form, under which recovery is good.

Treatment.—As soon as this affection is discovered to exist, the greatest possible attention should be paid to the following points: An alcoholic vapor bath; open the bowels with a saline purge; perfect rest in recumbent position in bed; temperature of room from 65° to 75° moist; dry cup over the affected bronchi; then apply poultices. Give a mixture of tinctures of aconite, gelseminum, and veratrum in doses sufficient, and repeat frequently, so as to maintain the circulation at about 70, such as the following:

℞.—Water, ℥vi;
Tinct. aconite fol.,
Tinct. veratrum viride,
Tinct. gelseminum green rad., āā ℥j.—*Mix.*

Teaspoonful doses.

In connection with the above, the patient should be kept in a relaxed state with green lobelia and blood-root in decoction, so as to favor a copious exudation from the bronchial mucous membrane. Diaphoretic teas of asclepius or boneset.

The patient should be permitted to drink freely of mucilaginous drinks, as flaxseed tea or decoction of marshmallow, so as to aid nutrition in depressed mucous membrane. Diet, beef tea, milk, and lime water.

Inhalations of warm water medicated with ammonia or potass.

Irritability and sleeplessness must be alleviated with

℞ —Pulv. opii., gr. ¼;
Beach's diaphoretic powder, grs. v;
Asclepius, pulv., grs. x.—*Mix.*

Make a powder; repeated as indicated.

The stage of convalescence is to be established upon tonics good diet, and bronchial stimulants, as follows:

℞.—Syr. scillæ,
Syr. senega,
Syr. ipecac,
Syr. prunus virg., āā ℥j;
Chlorate potass, ʒij;
Hydrocyanic acid, dil., gtts. x.—*Mix.*

Teaspoonful every three hours; or the following:

℞.—Muriate ammonia, ℥viii;
Chlorate potass., ℥xvi;
Alum pulv., ʒij;
Capsicum, ℥j;
Blood-root, ℥j;
Gum arabic, ℥vi;
Sugar, white, lbs. ij;
Water, two quarts.—*Mix.*

Dose.—A teaspoonful, as indicated.

Chronic Bronchitis.—This may be a sequel of an acute attack, or it may come on itself in patients of enfeebled vitality or old age. The milder forms are indicated simply by incessant coughing, some shortness of breath, copious expectoration, slight soreness or rawness over the affected part. These symptoms are aggravated by cold or wet, always worse in winter.

There are a number of varieties of this form of inflammation, as bronchitis senilis, a form occurring in the old, and dependant upon the natural process of decay incidental to that period of life. Its true character in a large percentage of cases is a subacute attack of general or capillary bronchitis, the symptoms being violent catarrh, excessive exudation of puriform mucus. In other cases fever and catarrhal symptoms are mild at first, but subsequently become aggravated, and often a tendency to asphyxia, prostration, and death, in some cases even unsuspected.

Mechanical bronchitis is caused by the inhalation of particles of dust or foreign bodies, which irritate the tubes. This form is common in certain trades, as miners, grinders, factory operatives.

Bronchitis also may depend on some blood disease, as gout, rheumatism, syphilis, mercury, tubercle.

There is also a variety termed plastic, from the fact that there is a rapid, profuse exudation of lymph, thick, ropy, more common in the plethoric.

In the diagnosis, the greatest care should be exercised to distinguish bronchitis from bronchial phthisis.

Treatment.—This will necessarily depend a good deal upon the age and constitution of the patients. Most cases are bene-

fited by a general alterative and tonic treatment, counter-irritation, best of diet, and special remedies adapted to the cause.

The special treatment will consist in administering stimulants, expectorants, and astringents, so as to stimulate a renewal of life in mucous membrane.

To elaborate red blood, the best of diet, and teaspoonful doses of the following before meals:

℞.—Comp. tinct. cinchona,
Simple syr., āā ℥iv;
Nitro-mur. acid, ℥ij;
Dil. hydrocyanic acid, gtts. x.—*Mix.*

As an alterative, comp. syr. stillingia and iodide potass.

External stimulants over the chest, inhalation of carbolic acid; to build up the nervous system, comp. syr. hypophosphate of lime, soda, and iron.

Capillary Catarrh.—Consists in a relaxed condition of the bronchial mucous membrane, with a follicular degeneration, and it is important to discriminate between this and chronic bronchitis. The dyspnœa and muco-purulent discharge is usually greater, and there is an entire absence of soreness and rawness.

Moist warmth, outward and inward, is a powerful restorer of the arrested circulation and mal-nutrition. The patient should breathe hot vapor, as this limits the supply of oxygen to the lungs; a normal amount of oxygen can do no material harm in health, but even a normal amount, or an excess, is injurious to tissues in a state of partial death. Otherwise, the same treatment as chronic bronchitis.

PNEUMONIA.

Inflammation of the substance of the lungs is predisposed to, by intense nervous depression, debility, or exhaustion.

The exciting cause is usually the depressing effect of cold, damp, exposure, vicissitudes of heat and cold, inhalation of irritants, or mechanical violence. The usual mode of seizure in the United States is depression of the large aerating surface of the lower lobe of the right lung.

It may remain there, or proceed over to the left lung, and then proceed upwards. In all conditions the lungs become engorged from below upwards.

Pneumonia may be met with in the following forms: *acute*, sudden in its seizure, and attended with fever; *sub-acute*, of the same character, but the vital forces of the patient being vigorous, resist the local irritation, consequently there is no fever; or *chronic*, which may be a sequel of either of the former, or come on of itself, from slight irritation in patients whose constitutions are feeble.

It may be *lobular*, simply attacking one lobe; or it may be *single*, involving one lung; or it may be *double*, when both lungs are affected; it may be *pleural*, when the violence is applied from without; when pleura and lung are both implicated; or it may be *typhoid*. In this condition of nervous depression the body is capable of generating within itself a special germ, which gives rise to typhoid symptoms, or, in other words, typhoid fever following as a sequel of pneumonia. The symptoms that are usually present are first a shock, which may last a few hours or a few days, followed by rigors, and if of the acute form, a fever or pain in the head, back, calves of the legs, general derangement of the secretions, high heat, frequent pulse and respirations, breathing difficult or oppressed, chiefly bronchial; flush on cheek or cheeks, corresponding to the lung affected; dilated nostrils, tongue rapidly becomes covered with a brown coat, coma or delirium often present, due to an imperfect aeration of the blood, great distress, difficulty of breathing, rusty or brick-dust colored sputum, an exudation or hemorrhage of blood; if a typhoid condition take place, the tongue will take on a buff leather appearance, very dry or patchy, or it may become red like a piece of raw beef, and the pulse, which was full and bounding at first, becomes small, wiry, frequent, bowels usually constipated; but if typhoid symptoms threaten, diarrhœa, urine scanty, high colored, loaded with lithites and phosphates; on percussion, dullness over the base of the lung, proceeding upwards; on auscultation, moist rales, small and large crepitation if pleura is involved, friction sound, great lividity of the features, extreme anxiety, great depression, general distress, and difficulty of breathing, becomes greater when gray hepatization takes place, rigors, profuse sweats, prostration, expectoration of pus, thick, ropy, tenacious. The duration of pneumonia varies from two to three weeks if acute, longer if of the sub-acute or chronic form. It may last an indefinite period of time; it is very prone to terminate at any time in ulceration of lung structure of phthisis pulmonalis.

The following may be enumerated as the different stages of this affection, viz: the stage of infiltration, or infusion of serum, lymph and blood in the substance of the lungs. This stage takes place early, and is succeeded by what is termed the second stage, in which the lung is perfectly infiltrated with the products of inflammation, and is termed red hepatization, from the fact that the substance of the lung resembles a liver; solidification is perfect, the lung not permeated with air. This terminates usually in the acute form in from one to two weeks, in the blood and lymph which has been infused breaking down, and forming and constituting pus. This stage is called grey hepatization, or abscess proper. Prior to or co-existing with this there is apt to be generated within the body a typhoid

germ, elaborated during the stage of nervous prostration, which gives rise to typhoid symptoms.

Imperfect oxygenation of the blood may give rise to delirium, coma, convulsions, apoplexy, cardiac disturbance; hence the livid appearance of the face, hands, blue lips, rose-colored spots, eyes bloodshot, showing that the hematin of the blood is poisoned.

The lungs being extremely vascular in their substance where consolidation by lymph does take place, their proper connective tissue is apt to be destroyed or impaired; consequently, resolution is rare.

Our prognosis of all cases (if not seen in the first stage) and the treatment of the most rigid description, should be very guarded, and, as a general rule, unfavorable if the second stage has taken place.

The appearances after death are either great congestion, infiltration (red hepatization); blood thick, clotty, black; brain, heart, liver, spleen, kidneys congested. In pneumonia a true vital organ is smitten, and as far as red hepatization extends, destruction is total. A consolidated lung cannot aerate the blood, a process necessary to animal life. The amount of tissue involved in all cases is important, and also the rapidity with which we can check its progress into fresh parts; hence the importance of energetic treatment.

Treatment.—As soon as the disease is recognized, the patient should get an alcoholic vapor bath, and be put to bed, the temperature of the apartment kept between 65° and 75°. Then active cupping should be resorted to over the consolidated lung, followed by flaxseed poultices. The action of warmth and moisture on the affected tissue tends directly to increase its vitality, as is shown by diminished dyspnœa, the breath being drawn more easily, even intercostal movement can be detected. The poultice should be made of linseed meal, because it keeps moist longest, and should be fully half an inch thick, spread on flannel sufficiently large to cover the affected part, and should be covered over with oiled silk; the poultice should likewise be changed every three hours, and persevered with until the termination of the case. Cupping may be repeated for a few days if necessary, and at the same time the patient should be put under the influence of the tinct. of veratrum viride, prepared from the green root.

This form of veratrum stimulates brain-force; it checks the current of the circulation, so that when passing through a weakened tissue, effusion cannot take place. A balance is maintained, a heart controlled; it checks the progress of inflammation into fresh parts; its action is decided. Begin at first with small doses and increase; it should be persevered with until the contractions of the heart reach 65 per minute.

It is a condition that brooks no delay, so that a few drops should be administered every ten minutes, until this equilibrium is established and a relief of every symptom. The patient should be kept carefully under the influence of this drug.

Quinine in solution should be administered in all cases, never less than one grain three times per day, but if the patient can tolerate it, much larger doses are admissible. This drug stimulates nerve centres, aids in elaboration of red blood, and prevents the destructive metamorphosis of red corpuscles and hematin. Opium is indicated in all cases, to allay irritability, to blunt the impressibility of nerve centres; it is best given in either of the following formulas:

℞.—Opii, pulv., grs. v;
Beach's diaphor., pulv., grs. xxx;
Asclepias, pulv., ʒij.—*Mix.*

Make 10 powders. One as indicated.

Give as indicated, or a solution of sulph. of morphia in proper doses. Diet should consist of milk and bicarbonate of potass., and beef-essence. Eggs and oysters should be rigidly forbidden, as the albumen undergoes decomposition in the stomach. Hydrosulphite of ammonia is formed and aids in the formation of the typhoid germ.

Alcohol, especially in the form of wine, is very useful if there is tremor of the hands, quivering of tongue, or delirium; besides it has a tendency to arrest the rapid waste of structure.

The position of the patient in bed is of importance; change so that the blood does not gravitate to any one point. Purgatives are never admissible, because under the condition of vital depression present in pneumonia, there is a tendency to generate within the body itself the typhoid germ, which is apt to produce intestinal disturbance. Some preparation of ammonia is indicated; it serves to maintain the normal fluidity of the blood, and to prevent corpuscular death.

Antiseptics should be administered in all cases, as they tend to prevent the formation of the poison in the stomach. Tablespoonful of brewer's yeast morning and afternoon, or some other good antiseptic, as hydrochloric or carbolic acid. The action of hydrocyanic acid is salutary, and should be given as follows:

℞.—Scilla, syr.,
Prunus virginiana, āā ʒij;
Hydrocyanic acid, gtts. xv.—*Mix.*

A teaspoonful every three hours.

Cough must be allayed; every symptom carefully watched; patient bathed three times per day; bottles of hot water kept at feet; temperature of room carefully regulated, thoroughly saturated with moisture so as to diminish the amount of oxygen in the air, which is an irritant to inflamed surfaces.

The only successful method of cure consists in aiding the vital forces of the part to regain its natural condition. This, at the present, consists of the following items.

Cupping over the affected part freely, and then keep the chest enveloped in a jacket poultice, and as little movement as possible. Give tinct. of veratrum energetically, quinine liberally; administer food frequently and in a liquid form; when the nervous system is greatly prostrated, give alcohol; if there is irritability, give opium; if there is diarrhœa, arrest it immediately with opium and tannin; all through the case antiseptics.

PLEURISY.

Inflammation of the pleura, runs either an accute or chronic course, being either partial, or involving the whole pleura. It is generally ushered in with a chill, followed by fever, and an acute, lancinating pain in the side, called a *stitch*. Pain aggravated by motion, as inspiration, coughing, lying on affected side, pressure; cough harsh and short; skin dry and hot; temperature varying from 102° to 105°; cheeks flushed, pulse hard and quick, respiration increased, restlessness, anxiety, scanty and high-colored urine.

The deficient elevation of the ribs, in breathing, with friction sound, which is caused by the dry and inflamed pulmonary and costal surfaces of the pleura rubbing against each other. This friction sound is often felt on applying the hand to the affected part. This sound is usually detected from the second to the fifth day; it ceases as resolution takes place, when the two surfaces become moist and smooth; or when the surfaces become adherent, the exuding lymph, forming membraneous bands between the costal and lung pleura; or when the surfaces become separated by effusion, when we have hydrothorax; or when pleurisy terminates in suppuration, when we have pus accumulating in the cavity of the chest, as in empyema.

Whatever the form of the effusion may be, there will be a dullness on percussion. Auscultation detects a diminished respiratory murmur. We sometimes meet with a form of latent pleurisy, with no pain, cough or dyspnœa, and effusion will take place if the powers of life are low.

Pleurisy may, in nearly all cases, be aborted in its early stage by appropriate treatment, which should consist of perfect rest in bed, an avoidance of talking, or of full inspirations, so as to prevent undue friction; dry cup over seat of pain, followed with a linseed poultice. Continuous warmth is a direct agent in our hands of vital development; it not only fosters vital growth, but makes that growth take a higher grade of life. Warmth and moisture raises and restores the part to its normal force and development. A roller from the axilla to the bottom

of the ribs. The hot poultice should be kept on till all pain is gone; until the patient can breathe freely. Before beginning special, positive treatment for pleurisy, give an aperient of citrate of magnesia. Then the following every hour until the pulse has reached 70, and temperature diminished to 98°, and pain abated:

R.—Tinct. veratrum,
" gelseminum,
" aconite, āā gtts. iij;
Fluid extract asclepias, ʒi.—*Mix*,

and continue until febrile symptoms are entirely allayed. If there is great restlessness, give hyoscyamus, opium and asclepias. Tonics and good diet are indicated during convalescence.

With this simple treatment I never fail to check pleurisy in its early stage, and never have the trouble of treating its complications, which so often exist under the old mode of practice.

The leading idea in our treatment is, inflammation must be subdued, and a restorative plan of aiding nature adopted.

In the subacute or chronic form, active local stimulation with rest, opium and asclepias.

In the chronic form adhesions with membraneous bands is common.

These cases, however obscure, are easily recognized by the catching pain in movement, as raising the hands or movements sideways. These cases require the application of the irritating plaster locally, kept on continuously, spread fresh daily, and the use of alteratives as comp. syr. stillingia, with iodide potass—a general alterative and tonic treatment. If pleurisy does not terminate in resolution, or adhesions, there is a strong tendency for the inflammation to terminate in effusion of serum, which constitutes dropsy, or adhesion, and these might exist together.

The successful treatment of chronic pleurisy involves a union of alteratives and tonics; we must change the habit of the system and construct as well. The irritating plaster produces a powerful disorganizing effect upon effused lymph.

PULMONARY CONSUMPTION.

A diseased condition of the blood, dependent upon an impairment of the brain or nervous system. If the nerve centres are feeble, we have an impaired or degenerated condition of the blood, because that system entirely controls organic life and the elaboration of that fluid. An exhausted nervous system causes the manufacture of a large amount of white or albuminous blood, and gives the patient a predisposition to the formations that affect this, which, if any irritation exists in any part of the body, is liable to be effused, and, once thrown out, its watery

portions are absorbed, and its more solid constituents aggregate together and form tubercles.

This condition may be hereditary or acquired. If it does exist, we are liable to have it effused on the brain if there is irritation there; in the lymphatics, if they are irritated; in the mesenteric glands, if there be excitement there; in the lungs, if we have a determination of blood there; some inherent weakness of the structure of a part, and something that will cause an excess of blood there, so that the albuminous product be thrown out; hence the frequency of exudation in the left lung, from the presence of the heart on that side. By preference, this effusion takes place, in nearly every case, on the apex of the lungs, and it is remarkable that, so long as this tubercular effusion is taking place, the temperature of the body is high.

Pulmonary consumption is usually ushered in with a general loss of flesh. It is an early symptom, and a very persistent and remarkable one. It generally takes place before there is any cough or expectoration. The remarkable emaciation is due to a deficiency of nerve force, imperfect digestion, and malassimilation. Excess of waste in the later stages may hasten the progress of these symptoms. There is a gradual loss of hair, protuberant eyeballs, clubbed nails, and a delicate skin, easily raised from the subcutaneous structure beneath, brought about by the deficient assimilation, the wasting, &c. There is also a general derangement of the system, capricious appetite, furred tongue, acidity of the stomach, and a variety of dyspeptic symptoms, which evidently depend upon a want of nervous supply.

The properties of the blood are dependent upon perfect digestion, and if this is not attainable, a still worse condition is brought about.

The cause of phthisis is an impaired vital force, either hereditary or created by a vitiated atmosphere, changeable climate, unhealthy occupations, absence of light, want of food, incompatibility, or any depressing influence. When once imprinted on the human organism, impoverishment of the blood, exudation into the lung, albuminous at first, tubercular afterward, and owing to the softness of those tubercular patches, ulceration and destruction of the lung.

No period of life is exempt from this terrible scourge, and to cure it there are four points that must be embraced in a truly curative treatment; we must improve the centre of life, the brain and nervous system, establish a healthy condition of the economy, subdue local irritation, and avoid everything that will deteriorate.

Although we believe the primary cause of consumption to be a deficiency of brain structure, a defect in the organic nerve cell, we know that it is a condition easily remedied with scien-

tific treatment. Thousands of ignorant physicians believe that the cause is a particle of some foreign matter or parasite inhaled into the lung structure. Others, again, believe that it is a disease of the pancreas, caused by a deficiency of the pancreatic juice to digest the fatty portions of the food in the duodenum; hence the patient dies or starves for want of fat in the system.

Those two latter theories can easily be refuted. If it was caused by a parasite, why did it not exist in all ages of the world, and in all nations?

The insufficient amount of pancreatic secretion can be easily explained on the principle of a deficiency of life in the fountain head, the brain. All the organs must suffer when there is a lack of power in this organ. Hence indigestion, torpid liver, impaired function of the skin, obstruction of the kidneys, &c.

A more intelligent class have endeavored to explain the primary condition as being confined to the stomach.

Now, when there is weak digestion, food is retained a long time in the stomach, fermentation takes place, and acids are formed. These act as depressents, impairing the elementary molecules of the blood, rendering it feeble in all the essential elements of life; hence the body is imperfectly sustained, and disease commences its ravages. We claim that in ninety-nine cases out of a hundred the first cause exists in the brain. The effect of brain depression is this morbid condition of the stomach. The true condition, then, we believe to be a deficiency of brain elements, a want of more nerve force, an exhausted condition of that tissue, and vitality of the nerve cell. Believing in this theory, what do we find in the poor unfortunate sufferer? We find a feebleness of vital force; every structure, every tissue of the body is destitute of nerve vigor

The symptoms of phthisis are, debility, loss of appetite, dyspeptic symptoms, cough, hæmoptysis, expectoration, accelerated pulse, fever, difficulty of breathing, loss of flesh, sweating, diarrhœa, weakness of voice, or hoarseness, dull, aching pain under clavicles, cough and expectoration at first is dry and hacking; but when the tubercle softens, it becomes moist and more prolonged; if there is an excavation, it is hollow, reverberating. The cough is spasmodic, brought on by exciting the branches of the pneumogastric nerves, and causing reflex movements in the bronchial tubes. The expectoration of a dry cough is first scanty and muco-purulent, and subsequently copious and purulent. When it occurs in round, viscid masses, it is brought up from pulmonary excavations. An excellent mode of examination by the microscope, for the purpose of detecting lung tissue, is as follows: liquefy the sputa by boiling them with a solution of soda, and then place them in a conical glass; any elastic tissue present then sinks to the bottom, and can be picked out for examination. Extremely minute portions may be detected

in this way. Improved nutrition is the best mode of arresting the cough.

The loss of appetite is a most important symptom, because it interferes, more than any other, with the nutritive process, and any acidity should be rectified, for, if it remains, it exercises a most deleterious effect on the elaboration of the blood.

Nausea and vomiting are occasioned by the propagation of reflex actions of the par vagum to the stomach.

The diarrhœa is often due to the deposit of tubercle and ulceration of the intestinal gland. The hæmoptysis, in the early stages, is due to the softening of some tubercular patch over some bloodvessels; in the latter stages it is due to the ulceration of a large vessel.

Sweating is but a symptom of weakness. Febrile symptoms are very marked; pulse quick, general excitement, vascular distention, resulting in exudation and absorption, nervous irritation, and increase of fibrine in the blood. This febrile condition is a well marked symptom, and together with the rise in temperature, forms one of our most reliable points in diagnosis.

There is a continued elevation of the temperature of the body in every case where tubercular matter is thrown out, and this elevation is due to the deposition of tubercule in the organ. The temperature may be taken as a measure of the amount of the tuberculosis and tuberculization, and any fluctuation in temperature indicates corresponding fluctuation in the disease. This is a most accurate mode of diagnosis; with the thermometer, we can often diagnose phthisis before any dullness can be detected. We can also tell by the thermometer, the moment when the deposit has ceased or is being absorbed. A small amount of tubercle thrown out will raise the thermometer to 101°, and when an ordinary amount is being thrown out, 102°.

Debility, despondency, anxiety, emaciation, are all well-marked symptoms; urine contains a large excess of chloride and phosphate.

Physical Signs.—The earliest are, a sinking in under the clavicle upon the left side, with prolonged expiratory sound; defective expansion of upper and front part of the affected side; dullness on percussion, with blowing or bronchial respiration, and increased vocal resonance and vibration; dry crackling follows, with mucous or coarse crepitant rale; in a more advanced stage, great depression below the clavicle, flattening of the whole of the affected side, retraction of intercostal spaces, gurgling cavernous respiration.

Stages.—These are, incipient phthisis, where we have merely albuminous exudation; the stage of consolidation of the lungs; that of softening or excavation, and advances or confirmed

consumption. It may be complicated with bronchitis, pleurisy, asthma, &c.

This disease is one of the most destructive of all maladies, although, under good hygiene and medical treatment, it is sometimes amenable to treatment, and the most favorable circumstance that can take place is the arrest of the local disease by removal of its constitutional cause. The citatrization of vomicæ, and the cessation of the tubercular deposit have been found to occur, and so have the cornification and calcification of unsoftened tubercle.

The above description applies to the largest number of cases in which effusion takes place into the substance of the lung; but we occasionally meet with cases where tubercle is thrown out on the mucous membrane of the bronchi; when this is the case the substance of the lungs may be clear from top to bottom, still hoarseness or loss of voice, with violent hæmoptysis, will lead us to a correct diagnosis; an excellent division in those cases would be to designate the latter acute consumption, the former, that is, where it is effused into the substance, chronic.

In the treatment of consumption, if we wish to cure at all, we must leave the lungs alone, and direct all our attention to the organs of nutrition, the digestive system, in order to get the greatest possible amount of albuminous food fully digested, and applied for the purpose of building up the body, toning up the vital forces, so as to obtain a healthy cell renewal. The appetite should be our greatest care, our battle-field for a cure, and the mucous membrane of the stomach and bowels should be braced up by hydrastin, nux vomica, cinchona and phosphorus. These remedies are reliable, act quickly, and give permanent effects. An important part to observe, in the treatment of all cases, is to thoroughly subdue the excited heart, the febrile condition, with digitalis and aconite. If this is observed, no effusion takes place, but cicatrization is the result. Acidity is invariably the type, and a moderate use of alkalies is indicated.

Flannel clothing is important, also exercise in the open air; free ventilation, daily bathing, and after the patient has been well dried and rubbed, follow with an inunction of olive oil. This should be performed daily, it promotes nutrition, aids in construction of the broken down body.

Iron is a powerful ally; the increase of the hæmatin of the blood that follows its use is all-important, for we give the entire tissues of the body true life-giving medicine-red blood; pyrophosphate of iron give, to control the excited circulation of 90° or 100°; and also, to stimulate the absorbents, give it with a few drops of digitalis. But the patient should not be worried nor disgusted with medicines; if anything depresses, it will do harm.

Cod liver oil has had great repute in the treatment of pulmonary consumption. Now, the only property this oil has over glycerine is, that it contains a small amount of iodine and biliary matter. As a pleasant substitute, I give the following to all my phthisical patients, with the greatest success:

R.—Glycerine, Oss;
Acidum phosphoricum, dil., ℥iv;
Tinct. iodine, ℥j.—*Mix.*

A tablespoonful twice daily, and six grains of fresh ox-gall at bed time. It is an excellent base for molecular growth; a life-giving element, so that under its influence, the whole body becomes regenerated; the abraded lungs heal up; the debilitating discharges ceases; the pulse slower, firmer; the skin more natural.

Alcohol in some is useful, in most cases preventing metamorphosis, given in small quantities, not enough to produce excitement. Really to do good, the stimulant should not quicken the pulse, flush the face, or be felt in the head. We must remember that under its use renewal of tissue goes on slower. When given let it be in milk.

If the repugnance to eating be extreme, milk diet is highly advantageous, and if the milk does not agree well, give it with lime water or phosphate of soda. Beef tea, or essence of beef is very useful when digestion is weak, and should be given in every case where it agrees with the patient. A most excellent plan is to combine the white of egg, brandy and beef essence.

The phosphates and hypophosphates of lime, soda, and iron, have been well-tested, but do not even yield us the good results of phosphorus. There is, probably, no better remedy in the whole range of medicine so well adapted to phthisis as phosphorus.

Hygiene is of the greatest importance, nearly as great as the improvement of nutrition; a fresh and abundant supply of pure air; daily exercise, but never to fatigue; an equable temperature, warm clothing, as flannel next the skin, so as to equalize and keep up the temperature, and prevent sudden changes. The greater portion of the time should be spent in the open air; cleanliness is highly important; daily sponging with salt water, friction to the surface with a flesh-brush; change of air and scene. Special symptoms should be promptly met with properly selected remedies.

If there be hæmoptysis, gallic acid, perchloride of iron, chloride sodium, lycopin, erigeron.

To relieve cough, give senega, scillæ, ipecac, tolu and narceine.

If there is palpitation, aconite, cactus, digitalis, hydrocyanic acid.

To check night sweats, give aromatic sulphuric acid and quinine, crawley, or the following powder; every two hours:

℞.—Soda, bicarb., grs. viij;
Sulph. flor.,
Bismuth, subnit., āā gr. i—*Mix.*

It is contra-indicated where there is a tendency to diarrhœa, mineral acids.

To check diarrhœa, neutralizing mixture and gelsemin, logwood, quinine, geranin, opii, bismuth.

To aid in the absorption of tubercular matter, iodine, bromide potass.

To secure sleep, give narceine.

Inhalations have been quite extensively tried and used, in some instances, with success. Iron may be used in hæmoptysis; iodine or iodide potass., if we desire to promote absorption; carbolic acid, if we want to arrest destruction. To soften tubercular deposits, hyphophosphate of potass.

The warm atomized fluids are best adapted for this disease, remedies used to suit peculiar conditions.

Any remedy that aids nutrition, nourishes the body, diminishes the cough expectoration and sweats, and checks the fresh exudation of tubercle, is of utility; acidity of the stomach should be neutralized, and some preparation of cinchona, given so as to elaborate red blood. Stimulation over the affected lung is always judicious, and if a germ theory can be established for the disease, inhalation of carbolic acid. A moist atmosphere like Florida is of service, because the oxygen is diminished. There is probably no treatment so destructive as an excess of oxygen, or inhalation of oxygen gas.

CANCER OF THE LUNG.

This condition is rare, but when met with, it is usually of the medullary form. The symptoms at first may be obscure, still pain *anterior* and *posterior*, is an excellent guide, with a cachexia, bronchial and lung affections. Treatment avails but little.

PERICARDITIS.

The heart and its appendages are subject to various morbid conditions, the most common being pericarditis.

This consists of an inflammation of the fibro-serous covering of the heart. It is a local affection, depending either upon the presence of lactic acid in the blood, rheumatism, or some local irritation. Three forms: acute, subacute, chronic.

In the acute form, fever and pain radiating from the heart; tenderness on pressure in the cardiac region; accelerated, irregular or oppressed, rapid and feeble pulse; anxiety or delirium; nausea and vomiting in some cases; short, hacking cough; and

toward the close, coldness and pallor, or lividity, œdema of the face and extremities, loss of pulse. There are usually three stages, acute inflammation, adhesion, and effusion.

The physical signs of pericarditis are all important; in the early stage, before adhesion or effusion, intensification of the heart's impulse, sensation of friction communicated to the hand; regular friction sound, the same as the rubbing of two pieces of brown paper against each other; if effusion has taken place, extension of dullness over the heart, with a muffling of the heart's sounds. Friction sounds are attended or preceded by valvular murmurs; they disappear when effusion takes place.

Pericarditis can seldom be mistaken for either pleurisy or endocarditis. It is true the friction sounds occur in both, but they are nearer to the ear when the pericardium is affected. They are more limited also; not passing along the vessels, they do not keep time with the cardiac sounds. The friction sounds of pleurisy are more diffused, and are single, not double; and the dullness extends further over and around the side.

In the subacute or chronic form, cutting pains about the heart.

Treatment.—This should be vigorous; all the secretions should be well stimulated; diaphoretics, diuretics, saline cathartics. Then the patient should be put to bed, diaphoresis excited. The impressibility of the nervous system must be blunted to pain with opium, which should be given freely, the patient kept in bed, enjoining the most perfect rest; keep the temperature of the room at 70°; then give the patient the following every hour until relief is experienced:

℞.—Tinct. digitalis, gtts. iij;
Bitartrate potass., grs. x;
Nitrate potassa, grs. ij.—*Mix*,

and dissolve in water.

Cup and apply stimulants over the region of the heart, then apply a belladonna poultice; give some preparation of potassa as a drink, bicarbonate, bitartrate, or chlorate. A vapor bath is always attended with good results. Sleep should be induced with compound tinct. serpentaria; mustard might be applied to the limbs.

If effusion has taken place, the usual treatment consists in the use of tonics, diuretics, mild hydragogue cathartics, as iodide potass., queen of the meadow, saline diuretics. We often meet with cases of pericarditis where the skin is cold, blue, pulse feeble, irregular, and where the above treatment would not be applicable, where aconite, quinine, ammonia, xanthoxylin are the proper remedies. Veratrum, in all inflammatory conditions of the heart, is a remedy of the greatest value, and positive in its action.

In per carditis due to rheumatism, lactic acid in the blood, a good safeguard is the exhibition of the various antirheumatic remedies, alkalies, eliminatives, &c., for some time after recovery, such as:

℞.—Comp. syr. stillingia, ℥iv;
Iodide potass., ℥iij;
Wine root colchicum, ℥ss;
Tinct. cinch., ℥i.—*Mix.*

Dose.—Teaspoonful every three hours.

ATROPHY OF THE HEART.

This may be predisposed by the use of tobacco or cerebral stimulants, disease of brain or blood, strong grief, imperfect nutrition, in which the muscular substance of the heart wastes, its muscular fibres become small, pale, inelastic, and if it continues, this structure is usurped by fat.

This condition is easily recognized by the diminished area of dullness on percussion, pulse 55 to 60, heat greatly less than in health, extreme feebleness, paleness of surface, vertigo, ringing in the ears, specks or spots before the eyes, the systolic and diastolic sounds scarcely audible, usually no irregular action until fatty degeneration takes place.

The treatment best calculated to cure atrophy of the heart is entire avoidance of tobacco, whiskey, tea, coffee, and active exercise; rest; very nutritive animal food; external stimulants over heart with cardiac excitors should be recommended; cinchona with mineral acids is good to elaborate red blood and act as a stimulant; secondary action of digitalis and cactus grandiflora; diffusible stimulants, as bromide, compound tincture of myrrh, quinine, rhus radicans, and phosphorus, if there is no symptom of fatty degeneration.

HYPERTROPHY OF THE HEART.

Enlargement of the heart may be predisposed to by tobacco, disease of the brain or blood, as hyperæmia; the exciting cause is excitement, passion, over-stimulation, obstruction, exercise, sexual indulgence.

It is easily recognized by the increased area of surface; sounds of the heart very loud, audible at a distance; bulging out, wearing out of the ribs; skin red, congested; vertigo, tinnitis aurium, muscæ volitantes, epistaxis; disturbance of lung; numbness of the left hand or arm, caused by distension of the recurrent branches of the brachial plexus of nerves, which are reflexed over the heart; increased action of the heart; frequent respiration and a high grade of animal heat. The condition of hypertrophy can only be carried on to a point where nerve supply is insufficient, then fatty degeneration and irregular action comes in.

The treatment of this affection is very simple: active condition of the bowels, kidneys, skin; the diet should be very carefully regulated, nutritious but unstimulating, excess of vegetables, and a diminution of animal food; the mind must be kept free from all anxiety, study, or care; tobacco, tea, coffee strictly forbidden; abundance of fresh air; no stooping posture.

The medical treatment will embrace moderate doses of digitalis to diminish the heart's action, contract its calibre; cactus grandiflora, aconite, veratrum, are also of utility.

Simple hypertrophy of the left ventricle, with no obstruction to the flow of blood. This condition is rare. On auscultating the heart, the systolic sound is less loud and clear than natural, but no bellows murmur is heard; on placing the hand over the præcordial region, the impulse of the heart will be found increased.

In many cases of chronic Bright's disease, there is found hypertrophy of the heart, especially of the left ventricle, without any disease of the valves or large blood-vessels existing to impede the flow of blood, and thus to explain the increased bulk of the muscular walls. In these cases it is supposed that the blood is impeded in its passage through the minute systemic vessels, owing to its contamination by excrementitious materials, in consequence of the renal degeneration; and hence the left ventricle has to make extraordinary efforts to propel the blood, and of course acquires increased bulk and strength.

Hypertrophy of the left ventricle, with valvular disease. This is the most common form of hypertrophy. The chief causes are defective aortic valves, permitting regurgitation of the blood from the left ventricle during its diastole; constriction of the aortic orifice, impeding the free passage of the blood into the left ventricle during its systole; deficiency of the aortic valves associated with constriction of the aortic orifice; defective mitral valves, permitting regurgitation of the blood from the left ventricle into the left auricle. All these abnormal conditions occasion impediments to the circulation of the blood through the heart, and their immediate effects are, for the most part, communicated directly to the left side, and indirectly to the right side of the heart. As the hypertrophy in these cases is an endeavor, so to speak, toward health, the increased power compensating for the obstruction to the flow of blood caused by the valvular disease, we must not unnecessarily interfere with the symptoms.

Dilatation of the Heart.—This may occur under three circumstances. First, there may be, as has been just shown, as *active dilatation*, when the dilatation predominates over the hypertrophy. Secondly, we have *simple dilatation*, where the thickness of the walls is normal. And thirdly, there is *passive dilatation*,

the walls being thinned. This last is the only state which demands a few words. It is often combined with degeneration of the muscular fibres; both ventricles are usually affected, and the attenuation may be so extreme that the walls are found quite collapsed after death. Passive dilatation may be due to some exhausting cause, or to inflammation of the endocardium, or perhaps to pericardial adhesion; it causes the heart's impulse to be feeble, the apex beat to be almost invisible, and the sounds to be transmitted to only a short distance; while the patient gets weak and irritable, he suffers from asthmatic paroxysms, palpitation is often distressing, attacks of syncope are not uncommon, and there is anasarca followed by ascites. Antispasmodics and tonics are the only remedies which afford temporary relief.

FATTY GROWTHS.

Fatty deposits are, under certain circumstances, often met with upon the heart or among its muscular fibres. We find it alone or in conjunction with general obesity, or in association with fatty degeneration.

It may give rise to all the features of an enlarged heart impeded in the performance of its functions; pulse quickened, but its force diminished.

The great increase of diseases of the heart is no doubt owing to the greater intensity of the mental emotions and passions, for mental anxiety or excitement makes the greatest depredation on the function and structure of the heart.

Treatment.—In simple atrophy, fatty degeneration, fatty deposit, the selection of a proper diet is a most important consideration, although this restriction is seldom effectual in either diminishing or preventing the superabundant fat. Farinaceous diet, the use of acid wines or vinegar, has the property of removing fat or preventing its accumulation. Attention to the digestive organs, pure air, early hours, gentle exercise, avoidance of excitement, tepid salt baths, and such remedies as nitromuriatic acid in a bitter decoction, as asparagin, with bromide potass, iodide potass., in the comp. fluid ext. stillingia, are probably our best remedies.

DILATATION OF THE HEART.

Hypertrophy of the heart with dilatation, known as active dilatation, where the expansion predominates over the hypertrophy; simple dilatation, where the thickness of the walls is normal; passive dilatation, where the walls are thinned—conditions often combined with malnutrition of the heart and fatty degeneration of muscular fibres.

It often arises from exhausting disease, but more frequently it depends upon a disturbed circulation, affecting the brain,

which causes headache, giddiness, irritability, irregular circulation, and from which cause one or other chamber of the heart may become thicker, more dilated than natural, or from some mechanical obstacle, which prevents the free exit of the blood.

The prominent symptoms are a small weak pulse, coldness of the extremities, giddiness, deranged digestion, attacks of fainting, paroxysms of asthma, restless nights, palpitation; there may be anasarca followed by ascites.

The chief indications of treatment are to rectify any abnormal condition, and improve the general well-being of the patient, aid digestion with tonics, as hydrastin and cinchona; stimulate the skin with baths medicated with hydrochloric acid; remove the existing hypertrophy with comp. syr. stillingia, with bromide or iodide potass., veratrum, prunin; impart tone to the muscular fibres of the heart, with hydrastis can., myrica cerif., infusion or concentrated principle, or with chlorid of iron or tinct. iron and cinchona, cactus, asparagin, iron, chlorine, nux vomica. which have a tonic power over muscular fibre.

FUNCTIONAL DERANGEMENT OF THE HEART.

Functional disease of the heart closely resembles organic disease of that organ. It mostly occurs in the various phases of hysteria, as uterine or ovarian irritation, spinal irritation, anæmia, chlorosis. It is often a symptom of nervous exhaustion, mental anxiety, fatigue, excesses; sometimes due to a great variety of causes, as dyspepsia, disease of the liver, lungs, or blood; the metastasis of gout or rheumatism; to the use of tea, tobacco, &c. Defective appetite, general weakness and indisposition to exertion, the mind irritable, sleep prevented by excessive action of the heart, are characteristics.

The most prominent symptoms are an irregularity of the fluttering palpitation, difficulty of breathing, mental depression, dyspepsia, flatulency, acid eructations, œdema over the region of the heart, pain in the præcordial region, abnormal sounds, general disturbed circulation, inability to lie on the affected side, owing to tenderness; occasional attacks of giddiness, fainting fits, headache, noise in the ears, flushing of the face, violent pulsations in aorta, globus hysterica, gastric, cerebral, and cardiac irritation, constitute a strong chain of diseased action.

The treatment of all these cases is, when it is dependent on weakness, to increase the vigor of the constitution by the best of nourishment, tonic baths, proper exercise, and the administration of tonics, chalybeates. In chlorosis the different preparations of iron, phosphorus, nux vomica, hydrastin. In all cases the concomitant derangement should be well studied, symptoms allayed, and their cause removed. For example, if

connected with gout or rheumatism, alkalies, as carbonate of lithia, acetate of potassa, colchicum and quinine, macrotin and veratrum; if associated with uterine congestion, regulated secretion, daily warm hip bath, alteratives, bromide potass., counter-irritation; if there be dyspepsia, bitter tonics, nux vomica, bismuth, hydrastin, nitro-muriatic acid, cinchona, gentian, &c.; if there be spinal irritation, stimulants to the entire length of the spine daily, bromide potass. and stramonium, valerian, phosphorus, ergot.

In all forms of functional disturbance of the heart, the greatest attention should be paid to diet; let it be nourishing and easily digested; tobacco and tea should be rigidly forbidden; acids and saccharine substances always injurious; moderate exercise in open air, salt water bathing, agreeable associations always salutary.

RUPTURE OF THE HEART.

This condition may occur spontaneously, independent of any disease; sometimes caused by external violence. Laceration of walls of ventricles most common. Rupture of the valves often a result of endocarditis; laceration of muscular walls symptomatic of fatty degeneration, or of rupture of aneurism in ventrical wall.

If death does not result instantly, there is great difficulty of breathing, intense prostration, syncope, convulsions. In such cases the physician may prescribe stimulants and tonics, although without hope or avail, because death must ensue.

VALVULAR DISEASE OF THE HEART.

The great frequency and fatal nature of valvular disease of the heart should never be lost sight of by the physician. The heart is a single organ, with the one function of propelling the blood, and consisting of a number of parts naturally dependent on each other. If the left ventricular valves are injured, the right cannot do their work. No relief can be afforded to a weak or failing part, by another taking its place. No rest for the purpose of repair; no reserve function here. A patient may enjoy a tolerable degree of health, even if one of his kidneys or lungs be impaired, but no disease or injury of the heart can be compensated for in any way whatever.

The great cause of diseased conditions of the heart are inflammatory attacks, rheumatism, gout, insufficient food, mental anxiety, over-work, drinking alcoholic liquors, tobacco, violent exercise, &c.

Nearly all the alterations in the internal lining membrane of the heart result from inflammation, which gives rise to a

deposit of lymph upon or beneath the serous membranes. The valves lose their delicacy and transparency; become thick, puckered, and adherent to each other. Independently of inflammatory effusion, the valves often become covered with exudations, or vegetations, or excrescences; they often become ossified, or become the seat of calcareous deposits.

The effects of such a condition are either to contract and narrow the orifice, so as to obstruct the passage of the blood, *valvular obstruction;* or by thickening, and the valves to make the orifices more or less potent, and thus prevent regurgitation or blood-valvular insufficiency.

Diagnosis.—Both sounds of the heart are accompanied by bellows-murmur; this murmur may be harsh, or rough, or cooing or whistling, or musical.

A *murmur* is caused by some obstruction to the free flow of blood.

Diastole is a dilatation of the ventricles, when the blood enters their cavities.

Systole is a contraction, to send forth blood.

The following points are most excellent to detect aortic and mitral disease:

Bruit or Murmur.—If systolic and loudest at base—*aortic obstruction.*

Bruit or Murmur.—If systolic and loudest at apex—*mitral insufficiency.*

Bruit or Murmur.—If diastolic and loudest at base—*aortic insufficiency.*

Bruit or Murmur.—If diastolic and loudest at apex—*mitral obstruction.*

The *pulse*, if regular, is full and strong, or jerking, in *aortic disease.*

The *pulse* is irregular, intermittent, unequal, soft, small, in *mitral disease.*

Symptoms.—In valvular disease, difficulty of breathing, increased by exertion. Palpitation and irregular action of the heart, with abnormal sounds or murmurs; detectable by auscultation; alteration in the pulse; soft and irregular, in mitral disease; hard and jerking, but regular, in aortic congestion of the lungs, bronchitis, pneumonia, pulmonary hemorrhage; also, hemorrhage from nose, bronchi and stomach. Œdema of lower extremities, arms, face, hydrothorax, ascites, headache, noises in the ears, vertigo, syncope, cerebral congestion and hemorrhage, most urgent in aortic disease. Broken rest, starting during sleep, frightful dreams, enlargement of liver and spleen, disordered digestion, appearance of face peculiar, face puffed, cheeks flushed and of a purple hue, lips congested and blue, fingers blue, eyes bright.

As the disease becomes aggravated, patient becomes weak, nervous, suffers from over-exertion, mental emotion, food, exposure, &c., and death usually results from some of the secondary affections.

The chief indications of treatment are, to control the inordinate action of the heart, to ward off or relieve the results of cardiac disease, and to impart tone and strength to the heart.

If there is hydrothorax, give the following

℞.—Podophyllum, grs. xxx;
Nitrate potassæ, ℥j;
Bitartrate potassæ, ʒss.—*Mix.*

Make ten powders; one morning and night. In addition, a teaspoonful of cream of tartar, to which add eight drops of digitalis, three times daily; alkaline or vapor bath at least once daily, aided with the best blood-elaborating diet.

If the above does not succeed in a few days, I would substitute one-twelfth grain of elaterin for the podophyllum, and for the digitalis the following

℞.—Fluid extract buchu,
Uva ursi,
Hydrangea,
Superpurin, āā ℥j;
Veratrum, tincture, ♏ij;
Spts. nit., dulc., ʒss.—*Mix.*

A teaspoonful every three hours.

To act as a tonic to the heart, muriate tincture ferri, cinchona, hydrastin, aconite, phosphorus, quinine, best of diet, thorough hygiene. Hydrocyanic acid has a beneficial effect; its action is specific upon the pneumogastric nerve.

CARDITIS.

Inflammation of the fleshy substance of the heart, increased by motion; sense of fullness and oppression in the chest; palpitation from the slightest exertion; mental excitement; rapid, difficult and irregular respiration; short, dry, spasmodic cough; rapid, small, intermittent pulse; great anxiety, dread of suffocation; absence of the normal murmur; febrile condition, some parts being cold and others warm; countenance anxious; patient desponding, irritable, restless, alarming palpitation, fainting on rising up, &c.

Causes.—Grief, joy, anxiety, violent muscular efforts, injuries, metastasis of rheumatism, gout, &c.

In the treatment, I give five-drop doses of the tincture veratrum in a tablespoonful of water, till profuse perspiration breaks out, and the symptoms become ameliorated. Counter-irritation over the region of the heart, perfect rest in the recumbent position. If the symptoms do not yield, alternate with bryonia and veratrum.

Pericarditis is extremely liable to come on during the attack of carditis, and percussion and auscultation are our only guides; with them we can trace the progress of the disease through the stages of commencing exudation with friction, gradual pyriform enlargement, with or without friction, absorption and disappearance of the serum with returning friction and adhesion.

Functional symptoms may induce us to suspect, but not positively affirm, the existence of a low grade carditis; they are very variable and dependent on the general susceptibility of the patient. Even the local pain, dyspnœa, are often absent, and the disease latent from first to last.

The treatment should be arterial sedatives to effectually control the circulation, fomentations over the heart, quietude of mind and body, and alkaline remedies to neutralize any acidity of the blood, alternated with macrotys, colchicum, quinine and diaphoretics to aid elimination.

Our special remedies in cardiac diseases are the following:

Digitalis, on account of specific power over the sympathetic nerve and cardiac plexus, is especially adapted to those cases of inflammation caused by grief or mental anxiety.

Aconite is indicated if the contractions of the heart are irritable, rapid, vigorous; tightness, constriction; and where the breathing is short and labored; where the action of the heart is irregular and exalted.

Veratrum is a powerful therapeutic agent; it controls the action of the heart and arterial system, lowers the force and frequency of the pulse, depresses the action of the vascular system generally; a positive sedative.

Bryonia is a valuable remedy in all inflammatory conditions of the heart.

Arnica, if caused by wounds and contusions.

Kalmia has also a remarkable power over the circulation, and is valuable in cases complicated with rheumatism.

Macrotys and Cactus, where there is debility and irregular action of the heart.

Asparagine, bromide potassa, nitrate of amyl., where decided sedatives are demanded in palpitation.

Cannabis, pulsatilla, iodine, gold, when cardiac inflammation has arisen from some constitutional causes.

Lobelia is a powerful agent to control the heart and arterial system.

ENDO-CARDITIS.

The great frequency of diseases of the heart is undoubtedly due to the prevalence of a latent form of rheumatism, the presence of lactic acid in the blood, in the secretions, and its proneness to attack peculiar tissues and excite an inflammatory con-

dition as an effort of nature at elimination and consequent effusion. Endo-carditis of the left is more common than of right side of heart. The portion of membrane covering valves and lining of orifices is most frequently attacked. At the time it is seldom fatal, but its remote effects are to be dreaded.

The diagnosis is most important. Fever; small, feeble, intermittent pulse; patient always prefers to lie on his back, complains of great oppression and uneasiness over the region of the heart, is restless and anxious; extreme difficulty of breathing, jactitation, cold sweats, syncope—common in a case of acute rheumatism.

Palpation detects a vibratory thrill.

Percussion seldom reveals anything.

Auscultation detects a soft bellows murmur. If the murmur be systolic, it is most distinct at the base and along the course of the aorta, and is accompanied with small pulse, and *aortic obstruction;* if systolic, most distinct at apex, with irregular pulse, it is due to *mitral disease.* A diastolic murmur most distinct from centre of sternum upwards towards the base, with a jerking pulse, indicates *aortic regurgitation;* while a diastolic murmur most distinct from fourth left intercostal space down towards the apex, with an irregular, small pulse, results from *mitral obstruction.*

The termination of inflammation here is permanent valvular disease, with obstruction to circulation, dropsy, and death.

The only treatment reliable is to effectually control the circulation by veratrum, and neutralize the acidity with alkalies, perfect rest of body and mind, well regulated secretions. Alkalies, as quinine and colchicum, bromide potassa or ammonia, iodide potassa, and comp. syr. stillingia, macrotin; over the region of the heart irritating plaster.

ANGINA PECTORIS.

A disease in which severe pain is felt about the chest, with a sense of strangulation and great anxiety. It most frequently occurs in advanced life, more common in men than in women, often associated with fatty degeneration or hypertrophy or dilatation of the heart, and also with disease of the coronary arteries. There are several forms; persons of the rheumatic or gouty diathesis are more liable to its attacks; it may depend upon a nervous cause not connected with any structural lesion.

General Symptoms.—Paroxysms of intense pain, constriction about the precardial region, feeling of suffocation, a peculiar horror of impending death. The attack seldom lasts more than a few minutes.

It may come on at any time; if the patient is walking, he is obliged to stop suddenly. During the attack pulse slow, feeble,

intermitting; breathing short, hurried; countenance pale, anxious, pinched; surface of the body cold or covered with a clammy sweat; consciousness unimpaired. As the paroxysm passes off, the patient regains his usual health and is apparently well, but sooner or later, a fatal termination is the result.

Acute angina pectoris is sudden in its attack, pain severe in the cardiac region, and this extends to the shoulder, arm, wrist, fingers. When angina pectoris proceeds from hypertrophy of the heart, there are powerful sensations of that organ, which are at a distance. When angina pectoris arises from dilatation of the ventricles, there is swelling and visible pulsation of the jugular veins, vertigo, syncope, weak pulse. When it is connected with disease of the valves of the heart, there will be great dyspnœa, violent palpitation, feeble, irregular pulse, unnatural appearance of the countenance, swelling of the feet and ankles. If it is *chronic*, the paroxysms recur frequently from trifling causes, the pain involves both arms, ascends to the throat and lower jaw, aggravated by the slightest movement, as coughing, sneezing. A neuralgic pain continues under the sternum.

It is distinguished from asthma by the acute and peculiar pain in the sternum and left arm, by the difference in the phenomena attending each. The dyspnœa of asthma depends upon the spasmodic contraction of the muscular fibres and their ramifications. Perhaps the neuralgic character of the pain and its severity will distinguish it from other diseases.

Pathology.—Angina pectoris is undoubtedly an affection of the nerves supplying the heart, stomach, or lungs—that it has its seat either in a rheumatic or neuralgic condition of the par vagum or pneumogastric system of nerves, its branches, terminations, or communications.

Treatment.—If the patient is seen during the paroxysm, give diffusible stimulants, as brandy, wine, xanthoxylum, ammonia, or capsicum; place him in a reclining position; then give hydrocyanic acid, or gelsemin, or belladonna; they have a beneficial effect on the paralyzed nerves. Dry cupping between the shoulders is always safe, and of great utility, as we have its revulsive effects without depletion; friction to the surface with stimulating liniments.

The treatment during the interval must be upon general principles, and will consist in the alternated use of tonics and alteratives, as bromide potass., asparagin, ammonia, hydrastin, cinchona, iron, and nux vomica. Iron and hydrastin have a tonic power over muscular fibre, hence their value in affections of the heart. If there is great excitability, digitalis, aconite, and veratrum may be indicated. Digitalis is objectionable if it is possible to get along without, because it benumbs the heart, as well as the tract of the pneumogastric nerve. Other reme-

dies, as quinine, iron, phosphorus, macrotin, nux vomica, aconite, nitromuriatic acid in comp. tinct. cinchona, counter-irritation over the cervical portion of the spine. Avoid all stimulants, especially alcohol, for this agent is the most deleterious the patient can get, for it deteriorates the vital stamina, and is given with very mistaken views of its physiological action, for it impairs the contractility of muscular fibre, and in this disease it is very injurious, as it also quickens the heart, causes capillary congestion, irregular circulation, and mechanical dilatation. If purely nervous, valerianate of zinc, scuttelerin, cypripedin, with a belladonna plaster over the heart, avoiding all stimulants, violent exercise, walking after meals, sexual excitement, mental and physical exertion. The occasional inhalation of the nitrate of amyl is attended with good results.

In the selection of remedies, the greatest attention should be paid to the remote and exciting causes. If the symptoms indicate an organic affection of the heart, our prognosis will be unfavorable; but if the cause consists of a diseased condition of the *par vagum* or *cardiac nerves*, which renders them liable to become morbidly excited, then we may prescribe special remedies for particular parts. The most reliable specifics in this malady are asparagin, bromide potass., nux vomica, phosphorus, belladonna.

CYANOSIS.

A condition characterized by a blue or purplish discoloration of the skin, arising from some deficiency in the construction of the heart, as from the septum not arriving at its full development at birth, or from permanence of the foramen ovale allowing a passage of blood between the auricles, or from the origin of aorta and pulmonary artery from a single ventricle, or from contraction of the pulmonary artery—any condition permitting a mixture of venous and arterial blood.

Symptoms.—Blue condition of skin, coldness of body, temperature of the mouth, by the thermometer, 76° F.; great dyspnœa, syncope on excitement, violent palpitation, tips of the fingers and toes become bulbous, nails incurvated, imperfect development, dropsical effusions; mostly congenital, if so, patient blue all over.

Treatment.—This is simply palliative; plain, nourishing food, mild tonics, warm clothing, perfect rest, avoidance of fatigue, freedom from mental excitement. If it exists at birth, and not not due to any organic malformation, drop doses of digitalis three times a day, will in a few weeks contract the orifice, and consequently cure the affection.

CARDIAC ANEURISM.

Aneurism of the heart was formerly said to occur in two forms, either as a simple dilatation of the wall of a ventricle, forming the improperly called passive aneurism, or as a pouched fullness arising abruptly from the ventricle, constituting a tumor on the heart's surface. The latter is the only disease to which the designation of cardiac aneurism (or partial dilatation) should be applied. In it the tumor may vary in size from that of a small filbert to a growth the size of the fist. The sac is found to contain layers of fibrin, or laminated coagula of blood, especially when its mouth is constricted, like arterial aneurisms; while it generally has its seat in the left ventricle, much more rarely in the left or right auricle, but never in the right ventricle.

According to pathologists, there are two distinct kinds of cardiac aneurism. The first or acute variety depends upon a laceration of the endocardium and muscular tissue, through which the blood passes and gradually makes a pouch; while in this pouch fibrin is deposited, its entrance presenting a fringed margin of endocardium with vegetations attached. The second, or chronic form, is the result of some inflammatory condition of the muscular fibre, or of the investing or lining membrane of the heart. The walls of the sack consist of the endocardial and pericardial membranes unbroken, while the muscular fibre seems to be replaced by a fibroid tissue. Either kind gives rise to symptoms which are uncertain and obscure. Often the passage of the blood into the sac has caused a murmur, but this has been mistaken and thought to be due to some valvular lesion. Death usually takes place suddenly, from rupture into the pericardium, or into the pleura, if the free surfaces of the pericardium be adherent, as they often are in these cases.

The *coronary arteries* may be diseased. *Aneurismal* dilatation and rupture of these vessels is not a frequent event. In the instances which have been recorded, there have been no symptoms during life to allow of a correct diagnosis, while death has occurred suddenly, the pericardium being afterwards found filled with blood.

RULES FOR DIAGNOSING DISEASE OF THE HEART.

1. In health, the cardiac dullness on percussion measures, immediately below the left nipple, two inches across; and the extent of dullness beyond this measurement commonly indicates either the increased size of the organ or undue distension of the pericardium.

2. The apex of the heart may be felt and seen to strike the chest between the fifth and sixth ribs, immediately below and a little on the inside of the left nipple.

3. A friction murmur, synchronous with the heart's movements, indicates pericardial inflammation.

4. A bellows murmur with the first sound, heard loudest over the apex, indicates mitral insufficiency.

5. A bellows murmur with the second sound, heard loudest at the base, indicates aortic insufficiency.

6. A murmur with the second, loudest at the apex, indicates either (1) aortic disease, the murmur being propagated downward toward the apex; or (2) roughened auricular surface of the mitral valves; or (3) mitral obstruction, which is always associated with insufficiency, when the murmur is double, or occupies the period of both cardiac sounds.

7. A murmur with the first sound, loudest at the base, and propagated in the direction of the large arteries, is more common. It may depend (1) on an altered condition of the blood, as in anæmia; or (2) on dilatation or disease of the aorta itself; or (3) on stricture of the aortic orifice, or disease of the valves, in which case there is insufficiency, then the murmur is double, or occupies the period of both sounds.

8. Hypertrophy of the heart may exist independent of valvular disease. When it does take place, it is usually the left ventricle that is affected, and usually in connection with mitral or aortic disease; in the one the hypertrophy is uniform with rounding of the apex; in the latter there is dilated hypertrophy with elongation of the apex.

In addition, the nature of the pulse at the wrist; the nature of pulmonary or cerebral symptoms.

AORTITIS.

Acute inflammation of the aorta is comparatively rare; but I have met with cases of it, occasionally complicated with rheumatism.

The symptoms are usually obscure; great and general uneasiness, followed by rigors and fever; extreme difficulty of breathing, with an impending sense of suffocation; excruciating pain and violent pulsation in vessel; palpitation violent, loud systolic sound; pulse may be unaffected.

The usual post mortem appearances are changes in the coats of the aorta, the result of inflammatory action; often structural lesions or degeneration of the proper tissues. I have detected very frequently mineral or ossific, amyloid, and atheromatous or fatty degeneration.

Treatment.—The treatment found useful in this affection is free purgation, active diaphoresis, cupping over the region of the heart, followed with stimulants. Tincture of the green root of veratrum viride in sufficient doses to control circulation, and anti-rheumatic treatment, as a combination of colchicum, bitter-sweet, nitrate of potass, and bromine.

ANEURISM.

A tumor produced by the dilatation of the parietes of an artery. It may embrace one or all the three coats of the vessel, and may extend to a great distance. When all the coats of an artery are dilated, but not ruptured, it is a *true aneurism.*

Dilatation, with rupture of one or more of the coats, constitutes *false aneurism.* The internal and middle coats are frequently ruptured, the blood comes in contact with the external or cellular sheath, dilating it into a pouch or sac. The tumor condenses, acquires additional coverings, and becomes thick, and if the patient enjoys average health, the sac will contain fibrinous coagula. The division or rupture of an artery may result in extravasation of blood into the areolar texture, and thus form a diffused aneurism. *Varicose* aneurism can only happen where a vein runs over an artery, as when the brachial is punctured in opening a vein. The blood rushes into the vein, which becomes varicose.

The diagnostic symptoms of true aneurism in the various arteries are: extraordinary throbbing in a particular part occupied by a small pulsating tumor, which disappears when compressed, but returns the moment the pressure is removed. The tumor has a tendency to increase in size. Aneurisms are termed traumatic and spontaneous, according to their mode of organization. They are also divided into internal and external, according to situation.

Aneurism is more common in males than females, the predisposing cause being some weakened or diseased condition of the walls of the vessel, as calcareous or fatty deposit, or some irritation of the coats of the vessel, by which its elasticity and vital power of resistance are diminished, as the use of alcohol, mercury, excitement corporeal or mental, disease of the heart, physical causes, over-exertion, strains; blows may be exciting causes.

Aneurism, under certain circumstances, may terminate favorably by gradual contraction of the sac, by inducing the formation of coagula, by fibrinising the blood, by compression exerted upon and above the sac, by obliteration of the artery from adhesive inflammation or otherwise closing its calibre.

Treatment.—Nature points clearly and emphatically as to the mode of cure—the throwing out of coagulable lymph, which, with the fibrine of the blood, forms a layer more or less organized on the inner surface of the aneurismal tumor; this gives rise to membranous bands, which shoot down from all parts of the walls of the sac, which tend to retard the blood in its meshes, and thus aid coagulation. Everything that improves the health will aid this process: highly animalized diet, beef, eggs, oysters, milk. Improve the vital energies by cinchona,

iron, mineral acids, phosphorus, but restrain or retard the action of the heart; keep the circulation at 65 or 70, to aid coagulation in the tumor—digitalis and veratrum will do this; strict quietness of mind and body, change of air, regular secretions. If this does not succeed, other remedies to fibrinize the blood, as

℞.—Carbolic acid, grs. iij;
Panis, q. s.—*Mix.*

Make 25 pills. One every three hours.

Alternate with teaspoonful doses of the following:

℞.—Comp. tinct. cinchona, ℥iv;
Nitromuriatic acid, ℥iij.—*Mix.*

Hydrastis and phosphorus, &c.

Pressure upon the artery above the tumor has succeeded. It mechanically diminishes the flow of blood through the sac; it physiologically enables the fibrine to coalesce and become easily and readily entangled in the parietes of the sac, and if the case is managed judiciously, this will increase until the contents of the tumor solidify, and the circulation may be carried on by the natural channel, or else obliteration may occur at the point; then the collateral branches become enlarged, the circulation is carried on by them. Compression is best effected by two or three instruments with graduated compresses.

A ligature applied to the artery at some distance above the aneurismal tumor, cuts off the current; the pulsation in the tumor at once ceases, fibrinous coagula are diminished by absorption, and gradually degenerates into an impervious cord.

Electricity has been successful in producing coagulation of the aneurismal tumor. An injection of the following will produce instantaneous coagulation.

℞.—Glycerine, ℥iv;
Carbolic acid, ℥j.—*Mix.*

Inject ℥ij, or ℥iv, according to the size of the tumor.

But of all modes of treatment, I am most partial to constitutional means. *Fibrinize the blood, restrain the circulation, and coagulation is certain.*

ANEURISM OF THORACIC AORTA.

The symptoms of this form of aneurism are often obscure in the early stages, bearing a strong resemblance to disease of the heart. If the aneurismal tumor is large, and been developed quickly, there is disturbed action of the heart, with some modification of the radial pulse; dullness on percussion around portion of vessel from which aneurism springs; cough; wheezing; dyspnœa; hemoptysis; difficulty and pain about the chest and back; superficial veins of the chest and neck œdematous. If the aneurismal tumor becomes very large and pulsating, and

rises out of the chest, producing protrusion or absorption of sternum and ribs, then the diagnosis is easy. If the aneurism presses upon the trachea, there is dyspnœa and cough; when on one or both recurrent laryngeal nerves, aphonia, with troublesome cough, severe paroxysms of laryngeal suffocation, pain coming on at intervals. When on œsophagus, symptoms of dysphagia, engorgement of absorbent vessels and glands, inanition and symptoms of stricture. If the aneurism in the ascending is near to the heart, the patient suffers from angina pectoris, probably resulting from compression of the great plexus of nerves ramifying on each side of the ascending aorta, and communicating freely with the cardiac ganglia and plexuses of the ventricles.

Contraction or dilatation of pupil on affected side, according as pressure is sufficient to paralyze or only irritate branches of sympathetic nerve. Often a bellows sound can be detected. If the heart be compressed by a tumor, so as to impede the action of valves, a systolic or diastolic bruit will result. Pressure on aorta or on pulmonary artery may produce a murmur. In false aneurism there is generally a murmur both with entrance and exit of blood into the sac; or there may be one loud and prolonged and rasping bruit, from passage of blood over the roughened inner surface of vessel. In true aneurism, or mere dilatation of a part of the wall, murmurs seldom audible. Even a small opening into the canal of an artery into aneurismal sac, and a roughened state of the arterial tunics from degeneration, will give rise to a bruit. A peculiar thrilling or purring tremor is often felt over sternum.

The termination may be death from rupture externally or into pericardium, or into pleural cavity, or into trachea, or into bronchial tube, or the patient may die from exhaustion consequent upon long-continued suffering; or there may be fatal destructive inflammation of lung, owing to the compression of pulmonary vessels or pressure on pneumogastric nerve.

ANEURISM OF ABDOMINAL AORTA.

Very common in ladies, not quite so prevalent in males. Patient has felt something giving away, on emptying the bowels, and placing patient on back, a pulsating tumor, synchronous with action of heart. It is most frequently met with just behind the stomach. Care should be exercised in diagnosis, although this is easy.

HYDROTHORAX.

The presence of water in the cavity of the chest may be either due to pleurisy or obstruction in the heart, as valvular disease. When a result of pleurisy, simple effusion, a result of inflammation; when due to organic disease of the heart, exosmosis takes place.

The presence of water in the chest is easily diagnosed by the history of the case; great difficulty of breathing, especially when the patient lies down; dullness on percussion at the base of the chest, extending upwards, which disappears when the patient is placed in the recumbent position, the lung being permeated with air, floating on the top of the water; also, if the patient is of a spare habit, we may detect a splashing sound by shaking the patient.

This form of dropsy can be removed in a large per centage of cases, and a cure effected if due to pleurisy; but if due to organic disease of the heart, the cause not admitting of removal, nothing is to be hoped for.

Treatment.—In all cases of dropsy, an important point is to keep up a high standard of health—blood rich in fibrin, remedies to stimulate calculated to promote digestion and assimilation.

In order to remove the serum or water, the patient should be first placed under the influence of digitalis to astringe the blood-vessels and unlock the absorbents. It should be given in eight-drop doses every three hours in a little water. Three times a week, an alcoholic vapor-bath for half an hour, or a Turkish bath; then diuretics, diaphoretics, and hydragogue cathartics should be given, as

℞.—Podophyllin, grs. xxx;
Nitrate of potass, ʒij;
Bitartrate potass, ℥ss.—*Mix.*

Make ten powders.

Give at intervals, so as to produce a free action of the bowels. If there is any anæmia, the nitrate potass can be administered as follows:

℞.—Tinct. ferri chloride, gtts. xx;
Nitrate potass., grs. x;
Camphor water, ʒj.—*Mix.*

Give at a dose.

Squills, broom tops, queen of the meadow, buchu, elaterin, and other remedies, calculated to stimulate the absorbents, if after a fair trial of diaphoretics, diuretics, and cathartics, we fail to get rid of the effusion; then an effort should be made by absorption with compound syrup of stillingia and iodide potass.

DISEASES OF THE ORGANS OF DIGESTION.

DIGESTION.

Digestion is the process by which the food is converted into blood, and prepared for the appropriation of its nutritive principles to the different tissues of the body. It is one of the most important of those organic functions which are concerned in maintaining life.

It embraces, as subordinate processes, mastication, insalivation, deglutition, chymification, chylification and absorption.

Mastication is a mechanical process. It is performed in the first division of the alimentary canal—the mouth. It consists in cutting and triturating the food. Employed in this process are the teeth, tongue, lips, cheek, palate, maxillaries, and masseter muscles. Thorough trituration, by presenting a larger surface to the contact of the digestive fluids, renders it more susceptible to their chemical action, and facilitates insalivation and deglutition.

Insalivation is effected by the mixture of the food with the saliva, which is a compound of the secretions of the parotid submaxilliary and sublingual glands, and the mucous follicles of the mouth. Taken directly from the mouth it is colorless, alkaline, slightly viscid, with a specific gravity of 1005.

The most important ingredients are an organic substance called ptyalin, from the submaxilliary and sublingual, and sulpho-cyanogen from the parotid secretion, neither of which are formed in any other solid or fluid of the body. The estimated quantity daily secreted by an adult is 48 ounces, dependent upon the activity of the glands, since they are variously influenced by chewing, speaking, aromatic and acrid substances, hard, soft, dry and moist food, &c.

The function of the saliva is both mechanical and chemical. Its mechanical action is to moisten and lubricate the triturated food so as to facilitate its deglutition. Its chemical action is

to commence the conversion of the amylacious portions of the food into glucose. Its mechanical office would seem the most important since it is the most immediately apparent. Indeed some physiologists hold that its function is exclusively mechanical: but the fact that its peculiar organic substances, not necessary to its mechanical efficiency, possess the chemical power of commencing a legitimate digestive process, viz.: the conversion of starch into sugar, together with the general fact that nature utilizes all her products, warrants the conclusion that the office of the saliva is chemical as well as mechanical. The fact is well established by experiment that starch is converted into sugar by contact with the organic substances of saliva; and that they may be precipitated by alcohol, and kept in a dry state, retaining their power when again in a state of solution. It is, then, a reasonable inference, that when mastication and deglutition are performed with reasonable deliberation, the solution of the amylacious food is commenced before reaching the stomach, to be suspended there, and resumed beyond.

Deglutition is the transference of the food from the mouth to the stomach. When the food is masticated and insalivated, and pressed back by the tongue against the soft palate,—which, during that process has closed the orifice between the mouth and the pharynx,—its passage to the pharynx is effected by the action of the muscles of the tongue, where the contact of the food with the mucous membrane produces, through the glossopharyngeal nerve, reflex action of the superior constrictor muscle, which is continued to the middle and inferior constrictors, whose successive contraction forces the food into the æsophagus, where, aided by the oily secretions of that passage, it moves on through the cardiac orifice into the stomach.

Chymification takes place in the stomach. This organ and the alimentary canal below have four coats: the inner mucous, the connective cellular, the muscular and the outer serous. The muscular coat has two sets of fibers, longitudinal and circular, in addition to which the stomach has an oblique set at the cardiac end.

The stomach is an elongated, curved pouch, situated in the epigastric, and partly in the right and left hypochondriac regions, immediately below the diaphragm. Its normal capacity is about one quart. The mucous coat is thick, soft and vascular, lying in irregular folds. It contains pits, averaging about $\frac{1}{200}$ths of an inch in diameter, with a depth of about one-seventh of the thickness of the mucous membrane; the other thickness is chiefly made up of gastric tubes or glands, which secrete from the blood the gastric juice. These tubes contain epithelial cells filled with granules with oil globules intermixed, and each tube is invested with capillaries. In the

pyloric end of the stomach the tubes are somewhat different in size and form. From this fact some physiologists infer that they separately secrete the two essential constituents of the gastric juice.

When food is ingested, its contact with the mucous surface, through the reflex influence of its nervous relations, produces contraction of the muscular coat, closing its orifice, firmly embracing its contents, congesting the capillary investments of the secreting glands, and by the stimulus of its affinitive elements, exciting the gastric secretions. In the meantime the different size, length, arrangement and nervous influence of the muscular fibers produces a slower muscular action at the cardiac end than at the pyloric end, causing a vermicular movement, which, on reaching the pyloric orifice, effects its momentary relaxation, to be followed by a repetition of the peristaltic contraction. These contractions cause the semifluid food, as it enters at the cardial orifice, to separate in two currents, the greater following the greater curvature, the smaller following the lesser curvature, until meeting at the pylorus they are reflected into a central, axial current, in which they return to repeat the circuit. The mutual contact of these currents causes admixture of their contents, and a uniform contact of all the mass with the secreting mucous surface.

When empty the mucous coat is of a pale tint, from its anæmic condition. When full its color is deep red, from the injection of its vessels. When inactive the moisture of its mucous surface is nearly neutral, a condition abnormal to its function, but conservative of its structural integrity. When active the reaction of its secretion is strongly acid, a condition essential to its functional efficiency.

The essential ingredients of the gastric fluid are hydrochloric acid and a nitrogenous organic substance called *pepsine*. Lactic acid is often present, and many eminent physiologists believe it to be the normal acid of the gastric secretion; but numerous analyses have been made of the gastric fluid, taken from animals and from human stomachs through fistulous openings, in all of which hydrochloric acid has been present, while lactic has been often absent. Experiments in artificial digestion have also shown that water acidified with hydrochloric acid with the addition of pepsine, makes a perfect digestive fluid, at the normal gastric temperature.

These results taken in connection with the well known facts that the saliva has the power of converting sugar into lactic acid, and that lactic acid is an abundant element of the juice of flesh and hence might come from the very food that excited the gastric secretions with which it is occasionally found, all point to the conclusion that it is not the normal acid of the gastric fluid. It may be necessary to assist in the digestion of

the peculiar alimentary substances from which it is produced, or to meet other accidental emergencies, and hence its occasional presence may be timely and salutary: but in the light of the above facts it cannot logically be regarded as an element of the gastric secretion.

The gastric secretion is a colorless, slightly viscid fluid, with a well marked acid reaction, and a specific gravity of about 1010. The amount daily secreted by an adult, is variously estimated at from 14 to 35 pounds. This amount seems incredible, unless we consider that as soon as it has dissolved its quota of food it is reabsorbed and reenters the circulation with the alimentary substances which it holds in solution.

It is a curious and suggestive fact that nothing but the contact of digestible substances can excite, to any extent, the action of the gastric glands, and that only so much can be secreted as is sufficient to chymify the amount of aliment that nature requires, all excess of food becoming a source of gastric irritation.

The uses of this fluid are to dissolve the nitrogenous nutritious elements of the food and modify their physical properties and chemical relations, converting them, except gelatin, into new substances called *peptones* and *parapeptones*, albumen becoming albumen-peptone, fibrine, becoming fibrine-peptone, casein, becoming casein-peptone, &c.

The gastric juice does not act upon the non-nitrogenous food —the fats and carbo-hydrates,—caloric elements: though modified in consistency by the animal heat, they are not susceptible to other gastric influences.

Although the office of the gastric juice is to dissolve the albuminates, &c., experiments show that it is not sufficient in quantity to digest more than half the amount necessary to supply the demands of organic nutrition, a result consistent with the fact that undissolved albuminates are known to pass the pyloric orifice in considerable quantity.

Chymification then does not imply the complete digestion of all the nitrogenized portions of food, but only so much, and to such an extent as renders the mass amenable to subsequent digestive influences.

The time required for gastric digestion is from one to four hours, according to the kind of food and mode of preparation.

Eminent authorities maintain that the absorption of the peptones commences in the stomach; but this view is illogical, because only one class of proximate principles have yet been acted upon, and if *these were* completely digested, their absorption *alone* would produce an unequal distribution of alimentary principles.

The absorption from the stomach embraces only aqueous solutions and superfluous fluids soon after they are swallowed

to relieve the stomach of those elements that hinder its legitimate work. It contributes its quota to the portal circulation —its sewerage—but the portal vein conveys no nourishment to the hepatic tissue. The hepatic artery is the medium of its nutrition. The food has yet a long journey and many changes to undergo before it is fitted for its ultimate purposes.

Chylification takes place in the small intestines.

The mucous membrane of the small intestines is characterized by *villi*, *follicles of Lieberkuhn*, *Brunner's glands*, *Peyer's glands*, and *solitary glands*, which require description to facilitate the study of intestinal digestion. The *villi* are minute processes, giving the surface a velvety appearance. They are largest and most numerous in the further portion of the duodenum and in the jejunum, after which they become more rare, ceasing at the ileo-cæcal valve. Each villus is a network of capillaries, with a club-shaped lacteal with closed extremity, which absorbs the chyle. The lacteal is contained in a minute muscular tube, whose contraction under nervous stimulus assists absorption. The small intestines have transverse folds of mucous membrane, called *valvulæ conniventes*, most numerous where the villi are thickest, intended to increase the absorbing area. The *follicles of Lieberkuhn* exist throughout the small and large intestines. They consist of tubes at the base and between the villi. Their secretion is combined with that of other glands in the intestinal juice. *Brunner's glands* exist only in the duodenum and commencement of the jejunum. They are most numerous near the pyloric orifice. Like the pancreas in structure, they are aggregations of follicles, with duct opening into the duodenum, secreting a fluid somewhat like the pancreatic juice.

The *solitary glands* occur in all the small intestines, but are most numerous in the jejunum. Each gland is a flask-shaped vesicle, with closed neck at the surface and base in the submucous tissue. *Peyer's patches* are aggregations of solitary glands. They are largest towards the cæcum, rarest in the duodenum, most developed during digestion, twenty or thirty in number, and from a half to four inches in size, placed lengthwise. They are closed, having no ducts, but opening at intervals to discharge their secretions.

The muscular coat of the small intestines, already described, acts like that of the stomach, and for a similar purpose. The vermicular movement, continuous with that of the stomach, is wavelike, successive, effecting a thorough admixture of the contents, and impelling them onward.

The digestive fluids here employed are the bile, the pancreatic juice, and the intestinal secretion, *succus entericus*.

The bile is a viscid, neutral, or slightly alkaline fluid of a dark brown color, with a specific gravity of 1018. Its two

essential constituents are a pigment and a soda salt, whose acid is a mixture of glyco-cholic and tauro-cholic acid, the latter predominating.

The amount of bile daily secreted is variable, but estimated to average two and a half pounds.

Discrepant views have been entertained in regard to the function of the bile. It has been believed to exert a solvent action on the chyme; but experiment does not sustain this view. It has been thought to neutralize its acidity; but it is too slightly alkaline to exert an appreciable neutralizing effect, and we know the chyle is acid in the duodenum. It probably exerts an antiseptic influence on the chyle, since in patients with jaundice and animals in which the bile duct has been tied, the feces have a putrid odor. It undoubtedly stimulates the intestinal walls with a purgative effect, since in jaundice, when the bile is wanting in the intestines, constipation is present, and ox-gall, in pill or enema, produces purgation.

It is not, like the other digestive fluids, intermittent, flowing only during digestion; but, normally, always discharging. This and another exceptional fact, that it is secreted from venous blood in the portal circulation, gives color to the idea that it is excrementitious; but if it was not to be employed in the digestive process, nature would have furnished it a more appropriate outlet. It does, however, flow more abundantly during digestion, and while it probably contains fecal ingredients, it undoubtedly contains organic elements which exert an important influence upon digestion. From many pertinent experiments, its most important office seems to be, by its peculiar physical action, to disintegrate the fats, and impress on the *villi* a condition which facilitates the absorption of fatty matters.

The *pancreatic fluid* somewhat resembles the saliva. It is clear, somewhat viscid, and strongly alkaline. The important organic constituent to which it owes its digestive power is pancreatine, or pancreatic ferment in combination with soda. It has been estimated that an adult secretes daily about two pounds of this fluid. One of the chief uses of this secretion seems to be to convert the amylaceous contents of the chyme, and thus complete the work begun by the saliva. It possesses this property in a higher degree than the saliva.

Many eminent physiologists believe it is solely by the action of this fluid that the fat is reduced to an emulsion. That it assists the bile in digesting the oily substances is quite probable, since experiments demonstrate that its contact with them produces a marked effect; but that the bile has no agency in this matter is not sustained by evidence.

The *succus entericus*, or intestinal juice proper, is a colorless, viscid, alkaline fluid. It has the property of converting starch into sugar, and of dissolving the albuminates.

The fluid compounded of all the digestive secretions uniting in the small intestines, possesses the peculiar power of digesting all the remaining elementary substances, thus completing the work unfinished in the first and second divisions of the alimentary canal, and rendering the food fit for absorption.

The acid reaction of the contents of the alimentary canal changes progressively from the duodenum downward, becoming alkaline at the ilio-cæcal valve, and remaining so throughout the large intestines. The contents of the large intestines constitute the feces. They are comparatively solid and homogeneous, and often moulded into definite shape by the saculated form of the colon; growing more solid as they advance, by the absorption of their fluid. They are moved forward into the rectum by the vermicular action already described, and their defecation is controlled by the sphincter ani and other muscular auxiliaries.

Absorption is the last digestive process. The coats of the intestines have two sets of absorbing vessels; one set absorbs the chyle, the other lymph. The lacteals are the chyle absorbents. They commence in the villi, and pass in great numbers between the mesenteric layers of the peritoneum through the mesenteric glands, where their contents are more highly organized. Thence, constantly reducing in number, but increasing in size, until they reach the *receptaculum chyli*, an elongated pouch in the thoracic duct, into which they empty their contents of incipient blood. From this point it is carried upward by the thoracic duct and discharged into the left subclavian vein, passing on with the venous blood, through the descending *vena cava* to the heart, and thence to the lungs, with the venous blood, for oxygen, under the vitalizing influence of which it becomes fit for the highest form of organic development.

INFLAMMATION OF THE TONGUE.

Glossitis, or inflammation of the substance of the tongue, is usually dependant upon some constitutional cause or some irritant applied directly to the part. In either case there is fever, great nervous depression, and debility. In all cases, the local symptoms are those of pain, heat redness, swelling, the tongue a deep red color, and so swollen that it fills and protudes out of the mouth. It comes on quickly and is often attended with urgent symptoms and requires prompt treatment, active purgatives, free diaphoretics administered per rectum, veratrum and gelseminum should be given in large doses, mucilages of elm should be applied to the tongue. If impending sense of suffocation takes place, tracheotomy should be resorted to.

If it comes on from mercury, chlorate potassa, iodide potass internally with sulphuret potassa baths.

Ulcers or patches on the tongue are generally due to mal-nutrition and come properly under the head of aphthæ.

Warts and condylamate are not uncommon on the tongue in syphilitic affections. They should be destroyed and the diseased condition treated with alteratives.

INFLAMMATION OF THE MOUTH.

This is occasionally met with in children, depends commonly on mal-nutrition, and is usually seen as follicular ulcerative gangrenous stomatitis.

The treatment in all cases consists in perfect cleanliness, fresh air through hygiene, antiseptics to destroy the germs generated in this condition, tonics, alteratives, excellent diet, and gargles of gold thread, or permanganate potassa

APHTHÆ.

This affection consists of roundish pearl-colored vesicles, confined to the lips, mouth and intestinal canal, and generally terminating in curd-like sloughs. It forms a special disorder of infancy, known as the *thrush*. In adult age, aphthæ is often produced in the course of some debilitating disease; it indicates debility, imperfect digestion, mal-nutrition. Two microscopical parasitic plants, *leptothrix buccalis* and *oidium albicans*, developed in large quantity, in and between epithelial cells of mucous membrane; filaments and spores of these fungi render epithelium friable, loose, swollen, and latterly ulcerated.

Aphthæ Infantalis.—This form appears in small, white ulcers upon the tongue, gums, and around the mouth, palate, resembling small particles of curdled milk. If the mal-nutrition is bad, we have these white, creamy, circular spots scattered, but strongly tending to coalesce and break down into ulceration. From this abnormal condition, salivation is not abundant. The milk becomes immediately acidulated by the excess of acidity present.

It is attended with drowsiness, restlessness, debility, cough, difficulty in swallowing, vomiting, diarrhœa; the surface of the spots becomes brown or bluish after the loosening and separation of the crusts; the local affection runs into a kind of gangrenous ulceration; the discharges from the bowels contain slime and shreds.

In debilitated children, improperly nourished and subject to depressing influences, the aphthous ulcerations become gangrenous; the edges shrink, become flabby and ragged, a brownish slough forms in the centre, and, on coming off, a granulated surface of a vermillion color remains; the ulcers become covered with a brown, creamy fluid, which exhales a gangrenous odor;

the parts around the ulcers become tumid, soft, of a violet hue. The saliva becomes fetid, ropy, flowing from the half open mouth. Countenance pale, puffy; pulse feeble; surface of the body pallid, deficient in sensibility. The vomiting and diarrhœa become profuse, exhausting; abdomen tympanic; hiccough and eructations precede complete exhaustation and death.

Cause.—The disease is caused by mal-assimilation, the generation of acidity, which gives rise to the growth of a regular crop of cryptogramic plants, which usurp the healthy function of the mucous membrane, diminish absorption; hence the marasmus.

Treatment.—Give the little sufferer an emetic at least twice a week. After the action of the first emetic, put it upon the following

℞.—Neutralizing mixture, ℥iij;
Leptandrin, grs. xxx;
Sulphite soda, ℥ij.—*Mix.*

Half a teaspoonful every three hours.

To the aphthous spots, destroy the cryptogamic parasite at once. If the child is old, touch each spot respectively with nitric acid; if young, gargle or swab them with a saturated solution of sulphite of soda; this is instantaneous death to the parasite. This local treatment should be kept up for some time until we rectify the diathesis, and bring about healthy nutrition. After we have brought about a change both in the ulcer and in the process of assimilation, then lotions of gold thread, borax and glycerine, chlorate potass, etc., etc.

Local treatment will fail, unless associated with proper constitutional remedies. Our best remedies are those that rectify acidity and promote assimilation; as,

℞.—Comp. tinc. cinchona, ℥iv;
Nitromuriatic acid, ℥ij.—*Mix.*

Half a teaspoonful every three hours, in sweetened water.

Hydrastin here is excellent. Frazerin is next best; rhusin acts well. Nutrition must be promoted. We would give

℞.—Glycerine, ℥iv;
Acid, phosphoric, dil., ℥iij.—*Mix.*

Half a teaspoonful thrice daily.

Baths are important, daily salt-water bath, friction, warm clothing, exercise, fresh air. Hygiene perfect and thorough.

The diet must be the best, one that is calculated to promote health. It must be as nutritious as can be digested and assimilated; it should include beef, oysters, poultry, Liebeg's food, milk, eggs.

Besides the above form of aphthæ due to mal-nutrition, we may have a variety of other forms dependent upon some specific in the blood, as the poison of syphilis, lead-mercury, tubercula, etc., these give rise to molecular inflammation of mucous mem-

brane giving us syphilitic apthæ, lead and mercurial aphthæ in which by the action of air and light we have generated the vegetable germs above mentioned so that all varieties of aphthæ are essentially contagions and infections, not only in the presence of a vegetable germ, but in a direct communication of the poison that gave rise to the ulceration; these varieties of aphthæ should be treated by destroying the ulcers with nitric acid, by gargles of chlorate of potassa, gold thread, hydrastis, and in all cases antiseptics must be administered to destroy the germ spores in the stomach; our best antiseptics for this purpose are yeast, baptisia tincture and sulphite of soda.

Otherwise the case must be managed on general principles; in syphilis, a general alterative and tonic treatment is indispensable; if lead and mercury be present, iodide of potassium in some vegetable alteratives with sulphuret of potassium; baths, if due to tubercula, of lime, phosphate and iron.

Cancrum Oris.—This may be the result of aphthæ, provided the patient is subject to overcrowding, absence of all sanitary and hygienic surroundings, the generation of an animal poison superadded to the parasite in the ulcer which gives aphthæ a gangrenous or fagademic condition. The poisonous matter in connection with the spores from the ulcers are swallowed, causing ulceration of gums, cheek, œsophagus, stomach, bowels, putrid diarrhœa, offensive breath.

The treatment is the same as aphthæ, discarding antiseptics to destroy the septic germ which produces such destructive ravages.

BUCCAL GLANDS.

The mucous follicles seated in the buccal membrane opposite the molar teeth are often the seat of tubercular deposit, which forms quite an impediment to the proper function of the mouth, as their secretion is arrested and the mouth imperfectly lubricated. I have met quite a large number of those cases, and their removal in some cases has been extremely obstinate. The remedies to be depended on are, iodine, bromine, insin, phytolaccin.

Peculiar cases have occurred that resisted all treatment for a period of years, and suddenly yielded to the administration of iodine and phosphorus. The following is a good method of administering iodine.

℞.—Comp. syr. stillingia, Oss;
Tinct. kalmia,
Tinct. iris versicolor, āā ℥i;
Iodide potassa, ℥ss.—*Mix.*

A tablespoonful every three hours. Locally,

℞.—Unguentum phytolacca, ℥i;
Muriate ammonia, ℥iij;
Iodide potassa, ℥iv.—*Mix.*

Spread on leather and keep constantly applied.

Give, ℞.—Acidum phosphoricum, dilutum, gtts. xx, every four hours, and in alternation five drops of tincture of iodine in a little simple syrup; the best diet, most thorough hygiene, warm clothing, fresh air, &c.

INFLAMMATION OF THE PAROTID.

A specific contagious inflammation of the parotid gland, which lasts but a few days. It is ushered in with a chill, then febrile disturbance, pain in back and limbs, tumefaction and soreness of one or both parotid regions. It seldom exceeds a week in duration, reaching its height in four days, and subsiding in three more.

We often have a metastasis of mumps to the mammæ, or testicle or brain. There is seldom danger, and treatment simple. Open the bowels with citrate magnesia, warm alkaline bath, put the patient to bed, and put him upon aconite and belladonna, and alternate with comp. tinct., serpentaria, free diaphoresis; tepid water or poultice to throat.

INFLAMMATION OF THE TONSILS.

This affection is particularly prevalent during variable states of the weather. Heat and dryness are the earliest local symptoms, preceded by rigors; throat afterwards become filled by mucus; inflamed parts covered by viscid mucus; glands at the angles of the jaw become swollen, hawking and spitting of tough mucus, involuntary efforts to swallow, respiration affected, hearing diminished, febrile symptoms sthenic, pulse full, restlessness, suppuration, relief by puncture, pus fœtid, frequently gives way when patient is asleep.

Duration from five to ten days, and sometimes terminates by external abscess. Tonsils often remain for some time swollen; very apt to return, and sometimes remain permanently hypertrophied. The voice is altered. The disease is said sometimes to terminate in gangrene.

Causes.—Childhood, youth or middle age. Exciting causes: cold, autumn, winter, spring; cold drinks when body is heated, atmospheric vicissitudes, wet feet, &c.

The predisposing causes are, inherited scrofulous diathesis, irritability, chronic enlargement of the tonsils from mercurial salivations, and derangements of the stomach and bowels.

Treatment.—Smart emetic at outset, of lobelia and capsicum, succeeded by aconitum and belladonna, which are of the greatest value.

Steam of hot water inhaled, hot pediluvia. In strumous diathesis, cod liver oil and iodide potassium are highly beneficial.

When arising from a chill by being wet, or wet feet, pulsatilla is indicated, and of great utility. Chlorate potass makes an excellent gargle.

Induration or hypertrophy, is best treated with iodide potass., tincture phytolacca, iris versicola and alteratives.

If the infiltration breaks down, so as to give us abscess in the tonsils, suppuration should be aided with hot poultices, and as soon as softening has taken place, emetics to cause a free evacuation of puss.

DISEASES OF THE ŒSOPHAGUS.

Disease of this structure is not common, although it is essentially involved in all the morbid conditions of the stomach ; all abnormal states of the œsophagus are attended by one common symptom, dysphagia. Difficulty in swallowing may likewise arise from tonsilitis and diphtheria; from erysipelatous or other inflammations of the areolar tissue of the neck, or retro-pharyngeal abscess; from paralysis of the muscles of deglutition; from malignant, syphilitic, and tubercular ulcerations about the epiglottis; and rarely from the disease of laryngeal cartilages.

Simple ulceration of the œsophagus is a peculiar disease, the pathology of which is obscure. The chief symptoms are difficulty in swallowing, sometimes so great that deglutition is impossible; pain at the epigastrium, or at the top of the sternum, or between the shoulders; with a frequent sense of nausea, emaciation, and debility, and considerable mental distress. Not unfrequently the ulceration extends into the trachea; while it has also been known to progress until it has made a communication between the œsophagus and one of the bronchi, especially the left, or between the œsophagus, and either the pleura, pericardium or aorta.

The treatment should be active, and will likely be successful if the case is seen early. It should consist in most nutritious diet, irritating plaster over affected part, comp. syr. stillingia and iodide potass; tonics, as cinchona, hydrastin; gold thread, bayberry.

Cancer of the œsophagus may occur at any one part of the tube, or through its whole length and circumference. The disease may be of the scirrhous, or medullary, or epithelial variety; the latter probably being the most common when it occurs as a primary disorder; distant organs are but rarely implicated in the cancerous affection, possibly because of the rapidity with which it destroys life. It gives rise to obstruction, so that after a time not a particle of nourishment can be

passed into the stomach; while just above the constriction there often is formed a pouch where food accumulates until it is rejected. There is also considerable pain in the canal, or in the back, or in the shoulders; hiccup is not uncommon; there is sometimes hemorrhage, occasionally fatal, through extension of the ulceration into enlarged veins; the patient wastes rapidly and to a wonderful extent; while the cancerous cachexia becomes plainly established. Death may occur from inanition; or from the ulceration involving important parts; or from destructive inflammation of the lung, owing to the implication of one of the pneumogastric nerves.

The œsophagus may, like the urethra and bronchial tubes, suffer from *spasmodic stricture.* Young hysterical women are often affected with it; the principal symptoms consisting of difficulty in swallowing, an occasional sense of fulness and choking, with anæmia, &c. Spasmodic cannot be confounded with organic or permanent stricture, because the dysphagia is only temporary, a bougie passes with very little or no difficulty, and the symptoms are aggravated when the patient's attention is directed to them. The treatment consists of nerve tonics.

Permanent or organic stricture comes on as a sequel of spasmodic or nerve stricture, or may be due to effusion of lymph, the result of inflammation from swallowing some irritant. The symptoms are constant. The treatment consists in alteratives, as iodide potass, comp. syrup of stillingia, irritating plaster applied externally, and dilatation with bougies.

Dysphagia—Difficulty of deglutition exists in several varieties. *Dysphagia from nervous irritation* occurs most frequently in young women of an irritable nervous temperament, who suffer from leucorrhœa, painful menstruation, and impaired digestion. It is purely nervous, no emaciation, the attacks come on suddenly, there is nervous excitement but no pain.

Dysphagia from spasmodic constriction of the pharynx is also occasionally met with.

Dysphagia from mechanical injury of the œsophagus is frequently brought about by swallowing hard and imperfectly masticated food.

Difficulty of swallowing is often a cause of apoplexy.

Our best remedies in the treatment of this condition are, phosphorus, nux vomica, cinchona, drosera, rhus radicans, gold, bromide potass, scuttellarin, cypripedin, quinine, hydrastin.

ACUTE INFLAMMATION OF THE STOMACH.

Gastritis, or inflammation of the stomach, may be caused by the introduction of irritating agents into the stomach, as poisons, caustics, arsenic, mercury, emetics, whiskey, and other irritants; or it may be caused by poisons in the blood, mechan-

ical violence, or to the metastasis of inflammation from other parts.

It is easily recognized by the nausea, vomiting, burning, pricking, or lancinating pain in stomach; extreme soreness or rawness; very tender on the slightest pressure; intense thirst; great desire for cold drinks, which when swallowed are almost immediately rejected; tongue furred, red tips, edges, and in streaks; subsequently it assumes a raw-beef appearance, smooth, glassy, and if the blood is affected, a dark charcoal hue at root. The vomit, at first serous or mucous or biliary, becomes latterly greenish, then like coffee grounds or black, which is blood changed by the acids of the stomach. The patient in all cases lies on his back or side, with knees drawn up to relax the abdominal muscles. There is a high grade of fever, with high heat; frequent respirations; great depression; pulse small, wiry, frequent; obstinate constipation; disgust of food or warm drinks; swelling of abdomen, tympanic; urine very scanty, high colored. If not actively managed, death very liable to take place from exhaustion or gangrene, or it may terminate in chronic gastritis.

Treatment.—The principal points to be observed in treatment are to keep the patient in the recumbent posture in bed; sponging entire body every three hours; to apply powerful stimulants over stomach, as mustard or a cantharidal plaster, for six hours, or turpentine; whichever is applied should be warm, followed with poultices of flaxseed. No drink should be allowed, nothing bulky, so that the stomach will have nothing to contract upon; thirst allayed by means of small pieces of ice in the mouth; small, but frequent doses of the tincture of green root gelseminum, a few drops every fifteen minutes until its constitutional effects are thoroughly obtained—double vision, profound relaxation, an arrest of vomiting. If the green root tincture is not at hand, then opium should be used instead, and when commenced with, should be given with vigor, yes, even to narcotism. The following is a good combination:

℞.—Opii, pulv., grs. x;
Camphor,
Chlorate potass, pulv., āā grs. xx.—*Mix.*

Make 20 powders.

Give one every half hour or hour, or as often as the urgency of the symptoms demand, until the inflammation is controlled; mucilaginous drink, as gum arabic water, flaxseed tea, marshmallow, &c. No food on stomach until there is a subsidence of the morbid condition. Nutritive enemata. A cure should be carefully established.

Other symptoms should be met upon general principles. If the vomiting is persistent, minute doses of ipecac, subnitrate

of bismuth, are attended with good results; if there is delirium, *belladonna;* or if there is hiccough and bitter eructations, *pulsatilla;* if it depends upon the metastasis of rheumatism or gout, *lithia* and colchicum.

Chronic inflammation of the stomach may follow an acute attack, or may come on of itself, and is liable to terminate in thickening of the coats of the stomach and ulceration.

The symptoms are tongue red at tips and edges, with white coat in centre; pain aggravated by pressure over the stomach and other symptoms incidental to dyspepsia.

The best treatment consists in the removal of the cause, and in administering hydrastin, gold thread, bismuth, nitromuriatic acid, cinchona, &c.

Inflammation of the stomach frequently terminates in catarrh of the stomach, which, if present, is indicated by indigestion, furred tongue, oppression at epigastrium, vomiting, giddiness, headache. There is also a form of gastric catarrh which coexists with hooping cough, bronchitis, phthisis, and pulmonary emphysema. Congestion of the capillary gastric vessels, with excessive secretion of glairy mucus.

The remedies best calculated to remove this condition are those that impart tone to the stomach, as hydrastin, nux vomica, gold thread, mineral acids, bismuth, cinchona, &c.

Inflammation of the stomach sometimes terminates in ulceration. Ulcer of the stomach is generally round or oval, mostly seated at the posterior surface, lesser curvature, or pyloric pouch. A fatal termination may occur by hemorrhage, perforation, or exhaustion.

Symptoms of gastric ulcer are well marked and characteristic; constant, steady pain in the epigastrium, and also pain in the back opposite the one in the epigastrium; increased by food or exercise; acid eructations, nausea, vomiting, emaciation, aortic pulsations; if it is a female, amenorrhœa; if the ulcer heals, pain diminishes. With care, complete recovery will take place. Perforation is not uncommon; then the pain suddenly spreads over the entire abdomen; tympanitis, great anxiety, prostration, collapse and death.

The treatment should be directed to the cure of the ulcer. The first point in the successful treatment of all ulcers is to effectually subdue *pain*, for no breach of surface will ever cicatrize if pain exists. *Indian hemp and opium are excellent remedies to meet this indication*, in doses sufficient to get the desired effect. Rest is of great importance, complete rest, and nourish the patient as much as possible by enemata of beef essence. Probably no remedy excels the permanganate of potassa in ulceration of the stomach, one grain in a glass of distilled water, alternated with bromide of ammonium. If these do not act well, try some of the following remedies: bismuth, myricin, gold thread.

DYSPEPSIA.

Anything that interferes with the healthy action of the stomach and bowels may give rise to indigestion. Food is digested in the stomach during the day, in the intestines during the night, so that we have two forms, *gastric* and *intestinal*. The first occupies from two to three hours or more, and consists in an exposure of the food to the solvent powers of the gastric juice, which consists of water, acids, salts, &c., forming a substance called pepsin. The process of healthy digestion is easy, quick, and complete; there can be no excess of it, for food cannot be too easily, quickly, and completely converted into chyme, and taken up into the system, whereas, indigestion is painfully slow or defective.

Painful, from a slight torment to actual torture; *slow*, when the stomach fails to digest in the ordinary time, and chemical decomposition or fermentation takes place; *defective*, when the food is either altered or fermented, or decomposed or formed into parasitic germs.

Causes.—Irregularity in eating, improper food, imperfect mastication, drinking at meals, want of exercise, undue intellectual exertion, mental anxiety, general debility, use of tobacco, disease of liver, spleen, pancreas, lungs, uterus, Bright's disease and any disease of the blood. The symptoms are very numerous, ranging through all the structures and tissues of the body, involving nearly all of them in endless chains of sympathies and reflex actions.

They are very variable in their nature and severity. Loss of appetite, pain, weight, fullness at the epigastrium after eating; acidity, flatulence, eructations, languor, nausea, vomiting, pyrosis, giddiness; sensation when walking as if the pavement was rising up in front; constipation, alternating with diarrhœa; furred tongue and foul breath; palpitation, headache, pains in loins and limbs, heartburn, cramp, pressure in the stomach, hæmorrhoids.

In a more advanced stage there may be cough, pain in the chest, with muco-purulent expectoration.

If we for a moment glance at the physiology of the stomach, we can realize a dyspeptic condition more thoroughly. A healthy stomach contains no gastric, except when food is taken, and by its contact with the surface of the mucous membrane, excites the secreting organs to pour out the gastric fluid in the requisite quantity. The process by which this secretion is called into existence, points to the solution of a practical problem in treatment. The impression made by the food on the organs of taste, on the surface of the stomach, is, first of all, transmitted by the nerves to the nervous centres, thence propagated to the secreting apparatus, upon which devolves the

duty of forming the gastric juice. If the stomach is in a healthy condition, and the brain healthy, the quantity of gastric juice generated or thrown out will be just sufficient for healthy digestion; if the condition of either organ be impaired, the gastric juice secreted may be either deficient in quantity or vitiated in quality.

The stomach is the central reservoir of supply for the nutrition of the whole body, and every organ of the body depends upon that organ for its healthy condition. The ultimate relation between the stomach and other organs, the reflex action, the intimate relation between the stomach and the liver and other organs, renders diseases of this viscus an important consideration.

The liver is always torpid; the tongue usually coated; the eyes tinged yellow; urine scanty, high-colored deposits; a white sediment; skin dry, contracted; loss of strength; tenderness in the epigastrium; pain in the stomach; the brain is affected through the reflex action; there is imperfect nutrition, &c.; and these various conditions are often produced by excessive fatigue, great mental excitement, the influence of passion, overwrought intellect; in fact, physical and mental drain, constitutional debility, sedentary habits, over-indulgence in eating, constitute prominent causes of the disease.

To recapitulate the principal symptoms of heart-burn: acidity, weight, tightness, oppression, wearing cramp, eructations, vomiting, with irritation reflected to the brain Heart-burn is due to acids formed in a state of ferment; to those acids irritating the gastric nerves in a state of depression.

The sensitiveness may be explained thus: non-sensient nerves when depressed, become sensitive. Any abnormal condition of organs supplied by the abdominal plexuses of sympathetic nerves will give us acidity, so also will over anxiety, watching, harassing mental emotion and physical exhaustion induce this state of digestion; the other symptoms are produced by too long exposure of the food, the acids of digestion, and to an absence of gastric juice; the normal secretion from all glands in health is either neutral or alkaline; in disease, acid is only an abnormal secretion, but a true deficiency of normal constituents.

In the treatment of every form of dyspepsia, the diet should be regulated and easily digested, nutritious food allowed; new bread, tough or salted meat, alcoholic or fermented liquors, tea, coffee, tobacco, bodily fatigue or nervous exhaustion, should be carefully avoided, and active exercise in the open air, with cheerful mental occupation, inculcated.

An important point in treatment is a perfect regularity of habits, as eating, sleeping, alvine evacuations and exercise. The digestion should be improved by all means that tend to invigo-

rate the system generally. Rest, early hours, relaxation, change of air, sea-bathing, cold sponging, horse exercise, etc.

Our most approved remedies for the different grades of dyspepsia are: Hydrastin, cinchona, nux vomica, pulsatilla, nitro-muriatic acid, pepsin, iron, frazerin, salicin, hydrocyanic acid, columbo, tamarac, bismuth, sanguinaria.

Always examine the urine, and if there is oxalate of lime, depend upon nitro-muriatic acid.

Phosphorus is often of great utility, as follows: ℞.—Acidum phosphoricum dilutum, ℥j; strychnine, gr. ij. Mix five to ten drops thrice daily in a little water.

Sanguinaria and *ipecac* increase the secretions of the stomach, and either may be given before meals in cases of slow digestion.

Hydrocyanic acid is of great use where there is pain in the stomach, on account of its sedative properties.

Pepsin plays an important part in dyspepsia, supplies the natural elements of the stomach, gives that organ rest.

Bismuth is a valuable remedy. The sub-carbonate is sedative in its action, and also tonic. It is peculiarly suitable for those cases where the tongue is red and pointed, or where the digestion is difficult.

Collinsonia, *Hydrastin*, *Gentian*, *cinchona*, very useful where the coats of stomach need a stimulant.

Ginger, horse-radish, nitro-muriatic acid and rhubarb increase gastric secretion.

Carbonic acid gas and alkalies stimulate the mucous membrane of the stomach.

Salicin may be useful where cinchona disagrees.

In this devitalized condition of the stomach, we often need stimulants, and when such is the case, capsicum, or some other diffusible stimulant is the best.

GASTRIC CATARRH.

Catarrhal affections of the stomach are very common, so much so that they are often mistaken for other conditions. Depression of the mucous membrane, loss of vitality of that structure, gives rise to excessive secretion; whenever mucus is in excess on the stomach, the following takes place, atmospheric air is swallowed with the food taken, which in a healthy state is necessary to digestion, but when mucus is in excess, this air mingling with it, generates a true vegetable germ or fungoid plant which grows or germinates with remarkable activity, so much so that the stomach becomes filled with this abnormal production which looks like a jelly, tenacious in its consistency, and called the "cryptogum sarcina ventriculi." The yeast plant is also developed, called "torula cerevisiæ." Atmos-

pheric air is necessary to perfect digestion, and is absorbed, but when the mucous membrane is depressed, the condition is very different, the gastric juice cannot penetrate the slimy mass, neither can it affect the food.

Mucus is incapable of digestion, hence, if swallowed, it remains unaltered in the stools, and liable at all times to give rise to irritation.

"Acute catarrh of the stomach" like all other catarrhs, is excited by external, and often by epidemic influences. Changes of temperature are its most frequent cause. But still as in other catarrhs, the cause must have a special reason in the individual for selecting one mucous membrane rather than another. And since the naturally warm position of the stomach, aided by the usual habits of dress, guard it very efficiently against ordinary variations of the weather, the idiosyncracy of the individual has a preponderating influence in its production, and often leads the others to be overlooked. But in the prevention of the complaint, more is to be done by attending to these special reasons, and by protecting the stomach against such deleterious agents as the habits of the patient expose it to, than by trying to alter the diathesis of the body.

On the other hand, the mucous flux is much less dependent on external circumstance, and much more on organic changes, either in the stomach itself or some other viscus. Tuberculosis in the lungs, emphysema, chronic bronchitis, and enlarged heart, often produce it, and it is associated with cancerous tubercular, and inflammatory affections of neighboring parts, but alone it is rare. In this it resembles bronchial flux or chronic bronchitis.

There can be no doubt that its great frequency in this country may be due to the relaxing effect of a tropical climate and tobacco, causing a want of nutrition, a true depression of mucous membrane, alcohol, alkalies, hasty mastication and nervous prostration.

In this form of dyspepsia there may be soreness and even rawness, and a perversion of nutrition, a feeling of faintness, feeling of emptiness, craving for food, inability to eat, which vomiting relieves. Flatulence, eructations, heart-burn, pyrosis, weakness, coldness in extremities, tongue coated with a white fur (this causes it to have a liquorice appearance), breath acid, reflex irritation to head, liver, heart and other auricles. It can only be recognized by the action of one or two emetics, and the appearance of the fungoid in the shape of a thick, ropy, glairy, tenaceous mass.

The indications of a new form of treatment are, to restore the abnormal condition of the mucous membrane to a healthy one, to cut off the source of nutrition to the vegetable fungi present (sarcina ventriculi and torula cerevisiæ), and to get rid of the offending parasite by emetics.

The first indication is, to remove the foreign mass. This is best effected by copious emetics of a compound effusion of lobelia, these should be preceded with alkaline drinks, so as to aid the absorption of the lobelia, these should be administered twice weekly, until the plant is removed from the stomach; these emetics should be followed by infusion of bayberry and composition.

Of all drugs those are the best; bayberry astringes the mucous membrane so effectually that no abnormal amount of mucus is thrown out, it cuts off nutrition to this foreign body, it raises the standard of mucous membrane.

If there is pain at the cardiac extremity of the stomach, heart-burn or pyrosis, the conjunction of the composition powder is invaluable, it increases its efficacy. These remedies relieve all the symptoms, by removing the general state of irritability and discomfort, checking the discharge of mucus, imparting tone and vigor; other astringents are useless, but temporary expedients.

The arrested solution of the aliments may be partially compensated for by a diet of milk, guarded from coagulation by lime-water, so as to postpone its digestion to the intestines. The avoidance of such articles as are apt to form a solid mass will do much, and for this reason, pastry, new bread, and hard meat, or fish, must be strictly proscribed. But the most complete substitute for the patient's own natural secretion, is pepsin artificially prepared. It enables solid albuminous food to be taken without distress, increases the appetite, and raises the strength. In the milder cases, lactic acid, taken before food, is sufficient.

The most efficient agent in preventing the decomposition of albuminous food (evinced by fetid evacuations, acidity, etc.), is sulphurous acid combined with soda. There are two forms of this salt, the sulphite and hyposulphite, of these the former contains most sulphurous acid, and certainly does the work required of it most readily. But then it has the bad quality of completely destroying the potency of gastric juice at the same time, so that while you are preventing the chemical decomposition, you are also preventing the vital digestion. The hyposulphite has not this pernicious effect, and may also, from its less nauseous taste, be given in larger doses, so that by its means you are able to do the good without the harm.

All cases are benefited by counter-irritation over stomach; this gives rapid relief, increases the power of digestion.

Catarrh of stomach differs from all others, in the fact that a true germ or parasite is formed, which prevents secretion of gastric juice, hence the value of pepsin as an artificial solvent to food, and this germ destroyed by the hyposulphite of soda.

Emetics and bayberry must be persevered with; a rigid observance of anti-dyspeptic rules. Then a cure should be effected upon alteratives and tonics, so as to produce an organic change in the tissue of the stomach. This view of the pathology of gastric catarrh or mucous dyspepsia, suggests bayberry as of inestimable value.

Santonine, Collinsonin, nux vomica, hydrastin, rhubarb, where symptoms of relaxation predominate; an important point is rest—rest to a feeble organ—it should be spared work; food digested artificially with pepsin, solid, no liquids, or milk made alkaline, with phosphate soda, lime water. The alkali is stimulating, sedative; it also prevents the milk forming into a large curd—cramp or pain requires stimulants.

Eructation and vomiting being two of the prominent symptoms of gastric catarrh, deserve more than ordinary attention. With reference to eructation it may be remarked that gaseous contents of the hollow viscera are differently circumstanced from liquids and solids; their great expansibility by heat, and their low specific gravity, give them an inherent force which enables them to find their way out without any aid from the muscular system.

The first condition of eructation is the relaxed and open state of the cardiac end of the gullet. The air, instead of being retained by the contraction of this powerful sphincter, finds its way upwards in greater or less quantity.

The analyses of the gas contained in the stomach, by eminent chemists, show that more than four-fifths of it is atmospheric air, and the rest carbonic acid, in much less proportion than in the breath which is passing out of the mouth by expiration, so that we have not far to seek for a source of the air; it is evidently swallowed with the food and saliva in the majority of cases. Another morbid condition that produces a collection of gases is defective absorption. In health gases are readily absorbed by the alimentary canal. It is normal for the abdomen to be dilated during digestion with several pints of air, which disappear in a short time without passing upwards or downwards.

So far, the bulk of air swallowed has been supposed to be increased only by heat and expansion. But in some cases it is further augmented by gases disengaged from decomposed food. The occurrence of alcoholic fermentation in the digestive canal is proved by instances of vomiting, in which the matters ejected are visibly undergoing this chemical change. They are tumid with carbonic acid, like yeasty beer.

The spread of alcoholic fermentation through the saccharine contents of the stomach is a rare occurrence. Its features are so marked, and the discomfort it causes so great, that we should hear more about it were it common. (1) Where there is

simply a relaxed œsophagus; (2) when there is an increased quantity of atmospheric air swallowed, and (3) where foreign gases are formed from chemical decomposition.

In the first may be included many cases of heart-burn. The quantity of air brought up is small, but it relieves discomfort, probably by stimulating the organ to contract.

Under the same category may be classed cerebral diseases, where the partial loss of power in the œsophagus frequently causes eructations; in which instance they usually occur soon after meals, and have very little explosive character.

In the second group come hysteria, epilepsy and chorea. Watch an hysterical or epileptic fit, and you will see great gulps of air bolted down. In chorea, too, you may often detect by the eye or hand an involuntary spasm of the gullet, which gulps whether any solid matter is present or not. The spasm of the œsophagus in hysteria, called globus hystericus, is well known. The excessive swallowing of air is often associated with a large or dilated stomach.

In the third group, where the gas is really generated in the alimentary canal, the eructations occur much later after eating. The gases found and eructated are nauseous and fetid, sometimes with the odor of sulphuretted hydrogen.

In these cases there is almost always mucous flux of the stomach, sometimes from anatomical changes in some part of the organ, sometimes without. The rationale appears to be, that organic matters in a state of decomposition remain adherent in the mucus, and act as ferments to the newly received food, the mucus itself may decompose.

The decomposition of the mucus is confirmed by the frequency with which different sorts of low organic growths (moulds) are found in it. The cryptogum sarcina ventriculi is the most distinctly marked of these, and though detected occasionally elsewhere, certainly finds its most congenial home in the stomach; it may be seen fixed and growing in the mucus. It is not often that an opportunity occurs of proving to the eye that such is the habit of the sarcina—we frequently find it vomited. Besides producing eructation, the fermenting of organic matters in the stomach is almost always followed by vomiting; while, if it takes place in the bowels, the consequence is diarrhœa; two phenomena, which will be considered shortly in their own place.

The indications of treatment where *eructation* and *vomiting* are the principal symptoms of gastric catarrh, are to remove the vegetable fungi by emetics—to astringe the mucous membrane by decoction of bayberry—to administer antiseptics to destroy the germs floating in the mucus fluid, as carbolic acid, tincture baptisia tinctora, yeast, permanganate potassa, or

some preparation of sulphur or charcoal. Prescriptions of the above as follows:

℞.—Carbolic acid, grs. v to x;
Glycerine, ℥iv;
Hyposulphite soda, ℥ss.—*Mix.*

Dose.—A teaspoonful after meals. Another powerful arrester of chemical change is baptisia and charcoal; chloral hydrate is also valuable.

℞.—Tincture baptisia tinctora, ℥iv;
Chlorate carbon,
Hypophosphate soda, āā grs. xxx.—*Mix.*

A teaspoonful after meals.

INDURATION OF THE PYLORUS.

Induration, or fibroid infiltration of the pylorus, appears to consist in the abnormal development of fibrous tissue in the submucous areolar membrane about the pyloric portion of the stomach. It may occur as the result of chronic inflammation, or perhaps from the healing and contraction of an ulcer, or from irritation caused by the habitual use of raw spirits. The appearance of the diseased structure to the naked eye somewhat resembles scirrhus, so that by some this disease has been erroneously regarded as malignant; but, minutely examined, it is found to be composed of tissues resembling those of a simple fibroid tumor, and not to consist of the copious cell-growth characteristic of cancer. The walls of the pylorus may be only slightly thickened, or they may be converted into fibro-cartilaginous tissue, with such contraction of the opening that hardly a quill will pass. In proportion to the amount of obstruction there will be found dilatation of the stomach, with hypertrophy of the muscular coat.

Although the pyloric region is by far the most frequent seat of the fibrous deposit, yet the whole of the viscus may be affected. In such a case the necropsy shows a large stomach, of an opaque, pearly white appearance, of increased weight and density, of a gristly feel, and having its coats greatly thickened. This condition may exist without giving rise to any symptoms of importance, except in cases where there is constriction of the pyloric valve. *Fibroid infiltration* appears to be a good name for it, unless the reader should prefer the designation cirrhotic inflammation, or plastic effusion.

The symptoms of fibroid infiltration of the pylorus are, in some respects, like those produced by malignant disease affecting this part. There is emaciation and progressive debility, pyrosis, acid eructations, and constipation. Although the appetite is commonly ravenous, great moderation is obliged to be

adhered to owing to the severe suffering which a hearty meal induces. Vomiting takes place three or four hours after a meal, especially dinner, the matters brought up being partly digested, mixed with water, often yeasty-looking, and perhaps containing sarcinæ or torulæ; sometimes the sickness only occurs at intervals of a few days, while, if there be much hypertrophy, the contents of the stomach are ejected with considerable force. As the patient gradually wastes, so the thickened pyloric tissues can be felt, like a tumor, perhaps the size of a small orange, through the abdominal parietes; the swelling only being painful when there is any ulceration. After a time the feet and legs get œdematous, the temper becomes very irritable, the sleep is disturbed, diarrhœa often intervenes, and death ultimately occurs from inanition. In many instances, however, by strict attention to the diet, life may be prolonged for several years.

The treatment must consist in allowing only simple, soft food, such as milk, cream, raw eggs beaten up in sherry and water, strong beef tea and soup. Cod-liver oil often proves very useful. When there is any temporary exacerbation of the symptoms, the stomach should be rested for a day or two, and nutrient enemata resorted to. The patient should be warmly clothed. An elastic abdominal belt gives agreeable support; while pain may often be relieved by the application of a well-spread belladonna plaster.

DILATATION OF THE STOMACH.

Dilatation of the stomach is a curious disease, to which attention has lately been directed. The enlargement is due generally to some affection of the pyloric orifice, which causing contraction, prevents the food from readily passing into the duodenum. Hence the stomach slowly and gradually dilates, until at last it comes to occupy almost the whole of the abdominal cavity, giving rise to appearances as if a large tumor were present. These appearances are the more deceitful when the stomach is full, because fluctuation may then be present. When this viscus is empty, there will be a tympanitic sound on percussion.

The patient suffers severely from cardialgia, gastrodnyia, pyrosflatus, constipation, and sometimes from vomiting. In two instances which I have seen, the appetite was voracious to a marked degree; but whether this was partly the cause or the consequence of the dilatation can only be a matter of speculation. In favor, however, of its having been the cause, it may be mentioned that in one instance the symptoms during life were those of torpid digestion, with such mental depression that suicide was at length committed; while at the examination after death no reason for the dilatation could be detected.

Where there is sickness, the vomited matters are frequently very large in quantity, they rapidly ferment, are intensely acid, and often resemble yeast in appearance, while they are found, when microscopically examined, to contain large quantities of those vegetable parasites, the *sarcinæ ventriculi*, together with the yeast fungus—torulæ cerevisiæ. The sarcinæ have been discovered in ulceration of the stomach, with contraction of the pylorus, and these vegetable organisms result from the long detention of food in the stomach, and swallowing atmosphere. There is but little doubt that this explanation is correct, but it is also probable that the intensely acid fluid in which the sarcinæ are found may itself irritate and close the pylorus spasmodically. In such cases, consequently, if we check the formation of these growths, we shall cure the disease. We are enabled readily to accomplish this latter object by the administration of the sulphite of potash, or by the sulphite of soda, which latter is perhaps preferable, since it is a more stable salt, and is less liable to be decomposed by keeping than the sulphite of potash. The beneficial action of either of these salts depends upon their being decomposed in the stomach by the acids generated therein, sulphurous acid gas being liberated, which quite destroys the fungi. We prefer the hyposulphite of soda, in doses of grs. v to xx, thrice daily. The patient's diet should be regulated, and it will be better for him to be allowed the unfermented bread in place of the common bread. As a drink, copious draughts of bayberry.

ULCER ON THE STOMACH.

This is an interesting and not uncommon disease, variously spoken of by authors as the *simple*, *chronic*, or *perforating* ulcer of the stomach.

The pathology, symptoms and treatment of this disease have been thoroughly investigated. The ulcer is more frequent in the female than the male, in the proportion of nearly two to one. It is specially a disease of middle and advancing life, hardly ever occurring before puberty. It is more frequent in the poor than the rich. The ulcer is rarely smaller than a fourpenny-piece, or larger than a crown-piece. Its shape is usually circular or slightly oval; it is much more frequently found on the posterior surface, the lesser curvature, or the pyloric pouch, than on the anterior surface, the greater curvature, or the cardiac extremity, and two or more ulcers are frequently present in the same stomach. About half the instances of this disease undergo what is probably a spontaneous cure; in exceptional cases the ulcer has been fatal in ten days, generally by perforation, sometimes by exhaustion, caused or hastened by vomiting, and very rarely by hemorrhage. In the majority of fatal in-

stances, a period of several weeks or months precedes death. Perforation, however, is an exceptional occurrence in gastric ulcer; when it occurs, the ulcer has commonly been found on the anterior surface of the stomach. When perforation does take place, the contents of the stomach are generally poured into the abdominal cavity, where they give rise to fatal peritonitis. But in some very few instances the effusion, owing to the presence of adhesions, &c., is confined to the neighborhood of the perforated spot, so that circumscribed peritonitis is set up, suppuration takes place, and a kind of chronic abscess is formed. This may prove fatal in many ways, as, *e. g.*, by discharging its contents through the diaphragm into the thorax; or, more fortunately, it may open externally through the abdominal walls. In the latter case a gastric fistula is established, which may either remain open, or will gradually close, and permit of complete recovery. Of every 100 ulcers of the stomach, 50 may cicatrize, 13½ perforate its walls, 3¼ corrode its large vessels, and 2 or 3 kill by the sheer exhaustion and inanition they involve. There is still a proportion of about 30 ulcers in every 100 left unaccounted for.

The *symptoms* are liable to some variety, and hence the discrepancies which are to be found in the descriptions of different observers. The most constant symptom is pain in the back, over the lower dorsal vertebræ, and in the epigastrium. With respect to the latter, it is often referred to a small spot just below the ensiform cartilage. It is frequently described as dull and sickening, and it is increased by food; sometimes the pain is associated with violent pulsations, and in some few young women it has apparently been increased by the action of menstruation. There is occasionally eructation of a sour fluid, and at times nausea and vomiting. The patient generally loses flesh, but otherwise the constitutional symptoms are slight, with this exception, that in young females amenorrhœa is often produced, especially in those cases where there is copious hemorrhage from the ulcer. After the disease has continued a longer or shorter period, perforation may occur; or, failing this, there may be a severe attack of hemorrhage; but in favorable cases the ulcer gradually heals, the pains diminish, and the patient completely recovers.

Supposing perforation to result, the symptoms will be so severe that the nature of the case cannot be mistaken. There is violent pain, beginning in the epigastrium, but spreading over the whole belly; the abdomen becomes swollen and tympanitic; the patient assumes that position which most relaxes the abdominal muscles, and there is great anxiety, with rapidly increasing prostration. Moreover, these indications of the giving way of the coats of the stomach usually occur after a meal, and perhaps from sudden exertion, as that produced by vomit-

ing, coughing, sneezing, &c. After an interval, a state of almost painless collapse sets in, and death usually occurs within thirty-six hours of the time of rupture.

Perforating ulcer of the duodenum presents many of the symptoms of an ulcer in the stomach, but in a mitigated form; consequently fatal perforation occasionally takes place suddenly when the patient has previously made but little complaint. A curious observation has been made, that a sloughing ulcer sometimes forms in the upper part of the duodenum within a few days after a severe burn, and doubtless in consequence of it; but further investigation is required to confirm the statement. The ulcer may destroy life by hemorrhage or by perforation.

In the *treatment* of ulcer of the stomach, we have chiefly to support the system, and to facilitate the cicatrization of the ulcer. When the pain is very severe, hot fomentations, sinapisms and turpentine stupes, applied over the epigastrium, give relief; in obstinate vomiting, or in hemorrhage, the application of ice is more advisable. Gelseminum may often be administered with very great advantage, either alone, in the form of the tincture, or combined with henbane, Indian hemp, &c. Bismuth is also a good sedative, and may be given in ten-grain doses, thrice daily, mixed with five or ten grains of compound bayberry powder; when there is much flatulent nausea, the iodide of potassium, with columbo, when there is troublesome vomiting, hydrocyanic acid in an effervescing draught, gives relief; and when there is but little pain or nausea, some mild preparation of iron will prove very valuable; or if the patient can bear it, quinine and iron may be ordered. Supposing that aperients are needed during the progress of the case, small doses of castor oil will be most efficacious. Any of the foregoing remedies, however, will be almost worse than useless unless great attention is paid to the nature of the food and the quantity taken at each meal. In the commencement it will be better merely to allow farinaceous substances, as a little oatmeal or arrow-root, with milk, taking care that only a small quantity be used at a time; cold milk mixed with one-fourth of lime-water, to prevent its coagulating in the stomach, may be taken in small quantities at a time, to the extent of four or five pints in the twenty-four hours. It is probable that milk thus rendered alkaline is digested in the intestines, so that its administration really rests the stomach; should this even be rejected by the stomach, that viscus ought to be allowed a complete rest, nourishment and medicine being administered by enemata; then, as the symptoms decrease, more strengthening diet may be gradually permitted, until the patient can enjoy white fish, light puddings, poultry, &c. During the whole progress of the case, tea, coffee, sugar, beer and other alcoholic

stimulants, should be forbidden; but if the latter be called for by the wants of the system, only a little weak brandy and water may be ordered; and lastly, after a cure has been effected, the patient must be warned that a careful avoidance of errors in diet, of pressure over the epigastrium, as well as of violent exercise, will be necessary for many months. A single excess, several weeks after recovery, has brought back all the painful symptoms, and again placed the sufferer's life in considerable jeopardy.

CANCER OF THE STOMACH.

The stomach may suffer from scirrhus, medullary, or colloid cancer; the affection is generally *primary*. Of 9,118 cases of death from cancer, the disease was seated in the uterus in 2,906 cases, in the stomach in 2,303, and in the breast in 1,149. The pyloric aperture is the part most frequently attacked, next the cardiac orifice, and then the space along the smaller curvature. Sometimes the cancer, at the time of death, is of small extent, but occasionally, and especially in colloid cancer, the disease spreads until the greater portion, or even the whole of the stomach, is involved. When the disease causes obstruction or narrowing of the pyloric orifice, the stomach generally becomes greatly dilated. Gastric cancer is more common in men than in women, and is rare before the age of forty. Very few cases survive two years from the first appearance of the symptoms. In scirrhus, the most common variety of gastric cancer, life may rarely be prolonged for three years, while in encephaloid and colloid, death often takes place within twelve months.

The *symptoms* will vary with the situation of the disease; when it is in or near the cardiac orifice, there will be merely pain and some difficulty in passing food into the stomach; if in the pylorus, pain and sickness when, a few hours after eating—digestion being completed—the chyme has to pass into the duodenum; while, when the lesser curvature is the seat of the affection, the suffering will often be very slight.

Speaking generally, the principal symptoms may be described thus: pain in the epigastrium, of a burning, lancinating or gnawing character, augmented after eating, and often increased by pressure, pain, anterior and posterior eructations of fetid air; frequent nausea and vomiting, at first of ingesta and glairy mucus, subsequently of a bloody, sanious fluid, and sometimes of dark, grumous matter, having a coffee-ground appearance; constipation, and extreme and increasing emaciation and debility. Occasionally a pulsating tumor is felt in the epigastrium when the cancerous mass lies over the aorta; or a tumor may be detected in some part of the epigastric, umbilical, hypochondriac regions, so placed as not to receive any impulse from the aorta. And then, in almost all cases, the countenance will present the

peculiar cachectic hue and expression so characteristic of the cancerous diathesis.

In malignant as well as in simple ulceration of the stomach, *perforation* may take place, with escape of the contents of this viscus—fortunately not always into the peritoneum. Communications are this way sometimes formed between the stomach and the outside of the abdomen, or between the stomach and duodenum, or even between the stomach and the pleural cavities, lungs, or pericardium. *Gastrocolic fistulæ* are much more common than *gastro-duodenal*, while they have generally for their cause malignant rather than simple ulceration. In gastrocolic fistula, moreover, the stomach and colon are not always found closely adherent; but a cavity may intervene, as if a mass of cancerous or tuberculous matter had connected the two, and had been gradually hollowed out. The symptoms produced by such a fistula are chiefly fæcal vomiting and the expulsion of undigested food with the stools, owing, of course, to the passage of the contents of the colon into the stomach, and of the gastric matters directly into the large intestine. When these effects follow upon the symptoms of malignant or simple gastric ulcer, the diagnosis cannot be a matter of much difficulty.

ENTERITIS.

Inflammation of the small intestines varies greatly in intensity, being in some cases severe, in others mild. It may involve the entire tract, or be confined to a small portion.

It is usually ushered in with rigors, hot skin, 103°; thirst, hard, frequent wiry pulse. Pain commonly commences at umbilicus, aggravated by slightest pressure; distressing nausea or vomiting; patient lies on back, knees drawn up to relax the abdominal muscles; features very anxious, pinched. These symptoms are rapidly succeeded by great restlessness, fever greater, prostration, anxiety, tongue buff leather, but variable; constipation, delirium; the vomited matters are usually stercoraceous; pulse, at first firm and wiry, becomes imperceptible. The inflammation is generally due to some constitutional cause.

The diagnosis of enteritis is most important. The pain is the point most to be relied on—starting at umbilicus, and aggravated by pressure.

In the treatment of enteritis, perfect rest in bed, sponging; all purgatives rigidly avoided; the rectum may be emptied by enema; lime-water and milk for diet; drink teas of asclepias or marshmallow. Two drugs answer a good purpose in enteritis—opium or gelseminum; of the former, administer freely till narcotism is induced, or at all events an entire alleviation

of pain, and the drug held on to all through the case; if the latter, it is best administered in a tincture of the green root, in 20-drop doses every hour until its constitutional effects are decided, and then persevered with in smaller doses. During the administration of these, a cantharidial blister should be applied over the abdomen for six hours, followed with hot fomentations or flaxseed poultices. The even temperature of a warm poultice is invaluable in restoring the deficient vitality of the inflamed bowel. The opium is best given as follows:

℞.—Opii pulv., grs. x;
Beach's diaphoretic powder, grs., xxx;
Asclepias, pulv., ʒij.—*Mix.*

Make 20 powders. One as indicated.

The greatest possible care should be exercised, and several days after all pain has subsided, the bowels should be moved with sweet oil, convalescence carefully guarded, and a judicious selection made of some of the following tonics:

Nux vomica is an excellent remedy in indigestion afflicting persons of nervous temperament.

Cinchona, *hydrastin*, *nitromuriatic acid*, are well adapted to all cases of dyspepsia, in bilious or sanguine temperaments.

Lycopodium, *tamarac* are particularly suited to females of a lymphatic or scrofulous diathesis.

Frazerin, where a pure, bracing tonic is demanded.

Lobelia, in small doses, if there is cough, as this remedy acts as a specific upon the pneumogastric nerve.

Sulphur is peculiarly adapted to patients of a scrofulous dyscrasia, and where the dyspeptic symptoms depend upon the disappearance of some eruption.

INFLAMMATION OF THE CÆCUM.

The cæcum, or its appendix—situated in the right iliac fossa, and covered by peritoneum only, anteriorly and latterly—may be seriously diseased without any other part of the intestines being affected. Thus severe colic, and even fatal ileitis, may arise from the lodgement in this part of the alimentary canal of hard fæcal matter, skins or stones of fruit, biliary and intestinal concretions, balls of lumbrici and ascarides, &c. Sometimes the intestinal matters accumulate to such an extent as to produce a large tumor; and many are the cases where patients have recovered upon passing an immense quantity of fæces after a careless practitioner has diagnosed abscess or cancer of the kidney. When any of the morbid matters get impacted in the vermiform appendix of the cæcum, dangerous inflammation, ending in abscess, is very likely to arise; while, as we shall presently see, the persistence of disease in the appendix may form the starting-point of the morbid process in the cæcum itself.

The inflammatory process may affect only the vascular surface, or all the coats of the cæcum; in either case, the affection being termed *cæcitis*, or *typhlitis*, or *typhlo-enteritis*, so we may merely have *inflammation of the appendix cæci*, which is attended with more acute symptoms than simple typhlitis, or the abundant areolar tissue which connects the cæcum to the psoas and iliac muscles may be especially involved, and then *perityphlitis* is the rather pedantic name applied to the disorder.

Whether it be true or not that an important part of the process of the digestion is carried on in the cæcum, it cannot be denied that irritation, and perhaps the suspension of the functions of this part by disease, soon gives rise to prominent *symptoms*. Thus, there is always more or less general constitutional disturbance, slight fever, nausea, and often constipation, together with fullness and tenderness in the right iliac region, the pain being rendered exquisite by pressure upon the cæcum, or the parts in its immediate vicinity. The patient lies on his right side, with the trunk bent and the knees drawn up, so as to relax the tissues about the seat of inflammation. The pulse is not quickened to the same extent, nor is the countenance as anxious as in peritonitis or enteritis. Supposing the disease to progress, the peritoneal surface of the cæcum becomes involved, the appendix gets inflamed, and we soon have evidence of the existence of general peritonitis, while the areolar tissue may also be affected, and suppuration and abscess result. The latter may open externally, or into the intestinal canal, and the patient recover, but sometimes the matter is discharged into the cavity of the peritoneum, causing great suffering, and in a few hours death.

If the inflammation begins in the appendix from constitutional causes, or owing to the escape into this part of morbid matters, the symptoms are generally very acute, consisting especially of excruciating tormina, violent sickness, pain in right testicle and thigh, and obstruction of the bowels. Gangrene of the affected part, with general peritonitis, frequently ensue, and prove fatal. In tuberculous typhlitis ulceration occurs more frequently in the appendix than in the cæcum itself.

The early symptoms of perityphlitis are severe pains shooting from the right iliac region, diarrhœa and tenesmus, nausea, fever, &c. The parts around the seat of inflammation become swollen, and, unless resolution takes place, suppuration occurs. Frequently the abscess opens into the cavity of the cæcum, and with care the patient recovers.

Occasionally the physician meets with cases of chronic inflammation of the cæcum, in which the symptoms come on very slowly, with failing health, weakness and loss of flesh, colicky pains in the right iliac region, flatulence and anorexia, and

alternately diarrhœa with constipation. Frequently the mucous coat of the bowel ulcerates, and then there are numerous mucous discharges, with attacks of hemorrhage, the loss of blood at times being considerable. If there be much thickening of the walls of the cæcum and tumefaction, the case might be mistaken for an aneurism of the iliac artery. If death occur, it is generally from exhaustion, while at the necropsy the intestinal coats are found considerably thickened, inflamed and ulcerated. Very rarely is there perforation.

The *treatment* of all affections of the cæcum requires considerable caution. Generally speaking, anodyne fomentations or poultices will require to be assiduously applied, while opium is given internally. This latter remedy must be used so as to keep the patient free from pain, and its influence should be maintained for several days. Effervescing drinks, lemonade, and ice, will be useful in relieving the nausea, while, if it appear necessary to obtain an action from the bowels, castor oil enemata may be employed. In chronic cases I have seen most good from simple nourishing food, warm bathing, sedative liniments used night and morning, and the employment of small doses of the mineral acids with bark. If an abscess point externally, it should be opened.

DIARRHŒA.

If the absorbing power of the intestines is defective, the consequence is an excess in the quantity of matters that pass through them. That which ought to be taken up is carried along, and constitutes a diarrhœa.

Feculent Diarrhœa.—A very common form of diarrhœa among over-fed or over-indulged children, or among adults who eat an excessive quantity of food.

The characteristic symptoms of this form of diarrhœa are, looseness of the bowels, with or without griping pain; frequent discharges of feculent or thin, watery, secreted or undigested matters, sometimes acid, sometimes fetid and fermenting.

This condition is usually accompanied by partial or complete loss of appetite, pain in the stomach, swelling and tension in the lower part of the abdomen; cold, dry skin, thirst, urine scanty, nausea, straining, weakness, fainting.

The discharges are painful or painless. The secreted discharges are mucous, or serous, or purulent, of different colors and odors.

Causes of this form of diarrhœa are dentition, worms, irritating indigestible food, green vegetables, depressing influences, sudden changes of temperature.

For the diarrhœa which supervenes during dentition, an excellent remedy is the neutralizing cordial, alternated with

small doses of leptandrin; warmth, farinaceous diet, a spice-plaster over abdomen, and over all a roller; a daily salt-water bath.

In this form of diarrhœa among infants, look to the teeth. The state of the bowels often depends on reflex irritation from the dental nerves. The removal of the cause, of course, is indicated.

If the diarrhœa is caused by indigestible food, give an emetic: comp. tinct. lobelia; follow with teaspoonful doses of the white liquid physic; and if the case does not progress favorably under this remedy, with the recumbent position and stimulating applications over abdomen, give leptandrin and hydrastin. This remedy is of the highest value in diarrhœa, and may be used with good success in all forms of diarrhœa caused by irritation.

The diet is an important element. It should be such as does not require a perfect state of the digestive organs for its absorption, while it affords the patient nourishment. The best agent is milk and lime-water. The alkaline milk diet is the one that meets the indications precisely. In all cases of diarrhœa, flannel rolled over abdomen; it is a direct restorer of vitality.

Bilious Diarrhœa.—This is the next simplest form of diarrhœa. Bile, if thrown out profusely, and not concentrated by the intestinal absorption, adds largely to the amount of matter thrown off. This happens when the absorbing powers of the intestines are arrested by cold, irritation, mental emotion; it occurs, also, from congestion of the portal system in hot latitudes, in patients of a bilious or phlegmatic temperament. This causes the bile to be at times deficient, or poured out in excess. Irritation of the stomach or duodenum causes it to be retained in the liver and gall-bladder till it is unfit for absorption.

Our best aid to diagnosis is the smell. In bilious stools the odor of the hepatic secretion can always be perceived in spite of the fæces mixed with it; and at the same time it always prevents putrescence of indigested aliments, while in the grass-green stools the smell is not bile, but more or less putrid. If the discharges are mucous or slimy, or sanguineous, our best remedies are large doses of green root tincture of gelseminum, with infusion of chionanthus, nitromuriatic acid, ipecac, and podophyllin.

Serous Diarrhœa.—In this form there is an increased exhalation of aqueous fluid from the blood-vessels of the intestines, as well as an arrest of its absorption. This form of diarrhœa indicates a congested state of the venous plexus of the alimentary canal, and a consequent morbid proneness to exhalation,

and deficiency in absorption. The vitality of the mucous membrane is deficient, and if it is not restored, ulceration is the result. Our treatment here would be to watch the diet, keep a stimulating application over the abdomen, recumbent position. Give the patient:

℞.—Comp. tinct. cinchona, ℥iv;
Nitromuriatic acid, ℥ij.—*Mix.*

A teaspoonful every three hours, and alternate with gelsemin and crane's bill.

Bismuth is often advantageous. We always derive benefit from nux vomica, especially when combined with rhubarb and leptandrin. The benefit of nux vomica is by stimulating the nervous energy of the bowels.

If the general treatment fail, and the tongue clean, then the following could be given with good results:

℞.—Opium pulv.,
Tannin,
Geraniin, āā grs. x;
Aqua cinnamon, q. s.—*Mix.*

Make 15 pills, and give one after every motion of the bowels.

Muco-purulent Diarrhœa.—Dysenteric where not only water is in excess, but where we have the presence of mucus or pus mixed with it; in which, also, there are seen shreds of fibrine, blood-globules, flakes, the peculiar epithelium of the bowels. The fluid in muco-purulent diarrhœa is always highly alkaline.

Chronic Diarrhœa.—This form of diarrhœa is said to exist when either of the forms run into a chronic type, very common among the scrofulous. Ulceration of the bowels and bloody diarrhœa are often an attendant. Putridity of the stools, in this form of diarrhœa, shows that there is an imperfect quantity of bile in them; one of the functions of the hepatic secretion being to prevent the decomposition of albuminous matter.

In chronic diarrhœa the general health of the patient should be improved by all possible means—diet, bathing, clothing, nutrition; the frequent evacuations controlled with

℞.—Tinct. kino,
Chalk mixture, āā ℥ij;
Tinct. opii, ℥j.—*Mix.*

Half a teaspoonful as indicated.

In the meantime the patient should be instructed to drink freely of a tea of bayberry. No drug restores or invigorates a mucous membrane so efficiently as this, and it should be used in all cases of diarrhœa. In this form alteratives and tonics are also extremely advantageous.

CONSTIPATION.

In health, the ingesta of the intestines completes its revolution once in twenty-four hours. In that period the process of digestion is completed, the carrying forward of the contents of the stomach, the absorption of the chyle, and expulsion of the fæces, should be accomplished. Any deviation from this condition may be regarded as resulting in a state of constitutional disease. Constipation is dependent on a morbid condition, affecting either the whole or special parts of the entire apparatus, or conditions upon which their healthy function depends. There is a condition of gastro-intestinal torpor, but no structural disease. The natural peristaltic action of the bowels is deranged, either from a deficiency of healthy secretions or from a want of bile due to a torpid condition of the liver. A deficiency of bile constitutes a prominent difficulty; deficiency of nervous energy, impaired vital force; hence we often find it a symptom of scrofula, anæmia, chlorosis, debility. Constipation, if not relieved, progresses onward from bad to worse. The retention of effete matter in the bowels is a source of discomfort; it impedes the process of assimilation of the food; growth and nutrition are arrested; hence weakness, lack of nervous energy and muscular power.

The treatment of constipation by purgatives is not in accordance with the principles of true science. To cure, we must know the cause on which it depends, and cure by giving tone, stimulating nervous and biliary functions, and improve the secretory powers of the intestines. Habit has a beneficial effect on constipation—a habit of relieving the bowels at a particular time every day, after the morning meal. The act of eating gives an impulse to peristaltic action, and at these times it is easy to propagate the impulse along the whole tract. Moderation in everything, daily bathing, exercise, friction to the whole body, especially the spine.

Water, internally, is a valuable agent; drinking water beyond the demands of thirst is attended with marked benefit in all diseases of arrested metamorphosis. Habitual constipation and want of secretion in the bowels may be promptly relieved by the following:

℞.—Leptandrin, grs. iij;
Nux vomica, gr. ¼.—*Mix.*

Give at bed-time, and six drops of nitromuriatic acid thrice daily. If that fail, give ten grains of extract of ox-gall, with gr. ½ nux vomica, morning and night.

In cases where there is deficient nervous energy, electricity is very valuable. Apply the positive pole to the spine, and

bathe the bowels with the negative; or apply the positive to the tongue and the negative to the rectum.

Euoymin, combined with nux vomica, extremely valuable in constipation.

Leptandrin, triturated with pulverized liquorice, is well adapted for the constipation of children. We have found the following excellent in all forms of constipation:

℞.—Podophyllin, grs. v;
Leptandrin, grs. xxx;
Nux vomica, grs. viii;
Sulph. hydrastin, ℥j;
Ext. taraxacum, q. s.—*Mix.*

Make 30 pills. One at bed-time. Wholesome and digestible food, ripe fruits, bran bread, daily exercise, avoidance of too much sleep, &c.

DYSENTERY.

This disease is one of the greatest scourges of our country, present in every season, and almost every locality. It exhibits itself as a specific inflammation and ulceration of the mucous lining and other coats of the bowels. The cause of this terrible malady is malaria, or a poisonous miasm analagous, and for the purpose of exciting this morbid condition, its malignant powers are excited on a different set of organs, but its nature is essentially the same. It is endemic in all localities where malarial fever exists, and in some cases it is said to be contagious. It spreads rapidly if there is an absence of sanitary measures.

The predisposing causes are, strumous diathesis, constipation, abdominal weakness, general debility.

The exciting causes are, cold, chills, damp atmosphere, malaria, heat, peculiar articles of food, crude, indigestible food, green fruits and vegetables, carbonaceous food.

Now these causes do not operate directly on the rectum, but on the liver, causing a depression of that gland, thus obstructing the return of blood from the lower bowel. There is a perfect anastomosing of the hepatic and rectal vessels, so that if we have congestion of the liver, the same condition exists in the bowel—the blood, so to speak, is dammed back, and cannot return to the liver.

The seat of dysentery is the mucous membrane of the intestinal canal, and its nature is strictly inflammatory—congestive first, then irritative, and latterly, a true inflammatory condition. Let a patient, living in a malarial section, be exposed to cold or damp, when the body is overheated, it will immediately repel the blood from the surface to the internal viscera, which

is intimately connected to the skin, at least by sympathy. The internal congestion is marked by rigor, want of appetite, nausea, paleness of skin, brown tongue, bilious vomiting, yellow conjunctiva, disturbance of lungs, heart, &c. This engorgement breaks up the equilibrium between the vascular and nervous systems, and the latter, irritated by the action of a poison, is exerted in an unequal degree by the former. Hence, the first symptom of the disease is often constipation, due to the heat present in incipient inflammation. The irritative stage is marked by the beginning of the wandering tormina, but no effusion of blood, for all the hepatic and intestinal secretions are arrested. The inflammatory stage is marked by the whole mucous membrane of the entire digestive tract being in a stage of inflammation. The morbidly sensitive secreting vessels pour out vitiated, irritating secretions. Effusion of blood from the intestinal surface might be expected, to relieve the engorged organs, but the whole contents of the bowels and their acrid secretions rather increase the general distress.

The pathology of dysentery gives us a clue to its varied symptoms—an inflammation of the entire mucous tract of the rectum, due to congestion of liver. The tincture of the green root gelseminum is the best form. It should be commenced with at once, and a few drops given every few minutes, and persevered with till heat, respirations, and pulse are slightly below a normal standard; till double vision and thorough muscular relaxation is induced, then an interval of two or three hours between doses. The patient, kept in this condition for several days, until a perfect equilibrium is established, until the congestion of liver is relieved, and the circulation from the large intestine flows on uninterruptedly; under the use of this one drug all the symptoms rapidly subside, and recovery is rapid and permanent. When this peculiar morbid condition sets in, the mucous surface of the rectum becomes quickly involved, and becomes exquisitely sensitive, contracts spasmodically, and prevents the passage of all solid substances, permitting only blood, mucus, or serum to escape. Constipation is obstinate, because the fæces accumulate in the cæcum and colon, and are retained there. Alimentary matters, blood, air, vitiated secretions are propelled forward by peristaltic action. Irritation and distension soon arouses the abdominal muscles to frequent, violent, expulsive efforts; hence the great tenesmus, uneasiness, pain of a griping character. When ulceration begins, the desire to empty the bowels becomes more frequent, and is followed by shorter intervals of ease. The ulcerations in dysentery would undoubtedly be much more numerous and extensive, did not nature make an effort to arrest the activity of the inflammatory process by a diminution in the activity of the secretory functions of the small intestines, which no longer pour out

such large quantities of vitiated secretions, by a propagation of the inflammation to the muscular coat, which, when weakened by normal action, have no power to keep them so obstinately confined. The evacuations in dysentery are scanty, thin mucus, bloody, mixed with small, hard lumps of fæces. The scanty stools produce great distress, straining, particularly when the motions are dark colored, mixed with blood, purulent matter with shreds of lymph. The inflammatory condition is often propagated to the bladder. As a result we have frequent micturition, high-colored, scalding urine, great constitutional disturbance and prostration.

The disease often terminates in some change in the intestinal follicles; from the sixth to the tenth day they are dilated, break down and form small ulcerating points, and these by degrees penetrate the muscular, and sometimes we have perforation, thickening or fatal peritonites. There is often, after convalescence, troublesome constipation from contraction of cicatrices.

It often runs into a chronic, intractable form, which causes wasting and degeneration of intestinal cords, or imperfectly cicatrized ulcers remain all over the parts affected with inflammation. In the chronic form the patient wastes, skin becomes dry, scaly, fecal matter becomes mixed with blood, great exhaustion, pain, tenesmus, &c.

Two forms of structural change attend acute dysentery, and in the chronic stage they retain their distinctive characters. In one form we have large ulcers of irregular shape, chiefly occupying the rugæ and longitudinal bands, while in the other, small round ulcers. If the diathesis is strumous, the inflammation of a low grade, thickening is a frequent sequel, and often leads to stricture of the intestines.

In treatment the removal of the predisposing and exciting causes under which the disease originated is all important. Pure air, cleanliness, perfect rest in bed in the recumbent position, strictly maintained; room well ventilated, prompt removal of putrid effluvia from the evacuations are indispensable.

The diet should be restricted to mild, unirritating articles, mucilaginous and demulcent drinks, farinaceous food, sago, arrow root, rice flour, water made mucilaginous with slippery elm, gum arabic water, or by beating up the albumen of an egg in a pint of water. No cold drinks, no ice water or fermenting drinks. No beef, nor mutton, nor soups should be allowed, as they are always attended with bad results. Stimulating fomentations should be kept constantly applied over abdomen. If there seems to be a lodgement of hardened fæces, the neutralizing mixture with nux vomica and leptandrin might be given with excellent results; or, if there is much nausea or vomiting, an emetic of lobelia is the remedy from

which we derive the best results. Gelsemin, of all remedies, is our best in dysentery. Once having controlled the pressing indications, call the liver into active action with the following

R.—Sulph. quinine, grs. xxx;
Leptandrin,
Euonymin, āā ʒss;
Gelsemin, grs. vi.—*Mix.*

Make thirty pills, one every two hours, and as soon as the secretions are changed, come in with extract hematoxylon, opii, lycopin and baptisin, in small doses in combination.

Ipecac, in half grain doses every two hours, combined or alternated with gelsemin, is a most valuable prescription. If, however, in spite of these and other remedies, the stools continue numerous, watery, frothy, or bloody, a combination of bismuth, nux vomica, gallic acid, and gold thread.

Mudar may also be given like ipecac; it is a reliable cholagogue, and sedative to the muscular fibres of the intestines, but acts more particularly on the rectum and colon, rapidly allays pain, tenesmus, and puts a stop to dysenteric action.

By these remedies we can best control the morbid condition, and when this is done, if there is weakness and anæmia, quinine, hydrastin, tamarac, iron, cascarilla. During convalescence the diet should be generous—cream, raw eggs, broths, stimulants. In addition to the above remedies, we often derive most satisfactory results from hydrocyanic acid, geraniin, rhusin, hamamelin, bismuth, charcoal, pepsine, cod-liver oil, glycerine, and phosphorus, and if there is a disposition to collapse, diffusible stimulants, brandy and egg mixture with milk. If there is a loaded condition of the lower bowel, an enema of tepid water will meet the indication.

After the inflammatory condition is controlled, small doses of gelsemin every four hours are excellent, and during convalescence, phosphorus, nux vomica, rhein, iron, cinchona. Diet, milk and animal broths.

Where the gelsemin, in green root tincture, cannot be procured, digitalis might be tried, and its action carefully watched; but it does not arrest the nausea, vomiting, fever, tenesmus, frequent evacuations, and other dysenteric systems, like gelsemin.

COLIC

This is characterized by severe griping or twisting pain in the abdomen, particularly about the region of the umbilicus, occurring in paroxysms. There are numerous varieties: as colic from improper food; flatulent colic; bilious colic; nervous colic, lead colic, &c.

The characteristics of all forms are: the pain is relieved by pressure, never aggravated by it; a total absence of all febrile and inflammatory symptoms; vomiting, constipation, depression, animal heat lowered, countenance anxious. Symptoms can never be confounded with peritonitis, gastralgia, and the like.

Excess, indigestion, bilious derangement, unwholesome food, acids, and agents that undergo fermentation on the stomach; dyspepsia, absorption of metallic poisons; irritation of the intestine by morbid secretions, fæcal matter, drugs, fright, cold, hysteria, gout, are frequent causes of colic.

The symptoms in each form are modified by the cause.

So long as it does not exceed the limit of spasmodic action, it generally terminates favorably; but if there is tenderness, tension of the abdomen, symptoms of inflammation, the case is more unfavorable.

The indications of cure are, to relax spasm, and restore the peristaltic action. Warm water is a valuable remedy; warm fomentations, enemas of warm water. The warm bath is worthy of the most scrupulous attention, and should never be lost sight of, to relax abdominal spasm. The soothing effect of warm water upon the nervous system, when in a state of unnatural erethism, is too valuable to be neglected. Whatever may be the form of colic, give a teaspoonful of the fluid extracts of lobelia and dioscorea every five minutes until relaxation is perfect, then give a pill composed of the following ingredients, until the bowels freely respond:

℞.—Lobelia,
Dioscorein,
Colocynthin,
Jalapin, āā gr. j.—*Mix.*

One every ten minutes, with a strong infusion of asclepias. We have no better remedies than the dioscorein and lobelia, given with asclepin, repeated frequently until the patient is thoroughly relieved.

Flatulent bilious colic in children is best treated with

℞.—Neutralizing mixture,—℥i.
Oil anise,
Peppermint, āā gtts. ii.—*Mix.*

If it depends on the action of some special poison, the acute symptoms should be controlled, and the case treated on general principles.

Lead Colic.—This is a special form, due to the absorption of lead; hence it is common among patients who work in lead, or its compounds; sleeping in newly-painted apartments. Sailors are sometimes affected from drinking water from old wine casks. It is customary, in the preparation of some wines, to add sugar of lead, to give them a cooling flavor. The lead

is absorbed in some manner into the wood, and when water is subsequently added, the lead is taken up by the water. Lead, whether absorbed through the skin, mucous membrane, or glands, seems to diffuse itself equally through the body, although the fine, delicate muscular structure of the duodenum is principally indicated in irritating its fibres, and causes spasmodic action, so that it is usually ushered in with a grinding or twisting near the umbilicus, with retraction of the abdominal muscles to the spine and pain in the back, still there are various diagnoses, no marks, as the history of case, metallic aspect of skin, a blue line round edge of gums, skin becoming almost black when the hydrosulphate of ammonia is brushed over it; obstinate constipation, &c.

In the treatment of lead colic, the first indication is to relax spasm with lobelia, comp., internally and by rectum; fomentations of same locally, followed with an active cathartic of oil; a warm bath of sulphuret of potassium, keeping patient in it over half an hour. Great benefit is derived from this all through the case. Should these means fail, the following should be tried:

℞.—Sulphate magnesia, ℥iss;
Dilute sulphuric acid, ℥iii;
Infusion of wild yam, ℥x.—*Mix.*

S.—Two tablespoonfuls in three hours.

Just as soon as possible five-grain doses of iodide of potassium should be given every three hours, in a tablespoonful of comp. syr. stillingia. This sets the mineral poison free, and causes its rapid elimination by the secretions of the body. A chemical antidote is alum, which has a remarkable property of converting the salts of lead in the body to an innocent sulphate. If the pain is excruciating, 15 grs. of chloral hydrate should be given occasionally.

Occasionally has the use of electricity been useful in palliating the severe symptoms; it is excellent in connection with the sulphuret of potassium baths when the urgency of the attack has been relieved. The best plan is to depend upon the continued use of iodide of potassium for a free elimination of the poison. If, from necessity or otherwise, the patient is compelled to resume this occupation in lead, then, as prophylactic agent to the absorption of the poison, he should use a drink of diluted sulphuric acid, and use sulphuret of potass baths. The diet in those cases should be nutritious and light.

If it depends upon the absorption of lead, a *blue* or purplish line is seen running along the edges of the gums, just where they meet the teeth, the most obstinate constipation. The same treatment is indicated with the addition of five grains of the iodide potassium every three hours, which sets the mineral poison free, and is rapidly eliminated by the secretions.

A chemical antidote in high repute is alum, which has the power of converting the salts of lead into a comparatively innocent sulphate.

Alteratives.—Iodide potass, and comp. syr. stillingia.

Convalescence in cholera inflammation should be established upon tonics, country air, if possible. The children removed from the source of pestilence.

CHOLERA MORBUS.

Frequent and violent discharges of bilious matter from the stomach and bowels, with painful gripings, constitute cholera morbus.

In our climate it is met with in all seasons of the year, although it is more apt to prevail in the summer and autumn, when there is excessive heat, or sudden transition from heat to cold; and the violence of the disease has usually been observed to be greater in proportion to the intenseness of the heat. These and other circumstances naturally induce us to conclude that cholera morbus is the effect of a warm atmosphere, producing some change on the eight pair of nerves that supply liver and biliary duct, which change consists either in the matter of the bile being rendered more acrid, or acid, or of its being secreted in a preternatural quantity. In some instances the disease can be clearly traced to obstructed perspiration, from food that has become acid upon the stomach, or has passed into the acetous fermentation, as unripe fruit, torpor of the liver, obstruction of the bile duct, predisposed to by nervous prostration.

Symptoms.—It usually comes on with nausea, soreness, pain, flatulency in the stomach, acute griping pains in the bowels, succeeded quickly by intense and frequent vomiting and purging of bilious matter; heat, thirst, hurried respiration, and a frequent but weak and fluttering pulse.

When the disease is not violent, these symptoms, after continuing for a day or two, gradually cease, leaving the patient in a debilitated or exhausted condition; but when the disease proceeds with great violence, there arises great depression of strength, cold, clammy sweats, considerable anxiety, a hurried and short respiration, cramps in the legs, coldness of the extremities, and other symptoms of sinking, with an intermitting pulse, which quickly terminates in death.

Diagnosis.—Cholera morbus is to be distinguished from diarrhœa and dysentery by the matter which is discharged being pure bile, unmixed with blood and mucus, and scarcely any fæces. It may be distinguished from colica pictonum by the evacuations; for in the latter there is always a considerable quantity of bilious matter ejected by vomiting; still the bowels remain obstinately costive.

Prognosis.—This must be unfavorable when the evacuations upwards and downwards are accompanied by great prostration of strength, tympanitic abdomen, intermitting pulse, cold, clammy sweats, hurried respiration, hiccough, spasm of the extremities, or convulsions, but a gradual diminution of the symptoms, especially the vomiting, succeeded by sleep, or a gentle moisture of the skin, may be regarded in a favorable light.

Treatment.—From the very irritable state of the stomach in the first attack of the disease, it is almost impossible for any kind of medicine to be retained on it—everything being rejected the moment it is swallowed. To relieve this irritation, and evacuate the redundant, acrid bile, give an emetic of the c. powder of lobelia, and follow this with thirty grains of the bicarbonate of soda. After emesis has been thorough, give teaspoonful doses of either the fluid extract of prickly ash or c. tincture cajeput every ten minutes, till a feeling of warmth is experienced, and the patient relieved. In addition to these means, stimulating applications should be applied over the region of the stomach, and indeed over the entire abdomen; first, sinapisms, then fomentations. Warmth should also be applied to the extremities; first, the mustard foot-bath, then artificial heat. If the above fail, the aromatic tincture of guaiacum, given in the same doses, or the neutralizing mixture, with subnitrate of bismuth.

If prostration is extreme, wrap the patient up in a blanket saturated with mustard, and give stimulants.

I have found the following also to be effectual:

R.—Neutralizing mixture,
Tincture xanthoxylum,
Tincture leptandria, āā ℥i.—*Mix.*

Half a teaspoonful every twenty minutes, till the patient is relieved. If this does not quickly succeed, alternate with small doses of the white liquid physic, or the following mixture:

R.—Camphor, grs. xij;
Capsicum, grs. xij;
Oil peppermint, gtts. iij;
Morphia, gr. j.—*Mix.*

Make 10 powders; one every half hour.

The lungs and liver are the great decarbonizing organs of the body. The lungs are most active in cold weather, from the part they perform in generating animal heat. In summer the liver is stimulated by the heat to increased action, and forms a large quantity of bile, which is required to perform important uses in the function of digestion. In order to have a perfect state of health, these organs must be in perfect harmony; for if we have entire suppression of the function of the liver, we immediately have extreme congestion of the liver, stomach and

intestines. This condition always leads to increased sensibility, and this leads to vomiting.

The most efficacious remedies in the treatment after arresting the vomiting, are small doses of veratrum, alba. The latter agent may often be relied upon when the vomiting is extreme.

In all cases astringents are contra-indicated, as they aggravate the complaint by retaining vitiated bile in the intestines, which ought to be discharged as long as the morbid secretion from the liver continues. As the debility is usually very great, it is proper, as soon as the intensity of the disease is allayed, to begin with tonics and nourishment. For this purpose, hydrastis, cinchona, &c., will answer well, and the blandest description of food.

CHOLERA INFANTUM.

A disease peculiar to children in tropical or semi-tropical countries at an age ranging from four months to two years, or as it is termed the second summer. It is a perfect scourge in all large cities, during the months of June, July and August, and in spite of our best treatment cuts off at least one-half of the infantile population during those months.

It may be defined as a condition of nervous prostration, brought about by the depressing effect of heat acting upon the brain, but chiefly upon the eight pair of nerves that supply the liver, thus producing a chemical change in the secretion of the bile; neutral or slightly alkaline in health, becomes intensely acid under this condition of irritation.

The predisposing cause is the depressing effect of solar heat, the morbid influence of city life, deficient sanitary measures, &c.

The exciting cause may be falls, blows, cradle rocking, retarded or difficult dentition, fermentation on stomach, improper or deleterious food, labor, disease, or exhaustion on the part of mother.

The symptoms are always well decided—nausea, vomiting, diarrhœa, great nervous prostration, or irritability; patient feverish, restless heats and colds; fever, skin white, sleeps with eyes partially open, rolls head, grinds teeth, wakes up with a scream; urine high colored, scanty; rapid emaciation, diarrhœa, stools at first greenish, become chop-spinach, and prior to each motion of the bowels, the child instinctively draws its knees up and screams with the spasmodic pain induced by the passage of the acid bile over the fine delicate muscular fibres of the duodenum. As the case progresses grave changes take place: 1, in the production of an intense tubercular diathesis; 2, in either a rapid effusion of tubercle in the mesentary or on the membranes of brain—in the former constituting tabes mesenterica or marasmus; in the latter tubercular meningites.

Its duration is from ten to twelve days or as many weeks, depending a good deal on the solar condition and power of vital resistance on the part of child.

There is probably no morbid condition that excites so much serious attention as this—its mortality being very great, destroying one-half of its victims, and if not terminating in death, creates a lower stratum of vitality, a being who takes his place lower in the scale of humanity than either of his parents.

A disease of all others that produces a great national disaster necessarily attracts the attention of the physician, philanthropist and divine.

Treatment.—There are certain minor prophylactic points of great importance, with reference to our children during the first and second summer; as regards the mother, she should eat healthy, nutritious food, no liquors or articles that undergo acetous fermentation should be allowed. She should invigorate her mind with reading history, healthy mental exercise, no drugs, no menstruation during lactation. The mother's mental condition has much to do with the child, as a means of preventing the devastating influence of this disease; we need mothers with more mental calibre, more stamina. The evanescent character of the modern female is notorious. The brain structure is feeble, retains impressions faintly, so feeble that no shock can induce such changes, as are produced on the rugged mind of the male. Give us better mothers, less trashy mental material, and we have an important prophylactic against this scourge.

The condition of our city children as regards diet, hygiene, clothing, &c., should be improved. Flannel should be worn next the skin, but especially should a flannel roller be worn over the abdomen until the child is two years. Daily bathing, followed by brisk friction; in the evening wiping off the oleaginous secretion of the skin with a towel, wet with aqua ammonia and water, wiping dry, followed with inunction with olive oil. All cradle rocking, or dangling should be rigidly prohibited; every source of local irritation should be at once removed, as fermentation of stomach, teething, worms, &c. The child kept quiet, cool, free from motion or the light of sun.

To arrest the nausea or vomiting, an emetic of lobelia, followed with a plaster composed of allspice, cloves, cinnamon, cinchona, and a very small amount of capsicum made into a paste with alcohol, and applied. For fear of crumbling it is best applied between the layers of fine cloth. Diet should consist of warm milk from cow, with either lime water or bicarbonate potass, so as to prevent the casein from coagulating. If the child is not weaned, mother's milk.

At the commencement the neutralizing mixture should be given. I am most partial to this over all other drugs. Usually I find the best plan is to give it rather freely until it acts on the bowels, until the stools are thoroughly tinged with the rhubarb, then to reverse the action of the drug, and give in small doses, say five drops every two hours.

Leptandrin should be given either with this or by itself, to stimulate the liver, one or two grains in the twenty-four hours. Aconite in sufficient doses to control the fever; all points carefully guarded, every symptom promptly controlled after a thorough attention to the most minute details, then from two to four drops (according to age) of tincture of white hellebore should be given every two or three hours. This is the drug that we rely upon—in stimulating the eight pair of nerves that supply the liver—in aiding nature in effecting a cure. We continue with this in smaller doses all through the case. It is well nigh what an empiric would call a specific.

Socks kept constantly applied to feet and legs, partially filled with dry mustard are excellent to keep off a determination of blood from brain.

Head kept cool, and even an evaporating lotion of muriate of ammonia, and camphor water applied.

Any brain symptom should be met with a mixture of

℞.—Aqua camphor, ℥iv;
Bromide ammonia, ℥ij;
" potass, ℥ss;
Bicarb. " ℥ij;
Tinct. calabar bean, ℥ss;
" Belladonna, gtts. xxx.—*Mix.*

Doses as indicated.

If tabes mesenterica threaten, spices over abdomen; juice of raw beef for diet. Liberal inunction of olive oil daily.

ASIATIC CHOLERA.

This disease originates in a peculiar specific poison, which is capable of being conveyed by currents of wind from one place to another, and in being absorbed in the form of minute particles or atoms, which, when breathed or absorbed, produce specific effects, and constitute an epidemic disease of such intensity that it often proves fatal in a few hours. The poison operates upon the nervous system, the brain and spinal cord, as is demonstrated by the early prostration, coldness and lividity of surface, vomiting, purging, suppression of urine, cramps of the muscles of the abdomen and extremities, sometimes preceded by diarrhœa, but more frequently comes on suddenly, without warning. It exhibits well-defined diagnostic marks, copious secretion into the stomach and bowels of a serous fluid, albu-

minous in character, free from acids or alkalies, resembling rice water, and discharged from the bowels and mouth without effort. An arrest of all the secretions and excretions, as tears, saliva, bile, fæces, urine, perspiration; the skin cold and void of elasticity, presenting wrinkles, lead color; the mucous membrane in the same condition, tongue and breath cold (70° Fahr.). The muscles are in a state of tonic or clonic spasm, particularly in the lower extremities and abdominal muscles.

The specific poison is an infinitessimal, imponderable, morbific agent, generated from animal matter during the prevalence of some peculiar conditions of the atmosphere, and operates upon constitutions that are impaired by some depressing influence.

The symptoms of this disease usually present themselves in three stages:

1. Irritability, languor, sleepiness, confusion of head, countenance pale, derangement of stomach, diarrhœa, vomiting, symptoms that indicate the action, and also an effort of nature to eliminate a morbid poison from the system.

2. To the above symptoms, we have, in this stage, the diarrhœa aggravated. The discharges are light colored, become serous; the white flakes and rice-water discharges appear; the pupil is contracted; spasms, cramps, coldness of body, intermittent pulse. This stage usually lasts from two to forty-eight hours.

3. Suppression of urine, prostration, or collapse.

The general symptoms of these three stages, in detail, are as follows: copious vomiting and excessive diarrhœa, without pain; stools consisting chiefly of water, containing large quantities of epithelium, resembling rice-water, albumen, and a large quantity of the salts of the blood, especially the chloride of sodium; cramps so hard as to cause the muscles to contract into cord-like masses. The pulse is soft, easily compressed during the spasm; varies from 110 to 120°. The spine is inelastic; cold, smooth, pale, soon becomes of a leaden color, blueish. General temperature, 65 to 70°. The expression of the features is ghastly; eyeball sunken, glassy; cold, clammy sweats; tongue and mucous membrane of mouth cold; distress at the pit of the stomach; burning at the epigastrium; unquenchable thirst, albuminuria; suppression of urine and all secretions; breath and surface cold. The heart and its ramifications, the blood-vessels, the whole circulatory system, are affected by spasm; so is the respiration. The force of the poison is on the nervous system, which becomes early and decidedly affected; hence the whispering, husky voice, shrinking of the whole body, pinched features, contracted pupils. If the symptoms are not relieved, the breathing becomes less frequent; the rough, hoarse, husky voice becomes spasmodic;

the pulse thread-like and intermitting; circulation arrested; complete paralysis of lungs.

If the patient survives forty-eight hours, and exhibits signs of improvement, he may recover rapidly if the pulse rises, if the stools become bilious, respiration and circulation restored.

But very often improvement is only transient; suppression of urine, contracted pupil, &c., continue, and death is preceded by tonic and clonic spasm, vomiting, stertor and coma.

In still more favorable cases, a mild, febrile exacerbation follows, and subsides gradually in a few days; or this consecutive fever is of a more severe type, and a low typhoid condition follows; a contracted and immovable pupil often ushers in the symptoms, then suppression of urine, next an intermitting pulse, which is rapidly followed by thread-like peculiarity.

The symptoms and pathology of this disease emphatically demonstrate that the poison, or effluvia, operates positively and specifically upon the spinal cord, which is found, in all cases, after death, to be inflamed or congested, or entirely surrounded and compressed with serum.

Treatment—If this epidemic prevails, the most rigid sanitary and hygiene measures should be strictly enforced, and a high standard of health maintained. All green fruits or vegetables, or indigestible articles of diet, should be scrupulously avoided; no uncleanliness, no intemperance, no fatigue or over-exertion, no breathing of vitiated air; the best diet at regular intervals; pure water. On the slightest derangement of stomach and bowels—that is, nausea, vomiting, or diarrhœa, give neutralizing mixture, f℥ss; leptandrin, gr. j; tinct. xanthoxylin, drops, xx, every half hour until relieved; and if the slightest indisposition should exist, it should be promptly checked by the neutralizing mixture and leptandrin; perfect rest in recumbent position, sinapisms of capsicum and vinegar to the entire abdomen and spine, and probably the best drink is an infusion of the inner bark of the white mulberry, ℥ij; bayberry bark, ℥ss, to a quart of water. A wineglassful every two or three hours; plain, nutritious food, simple astringents, and, above all, the most perfect rest in the recumbent position.

If the disease has actually set in, if the premonitory symptoms have exhibited themselves, place the patient in the most comfortable apartment in the dwelling; have an equable temperament of 80° Fahr. The diarrhœa and vomiting are evidently efforts of nature to expel the morbid poison from the system. I have found it good salutary practice to give a stimulating emetic, as follows:

℞.—Pulv. green lobelia, ℥ij;
" bayberry bark, ℥j;
" capsicum, ʒss.—*Mix.*

Or, a tablespoonful of pulverized green lobelia, capsicum and

bayberry, āā, to half a pint of boiling water. Give a wine-glassful every five minutes until free emesis is produced; follow this with the neutralizing mixture, leptandrin and bayberry. Get the liver to secrete with copious draughts of chionanthus; perfect rest; oil or the powdered capsicum and alcohol to abdomen, and on each side of the spine. The acupuncturator should be applied, followed with equal parts of oil capsicum and lobelia. The common cup and scarifier may be used on each side of the spine.

Opium in every form is contra-indicated because it increases the congestion of the cord. Large doses, ranging from fifteen to thirty grains of bromide potass., in a tablespoonful of water, with twenty drops tincture calabar bean, are of undoubted utility. As a drink, the white mulberry tea, or iced champagne, or soda-water.

If the pupil is contracted, and there are indications of spasms, cramps, coldness, intermitting pulse, these symptoms must be met promptly with the following:

℞.—Antispasmodic tincture, thus,
Tinct. lobelia, f℥ij;
" capsicum, f℥j;
" cypripedium, f℥j—*Mix.*

Of this, give a teaspoonful in a tablespoonful of water every half hour. A teaspoonful mixed in a tablespoonful of sweetened water, or simple syrup, every hour, and alternated with 20-grain doses of bromide potass.

If sinking is threatened, one drop of oil of capsicum in a teaspoonful of the tincture of prickly ash, as often as indicated; powerful revulsives to spine. While these or other remedies are acting freely, give plenty of well-salted juice of raw meat or beef essence; relieve thirst with iced champagne; keep a sinapism, all through the case, over the gastric region. If cramps, coldness or sinking come on, depend upon oil capsicum. Give it in half-drop doses every half-hour in mucilage, and alternate with the following as frequently:

℞.—Chloride sodium, grs. xx;
Carbonate soda, grs. xxx;
Chlorate potass., grs. vj.

Dissolve in water, and give at a dose.

When vomiting is incessant, both medicine and drinks may be given in teaspoonful doses every few minutes.

If there is much irritability of the stomach, keep up active counter-irritation, and, above all things, maintain the recumbent position; and if there is much heat or burning pain, give either the carbonate or sulphate of soda. The following mixture might be thrown up the rectum:

℞.—Castile soap-water, f℥iv;
Tinct. opium, f℥i;
Spirits turpentine, drops, xx.—*Mix.*

Repeated every two hours, if necessary.

Iced champagne is excellent. Hot sand-bags around the entire surface of the patient; hot bricks to feet; hot bottles of water to axillæ and groin; dry frictions valuable; rubbing by attendants with diluted oil or tincture or infusion of capsicum. In all cases spasmodic tendency must be subdued with comp. tinct. lobelia and bromide potass, in doses that can be tolerated.

The isolation of the patient is important. Remove the bed from the walls, and put glass under the feet of the bed; surround him with pure air.

The excretions should be removed in a bed-pan, with powerful disinfectants, and the greatest caution should be exercised in diet during convalescence. Liquid diet should be the rule, beef essence, farinaceous substances, until the biliary and renal secretions have been thoroughly established.

Convalescence should be established upon mineral acids, cinchona, hydrastin, phosphorus, shower-baths, irritation of plaster to spine.

INTESTINAL WORMS.

Man and other animals enjoy a condition of perfect health so long as their vital forces resist the influences without and within them, that have a tendency to destroy them. We might say that life is but a struggle between the animal and vegetable parasites, with which we are surrounded. Wherever a condition of vital depression exists, this forms a seat or focus for a vegetable or animal germ to originate—a breach of continuity of skin gives us a germ there; or relaxation, loss of vitality or contractility of the mucous membrane of stomach and bowels, forms a field for the elaboration of parasites.

The number of animal parasites that are generated in the alimentary canal are variously described as between thirty and thirty-five; but the enumeration of these serves only to gratify a morbid curiosity, for, practically speaking, they can readily be reduced under three varieties, so that a description of these is sufficient.

They are sometimes called entozoa—an animal inhabiting the intestinal canal—possess an alimentary canal, and hence are called hollow worms, some varieties have no abdominial cavities.

1. *Ascaris Vermicularis or Ascarides.*—A common variety, white and thread-like, very slender, and only from one-fourth

of an inch to an inch in length. They possess great celerity, and when touched contract to about half their length. Their seat is the large intestines, and are most abundant near the termination of the rectum. But they have been found even in the stomach.

2. *Lumbricoides.*—Somewhat resemble the common earth worm; they are round and the size of a goose-quill; yellow and transparent belly; from four to twelve inches in length. Their principal seat is the small intestines, but occasionally found in the colon and rectum. They are sometimes discharged in masses, being united in balls.

3. *Tænia or Tapeworm.*—A long worm, formed of a chain of flat articulations connected by a membranous order; each of the links is possessed of independent vitality, and capable of becoming a distinct worm, five to fifteen yards long, and in breadth from two lines—at its narrowest part—to four or five at its central or broadest portion. The head of this parasite—more properly its root—is small and flattened, having in its centre a projecting papilla, armed with a double circle of hooks, around which are four suckers or mouths, by which the worm attaches itself to the mucous coat of the bowel. The generative apparatus consists of a ramified canal or ovarium, containing the ova, and of a minute spermatic duct, both occupying the center of each joint or segment. It is probably nourished by imbibition through its tissues, just as algæ imbibe nourishment from the sea-water in which they float. Researches have shown that the tænia solium is the same parasite as the cysticercus cellulosæ of the sheep, pig, &c.

The species called *armed tapeworm* is found exclusively in human subjects; it is difficult to effect its expulsion, as it is armed with two small fangs, which enable it to hold on tenaciously to the mucous membrane of the intestines. It is usually expelled in joints, which resemble gourd-seed.

Signs of Ascarides.—Irritation and intolerable itching and pricking pain, with swelling at the extremity of the rectum. Occasionally they produce imflammation of the rectum, and discharges of blood with tenesmus.

Signs of Lumbricoides.—Pricking and rending pain in the umbilical region; colic with rumbling noise in the abdomen, occasioned by the worm irritating the mucous membrane with the sharp cutting point of its head.

Signs of Tænia.—A feeling of something alive in the bowels, with a sense of weight; bitings felt in regions of the stomach; the abdomen swells and subsides at intervals; voracious appetite; livid complexion; vertigo and dilated pupils; vomiting; convulsive trembling of the body; small portions of the worms, like gourd seed, pass with the fæces.

The predisposing cause.—Scrofulous diathesis, giving a relaxed condition of mucous membrane, and excess of mucus, in which the parasites germinate; the exciting cause, certain articles of diet and medicine, as sugar, pork, cathartics, want of exercise.

The symptoms are variable where worms exist; still the following are nearly always met with; capricious appetite, acid eructations, pain in the stomach, grinding of teeth during sleep, fetid breath, picking at the nose, hardness of the abdomen, griping pains about the umbilicus, heat and itching upon the arm, short dry cough, and general emaciation. Evening exacerbations, irregular pulse and convictious, twitches, dark ring round the eyes and mouth. Leucorrhœa in girls, irritation of the organs of generation in men.

Treatment.—In the treatment of worms, great attention should be paid to the general health, clothing, bathing, diet, hygiene, no pork or saccharine agents allowed. Remedies should be given to bind up and astringe the mucous membrane of stomach and bowels, as bayberry, gold thread, and tonics as comp. tinct. cinchona and nitromuriatic acid to promote assimilation. This is important, for when we give remedies either for the destruction or expulsion of the worms, this preliminary treatment prevents their generation.

Our remedies should then be solicited, according to the species of parasite intended to be expelled, and our remedies are either expulsive, destructive, chemical or mechanical.

For the Ascarides.—Enemas are of the greatest use; an injection of a solution of table salt, bayberry, podophyllum, aloes, lime water, and camphor water, internal tonic treatment.

For the Lumbricoides.—Our best drug is santonine. Santonine and podophyllum, santonine and salicine. In the use of santonine for the chemical destruction of this worm, care should be taken to observe that it is of a pure white color, not yellow; it should be given in small doses, gr. i, at bed time, followed in the morning with a dose of comp. syr. rhubarb and potass. Small doses as above are best adapted for our children, as the santonine in large doses is very irritating to the liver, besides its action as a vermifuge; it is, perhaps, the most bracing tonic promotor of assimilation in the materia medica.

In *tapeworm* I have found the oils of pumpkin seed, male fern and turpentine, the most admirable combination ever introduced, followed by an active cathartic of podophyllum and jalapin. An infusion or extract of kosso, may be used with advantage; kamela is also excellent.

The following is a good formula for the expulsion of tapeworms:

℞.—Pumpkin seed, pulv., ℥i;
Ergot, pulv., ʒii;
Pomegranate bark, ℥ss;
Water, ℥iv;
Croton oil, gtts. ii;
Gum arabic, ʒii;
Male fern, ʒii.—*Mix.*

Give little by little at one dose.

Prior to the use of the above, the patient should be well-starved for a day or more.

The above prescription rarely fails to cause its entire expulsion. The combined agents produce asphyxia of the parasite.

OBSTRUCTION OF THE BOWELS.

Intestinal obstruction is a fearful disorder, which may arise from several conditions. The most frequent cause, perhaps, of an obstruction to the passage of the fæces through a part of the intestinal tube, is strangulated hernia; so that, consequently, in every case of obstinate constipation, the practitioner should make a careful examination of those parts of the abdomen, thigh and hip; and, in women, of the vagina, at which the intestine may protrude.

Three divisions of the causes of intestinal obstruction are made, viz.:

I *Intermural*, or those originating in and implicating the mucous and muscular coats of the intestinal walls.

(*a.*) Cancerous stricture.

(*b.*) Non-cancerous stricture, comprising:

(1.) Contractions of cicatrices following ulceration.

(2.) Contractions of walls of intestine from inflammation, non-cancerous deposit, or injury.

(*c.*) Intussusception.

(*d.*) Intussusception, associated with polypi.

II. *Extramural*, or those causes acting from without, or affecting the serous covering.

(*a.*) Bands and adhesions from effusions of lymph.

(*b.*) Twists or displacements.

(*c.*) Diverticula.

(*d.*) External tumors or abscesses.

(*e.*) Mesocolic and mesenteric hernia.

(*f.*) Diaphragmatic hernia.

(*g.*) Omental hernia.

(*h.*) Obturator hernia.

III. *Intramural*, or obstructions produced by the lodgment of foreign substances.

(*a.*) Foreign bodies, hardened fæces; concretions having gall-stones for their nuclei. In the first-class, the large intestine

is affected more than twice as frequently as the small; in the second-class, the reverse happens. The average duration of the attack of obstruction is shorter in the first-class than in the second. On the whole, the average is about three weeks.

When the strangulation is due to bands or twists, the lower part of the ileum is the most frequent seat of the mischief. In intussusception, that condition where one part of the bowel is drawn into another portion, just as the finger of a glove is pulled within itself, the passage gets completely obstructed by the congestion, effusion and inflammation which result. Most frequently the intussusception is single; the traction is usually from above downwards; that is to say, the upper segment of the bowel is drawn into the lower; in probably half the cases the ilium and cæcum are protruded into the colon. It is most common in children; while, in addition to the sickness, constipation, sudden violent pain, &c., there is often a discharge of blood and mucus per ano. In a number of instances the inflammatory action ends in gangrene, and many inches of the included sphacelated bowel may come away by the rectum, leaving the canal of the gut free, so that a cure will often ensue if care be taken not to disturb the adhesions. With regard to cancerous stricture, the sigmoid flexure of the colon, and less frequently the rectum, are parts usually affected; the general symptoms of malignant disease being superadded to the signs of the intestinal tube.

Symptoms.—The principal symptoms are constant vomiting, which is at first simple consisting of the contents of the stomach and mucus, but which in a few days becomes stercoraceous or fæcal; pain varying in degree, often very severe; gradually increasing tympanitis, with violent borborygmi, unless the obstruction be high up; severe hiccup, particularly in strangulation of the upper part of the small intestine; great mental depression, and the pathognomic symptom, constipation. Very careful palpation will often detect, at an early period, a feeling of increased fulness just above the obstruction, while percussion elicits diminished resonance, more marked at this point than elsewhere. In almost all instances the prostration sets in early; acute peritonitis is not very uncommon, and gangrene is most frequent in intussusception and obturator hernia. The lower the obstruction is situated, the less urgent will be the vomiting. If, for instance, it is in the duodenum, the vomiting will be incessant from the beginning; if in the colon, it may be absent for some time. It might be thought that the ilio-cæcal valve would prevent the return of the contents of the colon into the ileum; the preliminary dilatation, however, renders this valve quite patulous. When urine is freely secreted, the obstruction cannot be very high up, since absorption is only partially checked. The urine, however, may be scanty

when the seat of occlusion is low down, if there be copious vomiting of fluid, or if there be present much fever.

It has been shown conclusively that the natural peristaltic action of the bowel above the occluded point is not reversed, but that the intestinal contents are gradually propelled until stopped at the obstructed point. Here they accumulate so as to distend the canal with a liquid mass, and then a double current is formed; one at the surface or periphery of the tube having the direction of the peristalsis itself, and one in its centre or axis, having exactly the reverse course.

When the obstruction is in some part of the small intestine, and our treatment fails to remove it, death usually occurs in a period varying from five to ten days; while occlusion of the colon, from being attended with much less pain and distress, may not prove fatal for several weeks. Moreover, it must be remembered that in cases apparently quite hopeless, a spontaneous cure sometimes takes place even at the last moment; so that the more protracted the duration of the disease, the greater is the chance of recovery.

Treatment.—In the management of cases of obstruction of the bowels, there is at first a period when the diagnosis can only be doubtful. At this early stage purgatives may be resorted to, though they need never be of a violent or drastic nature. An ounce of castor oil may be given, or, preferably, an enema of lobelia may be tried, the patient being directed to retain it for an hour or two, if possible. But directly the practitioner is convinced that there is some mechanical obstruction to the passage of the fæces, all remedies of this class must be withheld, since they are positively mischievous.

Under these circumstances, the increase in the severity of the symptoms is to be retarded by attention to the nourishment of the patient, and by alleviating pain. As regards the first point, it is certain that the more freely food and fluids are partaken of, the greater will be the distension, torment and danger. It is absolutely necessary, therefore, that the sufferer exercise great self-denial, and that, instead of attempting to quench his thirst with copious draughts, he be content to alleviate it by sucking ice, as well as by frequently washing out his mouth with cold water. To support the strength, small quantities of extract of beef, or soup thickened with flour and eggs, may be given; a little tea, with cream, is often refreshing; while brandy and water will form the best stimulant. If the vomiting be severe, food by the mouth must be stopped, and nutrient enemata trusted to. The second indication is to be carried out by the administration of opium, which is invaluable in these cases, since it relieves or removes pain, checks spasm and contraction, diminishes the peristaltic action of the bowels, and supports life by lessening waste of tissue. Large quantities

will usually be needed, and no preparation is better than the watery extract, given at first in grain doses every four, six or eight hours. Relief will also be afforded by the assiduous employment of sedative fomentations.

But are there no direct means which may be tried in order to overcome the obstruction? There are two: a surgical operation, and the injection of large quantities of fluid, with manipulation of the intestines by pressure upon them through the abdominal walls.

The want of success which has attended the operation of gastrotomy has been so universal, that many excellent surgeons now consider it unjustifiable; arguing, that while, on the one hand, this proceeding has almost always proved fatal, on the other, many desperate cases which have been let alone, have ended favorably, recovery setting in at the last moment. Allowing the force of these objections, it still seems that there are a few perhaps exceptional instances where surgical interference may be the means of prolonging life, when all else seems to have failed. Thus, if we can be certain that the obstruction is due to malignant disease, or to some tumor in the sigmoid flexure of the colon or rectum, opening the colon in the left loin and forming an artificial anus, may be the means of relieving such sufferings and prolonging life. So, also, in cases where the obstacle is in the transverse portion of the colon, the same proceeding may be resorted to in the right loin. Again, if, by a careful and searching examination, we can come to the conclusion that the occlusion is in the small intestine, and is caused by a diverticulum, or by a contracting band of organized lymph round the bowel, it is the duty of the surgeon to perform gastrotomy. On the contrary, in the case of intramural obstructions, of intussusception, of stricture from the contraction of cicatrices of obstruction, complicated with enteritis or peritonitis, in neither of these instances has any operation the least chance of success. The use of large enemata, with manipulation, remains to be mentioned. And first it must be remarked, that though this proceeding is here spoken of at the end of this section, it is really to be practised at a very early stage, and certainly before there is any fear that the tissues have become gangrenous. Supposing that ordinary injections have failed in their object, the patient should be placed on his back, with the pelvis considerably elevated, while the shoulders are depressed. A long stomach-pump tube is then to be carefully passed as high as it will go; the anus is to be compressed around the tube by pressure with the hand and napkins, and warm water is to be slowly injected, as much as possible being thrown up, until there is distension of the bowel. As the fluid is allowed to come away, the surgeon is to press with the flat of his hands upon the abdomen, so as to move the coils of the

intestine upon one another, and to press them upwards against the diaphragm. This proceeding may be repeated more than once, and in many cases it will be advantageous to have the patient under the influence of chloroform while practising it.

HEMORRHOIDS.

The veins of the rectum are very tortuous and numerous, and form, between the mucous membrane and the muscular coats of the intestines, quite a net-work of vessels. The hemorrhoidal veins unite in forming the inferior mesenteric vein, which, with the superior mesenteric vein, the vein from the spleen, and the gastric vein, compose, by their union, the great portal system vein, which supplies the liver with blood.

A congested condition of the entire pelvic circulation, which involves not only the rectum, but the entire digestive tube in inflammatory, spasmodic, and neuralgic affections, is a predisposing cause of hemorrhoidal disease.

Hemorrhoids are the most common diseased condition of the rectum—more frequently demand attention than any other condition of the lower bowel. Any cause which operates upon the rectum in such a manner as to impair the integrity of its vascular and muscular structure, may induce the disease. Debility, then, is a frequent cause, permitting permanent dilatation, or a varicose condition of the veins of the rectum.

Piles are met with in two locations, either internal, or outside of the sphincter muscles of the rectum. Sometimes they exist together.

Both forms, in their primary condition, depend upon a varicose condition of the veins of the rectum. Debility or weakness of the veins of the rectum is the predisposing cause. With this there is usually associated congestion or obstruction of the liver, an impediment to the flow of blood to the liver from the rectum, and with this condition existing there is a congestive condition of the pelvic circulation, which involves not only the rectum, but the whole digestive tract. Various conditions may bring about an impairment of the vascular and muscular structures which surround the veins, with a subsequent relaxation and permanent dilatation or varicose condition of the vessels, beside weakness. The most common exciting cause of hemorrhoids is habitual constipation, dependent on hepatic torpor, which is followed by headache, cough, intestinal irritation; mania, hypochondria, neuralgia, dyspepsia, &c.; other causes, as drastic cathartics, ascarides, horseback exercise, protracted diarrhœa, sedentary habits.

External piles, if indolent, are troublesome only from their bulk, but if they become congested or inflamed, they may give rise to tenesmus, backache, irritability, uterine irritation.

Internal piles are met with as dilatations of plexus of hemorrhoidal veins, in which the blood has coagulated; also as spongy vascular growth, resembling erectile tissue; also as pendulous tumors, composed of fibro-areolar tissue. This form of hemorrhoidal tumor protrudes during defecation, as their pressure produces paralysis of sphincter ani, that muscle becomes powerless; relaxed, they protrude permanently unless when patient is in recumbent position. Loss of blood, often considerable; great uneasiness about the rectum, tenesmus, irritation of bladder, and of the uterus in women. Mucopurulent discharge, derangements of all the functions.

From the intimate connection of these veins with the liver and other organs, we have great constitutional disturbances; vertigo, headache, dyspeptic symptoms, languor, lassitude, prostration, melancholy, constipation, and great congestion about the rectum, pain in the bladder, perineum, thighs.

Treatment.—The grand desideratum is to get rid of the constipation, and this should be accomplished with suitable diet, ripe and wholesome fruits, and the habitual use of cold water as a drink. Enemata of cold water, and if they are much inflamed and very painful, great service will be derived from the external application of the same.

If medicinal agents are required to overcome constipation, give a combination of nux vomica, leptandrin, and juglandin, sufficient for the purpose. Then with special remedies we should tone up the varicose veins of the bowel. For this purpose nothing can excel the hamamelis, given internally, and used in the daily enemas of cold water. The morbid condition responds to the action of the drug. Our next best special remedy is the pilewort, administered internally in tincture or decoction. It also makes a valuable ointment for external piles. The ointment is made as follows: Chop the leaves fine, cover over with melted lard, and boil till they are crisp; then strain off the lard, which is converted into a most excellent remedy for piles, superior to gall or any other application. An ointment made of the oil of the horse-chestnut is also extremely valuable, and the oil of the same plant given internally in doses of from ten to thirty drops. If there is great congestion, I have derived most satisfactory results from a poultice of mullein leaves.

Nitromuriatic acid is specially indicated in all forms of piles. A peculiar action on the hepatic function is well appreciated here; give in comp. tincture of cinchona bark.

Sulphur, in small doses, is of utility; phosphorus, sepia, pulsatilla, tormentilla, benzoine, are all useful.

For bleeding piles, an ointment of the perchloride of iron or carbolic acid and glycerine.

For their radical cure, neither the ligature, nor excision, nor any other destructive mode is so valuable as the application of chromic acid. It is convenient of application, and does not spread nor excite much inflammation like the counterirritants.

PROLAPSUS OF THE RECTUM.

This may be described as an extrusion of the mucous and submucous coats alone, through the expulsive power of the muscular coat of the rectum; but it is, properly speaking, an inversion of all the coats of the bowels, the pressure of the bowels above, aided by the contraction of the abdominal muscles. In ordinary cases, when the sphincter is contracted, its strength is sufficient to resist the bearing-down forces above; but when the bowels act, the sphincter is relaxed, and the strain tells on its lateral adhesions. The rectum is provided with a strong coat of longitudinal fibres; but its power may be inadequate, or paralyzed, if constipation has prevailed for a long period of time. The most palpable causes are debility and habitual constipation, diarrhœa, dysentery, purgatives, straining from stone of the bladder. Prolapse, if neglected, is very liable to terminate in inflammation or ulceration of the part.

The leading points to be observed in treatment are the following: The tumor should be returned; anoint the protruded part with olive oil, and then apply a uniform pressure. If the protruded bowel is so much inflamed that it cannot be returned, take a tablespoonful of the extracts of belladonna and lobelia, and add a teacupful of elm flour; add boiling water sufficient to make a poultice, which apply to the perineum and anus, after which we shall be most likely able to reduce it.

In children affected with prolapse of the rectum, it is often advantageous to have them pass their motions in the recumbent position, so as to prevent straining. When the patient is about, a pad and T bandage should be worn. The general health should be improved by hydrastis, iron, glycerine, and constipation prevented by nux vomica and leontodin. Astringent enemas are very valuable, as an infusion of hamamelis, or the perchloride of iron in water.

If the case is bad, and resists the ordinary means of treatment, a radical cure can always be effected as follows: Thoroughly evacuate the bowels with castor oil and an enema; then place the patient upon his hands and knees, insert the ordinary anal speculum, then take strong nitric acid and make one vertical streak; turn the speculum a little and make another; continue on until five or six are made round the entire bowel; withdraw the speculum, put the patient to bed, and give one

grain of opium every hour, for several hours, so as to keep the bowels thoroughly confined for a week.

STRICTURE OF RECTUM.

Stricture of the rectum may be partial or complete—either a small portion of condensed tissue, or a complete ring encircling the bowel.

The usual symptoms are constipation; the fæces passed in small, flattened pieces; great difficulty in voiding them; flatulence; pains in the loins and sacrum; mucus discharge, stained with blood; general depression of the general health. If ulceration follows, burning pains, great tenderness about the loins, and constitutional disturbance.

The only successful treatment is mechanical dilatation with bougies, passing a small instrument smeared with belladonna ointment and iodide potass, gradually increasing the size of the instrument, and continuing treatment for some months. The bougies are best made from gutta percha. They should be used daily, or at least every other day, and retained for half an hour each time.

Spasmodic stricture is common in patients of a nervous temperament, and is best relieved with lobelia, belladonna, gelsemin, dioscorein.

RECTAL ULCERATION.

Ulceration of the coats of the rectum is not infrequent, especially as a consequence of acute or chronic dysentery, of diarrhœa, especially colliquative, and of tenesmus.

More frequently a complication of other maladies, as those of the lungs, liver, &c., than a primary and simple lesion; not infrequently associated with other diseases of the rectum, with lesions of the urinary and genital organs, or with tubercular formations, especially in the lungs.

Symptoms.—Tenesmus; a mixture of purulent, sanious and mucous matters in the stools; pain during the passage of the fæces, and often partial prolapsus of the inner coats of the rectum, with more or less escape of blood. If low in the rectum, it may be felt upon examination, thickening and induration of the edges, and irregularity of the surface serving to distinguish it; otherwise its presence may be known from the history of the case, and from the character of the stools; also from the pain under the sacrum and pubis, during evacuation of the bowels. It occurs most frequently in women.

Treatment.—Avoid constipation by mild aperients, cod-liver oil, nourishing food, but no stimulants; belladonna ointment.

Make a longitudinal incision through centre of ulcer and superficial fibres of sphincter ani; two grains of opium so as to confine bowels for a few days afterwards. Good tonic treatment to improve the general health, and allow the ulcer to heal.

RECTITIS, PROSTATITIS, INFLAMMATION OF RECTUM AND ANUS.

Symptoms of acute rectitis, heat and pain at the anus, extending under the sacrum; frequent desire to go to stool, with straining, nothing passing away but mucus, or an exudation of lymph, like in croup; if fæcal matter passes, it occasions fearful pain; considerable prolapsus, with spasmodic construction and severity of the attack. Its various terminations, 1st, in resolution; 2d, hemorrhagic exudations; 3d, in ulceration of the inner coats of the bowels; 4th, in abscess in the vicinity of the anus; 5th, in inflammation of the hemorrhoidal veins, or in chronic inflammation.

SUBACUTE AND CHRONIC RECTITIS.

The subacute form manifests similar symptoms to those of the acute, only they are milder, and often of long duration; frequent in females; and then the recurrence of the catamenia is often succeeded by resolution of the inflammatory action. When neglected or improperly treated, it passes into the chronic form.

CHRONIC RECTITIS.

Chronic Rectitis may be seated in the mucous surface; or, if of long duration, it may extend to the connecting cellular tissue, producing tumefaction or thickening of the parieties of the bowel. Chronic rectitis is more frequently complicated than simple, and then it may be either the primary or secondary affection.

Symptoms.—Tenesmus; aching pain under the sacrum; slight prolapsus of the inner walls of rectum after evacuation; or by dysuria and frequent micturition; and by exudation of mucus from the anus.

Terminations.—1st, resolution; 2d, ulceration; 3d, fistulous ulceration; 4th, fissures of the anus; 5th, tumefaction, thickening, induration, and constriction of the coats of the rectum; and 6th, ulceration.

Treatment.—Rest in horizontal position; milk and farinaceous diet; sedative enemata, saline draughts, hot hip-baths.

DISEASES OF THE LIVER, PANCREAS AND SPLEEN.

THE LIVER.

The liver is the largest gland in the body, weighing from three to four pounds, and measuring laterally about eleven inches, antero-posteriorly about six, and in greatest thickness about three inches. It is situated in the right hypochondriac, epigastric, and a part of the left hypochondriac regions. The upper surface is convex and in relation with the diaphragm, the under surface is concave and in relation with the stomach, duodenum, hepatic flexure of the colon, right kidney and suprarenal capsule.

The upper surface is divided into a right and left lobe—the right much the larger—by a fold of the peritoneum, the broad ligament, the under surface is divided into five lobes, the right, the left, the *lobus quadratus*, the *lobus caudatus*, and the *lobulus spigelii*. It is held in position by five ligaments, four being folds of the peritoneum, and the fifth, the *ligamentum teres*, a fibrous cord, the remains of the umbilical vein. It has five vessels, the hepatic artery, the hepatic veins, the hepatic duct, the portal vein, and the lymphatics. The hepatic artery, from the coeliac axis supplies the liver with arterial blood. The portal vein brings the blood from the digestive viscera to the liver. The hepatic veins carry the blood from the liver to the ascending *vena cava*. The nerves are from the hepatic plexus of the sympathetic, the pneumogastric and the right phrenic. Its color is a dark reddish tint.

Its structure is composed of lobules connected by fine areolar tissue, and the ramifications of the branches of the hepatic vessels. Each lobule is composed of cells, a plexus of ducts, a branch of a vein and minute arteries. The minute ducts unite until they emerge from the lower surface in two trunks which unite to form the hepatic duct. Into this the cystic duct from

the gall bladder enters and the two form the *ductus communis choledochus.*

The gall bladder is a reservoir for the bile from the hepatic duct, it being full after a fast, and empty during digestion.

The liver has both a depurating and assimilating function. It was long supposed merely to separate the bile from the blood, but it is now well understood that it produces sugar by metamorphosis of some of its own organic ingredients; that this is produced from its own tissue independent of the nature of the food. It is not produced from the blood by decomposition of the elements of the blood in the vessels of the organ, but from the substance of the hepatic tissue. When thus produced it is absorbed by the blood and transported to other parts of the body. The chemical changes which thus produce sugar from glycogenic matter is part of the nutritive process by which the tissue is sustained and nourished. The liver also elaborates fatty matters. The blood of the hepatic veins that leave the liver contains much more fat than that of the portal vein which enters it. So also the albuminous matter in the mesenteric veins, on its way from the intestine to the portal vein, is quite different from that of the hepatic veins, the former being a crude albuminous matter and the latter true blood albumen. The liver then is an assimilating organ.

Its depurating action is exhibited in the secretion of bile by which the hydrocarbonaceous portion of the effete matters from the blood is removed, as the effete nitrogenous portion is removed by the kidneys.

The bile, while it is partly excrementitious, exerts an important influence upon the process of digestion. It has an antiseptic action on the contents of the intestines. It stimulates the intestinal walls, and by a peculiar physical action on the fats and the intestinal parieties, disintegrates the fats, and moistens the villi, thus facilitating the absorption of fatty matters.

THE SPLEEN.

The spleen is the largest of the ductless glands. It has an elastic fibrous envelope which sends inward small flattened fibrous bands called trabeculae, often uniting so as to make a framework with irregular interspaces, filled with a reddish pulp. The pulp consists of nuclei and cells mingled with blood corpuscles in all stages of disintegration.

The organ is very vascular and richly supplied with lymphatics, connected to the smaller arteries at the ends, sides and bifurcations are the *malpighian bodies of the spleen.* These bodies are identical with the pouches or shut sacks of the lymphatic

glands, containing a molecular fluid, with nuclei and cells in all stages of development.

The spleen in its normal condition averages about seven ounces in weight, but in some morbid conditions it has weighed 20 pounds. Naturally it is largest during digestion, reaching its maximum about the fifth hour after a meal. Situated in the left hypochondriac region, its relations are such that its great variation in size occasions the least possible inconvenience to other organs.

The splenic vessels are very large in proportion to the size of the organ; the artery being the largest branch of the coeliac axis, and its vein five or six times larger than the artery, and, unlike other veins, without valves. It is richly supplied with lymphatics.

The function of the spleen is two-fold. 1. It is a diverticulum for the blood from the portal circulation during digestion, and from the general circulation in certain abnormal exigencies. 2. Its malpighian bodies are associated with those of other blood glands in the production of blood corpuscles.

That it is a diverticulum for the blood is manifest from its great distensibility, its convenient position, the great relative size of its vessels, the exceptional absence of valves in the vein, permitting the retrograde flow of blood; together with the palpable necessity of such a provision to divert from the portal circulation, during digestion, the fluids absorbed from the digestive viscera, which are in excess of the immediate capacity of the liver, as well as to receive the excessive influx of blood from the peripheral capillaries and veins caused by chills, &c.

That it is associated with the lymphatic glandular system in the production of blood globules is apparent from the analagous structure of the splenic malpighian bodies with the shut sacks, solitary or aggregated in the blood glands generally, and the fact that the white blood corpuscles are in much larger proportion in the splenic and hepatic veins, than in the general circulation, while in the splenic artery they are very scanty.

THE PANCREAS.

The pancreas is a conglomerate gland, in structure analagous to the salivary glands. It is situated transversely across the posterior wall of the abdomen, at the back of the epigastric and both hypochondriac regions. In length it is from six to eight inches, in breadth about an inch and a half, and in thickness from a half inch to an inch. In shape it slightly resembles a hammer. Its right extremity forms the *head*, the left forms the *tail*, and the intermediate portion the *body*. Its head is embraced by the concavity of the duodenum, and its tail extends to the spleen, and is over the left kidney and suprarenal capsule.

A lobular fold of the gland, placed transversely on its posterior aspect, and sometimes detached, is called the *lesser pancreas.*

The pancreatic duct or *canal of Wirsung*, extends transversely from left to right through the substance of the pancreas. It opens into the *ductus communis choledochus* near its entrance into the duodenum. In structure the pancreas closely resembles the salivary glands, but softer and looser in texture.

The vessels of this gland are its arteries derived from the splenic and pancreatico-duodenal branch of the hepatic and the superior mesenteric, and its veins, opening into the splenic and mesenteric veins. Its lymphatics terminate in the lumbar glands. Its nerves are filaments from the splenic plexus.

The pancreas secretes and discharges into the duodenum a clear, colorless, ropy and somewhat viscid fluid, nearly odorless, with a strong alkaline reaction. It is very similar to the saliva, but possesses in a much higher degree the power of converting starchy matters into sugar. It seems to be the principal use of the pancreas to furnish this fluid for the purpose of digesting the amylaceous portions of the food that has escaped the action of the saliva. Bernard believes that it is solely by the action of this secretion that the fat is reduced to a condition in which it can be absorbed and digested, that is, decomposed into glycerine and fatty acid. But this view has not generally been accepted. Although the change takes place, when pancreatic juice and fat are mixed together in a test tube, upon which Bernard seems to have based his opinion, it is not probable that the same change occurs in the intestines, the acid gastric juice acting as an interfering agent. It has been claimed that the pancreatic fluid has the power to dissolve albuminous matters; but this view cannot be substantiated. The better view seems to be—and various experiments support it—that this fluid acts mainly upon the starchy substances, and acts, also, auxiliary to other digestive agents upon the fats, though not so directly and decidedly as upon the starchy portions.

ACUTE INFLAMMATION OF THE LIVER.

It will thus be seen that the liver is the largest and most important gland in the body, being one of the great decarbonizing organs. In order to the maintenance of health, it is indispensable that the lungs, skin and liver perform their appropriate share of the work; for, if the liver is too much taxed, we have a morbid condition produced. If the function of the liver is impaired, the stomach and large intestines, and indeed, the whole system becomes deranged. If malaria, or solar heat be present and the vital forces low, there is still a greater tendency for the portal circulation to become engorged.

The principal diseases to which the liver is liable are inflammation and its results.

The liver is more likely to suffer from depression than any other organ in the body, because it is intimately connected with them.

The special symptoms are pain in the head, with vertigo, mental depression, yellow conjunctiva, brown-coated tongue, nausea, vomiting, fœtid breath, dyspeptic symptoms, pain in the right side and shoulder, shooting in the back, cough, dullness on the apex of the right lung, caused by depression of the eight pair of nerves that supply the liver, which are reflected on the upper part of the organ; there may be difficulty of lying on the left side, jaundice, febrile disturbance, great depression, clay-colored stool.

The ordinary causes of inflammation of the liver are: solar heat, malaria, carbonaceous food, as saccharine, fatty, alcoholic; mechanical violence, diseases of blood.

The treatment must be very energetic; control febrile symptoms with aconite, veratrum and asclepias, alternated with six-drop doses of nitromuriatic acid, in water, every three hours; sponge the patient as often with water acidulated with the same acid. This will excite a new action in the granular structure of the liver. The best counter-irritant is to paint the pure acid over the region of the liver, and keep cloths, wet with the same, over the entire region of the organ.

The nitromuriatic acid has often been successfully employed in chronic hepatitis, in all cases where it is associated with constipation and dyspepsia; it has a peculiar influence on the biliary secretion, and seldom fails to determine the action to the skin.

Nux vomica is of rare value where the disease is the result of indulgence in the too free use of alcoholic stimulants; also where there are excessive sensitiveness of the region of the liver to the touch, pressure in the hypochondria and region of the stomach, bitter sour taste, vomiting, thirst, headache, and voidance of *red* urine.

Leptandrin.—This remedy can scarcely be over-valued in the treatment of inflammation of the liver. It altogether supersedes the use of mercury.

It augments the biliary secretion efficiently though gradually, correcting the secretion, and securing restoration to the healthy action of the bowels, where they have been affected with diarrhœa, cholera infantum, dysentery or constipation; equally appropriate where there is habitual torpor of the liver, jaundice, dyspepsia or hemorrhoids.

Podophyllin.—This remedy is peculiarly valuable, acting almost as a charm as a specific to the disease. Moreover, its curative virtues seem to be appropriate to all the leading

symptoms accompanying this affection. Some of these are: voracious appetite, nausea and vomiting after a meal, fulness of the head, waterbrash and heartburn, sensation of emptiness in the epigastrium, stitches from coughing, and depression of spirits accompanying gastric affection. A sensation of fulness on the right side of the abdomen, dragging weight in the region of the descending colon; colic, with pain in the transverse colon, followed by diarrhœa; pain in the bowels, relieved by bending forward and by warmth. Valuable also in chronic hepatitis, with constipation, flatulence and headache; also in chronic diarrhœa, with prolapsus ani during stool, and from the least exertion. Chionanthus virginica is also very valuable. The following is a good prescription:

℞.—Podophyllin, grs. iij;
Sanguinarin, grs. ij;
Euonymin, grs. v;
Hyoscyamin, grs. j;
Ol. capsicum, gtts. ij.—*Mix.*

Make ten pills; a pill three times a day.

CHRONIC INFLAMMATION OF THE LIVER.

The symptoms are similar to those of the acute form, but less severe in character. Great weakness and loss of energy, with inclination to sleep the greater part of the time; despondency and indifference to life, and enlargement and induration of the liver. It often succeeds, and is a result of dyspepsia, disturbance of lungs, dullness on apex of right lung, suppression of the various discharges, depression of spirits, sudden pecuniary losses, want of exercise, &c., exert a potent influence in inducing this affection.

The skin is dry and harsh, and to overcome this condition, the daily use of cold *sponging* and *bathing*, succeeded by vigorous exercise, is an excellent adjunct to other medical treatment in securing a restoration of the cutaneous functions.

The treatment is of great importance. Diet should consist of articles rich in blood-making elements, but in a rigid avoidance of carbonaceous food, as beef, fat, sugar, whiskey. External stimulation over liver, daily bathing, exercise, change of habits. Remedies calculated to rouse, stimulate, energise the liver should be administered.

A selection from some of the following cholagogues should be made and given to the patient. Remedies changed weekly, so that the patient may not become habituated to any one drug.

Podophyllin, a true hepatic stimulant; it should be invariably combined with some other drug to prevent it irritating the fine muscular tissue of the duodenum, such as leptandrin, euonymin, nux vomica, hyosciamus, bitartrate potassae.

Chionanthus virg., either alone or in combination with the above, forms an invaluable remedy.

Nitromuriatic acid, invaluable as a stimulant to the granulated structure of the liver.

Phosphate soda, used in all articles of diet instead of common salt, has a good effect in promoting a free flow of bile.

Sulphur, in some form, is a true cholagogue, and therefore a valuable drug combined with taraxacum and ox gall.

Beside a special treatment to act upon a depressed gland, a general alterative and tonic treatment is admirable, and should be pushed with vigor.

For it must ever be borne in mind that, if chronic inflammation of the liver is not thoroughly cured, plasma, either with fatty elements, if the patient indulges in alcoholic drinks; or if of temperate habits, plasma with starchy amyloid elements; consequently, fatty or amyloid degeneration of the liver is to be apprehended in all cases of chronic inflammation of that gland. Now it is a notorious fact that when this condition of degeneration takes place, that either enlargement (hypertrophy) or a diminution in size (atrophy) also takes place. When this occurs, obstruction to the proper circulation of the gland, and an exudation of the watery elements of the blood (exosmosis) take place. In atrophy this effusion is small in amount, but gradual and persistent; in hypertrophy it is the same; but, owing to the distension of the peritoneal coat that covers the liver, distension of the fibres of that membrane, there is great effusion, much more so than in atrophy. Those conditions give rise to ascites.

Cirrhosis.—This is a general term employed in waxy and fatty degeneration of the liver; it is invariably the result of chronic inflammation of the areolar texture, followed by an exudation of lymph, and an organization of that into contractile fibrous tissue, and hence results the obstruction. The condition is one in which atrophy or hypertrophy rapidly shows itself.

Acholia.—In cirrhosis there is apt to take place a suppression of the secretion of the bile, which in a short time often proves fatal.

HYPERTROPHY OF THE LIVER.

Prominent symptoms are, weight in the right side of the abdomen, with sharp pain; obstinate constipation; urine scanty, which at first is colorless, then turbid, with brick-dust sediment; loss of appetite, despondency, desires for death, with inclination to suicide. Resistance of the right hypochondriac on palpation. Three hard lumps may be felt under the false ribs, belonging to the thin edge of the liver; pressure on this part causes sharp pains and great difficulty of breathing.

The *chionanthus virg.* is the appropriate medicine; no less suitable for the moral than the local symptoms, but most valuable in its curative effects when both trains of symptoms manifest themselves.

FATTY DEGENERATION OF THE LIVER.

The superabundant fatty matter in the liver exists in the form of oil-globules within the proper nucleated cells of the affected organ. Both the number and size of these oil-globules is enormously increased. A half of the entire bulk of the liver is composed of them in many cases, and the organ is much larger than natural. When the quantity of oil is *less*, the liver presents what is known as the "nutmeg" appearance.

The distention of the abdomen always causes inconvenience, but the functions of the organ may not be much deranged. The disease advancing, the augmentation, the increase of the fatty matter which was first destined to form a portion of the bile, becomes a poison obstructing the process of secretion.

CANCER OF THE LIVER.

The grand characteristic symptom is enlargement of the liver till it reaches below the false ribs, it may be to the brim of the pelvis; is irregular and knobby to the feel on applying the hand, its surface being covered with cancerous tuberculated growths. The size is diminished but in a few cases. The enlargement is progressive, occurs in the middle of life; the cause is eminently obscure.

Constant pain and tenderness are also decisive symptoms of cancer. Iodine, aconite, and cannabis are the most useful remedies. The treatment does not differ from that recommended as the general treatment of cancer. The prognosis is confessedly unfavorable, the cases usually having a fatal termination.

INFLAMMATION OF THE GALL BLADDER AND DUCTS.

Symptoms.—Pain in the situation of the common duct; fever, constipation, nausea and vomiting. Mechanical irritation of the gall-stones is the cause of this affection, which becomes aggravated by the thickening of the lining membrane of the ducts. The early appearance of a large moveable, pear-shaped tumor, occasioned by projection of the gall bladder, which is painful and tender, distinguishes it from inflammatory jaundice.

ULCERATION OF THE GALL BLADDER.

This lesion often occurs in the severer forms of remittent fever. In temperate climates it is associated with the presence of gall-stones, which so often close the cystic, or even the common biliary duct. This last form terminates in incurable jaundice; cases occur in which the gall duct becomes closed, and the parenchyma of the liver atrophied; in these cases the *secretion* and *excretion* of the bile is suspended. The continuance of life, in such cases, depends on the condition of the other excretory functions. The gradual, but progressive wasting from impaired nutrition, brings on death as the ultimatum.

GALL-STONES.

These usually consist of a solid concretion from bile, are usually formed in the gall bladder, more rarely in the liver and in branches of hepatic duct. Calculi or stones, when found in the gall bladder, are globular or oval, or pear-shaped; when formed in branches of hepatic, they are irregular in shape, rough, tuberculated, and of a dark color; when met with in the excretory passages of the liver, they are commonly gritty, sand-like deposits, or small stones. They are usually composed of cholesterine, cholochrome, earthy and alkaline salts, phosphate and carbonate of lime and magnesia, fatty acids

Gall-stones are very light in proportion to their size; when newly passed they sink in water, but if kept a few hours before they become dry they float. The lightest are composed almost entirely of cholesterine.

A gall-stone obstructing the bile duct, gives rise to severe pain, which is not constant, but comes and goes; there is no tenderness on pressure; nausea, vomiting of acid matters, hiccough, flatulence, dyspeptic symptoms, languor, lassitude. If the concretion passes into the intestines, the pain suddenly ceases.

The passage of a gall-stone gives rise to dull pain above the liver, then suddenly pain in the region of the gall bladder, resembling colic, intermittent pain; bilious vomiting, and the paroxysms become so excruciating that the patient bends himself double, pressing his hands firmly against the pit of the stomach; the paroxysms increase in intensity, and they may stop suddenly as the stone escapes into the duodenum. Very frequently there are large quantities of acid thrown up, secreted from the surface of the stomach. If the paroxysms continue long the patient suffers from prostration; there is more or less jaundice, periodic rigors.

Calculi in the gall-bladder may exist without producing any morbid derangement. They may set up a low grade of inflam-

mation, with pains about the epigastrium, right shoulder and hip; loss of appetite, indigestion, constipation. A calculi of any appreciable size, when it enters the cystic duct, invariably gives rise to biliary colic. Great pain and tenderness of right hypochondriac and epigastric regions, with nausea, vomiting, rigors, jaundice. The irritation of the stone in passing through the gall duct, causes the vomiting by nervous influence reflected to the muscles that perform the act of emesis. The acid is due to the decomposition of the secretions of the stomach.

Treatment.—In the treatment of the symptoms of biliary colic, we should relieve pain. Gelsemin and opium may be given freely without fear, and a sub-cutaneous injection of hydrochlorate of morphia. Hot vapor bath, fomentations over the liver, and an emetic of lobelia and gelsemin.

If these means fail, give oil and gelsemin, as follows:

℞.—Olive oil, ℥iv;
Gelsemin, gr. j.—*Mix.*

Give at a dose.

This prescription relaxes and dilates the duct, and permits the concretions to escape. The oil dissolves the stones. If it is a bad case it may be necessary to repeat the prescription several times at proper intervals. Patients afflicted with gall-stones are very tolerant of gelsemin.

Podophyllin is an excellent remedy, alternated with the olive oil. Another class of solvents that have been much employed and have produced permanent cures are alkalies. Under their influence calculi are dissolved or broken up without leaving a trace of their existence. The best alkalies for this purpose consist of the salts of soda, or ammonia. The sulphate of soda and olive oil is excellent, followed up with nux vomica and leptandrin, euonymin and nux.

Friction, shampooing douches, electricity, have all been employed to favor the expulsion of stone. The diet should consist of fresh laxative herbs, grapes, fruits, roast or boiled meat, vegetables, farina—a rigid avoidance of fat. Exercise is salutary, it favors the escape of bile into the intestine, and causes a combustion of fat.

CIRRHOSIS.

This term is applied to a condition of thickening produced by chronic inflammation—an exudation of lymph. This lymph becomes organized into contractile fibrous tissue; hence results a diminution of the calibre of the portal vein, as well as of the hepatic artery and duct. From this condition atrophy or hypertrophy of the lobular structure of the liver takes place.

Either of these conditions favors congestion of the capillaries of the gastric and intestinal mucous membrane; whence fre-

quently arises hemorrhage from the nose or other parts. It also produces engorgement of the capillaries of the liver itself, as well as its peritoneal covering, and hence ascites. The cachexia of the patient also modifies. This degeneration of gland structure, if he is scrofulous, waxy, or amyloid elements are effused; if the metamorphosis of carbonaceous elements are retarded, fatty deposits ensue.

The most common cause of cirrhosis is chronic inflammation of the liver, produced by alcoholic drinks, solar heat, malaria, carbonaceous food, sedentary habits, imperfect ventilation; or from the long continued use of *blue pill* and *calomel.*

Symptoms.—Until the free circulation of the portal blood, and the secretion and flow of the bile have been, more or less, arrested by the effused fibrin, the symptoms are not well defined. Afterwards slight enlargement of the liver is always noticeable in the early stages, as soon as the fibrous tissue contracts, resulting in atrophy of the hepatic lobules; the size of the liver is generally diminished, though enlargement may exist throughout. Pain in the right hypochondrium; deranged digestion; atony or irritation of the stomach; torpor of the bowels; pain in the right shoulder; more or less feverishness; yellow, dry and rough skin, with a sallow appearance. The symptoms may ameliorate by the free use of purgatives, and a proper regimen, and the patient feel greatly improved; but presently he feels himself gradually weaker, and observes that he is losing flesh and his complexion unchanged. Months, or it may be years elapse, and the portal circulation becomes still more impeded; the extreme branches of the veins conveying to form the vena porta exude serum; hence, the enlargement of the abdomen—the dropsical effusion, but too plainly indicated by the enormous distention of the belly. Such distention of the portal system may induce an effusion of venous blood into the stomach and intestines. The hemorrhage has even appeared so early and profuse as to constitute at once the first symptom of cirrhosis and the actual cause of death.

Treatment.—Whenever this condition is recognized, great benefit will result from rigid attention to the skin, kidneys, and bowels. The diet should be good, but all carbonaceous substances should be rigidly forbidden, as fat, starch, sugar, alcohol, &c.

An alterative course of treatment should at once be resorted to, such as

℞.—Comp. syr. stillingia, ℥iv;
Tincture phytolacca,
" iris versicola, āā ℥i;
Iodide potassium, ℥ss.—*Mix.*

Dose.—A teaspoonful three times daily.

Phosphate soda should be used freely in the diet. Then a long curative treatment should be inculcated by stimulating the liver. Locally, this may be effected by exercise, electricity, irritative plaster; and, internally, by nux vomica and chionanthus virg., leptandrin, euonymin and podophyllin; and by nitromuriatic acid in comp. tinct. bark.

ACHOLIA.

A suspension of the secretion of bile may take place in fatty or starchy, or cystic degeneration of the liver, associated with atrophy or hypertrophy.

1. It may occur in acute atrophy of the liver—a condition in which the gland rapidly wastes, where there is a destruction of the hepatic cells.

Acute atrophy of the liver evidently depends on an impaired nutrition, and may be caused by great mental and physical prostration; venereal excesses; use of mercury, whiskey; malaria, and other poisons. There is usually a preliminary stage, during which the patient complains of general depression, headache, the bowels being irregular, and tenderness of abdomen. The more uniform symptoms accompanying acute atrophy of the liver are jaundice; vomiting of the ingesta of the stomach, and subsequently matter like coffee-grounds, due to the presence of altered blood; derangement of nervous system—delirium and convulsions, succeeded by stupor and coma. The pulse rather slow at first, gradually increases to 120°, becoming slow again as stupor intervenes. Tongue and teeth coated with black sordes; the dullness of spleen increases, and of the liver diminishes; constipation with clay-colored, or even black evacuations; urine tinged with bile pigment, and may be albuminous; hemorrhages from stomach, bowels, bronchi, nose, &c.; and the jaundice remains persistent—in fact increases. It may terminate fatally within twenty-four hours, seldom later than a week from the commencement of the acute symptoms.

No very satisfactory account has, as yet, been given as to how one-third, one-half, or even two-thirds of the liver disappears so rapidly—a gland so rich in blood, and without any change in the blood-vessels themselves. We know of no other disease presenting a like analogy.

The destruction of the hepatic-cells, has, however, been variously inferred, as resulting from the action of the bile, by some, as analogous to typhus by others, and still from a fatty degeneration by others.

As post-mortem examination fails to detect any morbid appearance in the brain, we must refer even the nervous symptoms to changes in the blood.

Treatment.—The severity and rapid progress of this disease, renders the treatment almost useless. Our best remedies are powerful cholagogues, frequently and persistently administered, as

℞.—Podophyllin, gr. j;
Leptandrin,
Euonymin, āā grs. iij;
Jalapin, grs. ij;
Asclepias, pulv., grs. x.—*Mix.*

Make a power and give at a dose, and repeat as is necessary.

Vomiting should be allayed by small pieces of ice in the mouth; stimulating plasters over the stomach and liver; phosphate of soda in milk. Diffusable stimulants should be given all through the case, as well as artificial heat to the extremities. Independent of the above, quinine should be given freely in some of the mineral acids.

2. Acholia may occur from the action of various poisons on the liver. Poisons that destroy the glandular epithelium, and thus lead to a complete arrest of function. Cancer cells, fatty or starchy matter, produce an impermeable state of the ductus communis, choledochus of the hepatic duct.

In these cases there is usually cerebral disturbance; jaundice; fatal coma, and death.

3. Acholia may take place from either chronic hypertrophy or atrophy.

Whatever arrests the capillary circulation of the gland, and so diminishes its nutrition may give rise to this affection.

The causes which tend to lessen the size and function of the liver are numerous and diverse; the more common are continued compression from tight lacing, hypertrophy of the heart, pleuritic effusion, and distention of the ascending and transverse colon; obliteration of the portal trunk, or occlusion of the hepatic capillaries.

Percussion reveals a change in the size of the liver, it may be greatly diminished or increased; and these symptoms specified under the first variety are generally present. In addition to the treatment already indicated, wine of pepsine, or half-grain doses of ipecacuanha and rhubarb are recommended to aid digestion.

DIABETES.

An affection of the system dependent upon a disordered state of the digestive organs, with a defect in the assimilative functions, which is characterized by a condition of extreme nervous prostration; a morbid appetite for food and drink, and a secretion of a large quantity of glucose or grape sugar. It is, properly speaking, a saccharine diathesis, for not only is the starch

of the food converted into sugar, but, owing to the morbid condition of the liver, or the eight pair of nerves that supply it, the liver secretes *per se* saccharine elements.

The primary cause then of diabetes consists in a morbid condition of the digestive and assimilative organs, which favors the foundation of sugar from the starchy or farinaceous substances introduced into the alimentary canal, and its absorption into the blood and urine.

The function of the stomach is more complicated than all other organs—it is liable to be disturbed by various natural and artificial circumstances which operate upon the human organism, and in this disease a disordered state of the digestive organs is a primary symptom, as is indicated by the uneasy sensations in the stomach after eating, impaired or increased appetite, eructation, nausea, vomiting, and dryness of the mouth and tongue.

The digestive apparatus elaborates thoroughly and perfectly in health a certain amount of chyle, and the assimilative organs take it up and appropriate it in a certain manner for the purposes of the economy. Let this apparatus be impaired, suspended, or increased by either moral or physical causes, and we have abnormal elaboration. The beautiful harmony of healthy alimentary digestion may be disturbed through the nervous system, or by agents acting directly upon the part. Mental emotion, grief, anger, fear, disappointments, the depraving passions, often suspend both digestion and assimilation. Drugs, stimulants, tobacco, tea, sedentary habits, fatigue, want of sleep, vitiated bile, acids, indigestible food are apt to impair the function of healthy elaboration of the food.

Its progress is insidious, but progressive; general feeling of depression, feverishness, and excretion of a large quantity of urine of an apple-like odor and a high specific gravity, 1035–1050; the thirst is intense, appetite voracious, still the digestive function is perverted, the aliments are imperfectly converted into chyle, a superabundance of saccharine matter is elaborated, while the activity of the absorbents is remarkably increased; dryness and harshness of the skin, constipation, and hardened fæces. There is a general breaking down of the health, extreme muscular and nervous debility, loss of procreative power; pain in the loins; coldness of extremities, with burning of the palms of the hands and soles of the feet. Debility persistent and increasing; a decrease in weight, and wasting of the whole body; œdema of the extremities; and in the latter stages albuminuria. The breath has a chloroform-like odor; sponginess of the gums, decay of teeth, mental depression, and irritability. A sense of sinking at stomach, with voracious appetite; tendency to cataract, boils and phthisis.

Death results in the large proportion of cases from the supervention of some other disease, as bronchitis, pleurisy, pneumonia, gangrene, or exhaustion.

That farinaceous aliments are converted into sugar in the stomach of diabetic patients is evident from the fact that traces of it have been detected in the matters vomited, after the use of farinaceous food. The digestive functions have lost their faculty of elaborating healthy chyle, that starchy substances in the stomach are converted into sugar by the various juices present in the process of digestion, and are absorbed into the blood either in this form or after having been converted into lactic acid.

Pathology.—There can be little doubt but that when the disease is developed there is a marked diseased condition of the brain, and I am perfectly satisfied that this is the predisposing cause in every case; hence the frequency of cases cured by phosphorus, by alteratives, and remedies that improve brain tissue.

Very elaborate researches have demonstrated that sugar is a normal secretion of the liver—that abnormal quantities may be secreted by irritating the eighth pair of nerves at their origin in the fourth ventricle.

In health the sugar formed by the liver passes into the hepatic veins, the inferior vena cava, the right cavities of the heart, and thence by the pulmonary artery to the lungs, where it is consumed. If the sugar is in excess imperfect, combustion takes place, and reabsorbtion into the blood results.

Tests.—The following solution is very useful when many observations are to be made for the detection of grape sugar in the urine: Take of bitartrate of potash and crystallized carbonate of soda, of each 150 parts, of caustic potash 80 parts, of sulphate of copper 50 parts, and of water 1,000 parts; dissolve the potash and carbonate of soda in part of the water boiling; then add the sulphate of copper, powdered; when all the bitartrate is dissolved, add the rest of the water and filter.

A few drops of this solution added to a little urine in a test tube will, under the action of heat, throw down a dirty green or yellow precipitate of sub-oxide of copper, if sugar be present.

The quantity of urine voided by a diabetic patient varies considerably, from a few quarts to as many gallons in the twenty-four hours.

Treatment.—A regulated course of dietetics is of the first importance. A rigid and careful avoidance of all saccharine or starchy articles of food should be scrupulously observed, and a liberal nutritious diet, consisting of beef, mutton, venison, fowl, game, fish, &c., should be recommended. If the patient can afford it, a sea voyage; if not, salt water baths daily. The free use of small pieces of ice to allay the incessant craving for drink.

Gluten bread, made of flour deprived of its starch, eggs, oysters, milk, and any vegetable that does not contain feculent matter, may be allowed. The body should be carefully protected with flannel. Exercise in the open air, but never fatigue. Tonics and alteratives are the medical agents required in this affection.

Our best remedies are quinine, phosphorus, nux vomica, nitro-muriatic acid, belladonna, benzoic acid, rhus radicans, hydrastin, populin, creosote, permanganate potash, and the sesquicarbonate of ammonia, in five-grain doses, acts well, especially when alternated with the phosphate of quinine.

Give the permanganate potash in ¼ grain doses at first, gradually increasing to 2 or even 3 grains, say every four hours, and alternate with hydrastin.

All our remedies should be directed to the brain rather than to the stomach, liver, or kidneys.

Glycerine, phosphoric acid, and cod liver oil, improve the condition of the patient; also iron by hydrogen; pepsine, likewise is beneficial. An emetic is good at the start; also a purgative; never afterwards.

One square inch of irritating plaster should be applied over the cervical region of the spine, and repeated daily, is of very great service.

Under the restriction of amylaceous food the patient soon becomes tired of azotised matters, hence the following substitute for common bread will be found of great value: Take the ligneous portion of sixteen pounds of potatoes, washed free from starch; three quarters of a pound of mutton suet; half a pound of fresh butter; twelve eggs; half an ounce of carbonate soda, and two ounces of dilute hydrochloric acid. Divide into eight cakes and bake brown in an oven.

This is a morbid condition above all others, that has received a most empirical treatment, but a safe rule to adopt in practice is anything that decreases the specific gravity of the urine—anything that diminishes the elaboration of saccharine matter is the best drug for the patient. After careful, varied and extensive tests, I have never been able to detect germs of any kind, so that I have derived no benefit from carbolic acid or antiseptics in treatment. It would seem that any drug that stimulates the brain, improves digestion, or acts upon the liver, improves the general well-being of the patient; indeed, so fully have I been convinced of that fact, that I have most peculiar ideas about the action of certain drugs.

Lactic acid, ordinary buttermilk, has a most remarkable effect in decidedly ameliorating every symptom, indeed all preparations of lactic acid are very beneficial.

Poplar bark in from 5 to 20 grains three times a day is excellent.

Balsam Copaiba unquestionably is one of the best remedies, its action on the organs of assimilation is decided, besides it decreases the specific gravity, and prevents the elaboration of sugar.

The following is a good mode of administration:

℞.—Balsam copaiba, ℥iv;
Bals. tolu,
Gum myrrh,
Gum guiac, āā ℥ii;
Oil hemlock, ℥iii;
Oil winter green, ℥ii;
Alcohol, 95, Oii.—*Mix.*

A teaspoonful morning and night. Ozone also is of great advantage.

HYDATID TUMORS OF THE LIVER.

Such tumors, while but seldom met with in the liver, are of still rarer occurrence in any other organ; they have, however, been found in the brain, lungs, heart, kidneys, spleen, and omentum; also in osseous structure—but of all the bones the tibia is the most frequently attacked.

These morbid growths consist of cysts filled with a colorless and limpid fluid, which again contains smaller cysts. From their rare occurrence, pathologists are not quite agreed as to their nature and classification; nevertheless, such tumors generally have hydatids floating in their fluid. Whilst naturalists describe several species, the physician is only concerned with one variety, the pill-box hydatid, which is the kind that infests mankind.

The expressive name acephalocyst has been given to them, signifying a headless bladder. It has fine, friable coats of about the consistence of albumen when coagulated. An acephalocyst is the abode of minute animalcules, or echinococci. Each echinococcus averages the $\frac{1}{200}$ of an inch in length, and nearly the same in breadth; oval in shape; the head and neck contain over thirty small hooks, arranged in the form of a circle, also four projecting processes—suctorial apparatus. The growth of such tumors is remarkably slow, and its presence unattended by any great inconvenience to the patient. When, however, the tumor has become large, it is likely to be recognized by its weight and by its compression on vena cava or portal vein. Should it burst into the hepatic duct it may pass into the duodenum, be discharged, and the sac may close and the patient recover. Should it burst either into the peritoneum or lung, the termination is otherwise—fatal peritonitis or constitutional disturbance terminating fatally.

In other cases the result is favorable even without opening of the tumor; here there would seem to be a secretion of a peculiar kind of matter within the sac, securing the destruction of the hydatids.

When situated in the left side of the abdomen, it may be connected with the kidney, omentum or spleen; and though situated in the right side, it may be either the liver, omentum or right kidney that is the seat of the growths: only, as has been already stated, the liver is more frequently the seat of such growths than any other organ.

The best, and indeed only successful treatment consists in the continued use of iodide potassium for a length of time, in doses from 3 to 5 grains night and morning.

Alkaline treatment is emphatically called for, and the free administration of the phosphate of soda should not be omitted.

JAUNDICE.

This, properly speaking, is but a symptom of some affection of the liver or gall duct.

Hence it may result from one or other of the following morbid conditions: The existence of gall-stones forming an impediment to the exit of the bile into the duodenum; hardened bile; constriction or narrowing of the gall duct, and absorption of the bile into the blood; a defective action in the secreting substance of the liver (which occurs in all morbid conditions incident to the gland), and a re-absorption of bile.

There can be little doubt but that the large per centage of cases of jaundice are due to an impediment to a flow of bile into the duodenum, from some abnormal condition of the bile; it is also a sequence of inflammation of the liver, constipation where the impacted intestine arrests the flow of bile by pressing upon the duct.

Cholestrine is the principal constituent of gall-stones, which, being in solution in healthy bile, assumes the crystalline form in this morbid concretion, which primarily exist as minute pieces of solid biliary matter, so minute that from two to three thousand distinct gall-stones have been detected in one bladder.

Jaundice is easily recognized by the yellow skin and yellow conjunctiva; the saffron color of the urine, due to the presence of bile—the higher the color the case is all the more favorable, indicating that the biliary secretion is having an exit from the system through an extraneous one; frequently itching of the skin; tongue is brown coated; nausea, and may be vomiting; diarrhœa in rare cases; clay-colored stools. In addition to the foregoing symptoms there may be prostration; coma, delirium, or peevishness. The digestive organs and functions greatly impaired, or may be a vitiated appetite.

Occasionally the cornea and the aqueous and vitreous humors are so impregnated with bile that all objects appear as if tinged yellow.

If the morbid condition is of long continuance, emaciation may speedily ensue from malnutrition. Great cerebral derangement, manifested chiefly by stupor and delirium, and the blood becomes so seriously vitiated by the biliary acids, that hemorrhages from the nose, gums, or urinary organs take place, and purpuric patches appear on the skin.

If there are gall-stones passing, there is usually great suffering, paroxysmal pains, attended with vomiting, hiccup, and extreme prostration.

Treatment.—The greatest possible care should be exercised as regards the selection of remedies, which should be adapted to the cause.

Begin by administering an emetic of comp. tinct. of lobelia, then copious drinks of bicarb. soda water; enemata composed of an infusion of mandrake; hot poultices of mandrake and lobelia over liver; saline cathartics should be given freely; and as early as the stomach will bear it, the following pill should be ordered:

℞.—Podophyllin, grs. x;
Euonymin,
Leptandrin, āā grs. xx;
Ext. hyoscyamus, grs. xxx;
Oil capsicum, gtts. x.—*Mix.*

Make 25 pills; one every two hours. Or the following

℞.—Sulphate magnesia, ℥i;
Aqua, distillata, ℥viij.—*Mix.*

Take in two doses, night and morning; or—

℞.—Podophyllin, grs. iss;
Ipecacuanha, grs. v.—*Mix.*

Take in one dose.

After a free evacuation of the bowels, prescribe the following

℞.—Tinct. cinchona, comp., ℥iij;
Fluid ext. leptandria,
" " taraxacum, āā ℥j;
Tinct. nux vomica, ℥ss.—*Mix.*

Teaspoonful morning, noon and night. Then a noncarbonaceous diet, &c.

We have found the following mixture excellent:

℞.—Podophyllum, ℥viij;
Senna alex, ℥xvi;
Leptandria verg., ℥viij;
Juglands cinerea, ℥viij;
Prickly ash bark, ℥iv;
Orange peel, ℥viij;
Nux vomica, ℥ii.—*Mix.*

All to be ground suitably fine and mixed. Extra strength by perc., with dilute alcohol. Run off 12 pints; add five pounds sugar, which *makes two gallons.* First run off four pints with slightly diluted alcohol, then dilute more, and finish with clear water.

Dose.—Teaspoonful one to three times a day.

If due to the passage of a gall-stone, tinct. of the green root of gelseminum should be given in as large doses as the patient can bear. This will relieve suffering and relax the duct. In all cases of jaundice, however, the treatment should be conducted on general principles: by alkaline baths, saline and vegetable cholagogues, and well regulated diet

PANCREATIC AFFECTIONS.

Diseases of the pancreas have elicited but little attention; partly from their rare occurrence, and partly from the difficulty of recognizing them during life.

Besides hydatid tumors, cystic tumors, concretions of calculi, &c., this organ is sometimes the seat of cancer, as well as of inflammation. Scirrhus is generally met with as secondary to cancerous deposits in neighboring parts, especially in the liver. It may exist without any increase of size, but more generally it is considerably enlarged, and may adhere to some adjacent organ, and terminate fatally before ulceration has commenced. There can be but little doubt but that many cases that have been pronounced scirrhus were merely chronic inflammation of the areolar tissue of that organ. It may be distinguished from cancer of the pylorus by the absence of the gastric disorder always occurring in the latter affection.

Acute pancreatitis, generally accompanied by dull or rather acute, deep-seated pain below the pit of the stomach, extending below the left shoulder blade, augmented by the patient bending forward, but not much affected by pressure; a feeling of constriction at the precordia; dryness of the fauces with great thirst, and symptomatic fever.

In the chronic variety the symptoms are less easily recognized; still, generally whilst there is an absence of these met with in the acute form, or some of them existing but in a less degree, however, flatulence, dyspeptic symptoms, and pain in the back are not uncommonly complained of. When it occurs as a primary complaint, it soon extends to the duodenum, stomach or liver.

Chronic inflammation, causing enlargement of the head of the pancreas, is very apt to be confounded with aneurism of the aorta. The pulsation of the aortic tumor will enable us to discriminate the one from the other. The existence of adipose matter in the fæcal discharges, associated with our suspicions

of a tumor in the pancreas, will render our diagnosis the more certain, and that the tumor is pancreatic. It will readily be conceded that an enlarged pancreas may obstruct either the pylorus or duodenum when it may be very difficult to distinguish from cancer of the pylorus. The pancreas may likewise become the seat of the fatty degeneration, atrophy, as well as of one or other of the consequences of inflammation.

DISEASES OF THE SPLEEN.

It is well known that most spleen affections disturb the general health but slightly; such a fact would appear rather startling, were we only to consider the size of that organ, which is quite considerable; but we should bear in mind that the importance of this gland is not at all in proportion to its size, but that its function, so far as understood, is rather *extrinsic* than *intrinsic*.

Enlargement of the spleen is a phrase nearly as common as a household word. It is a common sequence of severe attacks of intermittent fever; but far more frequently occurring among residents of marshy districts and of tropical than of temperate climates. Easily distinguished by the seat of the tumor—left hypochondrium, by its conformation and by the history of the case. Moreover, those so affected have a singular sallow and unhealthy appearance; anæmic condition of the whole mucous membrane and of the gums, with a dingy appearance of the conjunctiva.

The digestive organs are deranged, and the bowels are irregular, with dark-colored stools; general languor and muscular debility. In chronic cases dropsy may ensue; also precordial dullness, either from altered condition of the blood, or from the engorged spleen displacing the heart upwards, thereby interfering with the free motions of the left lung. The enlargement has been so large as to have occupied half of the abdomen; in such cases the general debility is very characteristic; the structure of the organ may either remain intact, or it may be indurated; or it may be the seat of cysts, or any of the affections to which the pancreas is liable to. If resulting from ague, give quinine, and administer purgatives freely.

In all cases, bromide and iodide potassium, and a general alterative treatment; phytolacca and iris versicola are reliable agents.

Support the general health by liberal diet, inculcate cheerfulness of disposition, and residence in a dry locality. Extract of berberis has frequently proved of service.

Hydatids in the spleen are of but rare occurrence, and scirrhus even more so, in fact it seldom, if ever, occurs, save as a secondary to its seat in some other organ.

PERITONITIS, (ACUTE.)

Inflammation of the Peritoneum.—The serous membrane which not only lines the abdomen and pelvis, but likewise invests the various viscera contained therein. There are several varieties—traumatic, tubercular, idiopathic, and puerperal; the two latter being the common varieties.

The more obvious causes are, exposure to the wet, injuries and the puerperal condition. Causes less frequent in their occurrence, are perforation of the stomach or bowels, by gradual ulceration, with the necessary passage of the ingesta or fæces into the abdomial cavity; extravasation of blood, urine or bile, into the peritoneal cavity; sudden suppression of the menses, and metastasis of erysipelas or rheumatism; cases do occur, though rarely, where the inflammation would seem to be transferred from the joints to the peritoneum.

Those portions of the peritoneum covering the convex surface of the liver and spleen, the iliac fossæ and the small intestines, are more subject to this affection than those covering the stomach, omentum, mesentery and the bladder.

Symptoms.—Sharp lancinating pain, at first more limited, but soon extending over the whole abdomen, sometimes preceded by a feeling of lassitude, pain in the limbs, and slight creeping chills, followed by flashes of heat; but frequently the pain comes on quite suddenly in the hypogastric, or one of the iliac regions. The pain is frequently so intense that the weight of the bed-clothes cannot be borne by the patient, the least movement likewise aggravating it.

To avoid this source of suffering the patient lies on her back, with the knees and shoulders raised, so as to remove the tension of the abdominal muscles, and the pressure of the bed-covering.

The abdomen is hot, tense, and more or less tympanitic; constipation; frequently the stomach sympathizes strongly with the abdominal affection; when the patient is troubled with nausea and vomiting; constant hiccough where the peritoneum covering the under surface of the diaphragm is inflamed; the voidance of urine almost entirely suspended when the peritoneal coat of the bladder is affected; the pulse is weak and wiry rapid; respiration hurried; tongue thickly coated, small, wiry, constant wakefulness generally prevails throughout, and delirium, which, however, seldom occurs till towards the conclusion of fatal cases; the abdomen becomes tympanitic, tense, and elastic, from flatulent distention of the intestines, with the great tenderness; the countenance pale; sharpness of the features, with an expression of great anxiety; respiration is very laborious in the latter stage of the disease. Occurring in the puerperal state, it constitutes what is termed puerperal fever; the lochia is arrested or much diminished. In these cases the pa-

tient usually sinks much earlier than when not connected with the puerperal condition.

If a fatal termination is about to occur, the abdomen becomes distended, the pulse thready, the countenance ghastly; cold, clammy sweats, exhaustion and death.

Acute peritonitis is generally very rapid in its progress, seldom lasts beyond six or seven days before it terminates, either in resolution or death, or passing into the chronic or subacute form; it frequently terminates fatally as early as the third day, and may be so rapid that only a few hours intervene between the origin of the inflammation and death. When it assumes the subacute form it may be prolonged over a month ere it proves fatal.

Acute peritonitis is not very liable to terminate in gangrene, but when it does occur, the abdominal pain suddenly subsides; the pulse becomes very small, frequent and may be intermitting; great muscular prostration ensues; the extremities cold and clammy; and the countenance pale, hollow, and contracted, and wandering delirium in cases terminating fatally.

Post-mortem Appearances.—The peritoneum may be highly inflamed without extending to the subjacent structures, *i. e.*, the peritoneal covering of the stomach has often been found inflamed, or even gangrenous, while the other coats of the stomach were perfectly sound. The peritoneum may present large patches of a deep purple or almost black. Adhesions between the intestines, or between them and the inner surface of the abdominal cavity; or pseudo-membranous layers may connect them. White membraniform concretions frequently found on different parts of the peritoneal surface, the stomach, liver and bowels. Effusion of a whitish fluid, containing flocculi of lymph into the abdominal cavity; and blood may be found effused into the abdomen. Small tubercles may exist between the peritoneal and mucous membranes of the bowels, and nearly always the peritoneum is well injected. Whenever effusion or suppuration into the abdominal cavity occurs, a diminution of the pain and tenderness follow, with a sense of weight and oppression in the hypogastric region; rigors, with cold extremities; soft, feeble pulse, and may be slight diarrhœa.

Diagnosis.—Distinguished from acute enteritis by a severe pain, greater frequency of the pulse, more tenderness on pressure, more tympanites, rigidity of the abdominal muscles, absence of diarrhœa by the symptoms generally being more severe than in enterites. Neither need it be mistaken for colic —this latter lacks the continuous pain, the abdominal tenderness, the tympanites, the muscular rigidity, the frequency of the pulse, and the great prostration which accompany acute peritonitis.

In rheumatism, deep, firm pressure does not augment the pain; in peritonitis it is greatly aggravated thereby.

Acute peritonitis, just as in other serous inflammations, may be *latent;* or the pain and tenderness may be obscure, owing to complications.

It is highly important to find whether the disease be idiopathic or dependent, as in the cause of typhoid or pulmonary tuberculosis.

Prognosis.—In many cases the patient sinks with awful rapidity, and is always a grave disease; and, in most cases, the danger is increased by the surrounding circumstances on which its development so often depends. In complicated cases, as those connected with gastric or intestinal ulceration, the prognosis must ever be very unfavorable. In other cases with judicious treatment, there is a reasonable hope of recovery; in such cases we have a gradual diminution of the tympanites and of the muscular rigidity of the abdomen. In most cases the convalescence is rather tardy, and the tenderness and pain are not dispersed until considerable progress towards recovery has been made.

Treatment.—No disease requires more careful and active treatment than this, and we are sorry to acknowledge that our resources are meagre. The large area implicated by the inflammatory process—the great importance of the organs—and the fearful amount of reflex irritation, soon prostrate the patient in death, unless relief be promptly administered. Rest in the recumbent position in bed. Diet should consist of drinks of gruel, crackers, water, &c.

Either turpentine cloths or a cantharidal blister should be applied over the whole abdomen; if turpentine, once and a while followed with hop fomentations; if a blister, to be kept on for six hours, and succeeded by hot, but light flaxseed poultices with tincture opii.

The internal treatment, from which I have derived the best results, has been thorough narcotism with opium. It is just as necessary to blunt the impressibility of the nerve centres, by a high grade of stimulation with this drug, as it is to produce a quasi-suspension of the nervous system by alcohol in cases of snake-bite.

Opium, then, is the great desideratum in peritonitis, because its action stimulates the vasa motor system, blunts the impressibility of the brain, and thus prevents the tremendous force of the irritation being spent in extinguishing life. Unless the patient has a strong idiosyncrasy to the drug, there is little danger of its use in peritonitis, let provided narcotism be thoroughly induced. As to the best mode of administration I am very partial to the following

℞.—Opium, pulv., grs. x;
Beach's diaphoretic powder, ℥j;
Asclepias, pulv., ℥ij.—*Mix.*

Make twenty powders.

One every half-hour or hour, according to the indication, until narcotism is induced, or an entire avoidance of pain.

If the above does not operate favorably, the following might be substituted:

℞.—Cinnamon water, ℥ij;
Acetate morphia, grs. ij;
Bicarb. potass, ℥j.—*Mix.*

One teaspoonful every hour—or the following

℞.—Tinct. opii,
" comphoræ, āā ℥j.—*Mix.*

Half teaspoonful every hour.

In some very mild cases I have tried the green root tinct. of gelseminum, carried up to its full physiological action, till double vision and muscular paralysis ensued; but have never derived the full benefit that is said to accrue from the drug; indeed, the materia medica may be ransacked, and so far opium excels all other remedies.

The treatment of peritonitis brooks no delay, as everything depends on an active persevering use of that drug.

Having administered it successfully, and the patient recovered from the state of narcotism, its use should be continued at longer intervals, say every four or five hours; being also very guarded for one or two weeks with respect to diet and tonics. After that period a liberal diet and a judicious use of tonics should be advised.

The usual termination of acute peritonitis is death if opium fails in its action; recovery may be complete, if there be little or no idiosyncrasy to this drug, or it may terminate in chronic inflammation, in which thickening by lymph and abscess, or effusion of serum, indicative of dropsy.

PERITONITIS, (CHRONIC.)

It may be the sequel of the acute form of the disease; more frequently it occurs as an independent disease; or it may be due to tuberculosis of the peritoneum. If not the sequel of an acute attack, it is so gradual and insidious, that it seldom elicits sufficient attention to call for medical aid until incurable structural changes have been formed; or, it may be, effusion into the cavity of the abdomen. The pain is rather undefined than severe, for serous membranes, in a state of chronic inflammation, never give rise to acute pain; accordingly, cases have frequently occurred where the structure was even disor-

ganized from chronic inflammation, without the patient having experienced any considerable pain. The abdomen becomes fuller, elastic, or more or less tympanitic. In many cases, however, a sense of tightness and pricking soreness is felt across the lower portion of the abdomen, after fatigue from bodily exertion. There is no tension of the skin of the abdomen as in the acute form, but it rather sits loosely upon the peritoneum, which imparts a sensation to the touch, as if a tight band were beneath the skin and muscles; the patient complains more of tightness than pain; and as it is increased by any congestion of the bowels, the relief occasioned by a free evacuation of the bowels, the patient imagines that constipation is the only cause of his ailing. There may be adhesions between the coil of the intestines, recognized by a lobulated or irregular feel of the bowels under the hand when passed over the abdomen. The bowels are torpid; the pulse but little affected before the advanced stage of the disease; the digestive function not materially deranged, but in some cases there is occasional vomiting. The face and cutaneous surface is rather pale, and languor in the countenance; febrile exacerbations toward evening, with oppressed respiration and cough when the patient lies on his back; œdema of the feet and diminution of urine. There may be disease of the lungs as a concomitant. This affection is very indefinite in its duration; it may terminate in fatal disorganization and effusion within a few months; but it may continue slow and insidiously even for years before the system breaks down by the general irritation which it ultimately causes. However protracted it always terminates in more or less effusion, or suppurative secretions in the abdominal cavity.

Post-mortem Appearances.—The intestines are often glued together by intervening false membranous matter, may even be agglutinated into one mass. Thickening of the peritoneum often takes place; it may be reddish and highly injected or but little injected and but little changed in color.

Treatment.—In some respects the treatment of chronic peritonitis resembles the acute—rest in the recumbent posture in bed; opium to blunt the reflex impressibility of brain and stimulate serous tissue; a very light farinaceous diet; secretions well regulated; rigid avoidance of stimulants; drink a tea of asclepias. External stimulation by turpentine, so as to raise the standard of serous tissue.

In chronic peritonitis we have a large range of drugs, so that while we enforce the above regimen, we can with great benefit keep the patient upon some of the following formulas, and thus establish a decided cure:

℞.—Comp. syr. stillingia, ℥iv;
Iodide potass, ℥j;
Bromide potass, ℥iij.—*Mix.*

A teaspoonful every three hours; or,

℞.—Comp. syr. yellow dock, ℥iv;
Bromide potass, ℥ss;
" ammonium, ℥iij;
Tinct. calabar bean, ℥ss;
Bicarb. potass, ℥ij.—*Mix.*

Dose as above.

℞.—Iodoform three-grain pills, three times daily.

℞.—Fl. ext. asclepias,
" " bone-set,
" " crawly,
" " bittersweet, āā ℥j;
Iodide sodium, ℥ij.—*Mix.*

Teaspoonful for a dose.

Unless dexterously treated the case will steadly run on to a fatal termination.

ASCITES.

Dropsy of the abdomen is either the result of peritonitis or obstruction of the liver, whereby the free passage of the blood through the system of the vena porta is prevented. The obstruction may be owing to a diseased condition not merely of the liver, but of the heart, kidneys, spleen, aorta or omentum.

Renal disease and cirrhosis are, however, the more frequent causes of ascites, which is rather dependent on structural lesions than on functional disorder. If due to peritonitis, our prognosis, under rational treatment, is favorable; but if due to cirrhosis liver (waxy or fatty degeneration), remedial means will avail but little.

Symptoms.—The effusion and accumulation of fluid generally occur without pain, tenderness, or other subjective symptom distressing to the patient, the enlargement of the abdomen being the first symptom that engages his attention; but the equal enlargement and fluctuation is sooner or later succeeded by a sense of suffocation in recumbent posture, and œdema of the extremities. The distension of the abdominal parietes not only occasions great inconvenience to the patient, but the functions of the contained viscera—stomach, liver, kidneys—are interrupted by compression. Moreover, pressure on the abdominal veins occasions or increases œdema of the lower extremities, the breathing is restrained or arrested, owing to pressure upwards of the diaphragm, and if the accumulation be excessive, the capacity of the chest may be so diminished as to embarrass respiration to such a degree as to destroy life.

The appetite more or less impaired, with a sense of fullness after eating; may be vomiting and diarrhœa, and less frequently hœmatemesis. The superficial veins of the abdomen,

and may be of the chest also, become dilated, presenting a varicose condition; and hernial protrusions at the umbilicus and elsewhere are sometimes met with Œdema of the limbs, and may be of the scrotum and penis, are well marked.

As the disease progresses, pallor and emaciation, and occasionally icterus, is present. There is, however, but little febrile disturbance.

Diagnosis.—We must rely on the history of the case; fluctuation; abdomen equally swollen; sense of suffocation; and negatively the absence of pregnancy, ovarian disease, or hepatic affection. The mode of dying is in the most cases by slow asthenia; apnœa and asthenia are associated when coma precedes death.

Prognosis.—Somewhat unfavorable.

Treatment.—This consists in strict attention to the diet; flannel clothing; daily vapor baths; rather active condition of the secretions; compression of abdomen by flannel roller. The area of the circulating fluids should be restricted with digitalis, of this eight drops of the tincture should be given three times daily; then an effort should be made to draw off the fluid with diaphoretics, diuretics, and hydragogue cathartics, as the following

℞.—Podophyllum, grs. xx;
Bitartrate potash, ℥ij;
Nitrate potash, ℥j;
Elaterin, gr. ss.—*Mix.*

Make twenty powders; one frequently, so as to keep up an active condition of the bowels.

The following should be given in alternation, if there is anæmia:

℞.—Tinct. ferri chl., gtts. xx;
Nitrate potash, grs. xii;
Camphor water, ℥j.—*Mix.*

Give at one dose.

Various other prescriptions may be tried, and if not successful, an alterative course should be pursued for a reasonable length of time. All these means failing, tapping should be resorted to.

Everything is to be hoped for if the accumulation is due to peritoneal irritation, but not so when dependent on the degenerate fibrous capsule of the liver, when the portal blood is obstructed, and exosmosis takes place. No remedies avail much when the liver is puckered up with hard, compacting fibrous tissue.

TABES MESENTERICA.

This affection differs but little from chronic peritonitis, only that it is invariably associated with the tuberculous cachexia, and consists of a degeneration of the mesenteric glands rather than the peritoneum. Abdominal phthisis would be a more significant name for this malady than the one it bears.

Tuberculous effusion in those glands not only destroys their structure, but arrests the passage of chyle through the convulated lacteals, which ramify in all directions throughout the entire mesentery. Infants and young children are the principal sufferers from this serious and so fatal a disease.

The abnormal product deposited in those glands may be fibrous and tough, or it may be degenerated into a soft, pulpy mass; or the albuminous portion having been absorbed, the deposit may be somewhat calcareous.

Symptoms.—Pain in the abdomen, which may or may not be preceded by indications of decay in health; the appetite fails, or may be capricious; the bowels irregular and highly fœtid; thirst and fever. The abdomen soon becomes large, tense, and tympanitic, and cannot bear pressure without the infliction of severe pain. The lips are highly colored, and the angles of the mouth are studded with small ulcers, or the entire lip may be fissured. The child loses flesh, owing to the obstruction of the chyle ducts; the face grows pale and sallow and anxious; skin dry and hot, and pulse accelerated; and the weakness steadily and rapidly increases. The size of the abdomen does not increase so much as its tension, which, however, may relax for a time, and then re-appear. When the tension diminishes the abdomen yields a solid and doughy sensation. The superficial abdominal veins are very prominent, and the skin grows rough and dirty-like. The pain increases more than the abdominal tenderness, which is almost excruciating. The diarrhœa is habitual, and as the disease advances, the child is reduced to a state of extreme weakness and emaciation. Pulmonary consumption or cerebral disorder may supervene; or the child may be worn out, and die of the disease *per se*.

Recovery can only occur when judicious treatment has been resorted to ere the functions of the glands have been greatly arrested.

Diagnosis.—Apt to be confounded with simple diarrhœa, especially of strumous children. The utmost attention must be paid to the complete history of the case, and the greatest care to view the symptoms in toto. In incipient hydrocephalus the symptoms somewhat resemble those of tabes mesenterica.

In the former, however, the cerebral disturbance is greater sickness, more constant; besides, there is usually strabismus, and the abdomen is rather flat than distended.

Any irritation of the bowels or peritoneum is extremely liable to cause effusion of tubercular matter; hence its frequency after diarrhœa, &c. Two-thirds of our infantile population are carried off by this disease.

Treatment.—If possible, the child should be removed to the country. Bathing morning and evening, the morning bath to be followed by brisk friction with salt and alcohol, the evening one to be followed by careful inunction with olive oil.

The diet should consist almost exclusively of milk and lime water, juice of raw beef, &c.; flannel clothing. If there is fever, give aconite, and if headache, belladonna. Vomiting should be allayed by the application of a plaster composed of equal parts of pulv. cloves, cinnamon, allspice, and Peruvian bark over the entire abdomen, with the addition of a small quantity of capsicum; it should be moistened every few hours with alcohol.

Regulate the bowels with the neutralizing mixture and tincture of white hellebore. If there is much enlargement of the abdomen, or rather infiltration of the mesentery with tubercular matter, have recourse to iodide potass and comp. syr. stillingia, and should this not succeed, tinct. of phytolacca or iris versicola. Every symptom must be carefully guarded and promptly met by appropriate treatment.

Follow up with Tonics.—Teaspoonful of Beach's wine bitters every four hours, or elixir cinchona comp. Finally a truly curative treatment should be resorted to by administering comp. syr. hypophosphate lime, soda and iron.

The practice of giving alcohol in this affection cannot be too highly deprecated as disastrous to the patient by obstructing the necessary removal of the fibrous capsule of the liver, and causes degeneration.

There are two essential points in the treatment: 1. To tone up the nervous system so as to provide the means for securing a perfect elaboration of blood; and 2. Neutralize acidity, for all the secretions are highly acid. Give comp. hypophosphates liberally.

DISEASES OF

THE URINARY ORGANS

THE KIDNEYS.

The kidneys are situated, one in each lumbar region, behind the peritoneum, between the eleventh rib and the crest of the ilium. They are usually surrounded with fat and held in position by their vessels. The supra renal capsules embrace the superior extremity.

Their length in the adult is about four inches, breadth about two, and thickness aoout one inch. Their weight in the male is about five ounces, in the female about four. Their substance is dense and firm, but fragile, and of a deep red color.

At the internal, concave border, is a notch, the hilum. At this the vessels, excretory ducts, nerves, and lymphatics, pass into or from the organ. The hilum leads into the sinus, a hollow space in the interior. Its capsule is fine bibro-areolar tissue which at the hilum is continued inwards, lining the sinus and forming sheaths for the vessels and divisions of the ducts.

The external, *cortical substance* forming about three-fourths of the gland, is about two lines in thickness. It sends prolongations inwards, between the pyramids. It is soft, reddish, granular, containing, scattered through it, small red bodies, the malpighian bodies. It is composed of tubuli uriniferi, blood vessels, nerves and lymphatics with a granular substance containing granular cells.

The internal, *medullary substance*, consists of conical masses, *the pyramids of malpighi*, from eight to eighteen in number. These are within the cortical substance, except their apices, which terminate in the sinus in rounded extremities called *pupillæ*. In the fœtus the pyramids are separate lobules, afterwards coalescing in the gland. The medullary substance is denser, darker, and, from the tubuli uriniferi converging towards the apices, it has a stricted appearance.

The tubuli uriniferi convey the renal secretions, opening by about a thousand orifices at each apex of the pyramids, into the pelves of the organ. Traced backwards towards the periphery

into the cortical substance, they diverge, subdivide and anastomose freely. They are of basement membrane, lined with spheroidal epithelium. They arise in the cortical substance by free closed extremities and by dilated capsules, the capsules of the *malpighian bodies*. These bodies are vascular tufts, enclosed in the dilated commencement and sides of the uriniferous tubules. The tufts are ramifications of minute arteries, the *afferent vessels*, which, piercing the capsules, divide into radiating branches. These terminate in fine capillaries, and from these arise small veins—the efferent vessels. One from each tuft passes out near the artery, and with others form a venous plexus around the tubuli. In the malpighian bodies the urine is secreted from the capillaries, conveyed away by the tubuli and the depurated blood returned by the efferent veins, which are much smaller than the afferent arteries.

The renal artery is large because it supplies blood to the organ both for nutrition and depuration, which, relieved of its excrementitious portions, is returned to the rena cana, a smaller vein. The vessels enter and leave the cortical substance between the apices of the medullary cones. The nerves are from renal plexus. The office of the kidneys is to depurate the blood.

The *suprarenal capsules*, usually described in connection with the kidneys, on account of their intimate anatomical relations, are analogous in structure with the system of blood glands, and have no special physiological relation to the kidneys.

THE URETERS.

These excretory ducts of the kidneys are contractions and continuations of the renal pelves. They are tubes about seventeen inches in length and the size of a goose-quill, extending downwards, inwards and forwards to the base of the bladder, passing obliquely for about an inch between the muscular and mucous coat of that organ. The mucous coat of the orifice acting as a valve to prevent the return of the urine. They are composed of an external fibrous coat, a middle muscular coat of two layers—external longitudinal and internal circular—and an internal mucous coat. The mucous coat is continuous with the tubuli uriniferi of the kidneys and the mucous coat of the bladder. Its epithelial cells are spheroidal. Its arteries are from the renal, spermatic, internal illiac and inferior visceral. Its nerves are from the inferior mesenteric, spermatic, and hypogastric plexuses. The office of the ureters is to convey the urine to the bladder.

THE BLADDER.

This is a musculo-membranous sac in the pelvis, behind the pubes, in front of the rectum in the male, and the uterus and vagina in the female. In shape and position it is influenced by age, sex and distension. In the male it is greatest in its vertical, and in the female in its transverse diameter, and largest in the female. Its average capacity is about a pint. It has a summit, body, base and neck. Its summit is directed upwards and forwards and is connected with the umbilicus by the urachus and the remains of the fœtal hypogastric arteries. The bladder is held in position by ligaments and folds of the peritoneum. In the male its base rests upon the second portion of the rectum, from which it is separated by a reflection of the peritoneum. In the female it is in contact with the lower part of the cervex uteri, separated from the upper part by a fold of the peritoneum, and below is adherent to the anterior vaginal wall. The neck is the constricted portion continuous with the urethra. In the male it is surrounded by the prostate gland.

The bladder has a serous, muscular, cellular and mucous coat. The serous is from the peritoneum. Its muscular is double or longitudinal and circular fibres. The cellular is of areolar tissue, connecting the muscular and mucous. The mucous coat is continuous with that of the ureters and the urethra. It has a few mucous follicles and numerous small racemose glands near the neck. The epithelium is intermediate between the columnar and squamous.

The *arteries* of the bladder are the superior, middle and inferior vesical in the male, with the additional branches of the uterine in the female. They are from the anterior trunk of the internal illiac. The *veins* form a plexus round the neck, sides and base, and terminate in the internal illiac vein. The *lymphatics* accompany the blood vessels. The *nerves* are from the hypogastric and sacral plexuses.

The bladder is the reservoir for the urine.

THE URETHRA.

This extends from the bladder to the meatus urinarius. In the male its length varies from eight to nine inches. In the female about an inch and a half. In both it has three coats, muscular, erectile and mucous. The mucous is continuous with that of the bladder. In the male it is divided into the prostatic membranous and spongy portions. Their different structural relations are described in connection with the male organs of generation. The prostatic portion is the most dilatable, and is an inch and a quarter in length. The membranous portion is the narrowest, except the orifice, and is about an inch in length.

The spongy portion is about six inches in length, and extends to the external orifice. It is about a quarter of an inch in diameter. In the female it is beneath the symphysis pubis, imbedded in the anterior wall of the vagina, and is directed downwards and forwards, and slightly curved. It is about a quarter of an inch in diameter, and is more dilatable than in the male.

The office of the urethra, in relation to the urinary organs, is to discharge the urine from the body.

THE URINE.

The urine is a solution of excrementitious substances which represent the transformation of the albuminous ingredients of the tissues. They are the refuse products of waste tissue, brought down in the blood and separated and discharged by the urinary organs above described.

COMPOSITION OF THE URINE.

Water,	938.00
Urea,	30.00
Creatine,	1.25
Creatinine,	1.50
Urate of sodium, Potassium, Ammonium,	1.80
Urosacine, Mucus,	.30
Biphosphate of sodium, Phosphate of sodium, " " potassium, " " magnesium, " " lime,	12.45
Chlorides of sodium and potassium,	7.80
Sulphates of sodium and potassium,	6.90

These proportions are approximative, varying normally within certain limits.

Urea is neutral, crystallizable, nitrogenous, soluble in water and easily decomposed. If the renal secretion is suspended by disease of the kidneys it accumulates in the blood and produces uræmia. The average quantity discharged daily is about 500 grains. Varying according to the degree of bodily activity and the proportion of nitrogenous and non-nitrogenous food.

Creatine is neutral, crystallizable, nitrogenous, soluble in water and slightly in alcohol. It exists in the muscles and blood.

Creatinine is also crystallizable and nitrogenous, soluble in water, spirits, and slightly in ether. It has an alkaline reaction. It is found in the muscles and the blood.

Urate of soda is a neutral salt, formed of soda as a base with *uric acid.* It is soluble in hot water, and slightly in alcohol. It crystallizes in small, irregular, globular masses. It dissolves in alkalies, and decomposes with acid solutions, producing free uric acid. It is often found in the blood and exudations, in gouty and rheumatic diseases. In the urine it is next in importance to urea, the average amount daily discharged in health being about twenty-five grains.

The *urates of potassium and ammonium* closely resemble urea, but occur in much smaller quantities.

The *mucus and urosacine* are organic substances proper. They are present in very small quantities. The latter, normally, is in solution, but is thrown down by accidental deposits, which, colored by the urosacine, are known as "brick-dust" sediment.

The *mucus* comes from the lining membrane of the bladder. When first discharged it is disseminated by agitation; but when the urine is at rest for some hours, it collects at the bottom in light, cottony clouds. It is an important agent in the fermentation and decomposition of the urine.

Biphosphate of sodium exists in urine by direct solution. It is derived from the phosphate of soda in the blood, decomposed by uric acid at the time of its formation, producing urate of soda, and converting a part of the neutral phosphate into the acid biphosphate. This gives the urine its acid re-action.

The phosphates of lime and magnesia, or the "earthy phosphates," exist by indirect solution. Insoluble in water, they are held in solution by the acids above described. They exist in the blood. When the urine is alkaline they are deposited in a light colored precipitate, giving it a turbid appearance. When neutral they are held in solution to a smaller extent by the chloride of sodium. The remaining ingredients are held in solution by the water of the urine.

Thus constituted, the urine in health is an amber-colored fluid with an acid re-action. The average quantity daily discharged is thirty-five fluid ounces, with a specific gravity of 1020, with about twenty grains of solid matter to the ounce.

Considerable variations from this standard of quantity, color, reaction, and weight are not incompatible with health, dependent upon the amount of fluid ingesta, perspiration, the time of day voided, &c., but a decided and persistent deviation indicates a pathological condition.

When the variations are confined within healthy limits, the solid contents are held in solution, and the urine is clear. It is affected by reagents as follows:

If acid, boiling does not produce a visible change. If neutral or alkaline, and containing a large quantity of earthy phosphates, it becomes turbid on boiling.

Nitric or other mineral acids will produce a slight darken-

ing, and on standing a little uric acid crystals will be deposited on the sides and bottom of the glass vessel.

If a free alkali, potassa or soda, be added to neutralize the acid reaction, it becomes turbid from the earthy phosphates.

Nitrate of baryta, chloride of barium, or subacetate of lead produces a precipitation with alkaline phosphates.

Nitrate of silver produces a precipitate with chlorides of sodium and potassium. Subacetate of lead and nitrate of silver also precipitate the mucus and urosacine.

These reactions are owing to normal ingredients, and do not indicate diseased conditions.

Accidental Ingredients.—Besides the natural ingredients already described, many medical and poisonous substances, introduced into the circulation, are eliminated in the same way, and appear in the urine. Such substances as iron, mercury, silver, lead, arsenic, &c., that form insoluble compounds with animal matters, are the least likely to appear unless administered in large doses. Most other substances, either in the original form or chemically changed, pass off in the urine. The salts of lactates, malates, acetates, &c., of potassium, appear under the form of carbonates, and the urine becomes alkaline from their presence.

Pure alkalies and their carbonates produce a similar effect.

Ferrocyanide of potassium injected into the submaxillary gland appears in the urine in a few minutes. *Iodine* appears soon after administration, in the urine, saliva and perspiration. Quinine and ether are eliminated in the same way. *Bile pigment* and *saline biliary substances* in jaundice, &c., are re-absorbed from the hepatic ducts and carried by the blood to the kidneys, and pass off in the urine.

When *sugar* is in excess in the blood, it may be detected in the urine. In diabetes, where sugar accumulates in the blood, a saccharine condition of the urine with increase of quantity and specific gravity constitute the leading diagnostic feature.

Albumen has been present in the urine in pleurisy, pneumonia, pericarditis, bronchitis, hepatitis, cerebretis, peritonitis, metritis, as well as in pregnancy, &c. In Bright's disease this symptom is permanent.

In these cases these foreign ingredients are derived from the blood in the same manner as the natural constituents.

ACUTE NEPHRITIS.

If we exclude those cases of a traumatic origin this is a disease but seldom met with. It may arise from cold, wet, starvation, intemperance; and occasionally resulting from scarlet fever.

Symptoms.—When excited by cold it is ushered in with rigors and chilliness, and flushes of heat—the febrile reaction preceding the occurrence of pain in the loins; when proceeding from mechanical injury, irritating substances, or from metastasis of gout or rheumatism, the first intimation of its occurrence is an acute pressing pain in right or left lumbar region. The pain is deep seated and but little augmented by pressure; but any concussive motion of the body likewise increases the pain.

The pain frequently extends along the ureters, and the testicle of the affected side is retracted towards the abdominal ring with a sense of numbness in the thigh. The urine becomes scanty; if both kidneys be affected, almost completely suppressed, highly albuminous, and not infrequently sanguiniferous; always acid and of high specific gravity. When allowed to rest it deposits a filamentous substance, of a fibrinous character.

There is uneasiness or pain in voiding the urine, caused by sympathetic irritation of the bladder and urethra. More or less fever, tongue furred or loaded, bowels constipated; nausea and vomiting, with, it may be, pain across the epigastrium, and cough is not an unfrequent symptom. The pulse is at first full, hard and frequent; afterwards smaller and more frequent.

These symptoms are generally fully developed in from twenty-four to forty-eight hours, and shortly afterwards signs of dropsical effusion appear and augment with great rapidity, being first noticeable in the eyelids and face, afterwards in the extremities, and at last throughout the body. The skin is above the normal standard of temperature, and is very dry and parched.

The greater the quantity of albumen in the urine, the lower is the specific gravity of the serum; and just in proportion as the albumen diminishes the density of the serum increases in proportion.

Diagnosis.—Easily distinguished from inflammation of the psoas muscle—in the latter affection the pain is increased on bending the body forwards, in the former this position relieves or at least lessens the pain; besides, the nausea, vomiting and constant desire to pass off urine are absent when there is only inflammation of the psoas muscle.

From lumbago, nephritis is recognized by the small quantity of urine, the dysuria, the nausea and vomiting, the pain shooting down the ureters, which are absent in lumbago; but there is increase of pain on assuming the erect position, or by any motion calling into action the muscles of the loins in lumbago; such causes but little affect the suffering in cases of nephritis.

Its terminations are—1st. In restoration to health; 2nd. In chronic nephritis; 3rd. In coma or convulsions; and 4th. In pleurisy or inflammation of some other serous membrane—death resulting from one or other of these acute affections.

Nephritis is usually rapid in its course; it seldom continues beyond seven days ere it terminates in resolution or tends to suppuration.

Terminating favorably, the fever and pain decline; the skin becomes uniformly moist; the urine copious with a diminution of its albumen; the nausea and vomiting cease; and the anasarcous swelling subsides.

The symptoms indicative of suppuration are—frequent chills; heavy throbbing sensation in the affected kidney; a slight diminution of the febrile symptoms, with a feeling of weight and numbness in the affected organ.

The abscess may burst into the pelvis of the kidneys and discharge with the urine. Purulent discharge with the urine from renal abscess may continue for months or even years; when so prolonged it is apt to produce a hectic, an emaciated condition or *tabes renales.*

We must not, however, consider every purulent discharge with the urine as resulting from renal suppuration, for it may be the result of the irritation occasioned by calculous concretion in the kidneys, or of subacute inflammation of the neck of the bladder.

Genuine pus in the urine is readily distinguished by the circumstance that it will sink down and form a uniform layer at the bottom of the vessel containing the urine; whereas the other varieties remain partly suspended in the urine. Occasionally the abscess points externally, which is apt to leave a fistulous opening that is but too difficult, and sometimes impossible, to heal; terminating under symptoms of hectic.

Renal abscesses have opened into the intestines or into the abdominial cavity, giving rise to fatal peritonitis; and cases are not wanting where the matter has passed down along the psoas muscle and pointed at the thigh like a psoas abscess.

Acute nephritis may, though rarely, terminate in gangrene or scirrhus.

Heat and nitric acid are the two principal tests for albumen in the urine. The heat should not be under 140° or over 167° Fahr. With such a heat the albumen will coagulate in the test tube, but only when the urine is acid; if alkaline the urine will fail to yield any such deposit.

Add nitric acid to the secretion until the deposit is thrown down; afterwards apply heat to render certain that the precipitate remains unchanged.

Heat alone must not suffice, for it will render the urine cloudy wherever there is an excess of earthy phosphates.

Prognosis.—Favorable under judicious treatment which must be prolonged until the urine is restored to its healthy standard —in the composition and due proportion of its constituents. The principal cause of fear is the occurrence of uræmia with subsequent structural disease of the kidney.

Pathology.—Acute nephritis is essentially a morbid condition of the epithelial cells lining the uriniferous tubes, caused by their having to eliminate matters which are not naturally excreted by the kidneys; their functions being thus modified a change as respects their nutrition likewise results, which causes their desquamation, and the secretion is arrested by the mechanical obstruction in the uriniferous tubes. Not only are the gland cells altered but the malpighian capillaries are congested, and an effusion of serum and fibrin passes into the cavity of the tubes; and the serum escaping from the congested malpighian capillaries mingles with the urine and renders it albuminous. The cortical structure is generally more affected than the medullary in this disease.

Treatment.—Perfect rest in bed; dry cupping over loins, followed by hot fomentations. The green root tinct. of gelseminum should be given freely, until its constitutional effects are exhibited, and its action maintained by doses at longer intervals. Then aconite to control fever. Convalescence should be carefully established by a judicious use of astringent diuretics, as queen of the meadow, buchu, uva ursi, pipsisewa, with stimulation over the depressed kidney.

Independent of the condition of acute inflammation, we have various conditions of active congestion, without at first any structural leison, due to puberty, the imperfect development of the germinative organs; some cases occurring in pregnancy from pressure of the gravid uterus upon the kidneys; others due to the metastasis of a poison, as in scarlet fever, measles or small-pox. In other cases, some blood disease may give us simply a passive condition of congestion or relaxation. To whatever cause, dropsy is an invariable attendant.

The treatment of such cases is based upon general principles. Keep the skin active by sponging or bathing, morning and night, and wearing flannel clothing; the diet should be generous to a fault, neither fatty, saccharine, nor alcoholic agents allowed; stimulants should in all cases be applied over the loins, such as improve or elevate the standard of vitality in the kidneys. Then the water in the cellular tissue of the body should be drained off by removing the congested or blocked up condition of the kidneys. For this purpose the bowels should be kept open with saline cathartics and tincture of digitalis given to unlock the absorbents. No condition of dropsy can be effectively removed without this drug; besides its action on the absorbents, it astringes the whole network of blood vessels, and thus prevents exosmosis, and acts as a diuretic. Diuretics are also an important class of remedies. Infusion of parsley root or asparagus, or watermelon seeds, with sweet spirits of nitre.

Still more active diuretics are indicated if the condition becomes chronic or associated with albuminuria.

BRIGHT'S DISEASE.

It is difficult to draw a line of demarcation between chronic inflammation of the kidney and what is termed Bright's disease; still it is a useful term, as it serves to group together several forms of degeneration of the kidneys. A depressed or devitalized condition of the kidney takes place from some cause or other; the excreting power of the organ is impaired so that the urea is not sufficiently separated from the blood. The flow of urine when charged with urea is retarded in its passage through the minute vessels; there is more or less irrita tion, and as a consequence congestion.

Now, wherever congestion takes place, the exudation of albumen follows as a result. The primary cause of this disease may be in the kidney itself, or it may arise from some poison operating in the blood, irritating and depressing the kidney. When brought about by some blood poison we find that the presence of alcohol or lactic acid, malaria, drugs, and other toxical agents operate rapidly and effectively. Besides arrested perspiration nature strives to eliminate all disturbing agents, through one or more of the emunctories of the body, and she always selects the most appropriate channel for their escape.

The effort of nature to eliminate the poison of small-pox from the system is by the skin by suppurating pustules loaded with poison; if that fails the kidneys suffer. The natural eliminators of the scarlatinal poison are the skin, mucous membrane of the throat, and intestinal canal. If the vital forces are feeble or fail to perform their work, an extra amount of labor devolves upon the kidneys. In measles, erysipelas and the long category of cutaneous diseases, we often have the kidneys performing an excessive amount of work; but, in addition, we have the passage of a poison through the tubuli uriniferi—an inflammatory congestion is produced, which prevents the malpighian corpuscles, and the epithelial cells of the tubes from separating normal urine from the blood, but permits the passage of albumen, fibrin, and other abnormal constituents. When real inflammation results from the action of a passing irritant, it causes deep-seated and vital derangements, which originate the complaint. Albuminous urine has been detected in typhoid fever and cholera.

The most frequent and characteristic phenomenon, associated with Bright's disease, consists in the presence of albumen in the urine, and from this circumstance, it has received the appellation of albuminuria. Another symptom is the retention of urea in the blood, to which the term uræmia is applied.

The nature of the obstruction to the renal function differs under a great variety of circumstances, but such as are accom-

panied with persistent albuminuria and dropsy may be classed under three heads: first, inflammation; second, waxy and fatty degenerations; and third, structural degeneration.

(1.) *Inflammatory Stage.*—In the chronic form of inflammation the occurrence of dropsy may be the only symptom that attracts attention. On testing the urine chemically it is found to be albuminous; and on examining it microscopically, various casts with epithelial cells, blood corpuscles and other morbid products may be seen—exudative casts of the uriniferous tubes—desquamative casts, epithelial matter, and free nuclei of the tubes.

(2.) *The Waxy and Fatty Varieties.*—The former variety is met with in the scrofulous or tubercular diathesis. Dropsy and a peculiarly cachectic and emaciated look constitute the chief symptoms. The sediment in the urine is usually small, presents pale casts of the tubes (waxy casts) with a few colorless and transparent epithelial cells. The fatty variety is the one that is so frequently met with in advanced life, in patients suffering from cardiac and bronchial disorders, and in those addicted to over-indulgence in alcoholic drinks. Dropsy and persistent albuminuria are constant symptoms, and the sediment is loaded with casts of the tubes, containing oil granules (fatty casts).

(3.) *The Structural Degenerative Stage.*—Here the dropsy, albumen, fat globules exist, but in the addition, a breaking down of the structure of the kidney—retention of urea in the blood, terminating in uræmic coma or convulsions.

Causes.—The direct cause is the passage through the malpighian corpuscles, and the secreting tubes of the cortex of effete and excrementitious matters derived from the blood. Not an uncommon cause of this disease is the dissemination of poisonous drugs, alcoholic liquors, fevers, &c. Some irritant which excites inflammation, and the organ gradually weakened by that process may, after a period, take on a fatal chronic degeneration. A primary inflammation leaves the renal tissue thickened and obstructed by a foreign substance—effused lymph. This infiltration may remain dormant even for years, until some disturbing element gives rise to some form of renal degeneration, and the kind of degeneration will be determined by the exciting cause, and the constitutional and acquired peculiarities of each case—some constitutions favoring the development of granulations; some fatty degenerations; others, scrofulous.

This affection is rather infrequent in old age, generally occurring either in the young, but especially in middle life. Men are much oftener affected than women. Those exposed to cold and wet are more liable to be affected than those who are sheltered from the inclemencies of the weather; also those living on the sea-coast, or in humid and marshy districts, than those inhabiting inland, dry and elevated situations.

The symptoms of chronic inflammation of the kidney or Bright's disease are often obscure, but the languor, lassitude, debility, large flabby tongue, with its longitudinal fissures are significant. There may or may not be weakness in the loins, but a puffing under the eyes, or slight œdema of the hands or feet are characteristic; still we are not warranted in pronouncing it one of Bright's disease until we find albumen in the urine—and that persistent; so that the true pathognomonic symptoms are albumen all the time, followed by cellular dropsy, and a usurpation of the proper structure of the kidney by fatty or starchy products, hence the proper eliminative function of the gland is destroyed—urea fails to be secreted from the blood, and the patient dies of uræmia.

Diagnosis—Invariably depends upon three kinds of observation—or on the symptoms, and on the chemical and microscopical examination of the urine. The symptoms at first are nearly allied to those of inflammation of the kidney, followed with dropsy; but these symptoms are vague until we test the urine, and if there is a persistency of albumen in the urine, and if it be of low specific gravity, and it contains the peculiar exudative, desquamative, fatty and waxy casts seen under the microscope, we are warranted in pronouncing the case one of Bright's disease.

It must be remembered, however, that albumen is likewise found in the urine in the case of all essential fevers of pneumonia, diphtheria, erysipelas, &c.; but the amount is generally smaller than in Bright's disease, and always more transient. Occasionally, however, albuminuria is absent in this affection; here the renal casts will constitute the characteristic symptom. When not otherwise to be accounted for this affection should always be suspected in all cases of coma, convulsions, vertigo, and other forms of cerebral disorder, as well as in inflammations of serous membranes; in such cases examine the urine for albumen and casts.

The progress of the disease will the more readily be ascertained by carefully observing the size of the waxy casts—they increase in diameter as the disease progresses, owing to the tubes becoming denuded of their epithelial lining. The larger casts, which have the full diameter of the uriniferous tubes, with a remarkably sharp outline, having been formed in tubes which have lost their epithelial lining, and with it their proper secretory function. Accordingly these large casts indicate a more serious degeneration of the tubular structure than the small ones. The large and small ones are often combined in the urine of the same patient, but a considerable portion of the former—or full-sized wax like casts in the urinary sediment is a serious omen, being indicative of an advanced stage of the disease.

Prognosis.—In the first stage favorable under judicious treatment, in the later stages more or less unfavorable. It is highly unfavorable in all cases where there is scanty urine and of very low specific gravity; an extremely impoverished condition of the blood corpuscles, and stupor verging on coma.

Treatment.—Whenever we have albuminous urine and dropsy the patient must guard against cold, for it is the chief cause in the production of renal disease. In cold weather he must be compelled to keep in bed, both to insure the horizontal position and the equable warmth of the skin; flannel clothing is an almost indispensable prerequisite in the treatment; alcoholic stimulants should not be given; aconite and comp. tinct. serpentaria are the best agents to relieve congestion.

In all cases the greatest possible attention should be paid to diet and exercise. No fat or articles that are likely to become fatty; no acids, nor articles likely to generate acidity can be tolerated in such a disease. The best diet is abundance of animal food (but free from fat), eggs, milk, fish, change of air, a voyage, are all very beneficial. There are two classes of remedies indicated—diaphoretics and diuretics.

The intimate connections existing between the kidneys and the skin as excretory organs are well known. In health, arrested function in the one is compensated for by increased action in the other; hence whatever checks cutaneous exhalations, is peculiarly liable to excite renal disorder; and in renal disease we must never fail to excite the skin to action. Diaphoretic powders, comp. tinct. serpentaria, warmth of the surface, warm climate, hot-air baths, are all indispensable in treatment.

Diuretics stimulate the kidneys to increased action. The dropsy is induced by obstruction in the secreting tubes—this obstruction is often the result of inflammation; so by increasing the flow of urine, the accumulations causing the obstruction, are likely to be washed away.

The queen of the meadow, buchu, and bitartrate of potash, are the most valuable diuretic agents.

Increase the number of the red corpuscles by administering iron, phosphorus and vegetable tonics; and if the blood poisons the nerve centres give hydrochloric and vegetable acids; sponge with vinegar, and relieve the brain by the free use of cathartics.

The following are some of the more valuable remedies, which we can highly recommend in Bright's disease:

Gallic acid exercises a specific action, astringing the kidneys and preventing the escape of albumen—it should be given in from ten to twenty grains in a little port wine thrice daily.

Podophyllin, *elaterin*, *apocynin*, and the various preparations of potass and ammonium are valuable wherever we have obstruction of the renal tubes.

Asparagin, exercises a soothing effect upon the convoluted tubes.

Cannabis indica, where we have convulsons and cerebral complications.

Cannabis sativa valuable in cases preceded by stricture and irritable bladder.

Copaiba would seem to act specifically upon the epithelial cells. Its well-known action on the skin, producing an inflammation of that surface, is decidedly the very best remedy we possess in the treatment of nephritis.

Digitalis is indicated in the sanguine temperament or scrofulous diathesis. It operates specifically on the heart and kidneys—its action, on the urinary glands is at once prompt and positive.

Nitromuriatic acid, is specially indicated in cases depending on syphilitic contamination. After the dropsy is removed the treatment should be continued until the urine is restored to its normal condition, the blood improved, and the system reinvigorated. For such a purpose the following is excellent treatment:

℞.—Nitric acid, Miij;
Cinchona, comp. tr.,
Gentian, " " āā ℥j;—*Mix.*

Take three doses during twenty-four hours.

ALBUMINURIA.

Although we have classified chronic inflammation and Bright's disease as not identical, still some have designated them both under albuminuria. Albumen in the urine persistent, is our important symptom of congestion or relaxation of the kidney, or a deficiency of red corpuscles in the blood.

The essential nature of the state of constitution that leads to the presence of albumen in the urine then, is a depression of the kidney—an imperfect growth—a lower vitalized state of that epithelial cell tissue, which separates the effete matter from the blood in the form of urea. A portion of these cells remain dead, and sticking in the tubuli uriniferi, degenerate into fat if the patient partakes of alcoholic drinks, or starch if otherwise, either of these agents being mixed up with the fibrin derived from the blood, and thus obstruct or block, or usurp a pervious gland by a solid mass.

Successful treatment consists in washing away the debris in the kidney; in restoring the blood to that sound vital condition which will supply a healthy growth of new epithelium, equal to carry on the renal functions. This is best done by the following

R.—Comp. tinct. cinchona, ℥i;
Simple syr., ℥iii;
Muriatic acid, ℥ii.—*Mix.*

A teaspoonful every three hours.

No agent has the faculty of elaborating red blood so rapidly as cinchona, good diet and fresh air.

Digitalis is also most serviceable, its action is decided—it restores the balance of the circulation, and causes the vital fluid to flow more regular and full; with degenerated kidney and diseased blood there is often associated a degeneration of heart muscle, so incipient as not to attract much attention; nux vomica acts well in nearly all cases.

There is no agent capable of doing so much harm as mercury; its action is destructive. Otherwise, the successful treatment of albuminuria is the same as Bright's disease.

RENAL DEGENERATION.

There are three varieties of nephritic degeneration:

(1.) *Fatty Degeneration.*

Causes.—Desquamative nephritis; a strumous diathesis, irregular living, constant exposure to wet and cold, but perhaps the most common cause is *intemperance*, for it occurs most frequently in those addicted to the free use of alcoholic and other stimulants.

Symptoms.—General debility, which increases with the disease, accelerated pulse, striking pallor, and sometimes puffiness of the face and other parts; frequent micturation, weak stomach, and attacks of vomiting, a tendency to pericarditis, pleurisy, peritonitis, meningitis, and inflammation of serous membranes generally. Anasarca of the limbs, and œdema of the lungs. The retained urea may so affect the nervous system as to cause convulsions, coma and death.

The urine presents characteristic appearances—scanty secretion, of low specific gravity, but loaded with albumen. No sediment at first; after a time it presents a cloudy sediment, containing waxy casts and oil globules.

Prognosis.—Rather unfavorable where the urine presents a large number of cells and fatty globules, and is of a natural color.

(2.) *Amyloid Degeneration.*

The amyloid or waxy condition of the kidney, greatly impairs its functions as an excreting organ. Frequently associated with scrofula, syphilis or diseases of bone.

Symptoms.—Gradual loss of strength, excessive secretion of urine, œdema, especially of the feet; liver and spleen abnor-

mally large, urine pale, albuminous, of acid secretion, and of low specific gravity. The disease progresses slowly, sooner or later associated with anæmia; the quantity of urine diminished, with its proportion of albumen augmented; frequently diarrhœa; dropsy. Death may result from effusion into the pluræ or pericardium, from phthisis, convulsions or excessive exhaustion.

(3.) *Cystic Degeneration.*

There are four forms—1. Small scattered cysts which may exist on the surface or cortical substance without impeding the functions of the gland. 2. Cysts from the size of a pin's point to a hazel nut, which frequently are produced by an obstruction of the uriniferous tubes by exudation. 3. Congenital cystic degeneration, where infants are born with large irregular-shaped kidneys, made up entirely of cysts, but destitute of secreting tissue. 4. General cystic degeneration from dilatation of portions of the renal tubes.

One kidney only may be affected, but more frequently they are both involved.

The cysts contain a liquid which may be limpid and nearly colorless, but sometimes of a dark color. Sometimes the contents are thick or nearly solid; occasionally they contain crystals of chlorestrine, but liquid contents of renal cysts seldom contain the constituents of the urine.

The symptoms not very well marked and generally come on gradually.

There are pains about the loins, hematuria and albuminuria. The kidneys often become so large as to produce tumors. Death may either occur from uræmia or from some complication. These various forms of renal degeneration should be treated by an attempt to improve the general health, by regulating the secretions, by daily baths of nitromuriatic acid, and by the administration of buchu, phosphorus, cinchona, nux vomica, mineral acids, and strict attention to the diet; hydrastis is excellent.

Waxy or fatty degeneration of kidney.—All forms of irritation of the kidneys have a tendency to terminate in either of those forms of degeneration, congestion, effusion of plastic elements from the blood, producing thickening, induration—where either amyloid or fatty elements are—incoporated in the deposit. A safe rule irrespective of a chemical or microscopical examination of the urine, is the habits of the patient; if addicted to drinking of any kind of alcoholic drinks, *fatty;* if otherwise, *starchy.* Cystic degeneration is rare, causes are obscure.

URÆMIA.

The term uræmic poisoning is applied to that peculiar condition in which the kidneys fail to secrete urea from the blood where this substance is retained in the circulating fluids, and

changed or transformed into the carbonate of ammonium. This is liable to occur in a variety of diseases, inevitable in the third stage of Bright's disease, where the proper structure of the kidneys are broken down, and the urea fails to be eliminated. It may also occur in excessive inebriation, where the normal metamorphosis of the kidney is arrested; as in scarlet fever, where the erroneous treatment by carbonate of ammonium and brandy arrests the function of those glands; so in cholera, diabetes and other diseases, it may take place, and when so, the blood no longer aggravates the difficulty, to wit, its elimination by the kidney.

The effect of urea in the blood, transformed into carbonate of ammonium, strikes at the brain and spinal cord—an abnormal action then of the great nerve centres is the result—a true toxæmia. Uræmic poisoning is met with in two forms, as the two centres are affected separately or unitedly:

(1.) In which the stupor supervenes abruptly, where the patient is roused with difficulty, followed by coma, stertorous breathing.

(2.) Epileptic convulsions, affecting the entire muscular system, consciousness remaining intact.

Still both may be combined, that is, co-exist in the same patient.

Albuminuria with uræmia may result from a large number of other conditions besides structural disease of the kidneys, as cold damp, exposure, blood and nervous diseases, pressure.

For example, the convulsions of puberty, or pregnancy, or parturition, are often occasioned by pressure of the uterus causing renal congestion—obstruction.

Morbid poisons in the blood, whether they be germs or otherwise, frequently cause suppression of the urine and fatal results.

Nervous depression, from blows, falls, red or white ramollissement of the lumbar portion of the cord, may cause paralysis of the kidneys and a complete suppression of the urinary secretion, and coma, effusion upon the brain as well as in chest and abdomen, and death occurs rapidly.

In all cases of uræmia, the tears, saliva, sweat, breath, gastric, hepatic and pancreatic secretion are saturated with a fluid having the taste and odor of urine. The serum effused from the membranes of the brain has the same uriniferous odor.

When uræmia is due to inflammation of the kidneys, the following symptoms present themselves: rigors, followed by high fever, thirst, nausea, vomiting; pulse rapid, wiry; tenderness of the abodomen on pressure; swelling, amounting to a bulging over region of kidneys, with great pain; constant desire to urinate and inability to do so, or slight micturition, causing great pain; urinous taste in the mouth; odor of the

same in sweat; features contracted, extremely anxious and restless. Indications of cerebral disturbance soon follow, delirum, coma, &c.

When it depends on the presence of morbid elements in the blood, irritating the kidneys, it gives rise to grave complications and death. If it is caused by paralysis of the kidneys, the febrile symptoms will be absent, with perhaps no pain in the region of the kidneys or abdomen, no desire to urinate. Still, the danger here is very great, for fatal depression of the brain follows exceedingly rapid.

When preceeded by Bright's disease, its history, albumen in urine, anasarca, waxy or fatty degeneration of kidney, render those cases hopeless.

Accumulation of uric acid crystals, gravel and other calculi in the kidneys, obstruct the structure of those organs, causing a mechanical impediment to the secreting function of the organ. In such cases the foreign bodies operate by blocking up; by exciting congestion, induration, ulceration. They give rise to pain, swelling, sensation of weight, fullness, uneasiness, numbness of the thighs, retraction of the testicle, itching at orifice of the urethra, abdominal tenderness, tenesmus in micturition, nausea, vomiting, hiccoughs, pain in the lumbar region and perineum; pulse full, frequent, wiry; difficulty of breathing, delirium, coma, convulsions.

Uræmia may be distinguished from retention of urine, from the circumstance that the bladder is distinct, elevated above the pubes, presenting on the pressure of the hand a firm tumor; whereas, when the kidneys fail to secrete, there is a flatness over the pubes, as the bladder is empty, and falls down below the bony projection and affords no resistance or fluctuation.

Still, if any doubt exists, an excellent plan is to brush over a small portion of the cuticle, cantharidal collodion, which will at once cause a vesicle to form, from which draw off the serum, which place under a microscope. If there be a uræmic condition, crystals of nitrate of urea will be abundant; if there is none, they will be absent.

Treatment.—If it is due to organic disease of the kidneys, the case is hopeless; but, if to other causes, the point to aim at is to relieve the kidneys, first by acting on the skin and bowels. For this purpose alcoholic vapor baths daily or every other day. The bowels should be acted on with a mixture of cream of tartar, podophyllum and elaterin. If it is due to congestion, large doses of green root tincture gelseminum and with dry cups and hot fomentations over kidneys; if due to paralysis, ergot, belladonna, nux vomica, electricity, &c., and if no cause can be assigned for it, it should be treated on general principles.

ACID DIATHESIS; OR, RED GRAVEL.

In health the urine is very slightly acid, almost neutral, but when we have a deviation from this, there is disease, so that urine possessing a decidedly acid or alkaline reaction gives us a criterion by which we can estimate certain morbid changes in the body. The acid diathesis is a condition then in which there exists a perversion of nutrition, a generation of the starchy or saccharine elements of the food into uric or lithic acid.

The causes that produce this condition may be monotony of life, sameness of diet, mucous dyspepsia, disease of the liver; rapid oxydation of fibrin of the blood in fever and inflammations; excessive muscular exercise; rheumatism, &c.

The symptoms present are general depression of the nervous system, amounting to prostration; undefined sensations of irritation in the loins, sometimes excruciating pain in the kidneys; nausea, vomiting, aching in thighs, retraction of testicle; itching at orifice of the urethra; irritable bladder, with continence or incontinence of urine. The passage of urine causes a cutting or bearing sensation, resembling the passage of minute particles of glass.

It is easily recognized by the above symptoms, high-colored urine, very acid, stains chamber red or deposits a copious brick-dust sediment, with a burning or scalding sensation in urinating. The cachexia is remarkable, being one in which a general feeling of being unwell with all the organs in a state of torpor.

Treatment.—Special attention should be paid to the general management of the patient—all secretions regulated—daily alkaline bathing; flannel clothing; moderate exercise in the open air; the diet should be very liberal, but alcohol, fat, saccharine and starchy agents carefully avoided. If there is no appetite this must be promoted by tonics. A very important point in the radical cure of such cases is change—of habits, of diet, of everything, for monotony or sameness is destructive to a high grade of physical or mental life. Life consists in incessant changes—the higher the type, the more rapid the change, provided construction exceeds destruction. There cannot be too active a condition of change of the tissues in their complete form, for the fresher their organic constituents, the more serviceable they are.

Sun light, abundance of fresh air, are also of utility.

In the medical treatment, benzoic acid plays an important part, in changing the elaboration of the acid, further than that it is of no use. An alterative and tonic course is attended with the best results. Cinchona, Beach's wine bitters, Collinsonia, &c., our vegetable alteratives, answer the purpose remarkably

well. But in order to relieve the excessive irritation incidental to this condition, five-grain doses of bicarb. potassium should be given.

PHOSPHATIC DIATHESIS; OR, WHITE GRAVEL.

This is a cachexia, in which the urine is loaded with phosphates and chlorides, and which deposits a white calcareous substance, called white gravel. The urine may or may not be alkaline, still it possesses alkaline properties to excess.

Alkaline urine may be present in all diseases of the nervous system; in chronic diseases, generally from irritation reflected to the brain; in nervous fevers, nervous dyspepsia, nervous prostration. The presence of white gravel in the urine produces no pain whatever, hence is often unobserved by the patient.

It is a fair estimate, that the amount of white gravel present in the urine represents so much waste of brain tissue, just as the amount of uric acid present in acid urine represents so much waste of fibrin. The alkaline condition in white gravel may be due to two distinct causes, viz: (1.) From the presence of the carbonate of a fixed alkali, (potash or soda) or of alkaline phosphate of sodium; or (2.) from the presence of the carbonate of the volatile alkali, ammonia, which is due to the decomposition of urea.

The white gravel, which is deposited in the second of these conditions, is formed as follows: healthy urine contains phosphate of magnesium in a state of solution. If, however, the urine becomes alkaline from the decomposition of urea, a portion of the ammonia combines with the phosphate of magnesium, and forms a triple salt, which is insoluble in the urine, which has now become alkaline. This triple phosphate is usually an admixture of phosphate of lime. Urine of this kind, being allowed to settle, a scum forms on its surface, which, under the microscope, resembles the salts we have described. But the urine may become alkaline from the presence of the carbonate of potash or soda, and then, no ammonia being present, instead of the triple salt, there is a deposit of amorphus phosphate of lime. In these cases the urine is alkaline, pale, copious, slightly turbid, of a low specific gravity, and of a peculiar odor. This urine renders blue litmus paper permanently red; whereas, ammoniacal urine causes only a temporary change in the color.

These deposits occur in all cases of cerebral exhaustion—wherever the nervous system is shattered—where the vital energies have been depressed from any cause, as nervous disease, gout, sexual excesses, study, &c.

Treatment.—Generous diet, daily bathing, flannel clothing, well regulated secretions. In ammoniacal form, benzoic acid is very useful, but generally speaking the removal of causes

and a persevering use of tonics seem to meet with the most satisfactory results. Such as the following:

℞.—Comp. tincture cinchona, ℥ii;
Glycerine, ℥iii;
Diluted phosphoric acid, ℥ss;
Nitromuriatic acid, ℥ii.—*Mix.*

Dose.—A teaspoonful in water every three hours.

℞.—Collinsonia, fluid ext.,
Hydrastis, " "
Gentian, " " ℥iss;
Nux vomica, tincture, āā ℥ii.—*Mix.*

Half a teaspoonful as above.

OXALIC ACID DIATHESIS—OXALURIA.

This consists of a morbid condition of the system dependent upon great nervous prostration, in which the nerves that supply the stomach and lungs are in a deranged condition. Its most distinguishing characteristics are the nervous temperament, dyspepsia, and the persistent occurrence of crystals of oxalate of lime in the urine.

These crystals usually have the form of minute transparent octahedra, in some cases the shape of dumb bells.

The simplest mode of detecting the oxalate of lime is to put some of the urine of the patient in a conical glass, allowing it to remain until the crystals have gradually subsided, when more than two-thirds of the fluid should be poured off, and the sediment remaining at the bottom examined under a microscope of a power of 250 diameters. These crystals may be found in acid or alkaline urine, and are insoluble in acetic acid. This form of urine is peculiar to persons who suffer from any long continued irritation of the nervous system, as brain affections, dyspepsia, or malassimilations. In such cases the oxalic acid is not introduced into the system with the food, but is a product of the disintegration of the tissues, and due to the imperfect oxydation of compounds which should have been converted into carbonic acid. Oxalic acid is a compound of four equivalents of carbon and six equivalents of oxygen; but as it requires eight equivalents of oxygen to unite with four equivalents of carbon to convert anhydrous oxalic acid into carbonic acid, now, if these two equivalents of oxygen are wanting in the system, owing to imperfect oxygenation of the blood, oxalic acid in combination with lime forms an element in the urine.

The presence of oxalic acid, as a persistent sediment in the urine is not merely a proof of an existing morbid condition of the system, but may give rise to two perfectly distinct and dangerous complications:

(1.) A concretion of oxalate of lime (*mulberry calculus*) may be formed either in the kidney or the bladder.

(2.) The presence of oxalic acid in the system, may give rise to toxæmia—the poisonous action of oxalic acid on the brain, stomach and heart.

Treatment.—Great attention should be paid to exercise in the open air, but never to fatigue—daily bathing, shower bath, followed by brisk friction; diet, very generous, animal food, eggs, fish, milk, &c.; all articles of diet that contain oxalic acid, such as sorrel, rhubarb, tomatoes, sugar, &c., should be rigidly forbidden. Tonics should be also administered—cinchona, iron, nux vomica, hydrastis.

Muriatic acid is one of the best remedies, and is best administered in the comp. tincture cinchona.

Under such treatment the oxalates generally disappear in a short time.

URINE.

Healthy urine is transparent, of a citron yellow color, of a peculiar odor, and of an acid, saline and slightly bitter taste. When voided sometime after taking fluid, it is less colored and less odorous and dense, than that which is voided several hours after eating. That secreted independently of the immediate stimulus of either food or drink presents the essential character of urine.

Physical Characters of Normal Urine.—The average quantity is, under ordinary circumstances, about thirty ounces during the twenty-four hours in summer; and forty ounces during the same period in winter. Normally, the lungs and skin; abnormally, the intestinal canal and serous membranes may supply the functions of the kidneys in evacuating the water of the urine; but, as the secretion of water is merely accessary, not essential to their function, so our chief attention must be paid to the relative proportions of the different solid constituents of the urine. These may abnormally vary from eight hundred to one thousand grains in twenty-four hours for the man who lives freely, but less for the aged, and for women and children, whose urine is more watery. Aqueous urine, when not accounted for by the quantity of fluids imbibed or by the chill and moist state of the atmosphere, are sometimes indicative of emotional agitation—of joy, fright, grief or nervous disorders—and occurs often in females. Polydipsia, anæmia, diabetes and hysteria, are diseases in which the urine is most aqueous.

The specific gravity of urine, after drinking freely of fluids, is about 1.003 to 1.009; after digestion of a full meal, 1.020 to 1.028; and after a night's rest, 1.015 to 1.025.

Composition of Urine.—When we consider the diverse circumstances which are in constant operation to modify the composition of urine, it will not appear surprising that chemists have presented so many varying analyses. Urine presents a great diversity in chemical composition from different climates, variety of food and drink, atmospheric changes, habits of exercise, and mental emotions, all tending to modify the constituents of normal urine. However, a carefully conducted analysis furnishes a near approximation to the actual result. The following statement of such an analysis, is 35 ounces urine of specific gravity 1.020:

COMPOSITION OF 1.000 PARTS URINE.

Water,			967.
Urea,			14.230
Uric acid,			.468
Organic matter inseparable from each other,	Lactic acid, Coloring matter, Extractive matter,		10.167
Salts.	Chlorides, Phosphates, Sulphates,	Ammonium, Lime, Sodium, Potassium, Magnesium,	8.135
			1.000.000

Urea is the most abundant of the solid constituents of healthy urine, and forms about $\frac{8.0}{1000}$ parts; its appearance and taste resemble nitre; it is an organic base; is readily soluble in water but insoluble in ether. It readily results from the transformations of various azotized matters, and when not removed by the kidneys, it accumulates in the blood and appears in the saliva, the bile, the gastric secretions, in most of the humors, and is so abundant in the sweat as to form, after spontaneous evaporation, a bluish-white crust, especially upon the face.

The quantity of urine is increased by all cases which cause rapid metamorphosis of the tissues. Its prolonged retention in the blood gives rise to uræmic poisoning. Uric acid is insipid and inodorous, almost insoluble in cold water, quite insoluble in alcohol and ether. In combination with one or more bases—ammonium, sodium or lime—it forms one of the most common sediments in the urine. Being insoluble in the blood, it can only exist in that fluid as an urate—chiefly urate of sodium—and is separated by the kidneys, passes to the pelvis of the kidneys, to the bladder, and thence out of the body as an

urate of sodium; but during the passage of the latter through the urinary organs, portions of it are often decomposed, and uric acid set free by the free phosphoric and lactic acids of the urine. Such decomposition may occur in the kidneys, in the bladder, or after emission.

Fixed Salts of the Urine.—Of these the sulphates of potassium and sodium are most abundant. The average quantity of each in 1.000 parts of urine are as follows: Sulphate of potassium, 3.71; sulphate of sodium, 3.16. A small quantity of pure sulphur is also present in most healthy urine. They are derived in part from the metamorphosis of the tissues. Healthy urine contains salts of the phosphates of sodium and ammonium, about 2.94 of the former and 1.65 of the latter in 1.000 parts urine. Traces of phosphates of lime and magnesium are always present in normal urine. Free phosphorus is said to be a constant constituent of healthy urine. It is derived chiefly from disintegrated muscular, brain and nervous tissues, and from food and drinks, augmented by activity and cerebral irritation.

Chlorides.—These are in the form of chlorides of sodium and potassium, the proportion of the former being 4.45 in 1.000 parts of urine, and of latter but a trace. The following substances are likewise found in minute quantities in all normal urine, viz: Silica, free lactic acid, fluoride of calcium, chloride of ammonium, acetate of ammonium, albumen, gelatin and benzoic acid. As a knowledge of the chemical composition of urine is of indispensable value for the diagnosis and prognosis of numerous forms of disease, especially as far as concerns the presence of matters which are not found in the normal state of the urine, we shall now briefly describe the more important reagents that are employed for the detection of various constituents that enter into the composition of abnormal urine. But prior to resorting to chemical tests for particular substances suspected in the urine, it is always expedient to examine physical properties such as its color, odor, density, &c. The characters of the cloud or precipitate formed after the urine has been allowed to remain at rest for some time, and its morphological constituents determined by means of the microscope, should be carefully observed. Such observations may lead to a correct diagnosis, anyhow will certainly direct the path we should take in the subsequent chemical investigation of the fluid.

The specific gravity of the urine is at once obtained by means of the urinometer, and should be noted at the commencement of the examination, as it furnishes important indications for further proceedings. Thus, the specific gravity is generally diminished in chronic cases of Bright's disease and increased in cases of diabetes.

Tests.—To detect Albumen. A small quantity of the urine is heated until it boils, in a test tube, over the flame of a spirit lamp. As soon as the temperature of the liquid is raised to over 170° Fahrenheit, the albumen will become coagulated, and, if the test tube be set aside for a time it will be deposited and may be collected, dried and weighed. The precipitated albumen is soluble in a solution of potash, but insoluble in nitric acid.

But there are certain sources of failure attending the detection of albumen in the urine, which must not be overlooked. Thus, if the earthy phosphates be present in excess they will become precipitated as soon as the urine is boiled. As this precipitate somewhat resembles albumen, it might be mistaken for it, but may be distinguished by its solubility in nitric acid. Again, when urates are in great excess in the urine, a white precipitate of uric acid is occasioned on the addition of nitric acid, which might be mistaken for albumen. This condition I have observed in a few cases of typhus fever of a low type, and of small-pox. This precipitate is distinguished from albumen thus. The addition of hydrochloric acid to a second portion of the urine will occasion a precipitate equal to that thrown down by the nitric acid, if it be uric acid, but no precipitate will be occasioned if it be albumen. A precipitate likewise occurs when nitric acid is added to the urine of a patient who has taken cubebs or copaiba. This at first closely resembles albumen; it is distinguished from it by not subsiding as a distinct deposit and by producing a permanent opacity of the urine. Albumen may be present and yet not be precipitated by boiling; this occurs whenever the urine is alkaline, the albumen being kept in solution by the alkali. In this case it is necessary first to acidify the urine with nitric acid and then to boil; but nitric acid in excess precipitates albumen from the urine as well as heat. It is therefore best in most cases, to test both with nitric acid and heat, and it is always proper to ascertain whether the precipitate, which appears on boiling, is soluble in an excess of nitric acid or not. In employing nitric acid the reagent should be added in excess as it sometimes happens that the albumen first thrown down is redissolved; but, when an excess of acid is used, the albumen is thrown down permanently and is not redissolved.

The quantity of albumen in urine varies greatly from a mere trace to some grains in the ounce, and according to the quantity present will be the appearance of the urine on the application of heat. If the quantity be very small, the deposit may be so trifling as to quite escape detection until the test tube be set aside for some hours so as to allow the deposit to subside. In this way the presence of a very minute quantity of albumen will be detected. When, if only a trace of albumen exist in

the urine, it is best to take a very large test tube and to boil some six or eight drachms of the urine.

Albumen is also precipitated by dilute hydrochloric acid, ferrocyanide of potassium, bichloride of mercury, alcohol, creosote, tannin, and numerous other substances. Strong hydrochloric acid does not precipitate albumen, but when warmed together, a purple colored solution results.

To detect Fibrin.—Fibrin is distinguished from albumen by its undergoing solidification when effused from the blood-vessels. It usually occurs in the urine in connection with blood, but not always so; sometimes it exudes from the blood-vessels of the kidneys and solidifies in the renal tubes in the form of casts. In rare cases the effused fibrin does not solidify until after the urine has been voided. When fibrin solidifies in the kidneys the casts are usually met with in the urine. Then, whenever these casts are observed under the microscope, or the urine becomes at all gelatinous on cooling, and this, whether it contain blood or not, fibrine is present. Now, almost invariably, albumen is voided at the same time with fibrine. Whenever, therefore, the latter is present the former is almost sure to be found in the urine.

To detect Bile.—When bile exists in considerable quantities in urine, its presence is sufficiently indicated by the color of the urine. This is especially the case in jaundice, in which the urine possesses a dark yellowish green or brown color, which is exceedingly characteristic. When the quantity of biliary matter in the urine is less, its tint is only deepened and reddened of a brown or reddish hue. In these cases it is necessary to seek for the presence of bile, for which there are several tests. One of these consists of sulphuric acid, free from *sulphurous* acid and sugar. It is used thus: to a small quantity of urine, in a test tube, add about two-thirds of its bulk of sulphuric acid, drop by drop, so that the temperature of the mixture may not be raised above 144° Fahrenheit; at which the characteristic color of bile is destroyed. To this mixture add a grain or two of sugar or syrup, shake the whole and allow to stand at rest a few moments. Should bile be present, the liquid will assume a more or less intense red color or violet tinge. This remarkable development of color equally takes place when the above re-agents are added to a solution of decolorized bile. If the suspected urine contain albumen, this should be removed by coagulation and filtration; because with albumen, sulphuric acid and sugar, a similar color is developed. Should the quantity of bile present be very small, the urine should be evaporated to dryness in a water-bath before the test is tried, and the bile dissolved out, by means of a little water or alcohol.

Another test for bile is the following: a little white of an egg is added to a small quantity of suspected urine, and, after

the mixture has been well shaken, add a few drops of nitric acid; this effects the precipitation of the albumen in combination with some of the coloring matter of the bile, the precipitated albumen thereby assuming a dull green or bluish color.

A third test for bile in urine depends upon the action of nitric acid upon the brown coloring matter of the bile called biliphæin. Two or three drops of nitric acid are allowed to fall upon a little of the urine spread out in a thin layer on a white surface. If there be any considerable amount of bile present the mixture assumes a variety of changing and evanescent tints, green, violet, yellow and pink, the latter color usually predominating. Should the quantity of bile present be very small, the urine must be evaporated before the nitric acid is added, as mentioned in a previously described test.

To detect Chyle.—Urine containing chyle is usually more milky or opalescent than when it only contains oil. All the usual elements of chyle will, ordinarily, be detected in chylous urine when examined chemically and microscopically. The albumen is to be detected after filtration of the urine by coagulation in the ordinary manner. If oil be present it may always be obtained by agitation with ether. Chylous urine when first passed and still warm does not present the same degree of opacity and milkiness which it acquries when it becomes cold. This depends on solidification of both the fatty and fibrinous matters present. If the quantity of chyle present be very considerable, the urine will sometimes acquire a gelatinous or semi-solid consistence, owing to the coagulation of the fibrinous elements.

To detect Sugar.—The tests for sugar are quite numerous, but the following are the most reliable. Boil the urine for five minutes in a tube with half its bulk of liquor potassæ, if sugar be present the liquid assumes a brownish bistre color.

Another test consists in adding a few drops of sulphate of copper, so as to give the urine a pale blue color, then add liquor potassæ until the hydrated oxide of copper thrown down is again dissolved, which will happen if the urine be saccharine. The clear deep blue solution which is formed, must now be boiled, when, if sugar be present in a small quantity, it will be indicated by the mixture assuming a yellowish-red opalescent tint, but if there be present a large amount, by its becoming perfectly opaque from the formation and precipitation of the yellow suboxide of copper. If the urine contain no sugar, a dark green precipitate only is formed on ebullition.

This test, which is very simple, consists in adding a little carbonate of sodium and a small quantity of magisterium bismuthi to a small portion of the urine. Boil the whole together briskly, and as the liquor cools, if sugar be present the bismuth is reduced and forms a black powder.

Another test consists in adding a few drops of yeast to the urine and a test tube completely filled with the mixture inverted and allowed to remain in a saucer containing a little more of the urine; the whole should be put in a warm place of about seventy or eighty degrees for twenty-four hours; fermentation then ensues and carbonic acid is formed, which collects at the top of the tube displacing the fluid.

Still another test consists in dissolving a small quantity of ox gall in the suspected fluid in a test tube, and adding rapidly an equal quantity of strong sulphuric acid. If sugar be present a beautiful purpurine is immediately produced.

To detect Chlorides.—Add to the urine, in a test tube, a sixth-part of its bulk of strong nitric acid and then a few drops of a solution of nitrate of silver. If any soluble chloride be present, the chlorine will be thrown down, in combination with the silver, as a white precipitate, but if none exist the fluid will remain clear. From the degree of turbidity, occasioned by the addition of the silver solution, an estimate may be made of the chlorides contained in the urine.

To detect Pus.—Place ℥ii of urine and ℥i of liquor potass together in a test tube and heat, when, if pus be present, there will be a viscid gelatinous-like semi-fluid formed at the bottom of the tube, rather appearing like a substratum of the fluid contained in tube.

To detect Seminal Fluid.—Occasionally a mucus-like deposit occurs in urine, which, on examination with the microscope, is found to be semen; this is manifested by the presence of the well-known seminal animalcula and corpuscles. The animalcula are nearly always dead, owing to the length of time which usually elapses before the urine is examined to the injurious action exerted upon them by the urine itself. Spermatic animalcula are occasionally seen in urine in small numbers where there is no visible deposit.

URINARY CALCULI.

Calculous affections are of rare occurrence in either very cold or very hot climates—having been very seldom seen, either in the East Indies or the northern parts of Europe. Children and old people are but slightly obnoxious to such disorders, as they occur mostly in persons in the prime of life, and especially in individuals of a gouty diathesis. It is generally observed, that the attacks of calculous affections, like those of gout, are preceded and accompanied by languor of the stomach, nausea, eruction and borborygmi.

Calculi have been found in the brain, lungs, bladder, liver, spleen, gall-bladder, uterus, and the soft parts of nearly every part of the organism. But beyond comparison, these are of

most frequent occurrence in the urinary organs. It is reckoned that at least two-thirds of the whole number of calculi originate from lithic acid; this I consider a fair estimate, for lithic acid is always present in the urine, and is liable to become and form inodorous concretions of a yellowish-brown color. Chemists describe numerous varieties of calculi. We enumerate the more important.

(1.) The lithic or uric acid calculus, which is formed by concentric lamellæ, and present the appearance of a reddish or light-brown color, not unlike wood. They are soluble in alkaline solutions, but are not dissolved by muriatic or sulphuric acids. Infusible by the blow-pipe, but may be slowly evaporated, resulting in a white residue of ash remaining.

This form of diathesis prevails in childhood and middle life, and the voided urine is usually *acid*, and the sediment deposited of a red color.

Amorphous lithic sediments appear in two forms; the first is a yellow sediment, which appears in the urine of those whose digestive organs are deranged. It consists of the lithate of ammonium, combined with the coloring matter of the urine. The urine is mostly acid and clear when passed, but when it cools the sediment is deposited, and the addition of a drop of nitric acid causes the deposit of numerous little crystals of lithic acid.

The second variety consists of the lithate of ammonium, deeply colored by an excess of highly carbonized pigment in the urine. The coloring matter has been termed *purpurin*, and is always present where there is an excess of carbonaceous matter in the blood. This substance has a great affinity for lithate of ammonium when this salt is in excess and is precipitated with it.

The deposit varies in tint, often the lateritious or brick-dust sediment of fever, gout or rheumatism, but sometimes a pink sediment, which is indicative of organic disease of the lungs, liver, or of exhausting suppuration.

Crystallized lithic deposits consist of minute crystals of lithic acid, like cayenne pepper. They do not dissolve by heat like the lithate of ammonium. The urine is acid, high-colored, scanty, and of high specific gravity. Under the microscope they present somewhat the appearance of a rhombic prism.

(2.) The next in frequency to the lithic acid or uric acid variety, are those of a triple combination of phosphoric acid, magnesium and ammonium. They are of a lightish-gray color, indistinctly laminated with an uneven surface, and covered with small shining crystals, not soluble in alkaline solutions, but partially so in muriatic, nitric, and sulphuric acids, and but partially fused by the blow-pipe. The urine fetid, and the sediment of a white color like mortar. This is apt to be produced after lithotomy.

(3.) Not so common as the two preceding, is the *mulberry calculus*, of a dark-brown color, uneven surface, very compact and hard. It consists of the oxalate of lime, and is slightly soluble in sulphuric and muriatic acids, but insoluble in alkaline solutions.

(4.) The phosphate of lime calculus, which usually exists in combination with uric acid, and phosphate of magnesium and ammonium. This form is laminated, polished, of pale-brown color; soluble in muriatic and nitric acids, and may be fused by the blow-pipe. They are of small size and generally found in the prostate gland.

(5.) The cystic oxydized calculus is of rare occurrence, of a yellowish hue, not laminated, soluble both in acids and alkalines, and emitting a fetid odor under the blow-pipe.

(6.) The fusible calculus, composed of a mixture of the triple phosphate of magnesium and ammonium, and of the phosphate of lime; of a white color, also fusible by the blow-pipe. Met with between the prepuce and glands penis.

(7.) Different kinds of calculi are sometimes deposited in alternate and distinct layers in the same stone, and termed the *alternating calculus*.

Calculi occur more frequently in the male than in the female; but this may be due to the difference in the structure of the urinary organs. The urethra of the female is shorter and easily dilated, and thus affords an easy passage to gravel and small calculi; whereas, in the male, the passage is both long and contracted. The right kidney is more frequently the seat of such deposits than the left; usually spheroidical in form and one or two ounces in weight.

Calculi may originate in the kidneys, bladder, or the prostate gland; but the kidney is generally their primary seat. Calculi of small size may pass from the bladder without much inconvenience, and may either be discharged with the urine, or remain in the bladder, increase in size, and require surgical interference for their removal; while in the renal cavity, they may so increase in size as to become too large to pass along the ureter, and are thus retained; under such circumstances a calculus in the kidney may lead to atrophy of the parenchyma and become as large as the healthy organ.

Calculi, not too large to pass through the ureter, but too large to pass with facility, cause, during their passage, more or less pain and constitutional disturbance. The pain commences as the calculus enters the duct, and ends when it reaches the bladder. The paroxysm is like the passage of a gall-stone from the gall-bladder to the duodenum—hepatic colic—that under consideration is called nephritic colic.

Symptoms of Nephritic Colic.—The pain is usually both sudden and severe, and referable to the situation of the kidney—

the side of the last dorsal and first lumbar vertebræ. The pain usually radiates along the ureter, and extends to the groin and thigh. Generally in the male, there is pain in the testicle, which is drawn up by the contraction of the cremaster muscle. The pain is lancinating or tearing, often causing the patient to groan; the pain is continuous, with, however, exacerbations and remissions; urine is diminished; constant desire to micturate and pass only a few drops at a time; *tenesmus* of the bladder, and the urine often contains blood.

The constitutional disturbance is manifested, thus there is thirst, nausea and vomiting, coldness of the surface, with sweating, and feebleness of circulation, countenance pale and anxious-like, constipation, the pain suddenly ceases, abundant urine is discharged; now the calculus has reached the bladder, but other paroxysms may ensue if other calculi existing within the pelvis of the kidneys; also pass into the ureter. The composition of calculus is generally determined by the state of the urine, its size, appreciated by its composition (the phosphatic being the largest), by the length of its existence by observing the force required to dislodge it from its position, it may be measured by passing the sound across its surface. They vary in weight from a few grains to as many ounces, and in number from one to a hundred and fifty. The only positive indication of a calculus is our ability to *strike* it with a *sound* introduced into the bladder. Simple nephritis gives rise to many of the foregoing symptoms, as also do those of inflammation of the prostate gland and bladder. But the patient can often feel the motion of the calculus as he turns over from one side to the other.

Causes.—Often hereditary, being associated with gout, rheumatism and the sanguine variety of scrofula; error in diet, sameness of food, imperfect ventilation, want of exercise, and general inattention to hygienic measures, &c.

The lithic or uric acid is one of the forms into which the the constituents of the blood are converted by oxydation, in order to eliminate them from the system.

Treatment.—The treatment of lithic acid diathesis, strict attention to the quality and quantity of the food; a plain unstimulating diet, fresh vegetables, ripe fruit—to the exclusion of an undue proportion of oleaginous or saccharine or alcoholic substances. Fat, sugar or alcohol are highly objectionable, because they load the blood with hydrocarbonaceous matters, which prevent the due action of the oxygen on the uric acid, and its conversion into urea. The promotion of an active condition of the skin and proper aeration of the blood is of great importance; alkaline and vapor-baths, friction to the surface. The portal system must be relieved by podophyllin, jalapin and juglandin.

Alkalines serve various uses; they neutralize acids liable to be formed in the stomach at the close of digestion, they hold lithic acid in solution, they counteract the diathesis by saline diuretics. Give queen of the meadow, marsh-mallow, buchu, uva ursa, pipsissewa, parsley root, with some alkali.

Benzoic acid is very valuable, as it abstracts from the blood a quantity of nitrogenous matter, sufficient for its conversion into hippuric acid, and in this soluble form it is readily excreted from the kidneys. Give it in ten-grain doses twice a day in a glass of water, alternating with the bitter tonics, as quinine, gentian, hydrastin, nitromuriatic acid and phosphorus.

Treatment for Stone in the Bladder.—Change the diathesis, attend to the diet; avoid all stimulants, also water impregnated with lime, mental and bodily fatigue, depressing passions, dissolve the stone by suitable remedies, and if this fails, extract it by some of the operations recommended.

In the phosphatic diathesis, a farinaceous diet; fruits and acids should be inculcated.

Buchu, uva ursa, cannibis, pipsissewa, bitartrate of potass and digitalis, are excellent remedies during a fit of gravel, accompanied with painful micturation and slimy purulent urine. Stillingia and nux vomica, when resulting from derangement of the digestive organs.

Lycopodium is useful when the urine is of a dark-brown color and deposits a red or yellowish sediment.

Phosphorus in broken-down constitutions; in debilitated patients, cinchona is very valuable. When the calculus has passed into the bladder, the first point is to remove the irritability of the bladder by sedatives and proper remedies to render the urine normal, so that there may be no spasm to obstruct its passage into the urethra.

The patient should drink water freely so that the bladder may be quite full, and when going to urinate he should lie on his face and grasp the penis, in order to promote a sudden gush, that may carry the stone away with it.

GRAVEL.

Gravel may be defined to be the discharge of a gritty powder or sand, or of small calculi, with the urine, occasioning pain and irritation of the kidneys, ureters, bladder, and urethra.

Gravel is present in the uric, phosphatic and oxalic acid diatheses.

The most common of the three forms is the uric acid (averaging 80 per cent. of all cases), which gives rise to considerable irritation; the other forms are seldom troublesome, unless the concretion is large. All ages and both sexes are liable to be affected.

The treatment varies with the species of gravel. In the uric acid diathesis, a generous diet, avoidance of alcoholic drinks, fatty and saccharine matter; exercise, alkaline bathing, flannel clothing. The patient is quickly relieved by diuretic drinks and a free use of bicarb. potassii, and a cure effected by change of habits, benzoic acid alteratives, and tonics.

In the phosphatic there is no irritation—still a drain of this description debilitates, so that the diet should be generous; tonics and mineral acids are valuable. A decoction of hydrangea is invaluable. Gelseminum is also indicated if there is much cerebral distubrance. Complete mental relaxation must be insisted on.

In the oxalic, a well regulated diet, free from saccharine and vegetable elements—cold bathing, change of location, together with general tonics and mineral acids, seldom fail to effect a cure.

NEPHRALGIA.

Neuralgia of the kidney depends upon a variety of causes, as cold, malaria, sudden suppression of an eruption, the irritation produced by uric acid, phosphatic or oxalic acid deposits. It is undoubtedly the most painful of all forms of nervous irritation—coming on suddenly, violent in its intensity, and continuing from the time the concretion makes its way from the pelvis of the kidney into the ureter, and not ceasing till it has passed into the bladder. Even in an ordinary fit of gravel severe pain is felt in the loins, extending to the groin, thigh, or abdomen, and, in the male causes retraction of the testicle, or in the female irritation of the ovary. The pain in all cases is paroxysmal, with intervals of comparative ease. The paroxysm is usually accompanied with vomiting; a small, feeble pulse; prostration, profuse perspiration, a great desire to pass urine, and inability to do so. When the concretion reaches the bladder the pain suddenly ceases.

Its sudden seizure and periodic character, with its location, renders it easy of diagnosis.

Nearly all of these cases belong to the uric acid diathesis, so that diuretic drinks containing some alkali are indicated. Large doses of the green root tincture of gelseminum should be freely given, it acts efficiently on the kidney as a stimulant, and relaxes the ureters; dry cups freely over the loins, followed by hot fomentations of lobelia, are excellent. Watching the case closely, meeting symptoms as they arise.

HÆMATURIA.

Bloody urine or hemorrhage from the mucous membrane of the urinary passages, the kidneys, bladder, or urethra, is caused

by anything that produces congestion of those organs, as calculi, stones, morbid poisons in the blood, or some diseased condition of the bladder or urethra.

In those cases the urine is usually smoky, or of a black hue, or of a port-wine tint, albumen or pus invariably present. If it comes from the kidney the blood is equally diffused through the urine; if from the bladder or urethra, blood comes away after passing clear urine; renal calculi, cancer cells, casts of renal tubes are often present when the location or seat of hemorrhage is the kidney.

The most common cause of hæmaturia is from the irritation of malarial germs in the blood, operating on the kidneys, and the poison of yellow fever, and analogous affections. Cancer, stone, injuries, more rare.

In hemorrhage from malarial congestion, it is often quite profuse, passed in very large quantities, and more persistent than when due to calculus or any other cause.

In calculus, or malignant disease, the blood is not so profuse.

In the treatment of hæmaturia from any cause, rest in the recumbent position in bed, dry cups, followed with cold to the loins, diaphoretics to act on the skin.

Special treatment consists in administering large doses of green root tincture gelseminum—it tones up the kidneys and relaxes the ureters.

Gallic acid to astringe the kidney, and increase the coagulating faculty of the blood.

Ergot has also a good effect.

If dependent upon stone, its variety should be ascertained, and treated accordingly.

Phosphatic concretions are the most likely to take place in the kidney. This being so, we have an invaluable remedy in hydrangea. A strong decoction of this should be drunk freely, and persevered with, for it has the chemical elements within it that dissolve this form of calculi; indeed, when properly persevered with, its action seldom admits of failure.

If the hemorrhage depends upon some morbid state of the bladder, turpentine, oil erigeron, or sandal wood should have the preference.

CANCER OF THE KIDNEY.

This is probably the rarest form of renal disease. This form of degeneration usually commences in the cortical substance, and extends to the medullary cones and to the walls of the pelvis and ureters.

The diagnosis is most important—the cachexia. There is more tendency to hæmaturia than in any other affection. Can-

cer cells can also be easily detected in the urine, besides either a tumor or enlargement of the kidney, and also the pain anterior as well as posterior.

The treatment will consist of everything calculated to tone up and invigorate the patient, together with an alterative course calculated to change the diathesis, and prevent the elaboration of cancer cells in the blood.

DISEASE OF THE SUPRARENAL CAPSULES.

The function of the suprarenal capsules is evidently to aid in the elaboration of the blood, possessing properties analogous to the spleen. Still, their precise office is not clearly defined.

The obscurity that surrounds those organs has not been dispelled by any investigations on the subject.

The cause of disease in those capsules is unknown.

The symptoms present are very significant; great prostration and debility, anæmia, loss of appetite, sickness, emaciation, a persistency of albumen in the urine; the white of the eyes a pearly color; gastric, intestinal, and cerebral disturbance; discoloration of the skin very variable, often like indigo, more frequently brown or bronzed, the depth of the color variable; but, as the disease advances, the color increases, becoming more marked as the other symptoms acquire greater prominence.

The destructive characteristic of this disease is the extreme exhaustion, anæmia, sinking, albuminuria, discoloration, &c.

The pigment deposit in the rete mucosum of the skin might take place without any trace of renal capsular disease.

As our knowledge of the disease is very unsatisfactory, all that can be done in treatment is simply to keep up the vital forces with good food, tonics, stimulants, &c.

ACUTE INFLAMMATION OF BLADDER.

Commences with rigors, followed by fever, pain above and behind the pubes, frequent micturition. Pulse frequent, small or wiry; skin hot and dry; great anxiety and mental depression; thirst great; scanty, high-colored urine; nausea, vomiting, constipation; continual burning pain in the bladder; great difficulty and pain in micturating; passing the urine very slowly, or drop by drop. A feeling of tension or fullness over the pubes, from distension of the bladder, extending over the lower portion of abdomen. In severe cases, acute pain in the loins, uretus, perineum, and anus, with abdominal swelling; difficulty in defecation, from inflammation of rectum; rigors, cadaverous expression, cold extremities, delirium, convulsions, death.

Its duration is from one to two weeks. When death takes place it is usually caused by gangrene of the bladder, or irritation reflected to the brain.

In milder cases the symptoms gradually subside, and then the inflammation terminates in resolution or suppuration; if the latter, the urine is loaded with muco-purulent matter.

The most common causes are mechanical irritation, as blows, falls, concussions; drugs, as cantharides; use of instruments during parturition; and for stone, stimulating injections into the urethra; metastasis of gonorrhœa, or other poisons; suppression of menses from cold; inflammation of adjacent structures, as the rectum, uterus, prostrate, &c.

In the treatment of acute inflammation of the bladder, the patient must observe rest in the recumbent position in bed; stimulating applications should be applied over the region of the bladder, followed by hot poultices. Then the patient should be either put under the influence of tincture green root gelseminum or opium. Whichever drug is resorted to, its physiological effects must be thoroughly experienced and inflammation controlled. Simultaneously with these the patient should be put under the secondary action of belladonna. Diuretic drinks, as infusions of flax-seed or marsh-mallow, and as the case improves, queen of the meadow, or buchu, or bayberry. Convalescence should be established upon comp. tincture of cinchona and nitromuriatic acid, alternated with comp. syr. stillingia.

CHRONIC INFLAMMATION OF THE BLADDER.

This is more common than the acute, and is brought about by the same causes: as violence, exposure to damp or cold, foreign bodies in the bladder, inflammation of the prostate gland, venereal excesses, natural decay of age, persistently acid urine, excessive drinking, &c., &c.

It is easily recognized by the urgent desire to void urine frequently, with pain in the urethra. Tension and increased sensibility of the bladder, distension from an accumulation of urine. Mucus in urine greatly augmented, and of an unnatural appearance. The mucus, at first pellucid or grey, becomes yellowish, then greenish, and sometimes streaked with blood. When ulceration sets in the urine is loaded with pus. Indeed, this is the true characteristic of the disease.

The quantity of mucus discharge and pus is often immense, averaging several pints daily.

Otherwise the symptoms resemble acute inflammation of bladder, only less severe. If permitted to progress, the strength greatly diminishes, rapid emaciation ensues, and hectic fever sets in.

Simultaneously with these, pain increases, bladder more irritable; distress in the arms, down the thighs; continence or incontinence of urine takes place.

The pathological changes are chiefly an injection of the mucous membrane; enlargement of the blood vessels, and almost invariably the muscular coat is thickened, contracted, and firm in consistence.

In the early stage, under proper treatment, recovery may take place; but, if there is a large amount of pus in the urine, indicating extensive ulceration, recovery may be doubtful.

Treatment.—Attention to the general health of the patient is indispensable, rest, good nutritious food, flannel clothing, regular bathing. If there is fever, aconite and gelseminum in alternation with belladonna. Tonics are indispensable, and should be given daily, alternated with alteratives—tonics before meals, alteratives three hours after meals. The following tonics are excellent:

℞.—Comp. tinct. cinchona,
Glycerine, āā ℥ii;
Nitromuriatic acid, ℥ii;
Dilute phosphoric acid, ℥ss.—*Mix.*

Dose.—A teaspoonful before meals in a little water; or

℞.—Golden seal, pulv.,
Bayberry, pulv., āā ℥i.—*Mix.*

Add to half-pint boiling water, and give wineglassful before meals; or,

℞.—Aromatic sulphuric acid, ℥i;
Sulph. quinine,
" hydrastin, āā ℥i.—*Mix.*

Fifteen drops before meals in a glass of water.

For alteratives:

℞.—Comp syr. bayberry, ℥iv;
Bromide of ammonium, ℥ss;
Bicarb. potassium, ℥ii.—*Mix.*

Dose.—A teaspoonful two or three hours after meals; or,

℞.—Fluid ext. bayberry,
" " stillingia, comp.,
" " buchu,
" " hydrangea, āā ℥i·
Iodide potass, ℥iii.—*Mix.*

A teaspoonful as above.

℞.—Fluid ext. Collinsonia,
" " bayberry,
" " queen of meadow,
" " peppermint, āā ℥ii;
Tinct. nux vomica, ℥iii.—*Mix.*

Dose.—As above.

Injecting the bladder carefully about once in ten days with tepid water, slightly acidulated with nitric acid, is attended with good results.

Any drug that has a tendency to raise the standard of vitality of the bladder may be used with good results.

INCONTINENCE OF URINE.

Inability to hold the urine, so that it flows or dribbles away either during the day or night without control, is very common both in children and in adults over sixty-five; rare in the middle period of life.

The cause of this difficulty in children is either (1.) an inherent weakness of organization, or (2.) an acid diathesis, or both existing together.

When due to a feeble condition of vitality, it seems to be chiefly the sphincter muscle of the bladder that is affected; its nervous contractility seems to be impaired, a true deficiency of life, an inability on the part of the organ to hold its contents.

The treatment of this condition is simple—daily salt-water baths; flannel clothing; sleep in blankets; diet to be nutritious; bladder emptied before retiring; child instructed to hold urine as long as possible during the day. The application of stimulants to the lumbar portion of spine is attended with good results.

Tincture of belladonna in doses, say one drop for every year of the age of the child three times daily in a little water. This drug exercises the most salutary effect not only on the entire white fibrous tissue, but also upon the lumbar portion of the spinal cord, and on the sphincter muscle of the bladder.

In alternation with the belladonna, muriated tincture of iron should be given in the same doses, and as often.

These two remedies are unquestionably our best, but as the human body becomes habituated to the continued use of any thing, a change is indispensable, and for this purpose we have found the following efficacious: Comp. tinct. cinchona, tinct. nux vomica, wine of ergot, tint. Collonsonia, and tonics generally. A constructive treatment seldom fails in overcoming this complaint.

But where it is clearly due to a perversion of nutrition, to the generation of acid, then the treatment of the uric acid diathesis is to be enforced, in addition to the above, namely: Benzoic acid to correct the mal-nutrition, alkalines to keep the urine neutral, tonics, change of diet, habits, and location. Nothing relieves the paralyzed sphincter so effectually as belladonna.

Incontinence of urine in old age depends upon a breaking down of the nerves, a degeneration of structure, and is much more difficult of cure. Incontinence of the old takes place at a much earlier period of life than formerly. We meet with

cases now at 40 or 45, although 65 is the common period. Men who have exhausted their vital forces by alcoholic stimulants, venereal excesses, self-abuse, &c.

Some few cases may be due to an acid condition of the urine, irritating, exhausting, and paralyzing the sphincter muscles of the bladder.

Our best remedies in incontinence of the urine of the old, are, attention to shower bathing, clothing, diet, and a strict avoidance of stimulants or sexual excesses. The general health must be promoted by tonics, alteratives, change of location and habits.

The special treatment must involve remedies that will promote a renewal of life in devitalized tissue.

Phosphorous often acts like a charm. It is best administered in small doses, and in some fatty emulsion.

In alternation with phosphorous, the following operates well:

℞.—Tincture cantharides,
" nux vomica, āā ℥i.—*Mix.*

Fifteen drops every four hours in a glass of water.

Wine of ergot operates beneficially.

Gelsemin and belladonna do well in subduing irritation. Quinine may be used as follows:

℞.—Sulph. quinine,
Xanthoxylin,
Pulv. nux vomica, āā grs. xxv;
Oil capsicum, q. s.—*Mix.*

Make three grain pills, and give one three times daily.

Hydrastin and cypripedin; hydrangea and queen of the meadow.

Electricity to the loins and perineum advantageous. Other forms of external stimulation beneficial. Occasionally the belladonna and iron prove useful.

If it depends upon an acid condition, benzoic acid, alkalies, and tonics.

CONTINENCE OF URINE.

An inability to urinate from paralysis of the sphincter muscle of the bladder with contraction is common in children and old age.

It arises from the same causes as incontinence. In children, nervous irritation, scrofulous diathesis, acidity of urine; in adults, acidity, irritation of prostate nervous degeneration.

General Treatment.—On no account can the urine be permitted to remain in the bladder over a few hours—draw off at least three times a day. At the same time strenuous efforts must be made to overcome the contraction by warm hip baths,

by antispasmodics, by the application of relaxants to the perineum—by the administration of alkalies and belladonna internally, by adopting every possible means to improve the general health.

Special treatment in children, flannel, benzoic acid and alkalies, if there is acid; if weakness, belladonna and iron, with general tonics; if due to nervous irritability, sprinkling cold water on abdomen, bromide ammonium, carminatives, &c.

Special treatment in adults consists in the administration of large doses of either belladonna or gelseminum, so as to relax spasm, alteratives and nerve tonics. Phosphorus is of great value in the comp. hypophosphites of lime, soda and iron. Cinchona also is very useful.

IRRITABILITY OF THE BLADDER.

Irritability of the bladder is said to exist, when an individual is troubled with a desire to pass urine. It may arise from organic disease of the kidneys, bladder, prostate gland, or urethra; or it may be due to the presence of the enlarged uterus during pregnancy; or to the presence of foreign bodies in the bladder, or to the irritation of hemorrhoids; derangement of the digestive organs, and the generation of acidity; or to some form of nervous irritation.

The characteristics of irritable bladder are, the patient has a desire to urinate every few minutes—an inability to check the desire—if arrested, uneasiness and pain. The urine is seldom increased in quantity unless in cases of nervous irritation when it is very pale and of a low specific gravity. This condition rarely lasts long without producing remarkable changes in the calibre of the bladder—a diminution of size, or thickening of its walls, so that it will scarcely hold over an ounce or two.

In all cases of irritable bladder, the cause should be ascertained, the disease traced to its origin, as the irritability is a mere symptom of some constitutional defect or derangement, or organic disease.

In the treatment, great attention should be paid to the general health and comfort of the patient—the avoidance of all depressants, as mental anxiety, over-work, stimulating drinks. Greatest comfort, flannel clothing, tepid salt-water baths do much good. If the urine is alkaline, a generous diet, mineral acids in some tonic infusion are indicated; if extremely acid, alkalies in decoction of queen of the meadow act well. Tincture of belladonna in alternation with iron does much to lessen the irritability, otherwise the case must be treated with alteratives.

SPASM OF THE BLADDER.

All muscular structures are liable to spasmodic action; the bladder having a muscular coat is, consequently, frequently affected with spasm.

The common causes are anything that causes irritation, as stone, acid urine, tumors in or adjacent, ulceration of bladder, irritating drugs, as cantharides, sexual excess, venereal disease, spinal irritation, intestinal worms, &c.

It usually comes on in paroxysms of severe pain at the lower portion of the abdomen, which extends along the urethra to the orifice of the canal—spasmodic pain.

In the treatment we must depend on the antispasmodic tincture, given every few minutes, in sufficient doses to relax spasm; the hot bath, or hot fomentations; large doses of the tincture of gelseminum—the patient must keep under these remedies until the paroxysm disappears. Suppositories of belladonna are invaluable; after the spasm has been controlled the cause must be removed.

PARALYSIS OF THE BLADDER.

The muscular coat of the bladder may become paralyzed from disease of the bladder, or from some derangement of the spinal cord, or from constitutional debility.

The paralysis may be due to over distension of the bladder—a dilation of the muscular coat, brought on by holding the urine too long—is unable to micturate when the desire is felt. Injuries, or disease to the brain or spinal cord, often bring on paralysis.

The natural decay incidental to old age; poisons in the blood, rheumatic, gouty, syphilitic disease of the neck and bladder; enlargement of the middle lobe of the prostate gland. Pressure of the head of the child in labor, or tedious labor often produce it.

Whenever the bladder is paralyzed, its contents are retained, the urine dribbles away by the urethra; the resistance to its escape at the neck of the bladder being overcome when the walls are incapable of further dilatation. Distension of the bladder is very apt to impair its function In all cases of paralysis of the bladder the urine is found loaded with mucus of a strong ammoniacal odor, of an alkaline reaction, and loaded with phosphates—the neutral triple phosphates of magnesium and ammonium. In disease of the spinal cord, the walls of the bladder are so weakened that the urine readily becomes decomposed. The urea is converted into carbonate of ammonium; the urine thus loaded, inflames the mucous membrane and causes it to secrete a thick viscid mucus.

An early symptom of paralysis of the bladder is pain at its neck and in the glans penis; but after a little time the bladder loses its sensibility, and the desire to void urine is not experienced. The constitutional disturbance is usually severe; the pulse becomes quick, wiry, feeble; the tongue coated; appetite fails; great depression and restlessness; vital power shattered, and the patient sinks into a state of stupor, and dies from exhaustion.

Treatment.—If the paralysis depends upon over distension of the bladder, instant relief must be afforded by drawing off the urine with the catheter, slowly and cautiously, and this should be performed three times daily, until permanent relief is afforded by restoring the contractile power of the bladder. Good results follow the use of nux vomica and hydrangia; of Collinsonia and cinchona; of ergot and buchu, &c. Electricity, hip baths, stimulation to lumbar portion of spine, &c.

If it depends on gout or rheumatism, alkalies, lithia, colchicum, cimicifuga.

If upon disease of the brain or spinal cord, the treatment should be upon general principles.

Paralysis of the bladder is present as a symptom of various diseases, and when such, should be treated on general principles.

If it occurs in hooping-cough, give calabar bean, cochineal, muriatic acid.

If during pregnancy, pulsatilla, hydrangea.

If as an evidence of tubercula, comp. hypophosphites of lime, soda, iron.

If associated with sexual exhaustion, general tonics, special agents, as erythroxylon, coca, phosphorus, &c.

In the general management of all the affections of the bladder an effort should be made to build up the nervous system—good diet, generous to a fault—a judicious alterative treatment and special tonics to meet the indications of the case.

The character of the urine in all cases demands attention. If it is acid it should be neutralized; if alkaline the greatest care should be exercised to see that the urine is evacuated, so that no sediment remain and undergo decomposition or form a nucleus for calculi.

A decoction of hydrangea is indicated in all cases; it tones, astringes and promotes vitality in this viscus.

DISEASES OF

THE ORGANS OF GENERATION.

(MALE.)

THE PENIS.

This consists of a root, body and glans. The root is connected to the rami of the pubes by the crura, and to the front of the symphysis by the suspensory ligament. The glans is an obtuse cone. At its summit is the orifice of the urethra, the meatus urinarius. Passing back from this orifice and continuous with the prepuce is a fold of mucous membrane, the *frænum preputii.* The projecting border of the base is the *corona glandis*, and the constriction behind this is the cervix. The *glandulæ Tysonii* situated here secrete a sebaceous matter containing casine.

The body is covered with thin, loose integument, which at the neck is folded upon itself, forming the prepuce. The inner layer of the prepuce is reflected over the glans and is continuous at the meatus with the mucous lining of the urethra.

The organ is composed of erectile tissue in three parts, with elastic fibrous investments; two, the corpora cavernosa on the upper side and the corpus spongiosum, inclosing the urethra, on the under side. The corpora cavernosa separated to form the crura, by which the organ is attached to the pubes. The *bulb* is near the junction of the crura. The dorsal vein is lodged in a groove along the median line.

The fibrous investments send inwards *trabeculæ*, forming compartments containing erectile tissue, arteries and nerves.

The part containing the urethra commences in front of the deep perineal fascia forming the bulb between the diverging crura, terminating at the glans.

The bulb is surrounded by the accelerator urinæ muscle—a thin layer of muscular fibres continuous with those of the bladder; a part of the coat of the corpus spongiosum.

The erectile tissue consists principally of an intricate venous plexus. The vessels are largest in the central part of the corpora cavernosa. They return the blood by a series of vessels, a part of which converge and form the dorsal vein; but the

greater number pass out at the root joining the prostatic plexus and pudendal veins. The arteries are derived from the internal pudic. The superficial lymphatics terminate in the inguinal glands. The deep set terminate in the deep lymphatics of the pelvis.

The nerves are from the internal pudic and hypogastric plexus.

THE PROSTATE GLAND.

This gland surrounds the neck of the bladder behind the deep perineal fascia in contact with the rectum. In shape and size it resembles a horse-chestnut, with its base backwards. It is flattened and thinnest on the upper side of the urethra. It has two lateral and a middle lobe. In advanced life it often becomes so enlarged as to impede the passage of the urine.

The urethra and seminal ducts perforate this gland. It consists of dense friable glandular substance and muscular tissue.

The *glandular* structure is of follicular pouches opening into canals, which join to form excretory ducts opening into the urethra.

The *muscular* tissue is in circular bands continuous with the fibres of the urethra.

The *arteries* are from the internal pudic, vesical and hæmorrhoidal. Its veins terminate in the internal illiac.

Its *nerves* are from the hypogastric plexus.

The *secretion* is a milky fluid, with acid reaction, of molecular matter and granular nuclei.

COWPER'S GLANDS.

These are two rounded bodies about the size of peas, beneath the urethra, close behind the bulb. They consist of lobules connected by fibrous investments. Their excretory ducts open into the floor of the bulbous portion of the urethra.

THE TESTES AND THEIR COVERINGS.

The testes are glandular organs. In early fœtal life they are within the abdomen, behind the peritoneum. Before birth they pass with the spermatic cord along the inguinal canal through the abdominal ring into the scrotum, deriving in their course coverings from the serous, muscular and fibrous layers of the abdominal walls and the scrotum.

They are covered by the scrotum, intercolumnar fascia, cremaster, fascia propria, and tunica vaginalis.

The scrotum consists of the skin and dartos. The *skin* is thin, brown and in folds, containing sebaceous follicles, and is thinly beset with hairs. The *dartos* is thin, loose, reddish and

contractible. It sends in the *septum scrote*, which divides it into halves, for the two testes. It is separated from the subjacent parts by delicate areolar tissue. It is very vascular and contains unstripified muscular fibers.

The intercolumnar fascia is a thin membrane from the margin of the external abdominal ring. It is separated from the dartos by loose areolar tissue; but it is closely connected with the next layer. The *cremaster* consists of scattered muscular fibers from the lower border of the internal oblique muscle. The *fascia propria* is a thin membrane investing the cord. It is a continuation of a process of the fascia transversalis.

The *tunica vaginalis* is the serous covering of the testes. It is a pouch derived from the peritoneum, but becomes a shut sack, investing the testes and reflected on the inner surface of the scrotum.

The *arteries* of these coverings are the superficial and deep external pudic, from the femoral. The superficial perineal branch of the internal pudic, and the cremaster branch of the epigastric. The veins follow the course of these arteries. The lymphatics terminate in the inguinal glands. The *nerves* are the ilio-hypogastric and ilio-inguinal branches of the lumbar plexus, the inferior pudendal branch of the small sciatic, the two superficial perineal branches of the internal pudic and the genital branch of the genito-crural.

The *spermatic cord* extends from the internal abdominal ring, where its structures converge, to the back part of the testicle. It is composed of the excretory duct, arteries, veins, lymphatics and nerves. These are invested by the fascia and connected by areolar tissue. The left is a little the longest, and the left testicle hangs a little lower than its fellow.

The *arteries of the cord* are the spermatic, the cremasteric and the artery of the vas deferens.

The spermatic artery supplies the testicle and epididymis, and supplies branches to the tunica albuginea and the membranous septa between the lobes. The cremasteric supplies the cremaster.

The spermatic veins leave the testes at the back part, receive branches from the epididymis, and unite to form the pampiniform plexus, the chief mass of the cord, passing in front of the vas deferens, forming a trunk which terminates in the vena cava on the right and the renal on the left side.

The *lymphatics* are large. They follow the blood vessels and terminate in the lumbar glands.

The *nerves* are the spermatic plexus from the sympathetic.

The testes are oval in form; on the outer edge of the posterior border is a long, narrow, flattened body called the epididymis. It consists of the globus major, or head, and the globus minor, or tail. The head is connected to the upper end

of the testicles by its efferent ducts. The tail is attached to the lower end by cellular tissue and a reflection of the tunica vaginalis.

The size of the testis is about one and a half to two inches in length, one inch in thickness and one and a quarter in width. The weight is about seven drachms.

The testes have a covering called the *tunica albuginea* of interlacing white fibrous tissue. It is fibro-serous like the dura mater and pericardium. It surrounds the glandular structure, and at the back and upper border it is reflected inward, forming a septum, the mediastinum testium, which sends off slender trabeculæ to the tunica albuginea to form spaces for the lobules. The mediastinum also supports the ducts and vessels.

The *tunica vasculosa*, or *pia mater testis*, is a plexus of vessels held together by fine areolar tissue. It sends off processes along the trabeculæ. The glandular structure consists of globules estimated at 300 or 400 in each, those in the interior being largest. They are conical, with apices towards the mediastinum. Each lobe consists of from one to three or four convoluted tubes, the tubuli seminiferi. They consist of basement membrane, lined by epithelium of medeated granular corpuscles, inclosed in a plexus of capillaries; towards the apices of the lobules the tubes assume a nearly straight course and unite to form 20 or 30 ducts, called *vasa recta*. These enter the tissue of the mediastinum, pass upward in a network of anastomosing tubes forming the *rete testis*, which terminate at the upper end of the mediastinum in 15 or 20 ducts, the *vasa efferentia*. These carry the seminal fluid to the epididymis. Their course is first straight, then enlarged and convoluted, and form conical masses, the *coni vasculosi*, constituting the globus major. Each cone is a convoluted duct six or seven inches in length. Opposite the bases of the cones the efferent vessels open into a duct, which by its convolutions constitutes the globus minor. This tube, unravelled, measures over twenty feet in length, increasing in size as it approaches the vas deferens. The mass is united by areolar and bands of fibrous tissue.

The *vas deferens* is the continuation of the epididymis, and is the excretory duct of the testis. Starting at the lower part of the globus minor it ascends along the posterior and inner side of the testis and the epididymis, the back part of the spermatic cord, through the spermatic canal to the external abdominal ring, thence descending into the pelvis, crossing the external iliac vessels, curving around the outer side of the epigastric artery, arching back and down to the base of the bladder to the inner side of the ureter. Here it lies between the bladder and the rectum, along the inner border of the vesicula seminalis, is enlarged, but narrowing at the base of the prostate, unites with the duct of the vesicula seminalis

forming the ejaculatory duct. The walls of the vas deferens are dense and thick, the canal not above half a line in measurement. It is about two feet in length. It has three coats, a cellular, muscular and mucous, with columnar epithelium.

VESICULÆ SEMINALES.

These are two lobulated pouches between the base of the bladder and the rectum. They are reservoirs for the semen, and they secrete a fluid which is added to the semen. They are somewhat pyramidal, with the apex towards the prostate. They are about two and a half inches long, five lines wide and two or three thick, but varying in size. They are in contact with the base of the bladder and the rectum, the recto vesical fascia separating it from the latter. The anterior extremities converge to the base of the prostate, where they join the corresponding vas deferens, which run along their inner border, to form the ejaculatory duct. Each vesicula is a tube coiled upon itself, giving off several diverticula, all connected by fibrous tissue. The *ejaculatory ducts* are about three quarters of an inch in length, diminishing in size, and converge towards their termination.

The vesiculæ seminales have an external fibro-cellular coat from the recto vesicular fascia, a middle fibrous coat, somewhat elastic, with a few muscular fibers, and an internal mucous coat with squamous epithelium. In the coats of the ejaculatory ducts the outer fibrous layer is lost on entering the prostate, the other coats becoming very thin.

The arteries of the vesiculæ seminales are derived from the inferior vesical and middle hæmorrhoidal. The *veins* and *lymphatics* accompany the arteries. The *nerves* are from the hypogastric plexus.

The *semen* is a thick, whitish fluid, consisting of the liquor seminis, the seminal granules and the spermatozoa.

The *liquor seminis* is of an albuminous composition, containing particles of epithelium with oil globules and granular matter.

The *seminal granules* are fine granular corpuscles, measuring about the $\frac{1}{4000}$ of an inch.

The *spermatozoa* are the essential agents in fecundation. They are small, elongated, flattened oval bodies with slender caudal filaments. Their movements consist of an undulatory motion of the tail.

ACUTE INFLAMMATION OF THE PROSTATE GLAND.

This is liable to arise from kicks, blows, horse-back exercise, rude introduction of bougies or catheters; excessive sexual intercourse; the irritation of gonorrhœa, and foreign bodies, &c.

The usual symptoms present are, excruciating pain in the perineum, aggravated by pressure and defecation; also fever; continence or incontinence of urine.

There is usually little difficulty in recognizing it, by the history of the case; by the localized character of the pain; by inserting the finger per rectum and feeling the large, hot, swollen body pressing back on that organ, and the difficulty in micturition.

In the treatment, rest in bed; arterial sedation with large doses of aconite and gelseminum, so as effectually to control the fever; suppositories of belladonna to allay the excruciating pain; hot fomentations of lobelia and stramonium to the perineum. When partial relief is experienced, warm poultices of lobelia. Just as soon as the urgent symptoms are controlled, the following should be given:

℞.—Fluid ext. hydrangea,
" " senecio, āā ℥ii;
Iodide potass,
Bicarb. " āā ℥ii;
Bromide potass, ℥ss.—*Mix.*

A teaspoonful every three hours, alternated with pulsatilla.

This or some other form of alterative should be continued for several weeks, so as to effect a thorough disengorgement of the gland; for if this is not effected properly, a condition of enlargement will exist, and give rise to much trouble.

CHRONIC INFLAMMATION OF THF PROSTATE GLAND.

This may be a sequel of an acute attack, or it may be caused by mechanical violence, sexual excess, gonorrhœa; but more common causes are, masturbation, imperfect coition, the secretion of the gland, as well as the semen, not properly thrown off. This may result from the pernicious practice of withdrawal during coition; from a relaxed condition of the vagina which is present in all tropical countries; from the wearing of condums during sexual congress; sedentary habits; reading improper literature.

The symptoms present are very variable, but the most prominent are those of irritability of the gland, as nocturnal emissions, one occurring immediately after another, then a cessation for a few days, or a morbid desire for sexual intercourse; perhaps a slight gleety discharge, producing a tenderness along the canal. In all cases of chronic inflammation, enlargement of gland, which causes a mechanical impediment to the function of rectum, constipation, a feeling as if the patient had not properly evacuated his bowels; besides, the indurated or enlarged condition can be felt. The reflex symptoms are very numerous, langour, lassitude, debility, nervous prostration,

derangement of stomach and liver, spinal irritation, morbid condition of mind.

The progress of cure in these cases is both difficult and tedious; still, certain principles being observed, recovery takes place in a reasonable length of time.

Diet should be nutritious; if no appetite, tonics; skin, kidneys, and bowels carefully attended to; a cold water sitz bath night and morning for fifteen minutes at a time; tea, coffee, tobacco, and alcoholic drinks carefully avoided; good society, healthy literature provided; sedentary habits, and all conditions of depression, removed. Patient to sleep on right side. on a hair or straw mattrass.

To stimulate a renewal of life in the gland, our remedies are abundant. If it has lasted some time a permanent condition of hypertrophy or enlargement is likely to have taken place. When this is so, a species of calcareous degeneration invariably exists, which keeps up an irritation of itself.

To disengorge and eliminate those calcareous deposits, the following is very useful:

℞.—Pulverized blue flag,
" mandrake,
Cream of tartar, āā ℥i.—*Mix.*

Simply give one small dose daily, in water, just enough to keep the bowels regular. The action of the blue flag is remarkable as a stimulant.

As a solvent to those calcareous bodies in the prostate, nothing can excel an infusion of the hydrangea; drunk pretty freely. Five-drop doses of muriatic acid may also be given occasionally as a solvent.

To control or check the morbid sexual desire, or nocturnal emissions, either of the following may be given at bed-time, or, if the case be a bad one, continue during the day as well:

Erythoxylon coca, in fifteen-drop doses of a saturated tincture.

Tinct. green root gelseminum in sufficient doses to produce its physiological effects.

Tinct. digitalis is also excellent.

Tincture of humulus and lactucarium are occasionally serviceable.

The salts of bromine, or the bromide of potass, are efficient, but their use, if long continued, is very apt to become destructive, in absorbing the testis.

The following formula:

℞.—Camphor water, ℥iii;
Bromide potass, ℥i;
Bicarb. " ℥ii;
Tinct. gelseminum (green root), ℥i.—*Mix.*

From half to one teaspoonful every four hours.

If there be any inflammation of the prostatic portion of the urethra, the application of the solid stick, nitrate of silver in the *porte caustic* once every two weeks is attended with most beneficial results. Usually its application has to be repeated six times.

Otherwise, the treatment is to be according to the indications, general alteratives and tonics.

SPERMATORRHŒA.

Under this title it will be necessary to consider masturbation, or self-abuse, seminal weakness, sexual exhaustion, sterility, impotency, &c.

Masturbation.—Self-abuse is a name given to a pernicious and destructive habit—a discharge of semen by the stimulus of the virile organ with the hand—an act revolting to humanity, destructive to every feeling and faculty of vigorous manhood. The great and good in all ages and nations of the world, as well as the highest medical authority, condemn this baneful practice as one fatal to the vitality of the person, entailing on himself a lower type of manhood, and even transmitting to his posterity a structure so degenerated that its very constituents are disease, insanity, and death.

In a very large percentage of cases of nocturnal emissions and enlarged prostate, masturbation has been the cause. Nationally speaking, it exercises a disastrous effect, producing imbecility, cerebral disease of every form, and places the persons lower in the scale of being; but aside from this general type of degeneration, it creates certain local leisons, such as—

Inflammation of the Prostate Gland.—This is produced by the unnatural act, being an irritant, by the retention of semen in the ejaculatory ducts, producing inflammation. This invariably takes place when the semen is retained, not thoroughly evacuated.

Another very common result is a devitalization of the veins of the spermatic cord and testicle, producing a varicose condition of the veins, varicocele and circocele.

Atrophy, or a wasting away of the testicle, is also a common sequel. This may take place at any period. If the practice has been commenced in early life, they often do not attain their full size, and even lose the powers of secreting semen; but this effect is not on the testicle alone, but upon the body as a whole, which is dwarfed and robbed of its proper proportions; a perfect arrest of development takes place.

The generative organs suffer more than any other part. The penis and testicles resemble those of a boy, although wasting or diminution may occur at any age. The testicles may retain their proper size and shape, but they often take on interstitial

absorption, lose their elasticity and firmness, become pale in texture, the blood-vessels become diminished in number, the spermatic cord atrophies, the nerves degenerate, and the cremaster muscle disappears. The thin, watery semen which is now formed is entirely destitute of spermatic granules and spermatozoa; its fertilizing power, or its power to impregnate, is lost, and impotency gradually supervenes.

When the venereal or other poison is the cause of the atrophy, the testicles alter in shape, become uneven and irregular, even elongated as well as diminished in size and weight.

Enlargement of the testicle occasionally takes place. It seems strange that a low grade of irritation acts in this way, but it frequently puffs up, insidiously increases in bulk, but diminishes in firmness, consistency, and elasticity; they become remarkable for their sponginess, and feel as if they are divided into two. Enlargement or atrophy may also be caused by improperly healed gonorrhœa, sexual excesses, or it may be the precursor of decay in the organ.

Blows, shocks, concussions on the back portion of the head, will produce degeneration of the testis; so also excessive grief, sorrow, or suffering. This is easily explained by the intimate relationship of the brain, spinal cord and testicles; they are but one, for it is easily demonstrated that the nervo-vital fluid, the semen or spermatozoa, is secreted by the testis directly from the cerebellum.

The brain is the grand reservoir of life; its intimate connection with the sexual organs renders it a fixed fact that derangement of the one causes a disturbance of the other. Perfect harmony is essential to health.

The delicate and impressible fibers of our young of both sexes chiefly feel the frightful ravages and prostrating effects of such an irritation as self-abuse. This strikes at the very root of society, and is a direct and immediate cause in depreciating the vital stamina of all young men and women who practice self-abuse; it enervates and debilitates them from the very cradle.

We must not shut our eyes to the fact that children at a very early age resort to tickling the generative organs, and we must admit that this is a principal cause of epilespy, chorea, &c., among children. We need to counteract this by a better moral atmosphere, superior school and religious training; males, healthy and strong, should be substituted for females in teaching boys. There can be but little doubt that the frequent cause of onanism, is an ignorance of the enormity of the crime, a practice monstrous and unnatural, odious, ruinous, destroying every vestage of natural desire, and extinguishing all hopes of posterity. This vice, learned either from example or accident, has contaminated thousands of both sexes who would have

abhorred the very thought of such a sin, had they understood its nature and consequences, and been made acquainted with its fearful results. The records of our insane asylums exhibit a fearful warning to the rising generation, the inmates being chiefly those who have violated nature's laws.

The tendency of the present age in its high civilization and its gigantic efforts, discoveries, and progress, is an increased development of the brain and the nervous system, and the predominance of its action over other parts of the organism, predisposes the individual to the practice of masturbation. In proof of this, we may state that we seldom ever see this habit indulged in by robust and vigorous persons, whose muscular and digestive organs are in full development. The excessive development of a nervous sensibility or a hyperæmia of the nervous system may be derived either from a natural disposition or from early education.

In infancy and shortly after boyhood, just at the epoch, when the faculties of the child begin to be developed, the embryonic man runs the greatest risk. If then, as too frequently happens, the indelicate touch of strange hands, or the irritation from clothes or otherwise, disclose to the young subject what may at this time be considered a new sense (and at this time an immense concentration of vital force in the genital organs takes place), and the patient, led on by delusive pleasures, gives himself up with avidity to a vice which is certain soon to destroy him.

Another very critical period of life is the approach of puberty, which varies from fifteen to eighteen. The rapid growth of the generative organs, the increased power and frequency of erection, the rapid secretion of semen, all lead to the performance of the act which is sure to occasion the deepest remorse. It is the attentive and deliberate consideration of these facts that explain to us how the habitual exercise of the genital organs, either by coition or masturbation, may so far get control of the will of the individual as to force him to indulge in practices the object of which is to gratify the venereal stimulus. If we compare the injurious effects of excessive indulgence in coition and those of masturbation, we shall find that the causes which combine to render excess in the former dangerous, act with much more force in the latter, and that several circumstances peculiar to the latter render the results of its frequent repetition much more serious. Thus, the person addicted to masturbation is kept for some time in a state of permanent rigidity of the whole body; this tension is sometimes carried to such an extent as to cause the person to relax his efforts in order to rest. Another cause which renders self-abuse more dangerous than excessive sexual indulgence, arises from the circumstance that it is easier to become habituated to the one

than the other; thus, in coition the fatigue of his companion, as well as himself, will have the effect of preventing his exhaustion, while in masturbation there is no restraint. The former requires a favorable moment, while mere solitude is all that the latter needs to consummate the act. He nourishes in his breast the scorpion that stings him; his imagination excites his genital organs, and his organs inflame his imagination. While a thousand objects are constantly detracting the attention of the libertine, nothing occupies the mind of the masturbator except his own sin.

The time at which persons become addicted to this habit is one of the most critical periods of life, that is, from childhood to puberty. We meet with it in very young children, but among full grown boys and young men it is of most frequent occurrence; for the various difficulties which prevent copulation before a certain age do not exist in the case of onanism. The generative propensity, called forth prematurely and viciously gratified, steps in amid the natural efforts of growth with its unnatural train of sensual shocks and physical pollutions, causing our boys to have that air and appearance of old age; they are stupid, pale, imbecile, effeminate; they have a distaste for everything; they are incapacitated for enjoyment, and have a tendency to become paralytic, and they commit in reality a lingering moral and physical suicide.

Man is the abject slave of habit, hence the difficulty of abandoning the habit of masturbation when once indulged in. Often the patient is unconscious for years of any change, and no part of the body feels weaker than another; but *surely*, though it may be *slowly* and insidiously, a creeping langour, lassitude, and debility comes on; a want of energy, a depression of spirits, a disinclination to society; these feelings gradually increase until they attract the attention of the victim. His face becomes pallid; his back and knees weak; he sees specks or spots before his eyes; his hands and feet are cold and clammy; the circles around his eyes are depressed and darkened; he becomes emaciated; he cannot bear the cold as formerly; his old pursuits and amusements have no attraction, nor new ones a charm for him; his memory becomes imperfect; his eyes become weakened; morbid sensations annoy him; the freshness and plumpness of complexion disappear; a leanness or wasting of tissues succeeds; the skin becomes rough, often of a leaden hue; the eyes lose their brilliancy, and by langour express that of the whole frame; the lips lose their vermilion tint; the teeth their whiteness; the hair becomes dry and falls out, and sometimes even the whole body is bent and distorted; his face is shrunken, hagard, pale, unmeaning and unexpressive; his eyes dull, and lack lustre.

The evils of this practice are not alone confined to the male

sex, but are equally common among young women, especially those of a religious turn of mind in the higher circles of society. Young and apparently modest ladies are dying by thousands from consumption, female complaints, spinal and nervous irritation, general debility, and other obscure diseases, caused by masturbation. The effect on the female is similar to that in the male. The practice causes a glairy discharge, very weakening, also leucorrhœa, and ovarian irritation, mental aberration, suppression of the menses, and general disorganization of the economy.

The secretory glands of the human body form an apparatus, the action of which in health is unvarying and constant.

The liver is perpetually secreting bile; the kidneys working off the urea and other products; ashes of tissues, that have done their part in the animal economy. All the secretions are derived from the living, vitalizing fluid. The gall bladder is the recepticle of the carbonaceous material wrought off by the glandular structure of the liver; the pancreas secretes an important fluid which together with the bile dissolves the fatty portion of the food in the duodenum—is thrown out as the economy may require. The testicles secrete semen, the most intrinsically valuable of all secretions, and pour it out into the vesiculæ seminales—not to be absorbed again into the system, but rather to be excreted as indispensable to the reproductive act.

Hence the stimulus arising from distension of these vesicles becomes a pleasurable impulse to the necessary multiplication of the species; and if sexual desire were susceptible of gratification only as the result of instinct; if depraved man, instead of exhausting his generative organs by reading trashy novels or impure literature, filthy conversation, lewd and lascivious imaginations, and such like, which are entirely absent in the lower animals; if, like them, he were content to follow the dictates of his unerring organization, diseases arising from excess would be unknown, equally among us as with them, and the integrity of the human stock be improved beyond even the most vivid imagination. As the seminal vesicles will not allow of extraordinary distension, the thinner portion of the semen becomes absorbed, and thereby the bulk of the secretion is diminished; yet the residue becomes more acrid and stimulating, the impulse to excretion is almost rendered unconquerable, and so nature occasionally relieves herself of the superabundant secretion. Of this act, men are mostly unconscious; if, however, it arrests attention, its frequency and its consequences are the circumstances that arouse the proper and natural fears of the sufferer.

Besides this natural cause for seminal losses, there are numerous others brought on chiefly by abuse. The testicles may have

acquired, from the practice of self-abuse, (for involuntary emissions rarely assume the formidable character here described, except induced by masturbation), a morbid sensitiveness that on the slightest local invitation they exercise the secretive power. It is very apt to cause an atrophy or wasting of these glands; the cause may be at this period, seat worms, piles, constipation, indigestion, irritability of the bladder or kidneys; for they all more or less are present, and perhaps, severally acted on by the stimuli of one kind or another during the day or previous to rest. Another cause may be the loss of tone of the absorbents, also loss of sensibility of the passages through which the discharge escapes, thereby acting as somnolent sentinels only, to the brain, whereby even the little control the will might possess is lost.

The difficulty is not local debility of the generative organs alone, but the brain, the function of life becomes involved. The constant drain from the testicles impoverishes the spinal cord and brain, and tells upon the whole body; the semen of a person so affected becomes thin, watery, sickly odored, no spermatozoa in it, consequently not prolific.

We may class these losses under three heads. 1st. A simple condition of relaxation or debility, when the seminal ducts will not retain their semen. 2nd. Irritation of the lower portion of the spinal cord. 3rd. When the brain becomes affected, irritated and exhausted.

The characteristic symptoms of these three stages are as follows: A general feeling of languor or debility, the muscles become soft, effeminate, the body bent, gait sluggish. Digestion becomes enfeebled, breath fetid, bowels constipated, the fæces harden in the rectum and produce irritation of the seminal ducts in its vicinity. The circulation of the blood becomes impeded, the extremities are cold and clammy. The youth frequently sighs, the countenance somewhat livid, and the skin of the forehead becomes studded or dotted with pimples, the corners of the mouth are lengthened, the nose becomes sharp, the eyes sunken and deprived of their brilliancy, they are cast down, the patient cannot look you in the face, and around them there are bluish circles, no look of gaiety or animation remains; the patient is in aspect a wreck. He acquires a morbid emotional sensibility, often crying without cause, supposes himself looked upon by all men, is fearful in business, is wretched if he imagine himself slighted.

The knees become weak, memory lost, perceptions, desires, and affections weakened, singing in the ears, spots and specks before the eyes. Distraction, or absence of mind, rendering the subject unfit for business. Imagination gives birth to the wildest fancies and most groundless fears, an allusion, however slight, to the habit causes a twitching, a flush of shame, and

even despair. Then the individual shuns the face of man and dreads the observation of woman, then faintings, wandering pains, convulsive tremblings and partial paralysis.

The characteristic debility from seminal weakness is general, not partial; among persons so affected on attempting sexual intercourse the emission is too quickly discharged, nocturnal and even daily losses are frequent, also the semen is expelled during the evacuation of the bladder and bowels; the patient now becomes sensibly alive to the origin of his weakness, becomes timid, fearful, careless of the world around him, his mind becomes absorbed in the consideration of his malady, until the continual presence and recurrence of the same train of thought creates a species of monomania, or rather the premature childishness of old age. All the functions of the body are performed irregularly, and complete and general condition of depression takes possession of every faculty of mind and body. The seminal fluid may dribble away without pleasure, without erections, or natural ejaculations. The draining of the seminal fluid which occurs, is not equally great in every instance; their powers are weakened but not altogether destroyed.

The brain becomes exhausted, a molecular change takes place in its structure, and so great is this that the brain ceases to hear by the ear or see by the eye. The hearing becomes less acute, humming in the ears, eyes dull and lustreless, pupils dilated; hence the great demand for glasses in our young people.

The effects of this practice may exhibit themselves in other directions, as total derangement of the stomach, irregularity of appetite, and indigestion, weakness of the respiratory organs, cough, weakness of the voice, and sense of suffocation. Relaxation of the nervous system, lassitude by day, sleep unrefreshing, debility and languor. In some patients the nocturnal emissions perfectly prostrate them, so that they are in an extreme state of lassitude the next day, pains in the loins, back and head.

With regard to the diurnal emissions, which occur at stool or while making water, or which are evident in a continual moisture or humidity of the organs. The nightly emissions often leave him entirely—the drain by day being excessive.

During the progress of spermatorrhœa, many suffer from bronchial, laryngial, and other diseases, or symptoms of diseases of the throat and lungs; there is atrophy and relaxation of the testicles.

Then, briefly to recapitulate, spermatorrhœa is a draining away of a vital fluid, a loss of an essential principle of life, or in other words, a state of nervous exhaustion, brought about by a constant irritation, which is reflected to the brain, and a functional or organic (as the case may be) lesion of the brain and spinal cord occurs as an effect; the loss of memory, and

then power of continuity, lassitude and debility, an eruption, a lustreless eye, a cadaverous look, an inability to look a person fairly in the eye, a distaste for society, a fear to meet women, a love of solitude, an atonic condition of the genital organs, followed by disorders of the kidneys, bladder and liver, a debilitated condition of the stomach and bowels, laryngial and bronchial affections and general disorganization of the economy, followed by nervous exhaustion. In short, the whole structure is affected by and injured from indulgence in this one vice.

It occurs in children, in youth, and in manhood, it affects male and female, it is the true cause of many obscure female complaints, its effects are protean; epilepsy, nervous exhaustion, impotence, sterility, leucorrhœa, prostatitis, disease or atonic condition of the abdominal viscera, chorea, menstrual irregularities, imbecility, consumption, and death.

From the above remarks it will be seen that spermatorrhœa, with its complications, involves three distinct elements of pathology:

1. A weakened or relaxed condition of the organs of generation, with an oozing of semen either in leakages, emissions, or otherwise.

2. This weakness cannot exist long without involving the spinal cord. The reflex nature of that body invariably causes it to take on hyperæmia.

3. Co-existent with the earliest dawn of sexual exhaustion the brain becomes implicated, and remains persistently so all through the case, and is often the most stubborn to induce recuperation or repair.

In the medical treatment those three conditions should be prominent in the mind of the physician, and the treatment carried out accordingly. The first step towards a successful treatment is to obtain the most perfect confidence of the patient. He must realize the fact that his medical adviser can prescribe and advise him the necessary means for a cure. A physician, in those cases, must be more than a mere prescriber of drugs; he must explain to his patient the deleterious influence of immoral literature, variety theatres, and other vices of modern civilization, the pernicious effects of bad company on his constitution; he to his patient must be a true moral disinfectant, keeping it carefully in mind that religion, morality, &c., act as invigorators of the sexual system, of the mind, of a high standard of vitality.

The medical treatment should be directed first to checking off all losses either by day or night, and for this purpose we would recommend a rigid attention to the general health—flannel clothing, good diet, and avoidance for the time being of the society of females.

A tincture of the erythroxylon coca in fifteen-drop doses every four hours during the day, is attended with the most happy results.

Tincture of the green root gelseminum in thirty-drop doses, three times daily, has also an excellent effect in arresting nocturnal losses.

Occasionally the tincture of digitalis may be used with the most decided effect.

Equal parts of lupulin and lactucarium are invaluable at bedtime.

Bromide of potassium and ammonium are contra-indicated, because they act as irritants to the mucous membrane of the stomach, and cause atrophy of the testis—a pathological condition that has probably taken place, and by this drug hurried forward.

During the day a general tonic treatment with hydrastis, life root gentian, cinchona, &c.

Nocturnal losses in married men are not uncommon, resulting from weakness or debility of those parts. In these cases a somewhat different line of treatment should be pursued—a more stimulating course, for example:

℞.—Tinct. nux vomica,
" cantharides, āā, ℥ss;
Fluid ext. bayberry, ℥iv.—*Mix.*

One teaspoonful every four hours. Or,

℞.—Fluid ext. erythroxylon coca, ℥i;

Ten drops every four hours, in water. Or,

℞.—Tinct. ferri chloride, ℥i;
Sulphate alumina, grs. xxx.—*Mix.*

Fifteen drops every four hours in water.

If these remedies fail, electricity should be tried, negative pole to sacrum, positive to the prostatic portion of the urethra. The best mode of procedure in these cases is to use it in alternate days for twenty minutes at a time.

Failing in these, and especially if there is any inflammation of the prostatic portion of the urethra, cauterization of the mouths of the ejaculatory ducts, with tullemance porte caustic, using in all cases the solid nitrate of silver.

A general treatment with tonics and alteratives should at the same time be carried out.

When the second and third stages are clearly defined, we must still pursue the use of the same remedies to tone, contract and invigorate the ejaculatory ducts, and then our attention should be directed to the prominent symptoms that are present.

If the mental condition is such that the patient is unable to concentrate his thoughts; if the memory is bad; noises in the ears, with muscæ volitantes; great debility; then the following

remedies should be tried: Comp. syr. hypophosphates in alternation with comp. tinct. cinchona and mineral acids.

If the genital organs are loose, flabby, and wanting in energy, then such remedies as pulsatilla, senecin, helonias tullin should be given in alternation with dilute phosphoric acid.

There are decided symptoms of nervous irritation, as irritability of heart, impeded respiration, faltering voice, chlorosis, epilepsy, rheumatic or neuralgic pains; then such remedies as the following would be indicated:

℞.—Fluid ext. stillingia, ℥iv;
Bromide potass, ℥ss;
" ammonia, ʒiii;
Tinct black cohosh, ʒiii;
" colchicum sem., ℥i;
Bicarb. potass, ʒii.—*Mix.*

Dose.—A teaspoonful three times daily.

In alternation, tonics, iron, cinchona, hydrastis, mineral acids, phosphorus; the disordered circulation, dependent upon a want of equilibrium in an exhausted brain, should be attended to by alteratives and tonics.

The only radical cure for spermatorrhœa, sexual exhaustion, consists in a little more elevated tone of society. Our school system, our literature, our amusements, need remodelling—the standard of morality must be elevated.

DISEASES OF
THE ORGANS OF GENERATION.

(FEMALE.)

THE VULVA.

This includes the mons veneris, labia majora, labia minora, clitoris, meatus urinarius, and the orifice of the vagina.

The *mons veneris* is the fatty eminence in front of the pubes.

The *labia majora* are the two longitudinal folds that inclose the urino-sexual opening. It is covered externally with integument, internally with mucous membrane, and between these areolar tissue fat and a tissue resembling the dartos of the scrotum—to which they are analagous in the male—with vessels, nerves and glands. At each extremity they form the anterior and posterior commissures. Just within the posterior commissure is the *frænulum pudendi*, ruptured at the first parturition; between this and the commissure the space is called the *fossa navicularis*. The space between the commissure and the anus is called the perinæum.

The *labia minora* are small folds of mucous membrane within the labia majora, running from the clitoris downwards about an inch and a half on each side of the orifice, where they are lost. As they approach the clitoris each divides in folds which surround the glans clitoridis, the upper forming the præputium clitoridis, the lower attached to the glans forming the frænum. These labia contain a plexus of vessels, and have mucous crypts which secrete sebaceous matter.

The *clitoris* is erectile and analagous to the corpora cavernosa of the penis. It is partly hidden between the folds of the labia minora. The glans is a rounded tubercle, highly sensitive. The body is short, connected to the rami of the pubes and ischia by two crura. The clitoris has two corpora cavernosa, inclosed in a fibrous membrane, united by an incomplete fibrous septum. It has a suspensory ligament and two small muscles, the erectores clitoridis, inserted into the crura.

Between the clitoris and the entrance of the vagina is a smooth, triangular surface, bounded by the labia minora, called the *vestibule.*

The *meatus urinarius* is the orifice of the urethra, about an inch below the clitoris, near the margin of the vagina, surrounded by a prominent elevation of mucous membrane. Below this is the orifice of the vagina, in the virgin, more or less closed by the hymen.

The *hymen* is a thin fold of mucous membrane across the lower part of the orifice, its concave margin upwards; sometimes it is closed; sometimes it forms a circular septum, with a small opening in the center; sometimes it is absent; sometimes it remains after copulation. It is not a test of virginity. Its rupture gives rise to rounded elevations, the *caruncul*æ *myrtiformes.*

On each side of the commencement of the vagina is a reddish yellow, oblong body, analagous to Cowper's gland in the male, called the *gland of Bartholine.* The duct of each gland opens on the inner side of the labia, external to the hymen. Along each side of the vestibule are two oblong masses about an inch in length, consisting of a plexus of veins inclosed in a fibrous membrane. They are narrow in front, rounded below and called the *bulbi vestibuli.* They are analagous to the bulb of the corpus spongiosum in the male. In front of these is a smaller venous plexus, the *pars intermedia.* It is continuous with the bulbi vestibuli and the glans clitoridis.

THE VAGINA.

This is a membranous canal extending from the vulva to the uterus. It is in the pelvis behind the bladder and in front of the rectum. It is curved forwards and downwards, following first the line of the axis of the pelvis then of the outlet. It is flattened from before backwards, and its walls are in contact. Its length is about four inches on the anterior wall, and five or six on the posterior. It is dilated towards the uterine extremity. A short distance from the os it surrounds the cervix uteri, further up on the posterior than the anterior wall.

Its anterior surface is in relation with the urethra and the base of the bladder. Its posterior is connected to the wall of the rectum for the lower three-fourths, the upper fourth being separated by a fold of the peritoneum. Its sides give attachment to the broad ligaments, and below to the vesatores ani muscles and recto vesical fascia.

It has three coats—the external muscular, erectile and mucous. The *muscular* is of longitudinal fibers, which are continuous with those of the uterus. The *erectile tissue* is more abundant at the lower than the upper part, and is inclosed be-

tween two fibrous layers. The *mucous membrane* is continuous with the lining of the uterus and the integument of the labia majora. Its longitudinal folds, or raphe, form the *columns of the vagina*. There are also transverse rugæ. These are most distinct near the orifice. These raphe and rugæ facilitate its enlargement during parturition. The mucous membrane is covered with papillæ and provided with mucous glands, most numerous around the cervix uteri.

THE UTERUS.

This organ, in the virgin state, is pear shaped, flattened a little from before. It is in the cavity of the pelvis, between the rectum and the bladder. It is held in position by the broad and round ligaments and projects a little into the vagina. It is in the line of the axis of the inlet of the pelvis. It is about three inches long, two inches wide and one inch thick in its upper part, weighing from an ounce to an ounce and a half.

It is divided into fundus, body and cervix. The *fundus* is the upper extremity. It is on a line with the brim of the pelvis. The body narrows from the fundus to the neck. The fundus and the upper three-fourths of the body are covered by peritoneum, and separated from the bladder by some portions of the small intestine; the lower fourth is connected with the bladder in front, and it is separated from the rectum posteriorly by some convolutions of the intestine. Its lateral margins give attachment to the fallopian tubes above, the round ligament below and in front, and the ligament of the ovary behind and below both these structures. The cervix is the lower and smaller portion projecting into the vagina; at this extremity is a transverse orifice, the *os uteri*, bounded by two lips, the anterior the thicker.

The *ligaments* are two anterior, two posterior and two lateral. The *anterior* are semilunar folds passing between the neck of the uterus and the bladder. The *posterior* pass between the sides of the uterus and rectum. The *lateral* pass from the sides of the uterus to the walls of the pelvis, forming a septum for the pelvis. The anterior division contains the bladder, vagina and urethra; the posterior the rectum.

The *cavity* of the uterus is small. The portion that corresponds to the body is triangular, with its base upward, and so flattened from before that its walls approximate. At each upper angle is a cavity, at the bottom of which is the orifice of the fallopian tube; at the lower angle is a small opening, the *ostium internum*. The cervical cavity is broader at the middle than at either opening, a little flattened from before, communicating with the vagina.

There are two columns, or folds, on the internal surface, having branches, and hence the name *arbor vitæ uterinus.*

The uterus has three coats—an external serous, middle muscular and internal mucous.

The *serous*, derived from the peritoneum, invests the fundus and the posterior and the upper three-fourths of the anterior surface of the body.

The *muscular* forms the chief substance of the organ. Unimpregnated, it is of a grayish color, firm and dense, cutting like cartilage. At the orifices of the fallopian tubes it is thin, but thick at the middle of the body and fundus. It is made up of bundles of unstriped muscular fibers in layers mixed with areolar tissue, blood vessels, lymphatic vessels and nerves.

Its muscular tissue is disposed in three layers. The external fibers pass transversely across the fundus, converge at the superior angles of the uterus, and are continued on the fallopian tubes, the round ligament and the ligament of the ovary, some passing each side into the broad ligament, others running from the cervix into the recto-urerine ligaments. The middle layer is not regular in arrangement, its fibers running longitudinally, obliquely and transversely. The internal layer is in the form of two hollow cones, the apices of which surround the orifices of the fallopian tubes, their bases intermingling on the body of the uterus. At the cervix the fibres run transversely.

The *mucous* membrane is smooth and thin. It is continuous with the vagina through the os uteri, and with the peritoneum through the fallopian tubes.

In the body of the uterus it is soft, smooth and reddish, and lined with columnar ciliated epithelium. In the cervix the mucous membrane between the rugæ and around the os uteri has numerous follicles and glands. The small vesicular elevations, often found in the os and cervix, are due to the closure of these follicles, and their distension with their secretion. They are called *ovula* of *Naboth.* In the lower half of the cervix the mucous membrane presents numerous papillæ.

The *arteries* are the ovarian from the aorta, and the uterine from the internal illiac. They are very tortuous in their course, and anastomose frequently. The *veins* are large and correspond with the arteries. In the impregnated uterus these vessels are the *uterine sinuses*, consisting of the lining membrane of the veins adhering to the walls of canals through the substance of the uterus, terminating in the plexuses. The lymphatics are large in the impregnated state, and terminate in the pelvic and lumbar glands. The *nerves* are from the interior hypogastric and spermatic plexuses and from the third and fourth sacral.

In the *fœtus* the uterus is in the abdominal cavity. The cervix is larger than the body.

At *puberty* the uterus is pyriforms, and weighs about eight

drachms. It is in the pelvis, the fundus being just below the level of the brim. During and after menstruation it is enlarged, more vascular, its surface rounder, the labia swollen, the membrane thicker, softer and darker.

During *pregnancy* the uterus increases to from two to three pounds in weight. It projects into the hypogastric and lower umbilical regions. Its mucous membrane becomes more vascular; its mucous follicles and glands enlarged; the folds in the cervix become obliterated, and the vessels and nerves become enlarged. After parturition the uterus returns nearly to its normal size; but its cavity is larger; its external orifice is transverse and more marked; its vessels are tortuous, and its muscular layers better defined.

In *old age* it becomes atrophied, paler, and denser, the body and cervix are more distinct, the labia almost disappear, and the os internum and the vaginal orifice sometimes almost disappear.

APPENDAGES OF THE UTERUS.

These are the fallopian tubes, the ovaries and their ligaments and the round ligaments. These and their vessels and nerves are inclosed between the folds of the two folds of peritoneum, which constitute the broad ligaments.

The fallopian tubes, or oviducts, transfer the ova from the ovaries to the cavity of the uterus. There is one on each side in the free margin of the broad ligament; each is about four inches in length. It is very minute, commencing at the ostium internum, from the middle it widens towards the extremity, which is again contracted at the termination. This orifice is the *ostium abdominale*. It communicates with the peritoneal cavity. Its margins have fringe-like processes, called *fimbriæ*, one of which is connected with the outer end of the ovary. It embraces the surface of the ovary during sexual excitement.

The fallopian tube has an external *serous* coat derived from the peritoneum; a middle *muscular coat* consisting of an external longitudinal and an internal circular layer; and an internal *mucous* continuous with that of the uterus. It is dilatable, having longitudinal folds.

The ovaries are elongated, oval-shaped bodies, flattened from above, one on each side of the uterus behind and below the fallopian tubes. They are between the folds of the broad ligament, to which they are attached, and connected with the uterus and the fimbriated extremity of the tubes by ligaments. The ovaries are analagous to the testes in the male. They are whitish, and have either a smooth or uneven surface, about an inch and a half in length, three-quarters of an inch in width, and four lines in thickness weighing about two drachms. The

posterior border and surface and border are free. It is covered by peritoneum except at its attached points. Beneath this is *tunica albuginea*, a dense structure, inclosing a soft, fibrous, vascular tissue. Within this tissue are small, round, transparent vesicles in different stages of development. These are the Graafian vesicles, the ovisacs that contain the ova. They have transparent walls, and contain clear albuminous fluid.

These vesicles are first small and deeply seated. They approach the surface as they enlarge, and when mature they form small projections under the peritoneal coat. Each vesicle has an external fibro-vascular coat connected with the substance of the ovary by a net-work of vessels and a coat; the *ovi-capsule* lined by nucleated cells, the *membrane granulosa*. The ovum is suspended in the contained fluid.

The formation and development of the vesicles and ova commences in childhood, and continues to the end of the fruitful period of life.

After puberty the Graafian vesicles, gradually approaching the surface, burst; the contents are liberated, the fimbriated processes of the fallopian tubes grasp the ovary, and the ovum is taken up and conveyed along the tube to the uterus. In the human the maturation and discharge of the ova occur at periods indicated by menstruation, at which time sexual desire is most intense, and the ova are most liable to fecundation.

After the rupture of the vesicle, it is filled with a blood-tinged fluid, and its circumference is occupied by a firm, yellow substance, formed from plasma exuded from its walls. A corpus luteum is formed for every vesicle that discharges an ovum. If the escaped ovum was impregnated, the corpus luteum (the true corpus luteum), will present a characteristic appearance. If not impregnated, the corpus luteum of the vesicle from which it escaped (the false corpus luteum), will present its own peculiar character.

The *true corpora lutea* are often as large as a mulberry, projecting from the surface, the summit presenting a triangular cicatrix. In the latter stages of pregnancy by contraction, the cicatrix becomes stellated. The true are vascular, lobulated, firm, and of a yellow color.

The *false corpora lutea* are small, do not project; are angular; have no cicatrix; are not lobulated; are soft, resembling coagulated blood. They result from effusion of serum or blood, which is subsequently removed.

In the fœtus the ovaries are situated like the testes, near the kidneys, in the lumbar region. They descend gradually into the pelvis.

The *ligament of the ovary* is a rounded cord, which extends from the extremity of the ovary to the superior angle of the uterus.

The *round ligaments* are two cords four or five inches in length, between the layers of the broad ligament, in front of and below the fallopian tube. Beginning on each side at the upper angle of the uterus, this ligament passes forward and outward through the internal abdominal ring, along the inguinal canal to the labia majora, in which it is lost. It consists of areolar tissue, vessels, and nerves, with fibrous tissue and muscular fibers, from the uterus, inclosed in a fold of peritoneum.

Vessels and Nerves.—The ovarian arteries from the aorta supply the ovaries and fallopian tubes. The *veins* follow the arteries and form a plexus near the ovary—the pampiniform plexus. The nerves are from the spermatic plexus; the fallopian tube receiving a branch from one of the uterine nerves.

MAMMARY GLANDS.

The mammæ are accessory to the generative system, and secrete the milk. In the male they are only rudimentary. In the female they are hemispherical eminences, of different size in different persons, and at different periods of life. They enlarge as the generative organs develop, increasing during and after pregnancy, and become atrophied in old age. The left is a little larger than the right. They are separated from the pectoral muscles by a thin layer of superficial fascia. A little below the centre is a small conical prominence, the nipple (mamilla). It is dark colored, and surrounded by an areola having a colored tint.

In the virgin it is a rosy hue. In pregnancy it enlarges, and continues to grow darker till it becomes dark brown. This color diminishes after lactation.

The nipple is slightly erectile under mechanical excitement. It is somewhat wrinkled and provided with papillæ, and its summit perforated by the apertures of the lactiferous ducts. Near the base, on the surface of the areola, are sebaceous glands, which are enlarged during lactation; they secrete a fatty substance, which protects the integument. The nipple consists of vessels intermixed with muscular fibers.

The mamma consists of gland tissue, with lobes connected, and the spaces between the lobes filled with fatty tissue. The lobes are composed of lobules connected by areolar tissue, blood vessels, and ducts. These lobules are clusters of rounded vesicles opening into the smallest branches of the lactiferous ducts. These uniting form larger ducts, which terminate in a canal corresponding with one of the chief subdivisions of the gland. There are from fifteen to twenty excretory ducts, which are called *tubuli lactiferi*. Beneath the areola they form ampullæ, which are reservoirs for the milk; they are contracted at the

base of the nipple, and the orifices at the summit are narrowed. Their mucous lining is continuous with the integument.

The *fibrous tissue* invests the breast, and sends down septa connecting the lobes. The *fatty tissue* surrounds the surface of the gland, except the nipple and areola, and occupies the intervals between the lobules and lobes. Its amount determines the form and size of the gland.

The arteries are from the thoracic branches of the axillary, the intercostals and internal mammary. The *veins* describe an anastomotic circle around the base of the nipple—the *circulus venosus*. Branches from this transmit the blood to the circumference of the gland, and end in the axillary and internal mammary veins.

The *lymphatics* communicate with the axillary glands. The *nerves* are from the anterior and lateral cutaneous nerves of the thorax.

GYNÆCOLOGY—ORGANIC DISEASES OF THE UTERUS.

The study of the origin and causes of the organic affections of the uterus, with their prophylactic and curative treatment, does not attract the attention of the general practitioner which its importance demands. It is true that this organ is not very susceptible to diseases, either acute or chronic, before the age of puberty. Before this period the organ is comparatively in a state of inertia, being devoid of that functional, vital activity the derangement of which when once established disposes it to various diseases and lesions; and furthermore, prior to the functional devolopment, the uterus exerts but a feeble influence upon the other organs, and is itself rarely affected sympathetically during the early period of life. From its anatomical position it is little exposed to accidental diseases, such as might result from the mechanical or physical action of extraneous causes, and from its isolation and non-participation in the general physiological economy before puberty, organic alterations or lesions are very rare.

But when the period of puberty arrives there is as it were a revolution in the economy of the whole body. The moral feelings and affections undergo a change, the mammary glands enlarge, there is that characteristic corporeal evolution, embonpoint, so attractive to the opposite sex; and the uterus becomes animated by its peculiar function. Its tissues assume permeability, extensibility and even erectility. The blood, which heretofore was but sparingly transmitted to it, circulates more freely through; its sensibility is developed, and consequently it becomes the center and point of departure of sympathetic irradiations, which subject to it all the acts of the economy, and these in their turn exercise reciprocal influences upon the functions of the uterus.

It is thus that from the reciprocal and interchangeable influences existing between the uterus and the other organs of the body, at this period of female life, that new physiological and pathological phenomena manifest themselves. From the histological and anatomical structures of the uterus it is subject to organic lesions and alterations in like manner that similar tissues in other organs are susceptible. The proper tissue of the uterus is composed of a cellulo-fibro, muscular character, surrounded by a serous membrane, and its cavity lined by a mucous membrane with its ciliated epithelium. It has a system of blood-vessels and lymphatics, cerebro-spinal nerves, and a net-work of nerves from the sympathetic or ganglionic system. Its constituents consisting of such diverse tissues, membranes, vessels, and nerves, the inference is that this viscus is obnoxious to all kinds of diseases to which its component parts are exposed in other viscera, either singly or collectively.

When the menstrual *molimen*, impulsion or movement makes its initial effort at puberty the discharge does not always follow, but the efficient cause may be at work at several periods and each time subside spontaneously, when at last the menstrual flow becomes established. In a perfectly healthy girl, where the molimen is not excited by abnormal stimuli, the discharge follows the first effort.

When the female is precocious, or addicted to masturbation, the uterus is not yet in a condition to perform the exhalent or secretory functions, and congestion, local plethora or engorgement is the consequence, accompanied by a sense of weight in the hypogastrium, with severe griping pains, fever alternating with chills, anorexia, slight dyspnœa, and almost constant headache. This apparently trivial condition too often lays the foundation for a subsequent train of very serious diseases. Among these are chronic congestion and hypertrophy, followed by prolapsus uteri, acute and particularly chronic inflammation; and if any cachexia, spanæmia, or constitutional peculiarity exist, either hereditary or acquired, will expose the female to the development of leucorrhœa, ulceration, suppuration or indurations, cartilaginous, osseous or fungus degenerations, and exuberances; or again, scirrhus and carcinoma of this organ. It is thus that the uterus, which before puberty was almost entirely exempt from disease, becomes now under certain unfavorable conditions the centre of numerous acute, chronic and malignant diseases.

Hence, it devolves a grave and important duty upon parents and guardians, and particularly upon physicians, to prevent, and if already present, remove the difficulty and assist the efforts of nature in establishing the normal functions of the uterus.

Assuming that the menstrual molimen exists, that there is a determination of blood to the uterus, but that the organ is incapable of disgorging itself, we must endeavor to relax the exhalents or orifices of the blood-vessels. For this purpose the following course may be pursued. If indicated, clear the stomach with an emetic of lobelia and sanguinaria, or a purgative of podophyllin and leptandrin. Having now stimulated and aroused the action of the secretory and excretory organs, we should give "Sudorific drops," spread warm emollient poultices over the abdomen, hot pediluvia, and warm hip baths. If considerable fever, give aconite or veratrum. This will usually establish the flow, when all the symptoms will subside. To prescribe such medicines only as have a specifie tendency to produce congestion of the uterus would be unpardonable folly, as the organ would be engorged still more, and the symptoms aggravated. If there should be anæmia or dyscrasia, a thorough alterative and tonic course should be instituted and continued for some time, at least until the catamenia are normally established.

It frequently happens that at the approach or in the commencement of the menstrual movement the female is chilled by exposure to rains, extreme cold, a cold, damp bed, or gets wet feet, indulges in cold drinks, ice creams, moral emotions, etc., by which the uterus is so impressed sympathetically that the menstrual movement is prevented or arrested, and a similar train of symptoms is developed.

Sudorifics, emollient fomentations, and baths are indicated, and stimulate the other emunctories. The greatest number of chronic diseases of the uterus originate in the consequences of conception, and are in most cases confined to the neck of the uterus. The contusion of the neck in parturition, frequent abortions, excessive coitus and introduction of the hand or forceps, are so many causes predisposing to disease of the neck, but in virgins its seat is usually in the body (in toto), owing to its production by general and not local causes, as in the former. Congestive or inflammatory engorgement of the uterus may result from violent contractions upon the child when the liquor amnii has been prematurely discharged from turning the child; extracting a retained or adherent placenta; and from certain medicines. Even the most favorable accouchement leaves the uterus in a state of engorgement; but this is dissipated during the period of the lochial discharge. If this resolution and involution of the organ is impeded or arrested by too early rising, walking, cold, moral emotions, &c., it remains the nucleus for the development, sooner or later, of profound organic alterations. The engorgement adds weight and volume to the organ, and if supervening upon an accouchement, the organ and appendages are more or less relaxed yet, it must sink in the pelvis so as to constitute prolapsus uteri. To

attempt, in such cases, to effect a cure by pessaries, uterine supporters, &c., without first attempting to relieve the organ of its engorgement, would be, to say the least, very unphilosophical, as it might, instead of affording relief, cause irritation, and so increase the engorgement. In the majority of cases the resolution of the congestion will secure the return of the uterus to its former position. However, the more protracted the prolapse, the more tedious and difficult is its restoration. When the critical period has arrived (usually between the 40th and 50th year), and the change is effected without any local or constitutional disturbance, the uterus returns to its primitive and complete state of inertia. Its functional activity being entirely abolished, it is as little subject and predisposed to organic disease as any other organ of the body. But this transition is not uniform, because many women have sustained some lesion or other, either at the period of puberty or in accouchement. Virgins may have contracted it through forced celibacy, or mental emotions. Engorgements, indurations, chronic inflammations, and hemorrhages are frequent results. It is at this period that, if any dyscrasia lurks in the system, it will manifest itself by scirrhus, ulcerations, polypi, degenerations, and carcinomata.

The pathological alterations of the uterus, not including the syphilitic virus, may be traced to engorgements of either healthy or unhealthy blood. True, the apphix and circulation of an exceptive quantity of blood through this viscus may be dependent upon circumstances operating directly or indirectly upon it, as local irritation, the sudden suppression of the functions of the eudoriparous glands from colds, or acting neuropathically, as from the chill of an intermittent or a nervous shock, thus constituting the primary cause. Nevertheless, we early detect this congestion with augmentation of weight and volume. If the augmentation is produced by excess of nutrition, and consists of healthy tissue eloborated from healthy blood, there is actually no disease, properly speaking, but only hypertrophy of the organ.

Again, this determination of blood, or this plethora, may be of an active or sthenic character, manifesting itself by dysmenorrhœa, hysteralgia, or inflammation, as in metritis. This plethora may also be of a passive or asthenic character, as far as the uterus is primarily concerned, the blood being driven there, as it were, by some extraneous or remote impulsive force, giving rise to menorrhagia and hemorrhagic engorgements. This blood may be disgorged by hemorrhage from the mouths of the exhalents in a manner akin to menstruation, or the blood may return into the general circulation by spontaneous resolution. Instead of this the serum of the blood may be discharged only during the period of engorgement, constituting

leucorrhœa, or œdema; but if the integrity of the vascular system is weakened, the blood will transcend its limits, and transude into the cellular texture on the fibrous interstices of the uterine parenchyma—a condition likened unto an ecchymosis of some other part. When this occurs the treatment is tedious and difficult; and moreover, if carmification take place, or the superfluous formation of any tissue not foreign to that of the uterus, there will be an increase of substance, a hypertrophy, which may remain innocuous or be resolved by appropriate treatment, or be absorbed by the recuperative powers of nature; or it may become the centre and focus of profound organic alterations, as ulcerations and degenerations. When the carcinomatous diathesis pre-exists, it is usually at this time and in one of these conditions of the organ, that cancerous cells concentrate and accumulate in the uterus. This is not always the mode of the development of malignant disease. The protracted derangement and alteration of the uterus may reciprocally influence and vitiate the depurating and blood-elaborating organs so as to be unable to produce healthy blood: and instead, abnormal and degenerated corpuscles are eliminated from the vitiated blood pabulum, scrofulous or cancer cells. These cells having an affinity for each other are retained and aggregate in the weakest organ—they are least capable of eliminating or throwing them off. The formation of the abnormal structure causes atrophy and destruction of the surrounding or adjacent normal tissue, scarcely leaving more than a trace of its primitive cellular network. In the unimpregnated uterus composition and decomposition have a steady relation to each other, so that there is in health neither diminution nor augmentation of its tissues; but wherever abnormal growth has deposited its nucleus it increases rapidly and persistently; composition is active, and if not interfered with decomposition does not occur until there is a dissolution of its consistency by disruption from size, weight, abrasion, contusions, pressure, and consequent ramollissement, abradation and exulceration of the cancerous mass.

Before entering into a description of particular uterine affections, it will be in place here to present the methods of investigating and diognosticating diseases of this organ. An examination may be made immediately or directly through the vagina by the *touch*; and through the same channel a view of the os tincæ and neck may be obtained by the aid of a speculum; or it may be made indirectly or mediately by introducing the finger into the rectum, and through the abdominal wall over the hypogastrium. Before making an examination the rectum and bladder should be emptied, and the patient should stand erect or be lying upon her back. The recumbent posture is necessary for the introduction of the speculum. By including the neck between the index and medium fingers we obtain a

knowledge of its shape from size, temperature and consistence, also the condition of the os tincæ. The finger pushed into the cul-de-sac of the vagina will give some idea of the form and volume of the body of the uterus, and of its position. Through the rectum we may detect the condition of its posterior border as well as retro-version and retro-flexion.

By applying the hand above the pubes and making pressure backwards into the pelvis, or taking both hands and grasping the uterus laterally, the size, form and sensitiveness and consistence of the body and fundus will be revealed.

An ocular examination through the speculum will give us a definite and certain appreciation of the color, form and volume of the os and cervix uteri. The view and touch combined can scarcely fail to give us a lively apprehension of the condition of the parts examined. Always bearing in mind that even the healthy organ does not present a similar form, size and consistence of the os and cervix in the virgin, in those that have borne already, in the different stages of gestation in primiparæ and multiparæ. Also that it is no uncommon occurrence to find, a little before or after the critical period, a bluish tint or color of the neck of the uterus, without being symptomatic of, or concomitant with, any particular lesion of the organ.

This precaution is suggested to prevent confounding a physiological with a pathological appearance or condition. It is also not uncommon to find hypertrophy of the neck, especially in multiparæ, the result of contusion received during the process of parturition. This may only delay dilatation of the os in a subsequent labor, but does not reveal itself by any untoward symptoms, nor does it interrupt uterine functions. It may resolve itself spontaneously, or remain for an indefinite period without entailing disease or functional disturbance.

Plethora or congestion with augmentation of bulk of the uterus, occurring at any period other than menstruation, utero-gestation, and immediately after parturition, constitutes a deviation from a healthy and normal state; properly speaking, it is disease. This pathological condition may arise from one of two, or from both the following causes, viz.: an *impulsive* and an *attractive* power or causation. The impulsive like the menstrual molimen is situated in the *ovaries*, and may be excited by lascivious thoughts, electricity, galvanism, titillation of the pudenda, pruritis, masturbation, certain medicines, and excessive venery. The *attractive* or *irritating* cause exists in the uterus itself, and may be from direct irritation of that organ, or from relaxation of its tissues, neither resisting or limiting the excessive flow of blood through its vessels, nor possessing the power to propel it with sufficient energy into the general circulation.

This congestion may attack the organ in its totality, or one or more of its parts. General congestion of the body is rare, while partial congestion of the neck is common. The engorgement is sometimes very slow, as in irregular or partially suppressed menstruation, and sometimes very rapid, as in complete suppression of the menses, and in the sudden arrest of the lochia after accouchement. This engorgement may increase its volume equal to four or five months of pregnancy, its rapidity of development being measured by the degree of relaxation and loss of integrity—being as a general rule, and for obvious reasons, more rapid after an accouchement than at any other period. And just here we may ask, How are we to distinguish simple congestion from metritis or inflammation of the uterus? The symptoms are nearly the same, but the accession and intensity are more rapid and more severe in metritis. In congestion are presented swellings, tension and weight in the pelvis, pain in the lumbar, sacral and inguinal regions, exacerbations of repeated and prolonged pains, during which the uterus seems to contract itself violently, as if to express the blood which has engorged it. The pains are of a peculiar character, a tenesmus or griping sensation, hence they are often called colics or cramps of the uterus. In the interval of those spasms or gripings, there is no unusual sensibility upon pressure or by the touch, and the constitutional symptoms, if any, are slight and insignificant in comparison with the local distress, and these are for the most part of a nervous character. On the other hand, in inflammation the pain is more uniform and constant and violent, especially in the incipient stage. The persistent tenderness is a marked feature of inflammatory congestion; the patient laments when *touched*, and the vagina is hot and dry. Moreover, there is a quick pulse, hot skin, retention of urine, either partial or complete, the tongue is soon covered with a dark brown coat, the bowels are constipated, nausea, vomiting, and sometimes convulsions. When these are the distinctive and differential signs of simple congestion and metritis. Whatever may have been the cause, other than the menstrual and the parturient state, it should be ascertained, if possible, and then avoided or removed. The grand object is to divert the blood from the engorged organ, and for this purpose stimulate the other secretory and excretory organs. Apply an "irritating plaster" over the hypogastrium, and a "strengthening plaster" upon the sacrum. At the same time give tinct. gelseminum in small doses, thrice daily; also a dose of caulophyllin and cinchonine, one grain of each, in a little sugar of milk, to be given every six hours. This will give tonicity and permanent contractility to the organs, and the engorgement will subside. When the cervix is implicated vaginal injections of vegetable astringents will be serviceable in

connection with the general treatment. Baths have a very salutary effect, and are very seldom contra-indicated in uterine diseases. As soon as the engorgement is under control, or has been removed, a general tonic course must be pursued for sometime after—chalybeates, vegetable tonics and alteratives; and particularly such remedies as have a bracing, invigorating influence upon the uterus. The diet throughout should be free and nutritious. Simple congestion, when improperly treated and but partially cured, frequently terminates in chronic induration and hypertrophy. This requires resolvent alteratives, as stillingia, iodine, &c.

When congestion resists the treatment, of which a brief outline has been given, we may conjecture some complication, and should direct our course accordingly. Some apparently intractable cases have been speedily overcome by the administration of ergot, combined with caulophyllin, and taken in cinnamon tea. If the neck was also engorged, but still possessing its pliancy, a vaginal injection of borax acted as a valuable adjuvant. The modus operandi of this treatment will be obvious, and needs no comment.

Congestion, with hemorrhage, is traceable to the same primary causes, as simple congestion. This affection, called metrorrhagia, in contradistinction to menorrhagia, presents in its course serious and formidable symptoms, which successively develop themselves, and from this circumstance may be conveniently divided into three stages. The engorgement is persistent and constantly accompanied by a sanguinous discharge, which is subject to more or less frequent aggravations; nevertheless, the discharges do not diminish the congestion, but accelerate and increase it, while, at the same time, the uterus is undergoing organic alterations, the first and most prominent of which is a relaxation of its tissues. The organ is deprived of its firmness, elasticity and resiliency, and appears to the touch softer and more pulpy than natural; the cervix is slightly red and flabby, and the os somewhat gaping and patulous.

This is the first stage, and does not differ much in its local peculiarities from simple menorrhagia, or from the condition of the uterus during the lochial discharge. Second stage—the engorgement increases at length, but without augmenting the volume especially, as might be expected, since the profuseness of the discharge is proportionately increased; but the hemorrhage is more easily induced, and is excited and aggravated by trivial causes, as coughing, walking, standing too long, coitus, and touching the neck or orifice. At the same time, the neck acquires a deep red color, as though the blood had been pressed or strained through the surface; the organ is now much softer, particularly the neck and the cavity of the uterus—in fact, ramollissement has taken place.

The constitutional symptoms are more prominent; there is anæmia, emaciation, the gastric and hepatic functions are disturbed, palpitations, præcordial pains, the patient is weak and nervous, and looks pale, languid, dropsical, haggard, and distressed. This may be termed the second stage. The third stage is synchronous, with an important and grave pathological condition of the uterus, usually manifesting itself at first at the neck or the internal surface of the cavity. Heretofore the blood did not transcend the vascular system, except where it was thrown off upon the surface; but now the vessels are down, and the blood is infiltrated into the interstices of the tissues. The color is changed to a brown red, and the blood being stagnant and partly coagulated there is distinct crepitation. The blood which escapes looks dark and adheres to the surface, which it covers unevenly, but is easily detached by the touch, and is followed by a discharge of a dark fluid.

We can easily imagine the result of this extravasation or transudation of blood beyond its natural channel and into the meshes of the tissues, where it is, as it were, incarcerated, being unable to return into the general circulation or escape through and upon the surface, it eventually softens, macerates and transforms the tissues into a putrilaginous mass; or if the area of extravasation is small and circumscribed it may terminate in inflammation and ulceration.

A few cases are on record where hemorrhage came on so suddenly and violently as to produce syncope, and spontaneous resolution followed. All hemorrhagic congestions are inclined to ramollissement, degeneration, ulceration, and if the dyscrasia exist, cancerous ulcerations. In the treatment, we should resort to the same means as for simple congestion, but applied more vigorously. If the organ is not already in a complete state of atony, but is still susceptible to the influence of physiological and therapeutical remedies, we endeavor, by appropriate medication, to constringe and to invigorate the relaxed vessels and tissues—ergot, quinia, tinct. ferri, murias, cornine, caulophyllin, oil erigeron, digitalis, comp. syr. stillingia, &c. Let the patient remain quietly in the recumbent posture, with the pelvis elevated, and wear a wet towel around the abdomen and back. Local astringents are themselves of little utility in promoting a cure, yet their employment must not be interdicted, as they are of intrinsic value in immediately arresting a dangerous paroxysm of flooding. The persulphate of iron (Monsel's solution) is perhaps as prompt and efficient an astringent injection as any in the materia medica. This treatment is applicable in the first and second degrees of congestion, with hemorrhage.

When arrived at the third degree, to the above treatment must be added an active resolvent and alterative course—the alterative syrup of Eclectic Dispensatory, sulphite of soda, or,

what is perhaps better than any, the grand alterative and resolvent called the "Cancer Antidote." The diet throughout must be nutritious and abundant. In conclusion, should an ulcer or abscess appear on the cervix uteri, it should be cauterized, and an injection of a solution of potassæ permanganas be used. If there are vegetations, loose, flabby, indolent excrescences, forming; a compound powder of sanguinaria, phytolacca and oxide of zinc may be thrown upon them, and the exuberances will probably drop off. Polypi, fungus outgrowths, when they cannot be removed by ligation of their pedicels, usually yield to the latter treatment.

Metritis—Synonyme—Hysteritis—Inflammation of the uterus. By metritis is understood inflammation of the parenchyma, the principal bulk or body of the uterus. We do not mean endo-metritis, or peri-metritis (peritonitis), inflammation of the lining or investing membrane of the organ, yet it must be admitted that these membranes, by their contiguity, are more or less involved. The general symptoms of inflammation were given when speaking of congestion of the uterus. Metritis may be produced by physical causes, such as shocks from falls and blows; irritation from pessaries; abortion; tedious and painful parturition; from violence received in turning and in the use of instruments; also the direct application of chemical and medical substances, in the form of injections; and indirectly, food, drinks, and drugs which have a special action upon the uterus; and lastly, any local uterine affection may, under certain circumstances and exciting causes, arouse inflammation. Metritis is seldom diffused throughout the entire organ, but is, in most cases, limited to portions of the body or neck. Should inflammation occur during the menstrual period, or during the lochial discharge, the flow is suddenly arrested, and even happens in hemorrhagic congestion, if inflammation set in. To recapitulate the diagnosis, we find the cervix uteri hot, and of a more or less lively red; the exacerbations of pain are of an intermittent cutting colicy character. At all times the uterus is the seat of continual pains, and when pressure is made upon it the patient fixes her body forward. Even the weight of the bed-clothes is insupportable; there is a sense of dragging in the pelvis; there is a sense of oppression and pain upon the perineum, and an exquisite sensibility along the anterior face of the thighs, increased by pressure or friction of the clothes. Nothing but a slight serosity escapes from the vulva. The urethra and bladder sympathize, causing a constant desire to micturate; or there is dysuria and even retention of urine; there is either constipation or diarrhœa, with severe tenesmus. The more intense the inflammation, the more prominent are these sympathetic phenomena. The fever is acute, accompanied by the inevitable arrest and disturbance

of all the functions of the economy, and when the metritis proves fatal, the fever assumes a typhoid type before death. The greatest danger is from suppuration in the substance of, or in the sinuses of the uterus, and this more frequently happens in the metritis, combined with peritonitis following parturition. The pus enters the circulation through the sinuses, and exerts a deleterious action upon the organs immediately essential to life. When it proceeds to a fatal termination, a dark glumous matter flows from the vagina, having an offensive, putrid odor. An autopsy in such a case will reveal some portion of the uterus containing pus and blood, being soft, and even gangrenous, having the appearance of a half-putrid spleen. It must be remarked that the discharge from the vagina of putrid and offensive matter does not always announce disintegration, or pyæmia, or gangrene of the uterus itself, it may be furnished by putrefaction of a portion of retained placenta, membranes, or from coagula. Formidable as metritis generally is, especially after an accouchement, the prognosis is not so unfavorable as some suppose, because some cases of incontestable metritis have terminated in gradual and spontaneous resolution. There is much reason to hope for a happy result when the metritis is simple. This, then, is a synopsis of the diagnosis and prognosis of what might be called accidental metritis, to distinguish it from that which is developed under atmospheric and terrene influences, such as certain epidemics and endemics, which primarily produce a serious perturbation of the whole economy of some accouched women, and appear to concentrate their violence and destructiveness upon the uterus as a focus. These latter will be spoken of under a separate head. In simple metritis we resort to antiphlogistic treatment. Aconite, and epecially gelseminum, to allay arterial excitement, and to equalize the circulation. If the aconite does not produce diaphoresis, give asclepias, cover the hypogastrium with a sinapism, and follow this with constant application of emollient cataplasms. Bland and mucilaginous injections are to be thrown into the vagina; they have a soothing effect upon the cervix uteri. The rectum must be evacuated by enemata, and there must be absolute repose, hips elevated if agreeable, diet unstimulating (unless especially indicated), but nutritious; with mild and cooling drinks, rendered demulcent and laxative, or diuretic. Under such medication and regimen, the inflammation usually subsides in a short time, and becomes tractable and manageable. The patient must not be discharged too soon by the physician, nor must she rise from her bed and engage in her ordinary vocation too early, lest such indiscretion might lead to the subsequent development of *chronic* inflammation. Should there be symptoms of the disease running into the second or third stage of conges-

tion, that of ramollissement and pyæmia, no time is to be lost to circumvent and arrest its progress. To accomplish this I know of nothing at present so well adapted to attain this end as the sulphite of soda given freely, and the bromide of ammonia, which is a remarkable solvent where there is a fibrinous condition of the blood. Also quinine, permanganate of potassium, essence of beef, eggs, and cream; and if there is rapid sinking, wine, or best brandy. When metritis follows sudden suppression of the flow of the menses from shocks or frights, calmatives, antispasmodics, and galvanisms are efficacious; if from impressions of cold, derivatives, revulsives, and sudorifics are indicated to restore the functional discharge. But when metritis results from a prolonged and painful accouchement, or the uterus has suffered violence from the necessary manœuvres in assisting delivery, or from contracting cold during lying-in, the symptoms are more alarming, and the uterine derangement is more serious, as evinced by the great and immediate debility and general depression, the accelerated pulse, severe chills, and intense fever; lancinating pains running through the pelvis; urine and lochia scanty; abdomen bloated; breasts flaccid, and perhaps cold extremities, with suppression of the lochia. These are certain formidable symptoms, yet the patient may be able to combat them if we aid by sustaining the strength, checking the fever and inflammation, and encouraging the elimination of the lochia; and this will be soonest achieved by following the principles of treatment as already laid down. Where the extremities are cold, apply heat, friction, and sinapisms. If the fever is of an intermittent type, quinine, cinchona, cornine; and if the patient is sinking, serpentaria, capsicum, xanthoxylum, and brandy. When the peritoneum is extensively implicated, we should resort to opium and bromide of ammonia.

It is astonishing, and not the less true, that congestions and inflammations of the parieties, and particularly of the neck of the uterus, very frequently terminate in an anomalous and innominate sequela; contemplating and considering its anatomical, physiological, and pathological characteristics, we cannot, strictly speaking, term it a chronic metritis, but rather a resultant of both acute and chronic metritis. Denominate the appearances separately connectively, as density, indurations, hypertrophy, cartilaginification, schirosity, or permanent engorgement, we have a faint and general, but not specific comprehension to give it an appellation in the nosology of diseases. Whatever be the characters presented, the ætiology remains the same, viz.: congestion and inflammation. Chronic metritis indurations and scirrhus are so intimately connected, and their transition from one to the other is so imperceptible, as scarcely to be recognizable. Let us call it "hyperseleroma," as indicative of both hypertrophy and induration. But perhaps for

brevity "chronic metritis," with its events, it is a good term as any, especially as the symptoms of the chronic do not differ essentially from the acute form, only that those of the former are characterized in a feeble degree. Chronic metritis may exist for an indefinite period, and may even pass into induration, and yet be susceptible of spontaneous resolution, provided the patient be removed from the conditions which gave rise to it. Under similar circumstances scirrhus may be arrested in its progress, or it may sensibly decline so as not to derange the patient's health grievously, or abbreviate her term of life. But this is seldom the case. We sometimes see extensive local transformations with but slight constitutional symptoms, but more frequently but slight local structural derangement produces distressing general symptoms, reducing the patient to the very verge of the grave. If it is sometimes difficult to recognize by *anatomical* inspection when an engorgement depends upon a more or less advanced induration, or an imperfect schirrhus, it is still more so to distinguish these two morbid states in the patient. Causes, symptoms, terminations are all similar or common; or if there be some pathognomonic signs peculiar to one and unusual in the other, the varieties of these signs, and especially their inconsistency, cause the diognostic differences to disappear, or render them scarcely applicable.

As regards the form of the cervix uteri in scirrhus we find it conglobated, or of a globular form, while in induration, or its stage of transition from chronic metritis, it is more or less traversed by fissures, or furrows, disposed perpendicularly to the uterine orifice, and towards which they converge. When fissures are situated laterally, or on either lip of the os uteri, and if touched may feel rough and cause pain and bleeding without there existing any ulceration; however, it may pass into this condition, but its more common transition is into a scirrhous tumor. If the cervix be grasped between two fingers, and it communicates a sensation of pliancy, the scirrhous stage has not yet arrived; but if all pliancy be lost, and there is uniform and partial hardness, there is scirrhus either of the whole or part of the cervix uteri. The greater the degree of induration, and the nearer its approach to scirrhus, the greater the intensity of the *whiteness* of the visible part. This is best observed when but a part of the cervix is indurated or scirrhus, and especially if only one lip is thus transformed, it will contrast strongly by its whiteness with the other parts, and its consistency will add greatly in determining its character. Nevertheless, the color may be of no value whatever, as an induration may present a reddish surface from inflammation of the mucous membrane which covers it; yet, through this, upon pressure, may be seen a transparent whiteness. The pains in chronic metritis, far from having arrived at a scirrhus state,

are sometimes so acutely and insupportably painful that the expressions which the patients make use of in describing them are calculated to embarrass the most attentive observer. In scirrhus, whose character is indolent, the pains though constant are not so severe, yet there are often violent hysteralgic attacks; and if the scirrhus assumes an acute, lancinating, flashing character, like the thrust of a sharp instrument through the hypogastrium, uterus and sacrum, then we may suspect a cancerous development. But neither form, color, consistence, nor the pain, can always solve the true diagnosis of the case, unless we consider also her previous history, such as former diseases, pregnancies, &c. Perhaps the surest method of arriving at a correct diagnosis is to ascertain all the causes to which she may have been exposed and subjected to, and which may have been capable of producing existing symptoms.

It may be remarked here that congestion of the uterus in *girls* is generally of an inflammatory character, and affect the *whole* organ, while inflammatory congestion, preceding accouchement, usually concentrates, sooner or later, upon the neck exclusively. In the former case we may have only *induration*, while in the latter more frequently a scirrhus condition. These conditions may remain without producing great inconvenience for an indefinite period; but when the *critical* period arrives there is danger of a transition, especially of the scirrhus state, into confirmed cancer.

In the meantime, the uterus is subject to prolapsus, either partial or complete, especially if preceded by antecedent pregnancies. The uterus being increased in volume by engorgement is precipitated into the vagina, which it painfully distends, compresses the meatus urinarius and the rectum, producing dysuria and tenesmus. Repose, the recumbent posture, elevation of the hips are primary indications in the treatment.

AMENORRHŒA.

Absence of the Menstrual Flow.—Two varieties.

Retention of Menses.—The catamenia are secreted, but do not escape externally. It may arise from occlusion of the vagina, from an imperforated os uteri. Menses sometimes secreted, but retained in the uterine cavity, forming an appreciable abdominal tumor. In these cases constitutional disturbance is well marked, as languor, lassitude, debility, fœtid breath, eruptions on skin, odors, occurring every twenty days.

Suppression of Menses.—This is the most common form of amenorrhœa. The menses, perhaps, may have appeared regularly for a shorter or longer time, and become prematurely arrested. It often occurs suddenly while the discharge is on,

from mental shock, some acute disease, exposure to damp. In other cases it ceases gradually, flow appearing at the proper time, but becoming less and less each time, and then entirely ceasing. Always some constitutional disturbance, more marked in abrupt than in gradual suppression. The gradual falling off, and then disappearing totally, is the most serious, for it depends usually upon anæmia, phthisis, chlorosis, albuminuria, atrophy of uterus. Care is necessary in the diagnosis, so as not to mistake pregnancy.

Treatment.—The great secret of success here is to remove the cause. If there be anæmia, some of the preparations of iron and phosphorous, as—

℞.—Vallets mass, ℥j;
Ext. nux vomica, grs. x;
Betin, q. s.—*Mix.*

Make thirty three-grain pills; one thrice daily. Hydrastin, cinchona, populin, as tonics; nourishing diet, brandy. If it be suppression from cold, hot hip baths, mustard, pediluvia, sinapisms to breasts, Turkish bath, ergotine, sabin, macrotin, myrrh, iodide potass, aloes, podophyllin, gossipiin, betin. If there be a suppression from plethora, comp. powder senna and jalap, aloes, bromide potass, ergot, avoidance of stimulants; iron, sabin, galvanism, or the following comp. betin pills:

℞.—Betin,
Ext. sabinæ,
Ergotine,
Ext. podophyllin, āā, ℥j;
Aloes, soc,
Iodide potass, āā ℥ss.—*Mix.*

Make three-grain pills; two three times daily.

Vicarious menstruation is liable to take place in amenorrhœa, that is, the patient may menstruate by the nose, bronchial mucous membrane, skin, umbilicus, or an ulcer if there be one existing. It usually depends upon an inertia of the uterus, and often associated with suppression.

The cure consists in stimulating the uterus with electricity, warm hip baths, nutritious diet, horse-back exercise, and such drugs as cinchona, pulsatilla, macrotys, iron.

DYSMENORRHŒA.

This condition of painful menstruation would seem to originate from a variety of causes, as derangement of the digestive organs, gouty or rheumatic constitutions, inflammatory or irritative causes, certain nervous conditions, rheumatic, gouty, or psoric constitutions. Dysmenorrhœa is a disease only known among highly civilized women, never known where the laws of nature are not violated. This is apparent when we view

the modern mode of life which the customs of civilized society impose upon young females. The foolish practice of moulding the shape of the body by corsets and stays, pressing the abdominal viscera downwards upon the bladder and uterus, and the thoracic upwards towards the throat, and thus mould a wasp-like waist to suit the morbid taste of modern society. By the application of steel and whalebone and compression, those vital organs of circulation, respiration, digestion and menstruation, are impaired. God's eternal laws are violated, human life is cut short. Modern woman has cheated her creator, lowered her vital stamina, impaired her vital force, and has taken her place in deteriorating the very fountains of life in the nation to which she belongs. Civilized woman has made herself an artificial thing, recognized and known as a specimen of fashion, the functions of which are subject to natural derangements, by consumption, chlorosis, dysmenorrhœa, and every conceivable disease. The disease under consideration is much more common than is usually supposed.

There are three varieties of painful menstruation:

1. *Neuralgic Dysmenorrhœa.*—In this form of painful menstruation, we have generally lassitude, debility, headache, pain in the sacrum and lower part of abdomen for some days prior to the menstrual period, soreness at the inner and upper part of the thighs, bearing down with sense of pelvic weight, and if the discharge comes on freely, instant relief is experienced. The catamenia is usually scanty, comes on in slight gushes, pain lessens and returns. Common in patients of a nervous temperament. Frequently marked symptoms of hysteria, flatulence, constipation, ovarian irritation.

It is most common in unmarried females, or in married women who suffer from ovarian irritation. Common after thirty years of age. It induces a state of mental depression, nervous excitement, and is sometimes regarded as a species of mania.

In the management of all forms, abundant exercise in the open air, regular hours, a plain regimen, abstinence from all stimulants, as coffee, tea, and a temperature not exceeding 68° Fahr., within doors, are primary indications in the treatment of all forms; regular bathing, &c. If these points are carefully attended to, some important items are gained in the way of successful treatment, constipation is obviated, the circulation of the blood is equalized, animal heat equally developed, and all undue determinations of blood prevented.

Our treatment during the paroxysm would be the hip-bath for half or three-quarters of an hour, medicated with lobelia and belladonna. Internally belladonna is an admirable remedy. I usually prescribe it in the dose of a quarter of a grain of the solid extract three times daily, but if the patient suffers much,

I have repeated it every hour until three or four doses have been given, according to circumstances. I have seldom been disappointed with its results. It is often advantageous to alternate with aconite or Indian hemp. Suppositories of belladonna are very valuable. If these remedies fail, hypodermic injections of a solution of sulphate of morphia. Warm poultices of hops and flaxseed to abdomen and vulva.

When the patient is free from the attack, we must, if possible, treat it according to its cause—if derangement of the nervous system, quinine and nitromuriatic acid, phosphoric acid, hypophosphites pulsatilla, ergot, conium; bitter tonics, as cinchona, hydrastis, goldthread, nourishing food, daily salt-water baths.

For the gouty and rheumatic forms of the disease, useful results will be obtained from

℞.—Colchicum, ℥ij;
Sulph. quinine, grs. xxx.—*Mix.*

A half a teaspoonful every three hours, alone or in combination with alkalies.

Bromide of potassium or ammonium possesses a sedative action on the several organs, and I have often used them with success in warding off neuralgic dysmenorrhœa.

In the hysterical form, pulsatilla in alternation with valerian is often magical in its operations. Macrotin is a positive antispasmodic, narcotic, tonic emmenagogue, and its use is of great benefit in all forms of dysmenorrhœa.

2. *Congestive Dysmenorrhœa*—May occur at any period, although it is most common in young married women of a sanguine or plethoric temperament. It often, also, depends upon a gouty or rheumatic diathesis, and is also an attendant on inflammatory conditions of the os uteri and cervix. In this form the suffering usually begins four or five days before each period; pain in the back, weariness, restlessness; sense of weight in the pelvis; irritation of the bladder; hemorrhoids; frequent flushings; throbbing uterine pain; menstrual flow comes on gradually, scanty at commencement; relief follows abundant flow. The great characteristic of this form of painful menstruation is the expulsion of flakes or shreds of membrane; sometimes, complete and perfect casts of uterine cavity, formed of the epithelial lining of uterus, analogous to decidua. The uterus is congested, œdematous, often displacement; extreme tenderness in the breasts.

This condition evidently depends upon some inflammatory state, as rheumatism, psoric or strumous diathesis.

The same treatment should be pursued as in the neuralgic form—at least during a paroxysm—but a cure must be effected by striking at the cause; alteratives and tonics, colchicum and

quinine, macrotin, ergot, cinchona; but the only remedy to be depended on is the iodide potass., in five-grain doses, thrice daily. The same remedy should also be thrown into the uterine cavity, say twice a week with the uterine syringe, in the following proportions:

℞.—Aqua, distilled, ℥iv;
Iodide potass., ℈ss to ℥j.—*Mix.*

Insert the tube of the syringe into the uterine cavity, and inject slowly, keeping the patient's pelvis well elevated. On or near catamenial period it should not be used.

Plain living, an avoidance of stimulants, open air exercise, and anything that conduces to health.

3. *Mechanical Dysmenorrhœa.*—This embraces a variety of conditions, the most common of which is a strictured condition of internal or external os uteri, or a narrowing of the entire canal, or cervix, or some uterine tumor, or some form of displacement —retroflexion or antiflexion. Narrrowing of entire cervical canal, conditions that cause sterility as well as dysmenorrhœa. In mechanical dysmenorrhœa there is an indication of obstruction to the escape of menstrual fluid; a scanty flow, discharge escapes in gushes, and each gush is attended with pain; pain in the back, irritability of bladder, congestion and tenderness of ovaries. An examination reveals a very small os uteri, perhaps an orifice of normal size, stricture being only detected by the uterine sound at the internal os. In some cases the os uteri is only smaller than natural, but under the influence of menstrual flow, spasmodic contraction is often excited.

Ulceration of the os and cervix uteri is often a cause of dysmenorrhœa; indeed nearly all physical imperfections of the uterine neck are either congenital or the result of inflammation.

Extreme dysmenorrhœa, from contraction of the cervical neck and os internum, independent of inflammation, is of rare occurrence.

In the treatment of this form of dysmenorrhœa, dilatation by sounds, or mechanical dilatation by sponge-tents, sea-tangle, and means of a like character, are useless, for a relaxation of the stricture or constriction is sure to take place sooner or later. The best and speediest mode of cure is to have recourse at once to dilatation of the os by incising it on both sides with Routh's hysterotime, followed by plugging with lint saturated with carbolic acid and glycerine.

The incision should be carried as far as the os internum, being careful not to cut too far in the upper portion of the cervix, lest some of the veins of the plexus uterinus be cut across.

Menorrhagia.—Uterine hemorrhage may take place at any period of life, from puberty to old age, and in every variety of temperament. Probably the most common kind of menorrhagia is that which happens during the periods of menstruation from a congestion or relaxation of the uterine vessels. At the throwing off of the ovum (which occurs every four weeks from puberty to the change of life) a certain amount of menstrual fluid is thrown off, and this natural secretion is determined by the temperament, constitution, mode of life of each particular individual. The nearer a female lives in accordance with the laws of nature, the less likely is an excess of blood from the uterus to occur.

The symptoms which attend the flow depend entirely on the nature of the case, the constitution and amount of blood lost in each instance. In mild cases we may merely have a sense of lassitude, debility, weariness, uneasy sensation in the back and limbs, indisposition to exercise, a feeling of sinking at the pit of the stomach, paleness of the face, cold extremities. In more aggravated cases the patient becomes perfectly prostrated, the surface blanched, syncope, ringing in the ears, impaired vision, coldness of the surface, great undefinable uneasiness and nervous irritation. The blood flows upon every exertion, or on coughing or vomiting. Then, faintings, respiration and circulation are almost suspended, the blood clots at the mouths of the uterine vessels, and thus the hemorrhage may be temporarily arrested. When reaction occurs, the clots are expelled by the contractile power of the uterus, and the flowing reappears.

Menorrhagia, when it originates in organic derangements of the uterus, as indurations, cancers, tumors, and ulcers, is accompanied with symptoms peculiar to the different maladies. The predisposing causes of this affection are, improper physical and moral education, excesses in eating and drinking, insufficient nutriment, scrofulous, syphilitic or psoric taints, pressure of the abdominal viscera downwards on the uterus, ardent sanguine temperament, and a relaxed habit.

The exciting causes, irritation, congestion, or inflammatory condition of the uterine vessels, the various disturbances of pregnancy, cancers, ulcers, tumors, sexual excitement, stimulating drinks.

Menorrhagia is always amenable to treatment, unless it depends upon some organic affection. Whenever it occurs it requires bold, prompt and judicious efforts to keep the patient from fatal prostration.

Treatment.—The first point in treatment is to remove the cause, then put the patient to bed, head low, pelvis well elevated, cold drinks, perfect rest; a roller should be applied, moderately tight, from the umbilicus to the middle of the

thighs, with a pad over the uterus; and if the hemorrhage does not quickly subside, the tampon should be used, and then a special course of treatment to effect a cure. Remedies adapted to the peculiarities of each case:

Erigeron is well adapted to those cases where we have a continuous oozing from the walls of the uterus. Give in fifteen to thirty drops, beat up in sugar, every half hour, according to the indications of the case.

Gallic Acid may also be given with the most successful results. A valuable remedy in all hemorrhages from mucous surfaces.

Cinchona is best adapted to patients of a sanguine temperament, when the discharge has existed for a considerable time, and produces an anæmic condition. An invaluable formula:

℞.—Huxham's tincture cinchona,
Simple syrup, āā ℥iv;
Nitro-muriatic acid, ℥ii.—*Mix.*

A teaspoonful every two or three hours.

Ergot has a specific influence in uterine hemorrhage, exciting uterine contractions, and in this may arrest the hemorrhage.

Iron is indicated in profuse hemorrhages, when the menorrhagia is accompanied with other symptoms of dysmenorrhœa; valuable also in enfeebled or cachectic females. The persulphate of iron, ℥ss, to two ounces of water, injected into the uterus, will arrest it at once.

Digitalis is valuable in lymphatic and plethoric habits. This remedy, given in eight-drop doses, and repeated frequently, exerts a special influence over involuntary muscular fibre, causing its contraction to be more firm and powerful, and exerts this influence most especially when that fibre is lax. Digitalis acts upon the involuntary fibres of the uterus, renewing their tone, bracing them up, and stopping the menorrhagia of relaxation.

Cannabis indica is valuable in uterine hemorrhage; acts almost like magic.

Pulsatilla is often valuable in profuse hemorrhages.

Carbolic acid is best adapted for injection, but well adapted to be given internally where the blood is thin, watery and not coagulable.

Hammelin, collinsonin, trillin, lycopin, senecin, are appropriate, and very efficient remedies in passive hemorrhages of the uterus, when they depend on an enfeebled and relaxed condition of the organ.

In urgent cases of uterine hemorrhage, give the remedies in doses sufficient to control the flooding, cold water applied over the pulses; the hips must be elevated and supported, head and shoulders lowered, the patient kept cool and free from excitement.

CHLOROSIS.

A disease due to some depression of the nervous system, either congenital or acquired, where the vital stamina of the brain and spinal cord is diminished, and every organ of the body, dependent upon the proper performance of the centres of life, is deranged or depressed. A state of nervous depression, or impairment, exists, as the basis, long before any appreciable lesion or alteration can be found in the blood or any organ of the body. It is a disease chiefly met with among girls of delicate organization, where an undue feebleness of the nervous system exists; and it may be that so long as this weakness of the nervous system is not overtasked there may be no development of the disease. But if, from any cause, this delicate equilibrium be destroyed, we rapidly have all the symptoms of the disease supervening at that important period of life when puberty arrives, and nature calls for her monthly tribute of the vital fluid; when the uterine organs are developed, and their potent reflex influences act upon the economy; when new emotions, desires, passions and affections powerfully stimulate the whole organism during the establishment of the catamenial flow, then the frail balance may be destroyed; the digestive, absorbent and assimilative functions fail, and the peculiar disease make its appearance. Patients of a weak, nervous organization and lymphatic temperament are peculiarly liable to its attack.

Symptoms.—In the early stages of chlorosis, derangement of the stomach and bowels, manifested by a pale and bloated appearance of the tongue, foul breath, loss of appetite, morbid craving for indigestible food, torpid bowels and liver, tympanitic abdomen, fœcal discharges, composed of imperfectly digested substances, unnatural in color and consistence.

If the disease at this point is not arrested, the symptoms become aggravated, and the patient becomes listless, irritable, languid, fond of solitude, unfit for bodily or mental exertion. The menstrual function becomes deranged, the face pale and humid, the lips lose their color, the eyelids are swollen and surrounded by a dark greenish or yellowish circle; emaciation begins; debility and lassitude become great; nervous, cardiac, hysteric symptoms apparent.

Then we have the true characteristic symptoms of chlorosis developed: the surface is smooth and puffy; skin dry, pale, or yellowish, or lead-colored; muscles soft and flabby; œdema of the extremities; countenance palid and wax-like; tongue clean, bloodless, semi-transparent; conjunctiva of a clear white color, or slightly tinged with blue; pulse feeble, rapid; occasional pains in the head, chest, stomach, side, abdomen; palpitation of the heart; menses superseded by a profuse leucorrhœal discharge; marked derangement of the functions of the liver, kidneys, skin, and every part of the body.

Diagnosis.—The only condition with which chlorosis is apt to be confounded is anæmia. Anæmia is generally caused by various circumstances that tend to impoverish the blood, as hemorrhage, exhaustive discharges, starvation. Chlorosis is induced by some obscure, nervous depression, and the disease developed by disturbed uterine functions. In anæmia, the alteration of the blood is constant and pathognomic; in chlorosis, it is the only one of the phenomena, and not always present. In anæmia there is a constant relation between intensity of symptoms and poverty of blood. This is never the case in chlorosis. A minute and careful examination of the history of every case will usually guide us correctly. Disease of the heart is attended with more pain, more disturbance of the circulation, than chlorosis; the expression of the eyes, the countenance, are always widely different.

Causes.—Confinement in over-heated apartments, sedentary habits, grief, anxiety, fatigue, leucorrhœa, masturbation, &c.

From these and like causes, operating on an exquisitely sensitive nervous system, we have an impairment of the fountain head of secretion and excretion; hence the symptoms of disordered action, of imperfect digestion, absorption and assimilation, and consequently the blood is imperfectly elaborated, and incapable of nourishing the various parts of the body; hence the absence of animal heat and vital power, and the tendency of this deteriorated blood to escape by the mucous membrane of the lungs, stomach and bowels.

Treatment.—The grand point in treatment is to improve the deteriorated vital forces—exercise in the open air, nutritious diet, salt water baths and sea-side residence, warm clothing, agreeable associations, and every thing calculated to tone, invigorate and improve the patient should be resorted to.

Our attention should be directed to the improvement of the digestive organs, as a means of amending the deteriorated blood and impaired nervous system. An emetic, twice weekly, is very efficacious—comp. powder lobelia. We would regulate the bowels with—

℞.—Fluid ext. leptandria, ℥iij;
Fluid ext. nux vomica, ℥iij.—*Mix.*

A teaspoonful morning and night. During the day comp. tinct. cinchona, in teaspoonful doses, every four hours, and to be alternated with ten drops of dilute phosphoric acid as often.

These are our best remedies, and their exhibition is of essential importance in the treatment. If there is pain on pressure in any region of the spinal cord, apply the acupuncture apparatus on both sides of the spinous processes, moderate postulation by these instruments with the following

℞.—Com. tinct. veratrum,
Croton oil,
Tinct. capsicum, āā, equal parts.

Repeat twice weekly.

After secretion is well established by the above remedies, the essential treatment should consist in meeting the indication of debility of the nervous system and the poverty of the blood. Iron and phosphorus will supply those elements, and these two remedies should be perseveringly relied on, and unsparingly given, at least in doses that are most easily assimilated. Emmenagogue remedies are often useful in inactivity of the uterus, occurring after puberty, where no marked delicacy of constitution is present. In chronic suppression they are especially indicated. An excellent formula for the purpose is the following: ℞.—Extracts sabine, podophyllum, betin, macrotin, erigeron, helonin, equal parts, made into three-grain pills, two at bed-time.

Pulsatilla is an indispensible remedy in chlorosis. It acts positive upon the organs of reproduction, and, next to phosphorus, is our most valuable remedy. Macrotin exercises a controlling, salutary influence over the uterine system.

HYSTERIA.

This disease usually occurs in females of a nervous or nervo-sanguine temperament, with cheerful, lively, ardent disposition, vivid imaginations, and highly impressible organizations. It occurs in paroxysms, with intervals of greater or lesser duration. The uterine and sexual organs have been regarded as the seat of hysteria, because it is frequently associated with derangements of the functions of those organs. Its occurrence is after the period of puberty in patients of the peculiar temperament indicated, and is usually accompanied by deranged menstruation, dysuria, sexual excitement, and pains in the pelvic region. The malady is purely of a nervous character, consisting of an erethism of the whole nervous system, and capable of being brought into active operation by anything which operates upon the economy, like deranged menstruation, uterine congestion, depressing passions, disappointed love, undue excitement of the sexual organs.

An hysterical fit is a paroxysm whose nature varies from mere uncontrollable laughter or crying to a severe epileptiform convulsion. It essentially differs from epilepsy in there not being a complete loss of consciousness, and also in its cause and cure. It is often preceded by a sensation like that of a ball rising towards the throat. It is a common trait of hysteria to simulate every form of functional disorder, as hysterical amaurosis, paraplegia, retention of urine, cough, aphonia, ovarian

disorder, spurious pregnancy, consumption, disease of joints or spine, stone in bladder, epilepsy, appetite for food increased or diminished.

In the nervo-sanguine temperament, with an ordinary constitution, the paroxysms come on by slight twitchings of the muscles of the eyes and mouth, wild expression, convulsive laughing, crying or sobbing, constant attempts to injure herself. In the bilious, the paroxysms are usually preceded by cough, pains in the head, chest, back, or pelvis.

Besides the causes enumerated, we might enumerate heated apartments, works of fiction, tight lacing, lascivious thoughts, luxurious living, exciting the sexual organs to irritation, congestion, which morbid condition is propagated to the spinal cord, whence the symptoms.

Treatment.—During a paroxysm, protect the patient from injury—loosen her clothes, admit an abundance of fresh air. If the patient can swallow, give teaspoonful doses of the ammoniated tincture valerian, and apply cold to the head. For the cure of hysteria it should be treated according to its cause.

If from constipation, torpid liver, &c., attended with putrid, sour, or bitter eructations; pain over the region of the stomach; nux vomica, leptandrin, alternated with nitromuriatic acid.

If dependent on masturbation, or excitement about the sexual apparatus, bromide potass., lupulin, camphor.

If dependent on mental excitement, belladonna, hyoscyamus, stramonium, phosphorus and quinine.

If the cause is congestion of the uterus, hip baths, twice daily, injections of cold water and elm, belladonna plaster to sacrum; internally, bromide potass., pulsatilla, senecin, caulophyllin, mother's cordial, viburnin.

If anæmia, glycerine, phosphorus, iron, hydrastin, ammoniated tincture valerian.

If the cause cannot be detected, a general alterative course to subdue the impress of the reflected irritation, as bromide.

Under any condition, nutritious diet, thorough hygiene, daily bathing, shower or salt water bath, moderate exercise in the open air, agreeable and diversified mental occupation, the occasional use of galvanism, the greatest possible attention to the uterine functions.

METRITIS.

Inflammation of the uterus is comparatively a rare disease. When it does occur, it is always ushered in by truly characteristic symptoms, as rigors followed by fever, fullness, weight, heat about pelvis, with throbbing, tenderness about the pubes, groin and perineum. Great irritability about the bladder,

nausea, vomiting, diarrhœa, with tenesmus and pain in sacrum, discharge serous, mucus sanguineous, and as there is mal-nutrition sensative to the touch, the os swollen, hot; to the eye, red.

Whenever the patient is placed in the recumbent position immediate relief is experienced. It is liable to terminate in any of the ordinary results of inflammation.

The treatment should be thorough; the circulation should be controlled with veratrum and asclepias, complete rest in the recumbent position rigidly enforced—over the region of uterus an elm poultice, which is a powerful means of restoring the deficient vitality. In alternation with the veratrum, give opium in full doses; this remedy is urgently demanded.

Indeed opium in alternation with belladonna is our sheet anchor.

Here it will control and lower the circulation, diminish the frequency of the pulse; the best rule for administration is to give it till all pain is effectually removed. The treatment here brooks no delay. Lost minutes are very injurious.

In the convalescing stages, nourishing food, fresh air, warm hip baths, an alterative course of treatment. The following formula I regard as one of the best for the inflammation, if it assumes the subacute form:

℞.—Comp. syr. partridge berry;
Comp. syr. caulophyllum;
Fluid extract Collinsonia, āā ℥ij;
Tinct. aconite, ℥iij;
Bromide potass.—*Mix.*

A tablespoonful every three hours.

UTERINE CANCER.

Cancer of the uterus is of frequent occurrence, and its fatality predominates over the disease in any other locality. It invades the cervical portion of the uterus more frequently than all other parts of the organ, yet it may begin in any portion, the fundus, body or cavity.

When it begins at the cervix it gradually passes upward to the fundus; or if it begins in the body, it creeps downwards. All the different forms of cancer are met with in the uterus, the medullary, epithelial colloid, and scirrhus, the first the most common. The enlargement and induration of cancer differs from all other conditions by its being uneven, and thrown out irregularly. If the lips are infiltrated, the elevated points are sharp, angular, and terminate abruptly.

This hardening from inflammatory infusion is less abrupt, the induration terminates by fading away in the surrounding

parts. This induration increases for an uncertain length of time, until the cancerous deposit takes the place of the normal tissues, then the nutrition of the parts is disturbed by a destruction of its bloodvessels, and sloughing take place; then we have true cancerous ulceration. The absorbents do not remove the parts, and thus sloughing and denudation takes place; then we have true cancerous ulceration. The sloughing causes the fœtid smell. The eating process continues, widens and deepens the chasm, sometimes rapidly, in other cases slowly.

Once the ulcerative stage of uterine cancer sets in, onward it goes until it destroys the uterus and adjacent parts.

Discharges, pain, fœtor, are the symptoms that usually first attract our attention. Pain is often the first symptom, it is a pain that is sharp, lancinating, darting, twitching. The discharge is either blood or serum, or sloughs—at first it is gen erally odorless, but afterwards becomes fœtid and remains persistently so. With these symptoms we have constitutional disturbance, cancerous anæmia, causing the straw-colored translucency of the skin, debility, indigestion, palpitation, neuralgia, colliquative diarrhœa and apthæ.

The disease may be hereditary or acquired by depressing passions or influences.

The treatment of uterine cancer is most hopeless, indeed it almost invariably terminates fatally at one period or another, being but the local development of a blood disease. The only really curative measures are constitutional means—alterative remedies to defend the patient against the rapidly prostrating influence of the disease. Locally the caustic potassa should be used to destroy the diseased part. Afterwards pain, smell and debility should be attended to. Belladonna, cicuta, hyoscyamus, and Indian hemp, may all be used locally for the pain, introduced into the vagina in the form of a bolus or injection, about ten grains of the extract of hyoscyamus, slighly diluted, and thrown into the vagina by a small syringe, and allowed to remain, the patient lying on her back for a length of time. Twenty drops of hydrocyanic acid to a pint of water, passed through the vagina, has a very pleasant effect.

Indian hemp is our best remedy for internal use, relieves more frequently than opium. Opium, in the form of subcutaneous injection, is a blessed remedy. The hemorrhage of uterine cancer requires prompt interference, because the bleeding is ultimately exhausting and often dangerous. The introduction of ice into the vagina in small pieces is very grateful to the patient as an hemostatic. Perchloride of iron or carbolic acid, in a form suitable for injection, is excellent; but if remedies fail, the tampon.

The offensive odor emanating from the disease renders it indispensible to correct it with good ventilation; chloride of lime, carbolic acid, exposed in the apartment. Injections of permanganate potassa, ℈i, to a quart of water thrown up the vagina three times a day.

Internally, the fluid extract of frostwort and iodide potass., or fluid extract hydrastis, corydalis and tag alder—vegetable alteratives to change the diathesis. Stillingia, gold, kalmia, iodine. The best bath is the nitromuriatic acid; the one that is most likely to produce a change. It should be used at least three times a week. The various tonics, as cinchona, phosphorus, nux vomica, hydrastis, should be used to meet indications. The bowels should be regulated, the stomach toned up, and the best diet should be given. But means will avail little if the disease is perfectly established, and the vital forces so overpowered with diseased blood that their function is impeded or paralyzed.

In uterine cancer, the terchloride of carbon is a specfic remedy; it stimulates the brain and nervous system; it alters or changes the character of the blood, renders it pure, vivifying—imparts tone to the whole system, and eradicates the diathesis.

From eight to ten drops in a little water every three hours, and a sponge wet with the following, in vagina:

℞.—Water, ℥iv;
Carbon, terchloride, ℥j.—*Mix.*

It is an anodyne of considerable power, and take it all in all, is the best remedy ever discovered to overcome the cancerous diathesis.

UTERINE DISPLACEMENT.

This consists in the falling down of that organ by the weakening of its membraneous supports, or by the pressure of the viscera above, or both.

Probably the great source or cause of uterine displacement is our hot climate, producing relaxation—the great frequency of inflammatory conditions of the uterus and its appendages. The abnormal mode of life of our modern females, tight lacing, the pressure of heavy petticoats, constipation. These, and a hundred other like causes, acting together, press the uterus down into the vagina until it appears externally.

As nearly all our females are exposed to some of the causes of prolapsus uteri, nine in ten have the complaint. Even young ladies, eighteen or twenty years of age, have falling of the womb. Few escape it, for very few women are entirely well.

Whatever exhausts vitality in a woman may be a cause of prolapsus uteri. Perfect health and vigor, if it were compati-

ble with the present dress and mode of living, would do much to prevent it; but we cannot talk of perfect health and vigor until our modern female is regenerated and reformed—until she is emancipated from her follies.

To cure prolapsus, every cause must be removed; the patient must live aright, dress according to nature's laws, refrain from all causes of exhaustion, observe all the requirements of health. There is seldom prolapsus without some complaint, as debility, and the patient should have invigoration. There is seldom prolapsus without nervous sensations, pain, dragging sensation in the back, a sense of oppression. This condition is frequently accompanied by anteversion or retroversion.

The general treatment is to remove all causes, as leucorrhœa, or any uterine or constitutional derangement, then sitz baths the frequent use of the syringe, and, if the case is so bad, mechanical support.

This may be effected in some cases by a fine sponge—pear-shaped—top cut out, in which the neck of uterus may rest, perforated with a cord, which may be permitted to hang out at the mouth of vagina from the stem of the sponge—patient in this way can remove it morning and night—wash it, and syringe out the vagina at the same time. Our best remedies are tonic astringents, as hydrastis, gold thread, witch hazel, mineral acids, &c., both local and internal. The silver cup instrument of Babcock is the best metallic contrivance.

UTERINE POLYPUS

Generally occurs during the period of sexual activity, or, if they be developed at a later period, they may still have originated sometime previous to it. It is frequently very difficult to ascertain the causes which either predispose or excite their formation; but there is reason to infer that inordinate excitement, or determination of blood to the uterus, with a predisposition to hypertrophy of one or more of the tissues of the organ, are the chief causes of such lesions. These polypi belong to a peculiar class of tumors, whose characteristics are mostly dependent on the mucous membrane to which they are attached, and consist of a fleshy pedunculated, morbid growth, and generally originate from a small pedicle.

There are four varieties, viz.: 1. Mucous polypi; 2. Follicular polypi; 3. Complex polypi; 4. Fibrous polypi.

1. *Mucous polypi* consist of excrescences from the folds of the arbor vitæ, are of frequent occurrence, and vary in size from a third of an inch to nearly an inch in length, to about three or four lines in thickness. They are connected with the mucous or villous membrane of the canal of the cervix by a very slender and short pedicle. They are of a bright rose tint, supplied with a delicate net-work of vessels, and consist of mucous mem-

brane, with a small admixture of cellular tissue, internally. They may arise from any part of the cervical canal, but are more frequently met with nearer the external than the internal os uteri. They are generally pediculated, but sometimes sessile, and in a few cases they appear as hypertrophied folds of the arbor vitæ. There may be only one, or two or three, existing in the same patient, and, being removed, they may be reproduced in a few months afterward. They have been known to have attained the size of a fig, flattened in shape, and hanging down beyond the os uteri into the vagina. They have been observed co-existing with fibrous tumors of the uterus, and to have been the precursors of malignant disease.

2. *Follicular polypi* are formed from enlargement of the follicles of the cervix; although not occurring so frequently as the former variety are not uncommonly met with. They present the appearance of *cysts*, about the size of a pea, imbedded between the folds of the arbor vitæ, and scarcely projecting beyond the level of the canal. They are sometimes much larger, more or less numerous, and distended by albuminous matter. When thus numerous and large they cause the absorption of the cervical canal, even occasioning the bulging outward of the structure of the cervix.

3. *Complex polypi*, more frequently than either of the foregoing, consist of mucous follicles, the mucous or villous surface, and fibro-cellular tissue of the cervical canal. They are either pediculated—the pedicles being of considerable length, but occasionally very short—or they present the appearance of continuous tumors or growths from the inner surface of one or other of the lips of the os. When divided they are observed to contain a tenacious, transparent, albuminous matter, identical with that secreted by the nabothian glands. If small, they chiefly consist of cysts filled with this matter; when larger, these cysts, or vesicles, are not so well marked, but exist in the forms of canals, longitudinally arranged, between which a fibro-cellular tissue enters, more or less abundantly. Their surface often presents an uneven or tubulated appearance, is generally not very vascular, and composed of a dense cellular tissue, covered by a thick layer of tasselated epithelium.

Treatment.—The smallest may be removed by laying hold of them with a pair of long forceps, and twisting them off, while those which are larger, after being twisted to check the risk of bleeding, may be cut off by a pair of scissors. The bivalve speculum should be employed in doing this, and both forceps and scissors are made for the purpose, so constructed as to be readily worked within the speculum.

For the sessile growths, or tumors, the free use of caustic potash will destroy them. Only apply vinegar freely afterwards.

4. *Fibrous polypi* are the most serious organic diseases of the

uterus, and, perhaps, the least amenable to treatment, as, also, uncertain in their rates of progress—being in some cases rapid, in others slow, and in a few instances nearly completely cured by the efforts of nature, which either throws off the morbid structure from the organ in which it is seated or stops its growth. They vary greatly both in their structure and seat. They may arise from the internal surface of the uterus, underneath the internal membrane, or, less frequently, from either lip of the os uteri.

Fibrous polypus is nearly identical with other fibrous tumors of the organ, and differs only in being developed immediately underneath the internal membrane, or in having more or less of the fibrous structure of the womb interwoven with or covering it. It is pediculated and more vascular than other tumors of the organ. The pedicle is composed of uterine fibres, mingled with more or less dense cellular tissue. A layer of uterine substance is continued a short distance from the pedicle along the tumor, in some cases, or invests it in part or altogether in others. In addition, the polypus is always covered by the internal membrane of the uterus, which becomes firmer and denser than natural, both it and the fibres of the womb being developed with the growth of the tumor. These tumors are generally single, but sometimes double, very rarely more numerous, of different sizes, and occasionally very large. They are either enucleated from their coverings, or their substance may be intimately connected with their envelopes. The vascular supply of these tumors, through their pedicles, is generally small in proportion to their size and the quantity of blood in their substance. The comparatively small supply of blood, the profuse hemorrhages they occasion, and the arrest of hemorrhage, by ligatures around their pedicles, have rendered it very difficult to determine the actual source of hemorrhage. These polypi influence the uterus according to their situation; if they arise low down, or in the cervical canal, the tumors soon grow beyond these limits, and passing down into the vagina may acquire a considerable size without disturbing the uterine functions; if they arise far up, near the fundus, they often remain until they have acquired a great size, occasioning enlargement of the organ and thickening of its walls, as in pregnancy. In many cases, before or soon after the tumor has reached the size of an orange, the os uteri gradually dilates, allows its passage through it, and embraces its pedicle. This sometimes results without much suffering, but at other times violent uterine action is excited by the tumor, which recurs at intervals, and resembles the pains of labor. The polypus is thereby extended from the uterus into the vagina, and the irregular contractions of the uterus may drag down or invert the organs. The polypus is generally detected soon after it has

passed into the vagina; but if not, it soon acquires a large size. They may present œdema of their substance, extravasation of blood into their structure, and, having passed into the vagina, they may undergo ulceration, especially if air comes in contact with them, or even sloughing when they are detached spontaneously, or by means which produce firm contractions of the uterus, their pedicles give way, and the whole mass is thrown off.

Symptoms.—Leucorrhœa, hemorrhage, bearing down, enlargement of the uterus, and irritations in bladder, rectum, &c. When these symptoms are present a vaginal examination should not be delayed. If the polypus has not passed the os uteri the diagnosis becomes difficult. In these circumstances the uterine sound becomes necessary.

Treatment.—The biborate of soda is sometimes given with the view to excite vomiting, and occasionally succeeds.

A far more successful agent is ergot, in two-drachm doses, repeated a few times if necessary. It seldom fails to produce slight uterine pains, nausea and vomiting—the pains increasing as the medicine is repeated, until at length the polypus may be completely expelled.

Treatment.—Enucleation has removed both polypi and fibrous tumors, which were not pedunculated. This effected by passing the fingers up the passage, and allowing the nail of the index finger to manipulate and lacerate the tumor. In some cases it will be necessary to use a blunt-pointed bistoury, passing it along the fore finger; make a vertical incision, slowly and cautiously, over the tumor, until the finger is enabled to be insinuated beneath the envelope, to complete the enucleation. In some cases enucleation will be performed more readily by substituting a spatula for the finger.

Ligature.—By means of the double canula a loop of a wire ligature may be drawn tight enough to strangulate the tumor, thus:

Operation.—Place the patient on her back, with the knees drawn up, introduce the speculum so as fully to dilate the vagina, observe the position of the os uteri, and pass the canula and loop of the ligature over the polypus to the mouth of the uterus by means of a probe, so as to place the loop as high up as possible. While an assistant retains the loop in position by means of the probe, draw upon the wire so as to strangulate the tumor, and leave it to slough off; tighten the ligature from day to day by means of the screw of the instrument. Should the hemorrhage be profuse, it may be checked by the application of the tampon, or the use of astringents.

Excision of polypi may be accomplished by seizing them with the forceps, and removing them either with the bistoury or scissors.

DISEASES OF THE SKIN.

Medical science has made rapid strides in the treatment of cutaneous diseases. In treating of this subject, we believe that the following arrangement is the clearest, most simple, of any that has been proposed.

The largest number of affections of the skin are dependent upon some poison or humor in the blood, generated either in a vitiated state of the organs of digestion or dependent upon some special poison in the system, as syphilis, mercury, psora. The affection of the skin being merely an inflammation or a result of that process—a salutary effort at elimination. This is the simplest and most effective mode of treating this hitherto but imperfectly understood subject.

The classes are as follows:

Order I.—*Erythematic eruptions.*—Erythema; roseola; urticaria.

Order II.—*Hemorrhagic.*—Purpura; scurvy.

Order III.—*Vesicular.*—Sudamina; herpes; eczema.

Order IV.—*Bullæ.*—Pemphigus; rupia.

Order V.—*Pustulæ.*—Ecthyma; inspetigo.

Order VI.—*Parasitia.*—Tinea, tonsurans; tinea favosa; tinea decalvans; tinea sycosis; plica polonica; chloasma; scabies.

Order VII.—*Papulæ.*—Lichen prurigo.

Order VIII.—*Squamæ.*—Lepra; psoriasis; pityriasis; ichthyosis.

Order IX.—*Tuberculæ.*—Elephantiasis; molluscum; acne; lupus frambæsia; keloid.

Order X.—*Maculea.*—Under this head may be classed all changes of color of the skin.

The skin disorder being but a manifestation of a great constitutional defect or blood poison—an effort of nature at elimination of morbid material from the system. That the proper treatment in all cases consists in building up vital force with good diet, hygiene, tonics—in antidoting or destroying, the poison in the blood—in causing its free elimination with diaphoretics, diuretics, and cathartics—in administering alteratives to change or modify the constitution—in keeping the parts carefully excluded from air and light, and in using medicated baths.

Order I.—*Exanthemata.*

Under this head we classify all affections of the skin in which we have pain, heat, redness, swelling—the first stage of inflammation. As we have already stated, this condition is dependent upon some morbid product in the blood, caused either by malnutrition in the stomach, liver, pancreas, or a special blood poison, or the absorption of natural discharges. This order includes three distinct conditions, as—1, erythema; 2, roseola; 3, urticaria, non-contagious affections.

1.—*Erythema.*—A diffused redness of the skin, irregularly circumscribed of variable form and extent, smooth to the touch; most commonly met with on the face, chest, and extremities. Its duration varies from one to two weeks. It is usually preceded with heats and colds, nervous depression, malassimilation, heat, burning, tingling redness in the affected parts. There are several varieties so designated from their cause: *Erythema simplex*, from derangement of the alimentary canal; *erythema solaris*, from the action of the sun; *erythema fugax*, from its fleeting or flying nature; *erythema œdruetum*, when it is developed on the lower extremities.

This disease being intimately associated with the acid conditions of the secretions, especially with a ferment which takes place in the duodenum, between the albuminous and oleaginous constituents of the chyme; by some believed to be lactic; but there are potent reasons for believing that it is butyrous or butyric acid—the acid which is present in the rheumatic diathesis, whether it be lactic or butyric. Erythema certainly is often associated with rheumatism, and there seems to be an intimate relation between that disease and erythema cincinatum, indicating a very similar application of remedial agents. A saline cathartic at the onset is always indicated; calcined magnesia, solution of the citrate of magnesium, or the solution of the tartrate of sodium are the most desirable of this class. If the previous health of the patient be good–

℞.—Fl. ext. stillingia, ℥ii;
" " phytolacca dicand., ℥i;
" " iris versicolor, ℥ss;
" " xanthoxylum frax, ℥i;
Syrup, aurant cort., ℥iv.—*Mix.*

Sig.—Give a half teaspoonful every three hours.

The above treatment usually suffices for a cure; if, however, the disease resists these agents, the following may be tried:

℞.—Syr. stillingia comp., ℥vi;
Vini colchici, ℥ss;
Potassii iodidi, ℥ss;
Aquæ, aurant, floris, qs. ad. ℥viij.—*Mix.*

Sig.—Two teaspoonfuls every three hours.

If the patient be of feeble vitality, the syrup iodide of iron may be very well substituted for the potassium iodide. Creuse's syrup of the iodide of iron can be mixed at once with the other ingredients without subsequent change or incompatibility, is to be preferred. If the colchicum produces much nausea or diarrhœa omit it. If the skin be dry use diaphoretics. The ammoniated tincture of guaiac, and the tincture of xanthoxylum may be given in teaspoonful doses, in mucilage of Irish moss, marsh-mallow or gum arabic, until the skin is bathed in perspiration. The ring-shaped patches having disappeared, tonics are required. The following combinations seem to do good at this epoch:

℞.—Tinct. ferri chloridi,
Acidi phosphorici dil., āā ℥i;
Quinia, ℥ss;
Strychnia, grs. i.—*Mix.*

Sig.—Twenty drops in water thrice daily; or Polk's syrup of the phosphates of iron, quinia and strychnia, may be given in drachm doses three times a day.

Erythema fugax seldom requires more than a saline cathartic.

Erythema intertrigo or chafing, produced by friction between folds of skin; a trouble almost limited to children and fat people, seldom requires constitutional treatment.

The following lotion with avoidance of the friction is all that is required.

℞.—Acidi carbolici (cryst.), grs. iv;
Glycerine, ℥i.—*Mix.*

Sig.—Apply to the abraded surface with a camels' hair pencil, three or four times a day.

Erythema Laeva, being usually an obstinate disease requires considerable care and attention. The limb should be elevated at a right angle with the body; warm fomentations of hops, hoarhound and other herbs may be applied; or a slippery elm poultice may be substituted; if the anasarca becomes painful, or the skin is likely to tear by the amount of swelling, prick the limb with small but numerous punctures. Give internally—podophyllin, compound syrup of stillingia, and the fluid extract of eupatorium, perpur. or other diuretics. Tonics should also be given as directed for the erythema cincinatum. Erythema nodosum; there is sufficient for believing that it is simply an expression of syphilis, and demands iodide of potassium, and the compound syrup of stillingia, with tonics and nutritious diet.

2.—*Roseola*—This is characterized by transient patches of redness, œdema, rough, isolated, small size, and irregular in form, and resembles measles, with the exception that there is

no watery eye, nor sneezing, nor catarrh, rash not regular, nor does it take a definite course, neither is it contagious. There are rigors and febrile disturbance, with tongue coated white and brown. The rash at first is red, but this gradually subsides, and it disappears gradually, lasting from a day or two to ten.

There is a form that appears in the summer upon women of an irritable nervous brain and a disordered uterine system.

3.—*Urticaria.*—Nettle rash, so-called from the fact that the skin of the patient looks as if beaten with nettles; the rash is either red or white, round prominent patches, irregular shape; uncertain in its duration, accompanied by pain, heat, burning, tingling, itching; non-contagious.

We meet with urticaria, acute and chronic, attacking individuals of all ages.

The three varieties of exanthemata are usually caused by derangement of the digestive organs, and the formation of germs or poisons which are taken up into the circulation, nature making an effort to eliminate them by the skin; certain kinds of poisonous shell-fish; cucumbers, mushrooms, certain medicines, as opium, turpentine, copaiba.

Uterine irritation, mental anxiety, fatigue, predispose patients to it, by producing mal-assimilation.

The simple and acute forms require but little treatment. A dose of anti-bilious physic; solution of the citrate of magnesium or the solution of the tartrate of sodium; and avoiding such articles as excite this disease, as fish, lobsters, mushrooms, cucumbers, and various kinds of nuts. Copaiba very frequently produces a copious eruption. With the removal of the cause the effect usually ceases. Sometimes urticaria is connected with rheumatism or gout. Then these associated disorders must receive attention. The comp. syrup of stillingia, with poke root, iodide of potassium and colchicum, with diaphoretics, as guaiac and warm baths will constitute our most efficient means in many cases, but some cases will defy all these means yet relieve promptly when cod liver oil is added to the treatment. The lacto phosphate of lime and cod liver oil is a splendid preparation in such emergencies. If torpidity of the liver be associated with it, give podophyllum and aloes; or if there be uterine irritation or detention involved, treat these on scientific and general principles. In obstinate cases in which it is impossible to arrive at the real source of irritation, the fluid extract of taraxacum, combined with nitromuriatic acid, gives relief if persevered with for some time, even after nearly every other agent or agents of the materia medica have been tried without benefit. Locally sponging with vinegar, with spirits of mindererus and cyanide of potassium in the proportion of two grains of the latter to a pint of the former will

afford temporary relief. Sponging the body with a weak solution of nitromuriatic acid is often beneficial. Sometimes, however, more relief is afforded by bathing in sea-water, or with a solution of the chloride of sodium.

The treatment of the three varieties should consist in the administration of emetics to remove offending materials from the stomach; cathartics to unload the bowels, tepid alkaline baths; then follow with a decoction of boneset and tincture aconite; to stimulate the skin, some form of sulphur should be given, as:

℞.—Aromatic sulphuric acid, ℥j;
Sulph. quinine, grs. x.—*Mix.*

Fifteen drops every third hour, or tincture of sulphur.

℞.—Brandy, Oss;
New Orleans molasses, ℥ij;
Sulphur, ℥j.—*Mix.*

Dose.—A tablespoonful three times daily. Excellent if the patient suffers from acidity. If the case does not yield rapidly, alteratives, as an infusion of sassafras and iodide potass.

Erysipelas being the expression of a germ in the blood, its elimination and neutralization constitute the indications which are immediately and universally presented. To promote the former the intestinal and dermoid secretions must be stimulated. There is no agent preferable for the former to the solution of the tartrate of sodium, being agreeably tasted, as much so as a glass of lemonade, slightly acid, yet acting as an antacid after coming in contact with the acids in the intestinal canal by displacement of some of the tartaric acid and the combination of the intestinal acids with the sodium. The solution of the citrate of magnesium is nearly as good, but, while being three times more expensive, yields the palm to its new rival, in taste, certainty and effectuality of action. If the skin be hot and dry, small and frequently repeated doses of aconite may be given—mix thirty drops of the tincture of the leaves with four ounces of lemonade and give a teaspoonful every twenty minutes until the skin becomes moist. Also give the following combination, giving the first dose about an hour after taking the solution of the tartrate of sodium:

℞.—Liq. ammonii acetatis, ℥vi;
Spt. nit. ether, ℥iss;
Tinct. ferri chloride, ℥ivss;
Quinia, ℈ss.—*Mix.*

Sig.—Dessertspoonful every two hours. The case must be intractable which will resist very long this treatment. Even the most unfavorable cases acknowledge its potency within twenty-four hours. So uniform is it in its good offices that it may almost be deemed a specific. Delirium and coma will

never supervene after the system is brought under its influence unless the brain or its meninges become locally involved. If, however, there be imperfect æreation of the blood, the skin dark or livid in its hue, and yet no marked tendency to coma, the following will be found to be more especially indicated:

℞.—Potassii, chloratis, ℈ij;
Quiniæ, sulph., grs. xvj;
Acid, muriat., gtts. xxiv;
Aquæ, aurant. flor., ℥x;
Aquæ, rosæ (dist.), ℥x;
Syrup, q. s. ad., ℨiv.—*Mix.*

Sig.—Dessertspoonful every three hours. At the same time giving whiskey and milk as freely as the condition of the patient will justify. If, however, there be tendency to drowsiness, stupor, or coma, alternate with—

℞.—Carb. ammonii, grs. lxxx;
Pulv. ext. glyc., ℥ij;
Pulv. acaciæ, ℥iij;
Aquæ, dist., ℨiii;
Tinct. card, comp., ℥iii;
Syr. aurant. cort., ℥v.—*Mix.*

Sig—Two teaspoonfuls, in water, one and one-half hours after the above mixture. Coffee may be also given freely. Upon these measures it may almost be said that medical science is limited. Many other plans of treatment have been proposed, but all others are quite inefficient in comparison to the above.

Local treatment.—Probably the most decisive local application may be realized in painting the entire erysipelatous surface with tincture of iodine, either undiluted or mixed with glycerine, in such proportions as the case demands. These applications may be repeated several times a day. Some, however, prefer encircling the erysipelatous surface with a stick of nitrate of silver, so as to limit the disease to the territory already occupied, or then cover the entire surface with a cranberry poultice, hop poultice, or with formentations of hot herbs. Some adopt inunctions of lard, others paint the surface with collodion.

If there be great tension, or if pus form, make free incision with a bistoury.

Order II.—*Hemorrhagia.*

Under this head are classed two diseases of the blood—purpura and scurvy.

Order III.— *Vesiculæ.*

Taking the theory that the large proportion of skin affections are but an effort of nature at elimination, simply inflammation and its effects, this order corresponds to an effusion of serum which elevates the cutis, or epidermis, into vesicles, or blisters. The serum in those vessels is generally transparent, but occasionally opaque or semi-purulent. The action of the absorbents on the effusion may absorb it, or it may run, or it may be evaporated and dry up, forming either excoriations or incrustations.

It is almost invariably preceded by local fever, still cases appear imperceptibly. They often have the appearance as if a drop of water was dropped upon the skin. They may appear upon any part of the body. There are three affections classified under this head—sudaminæ, herpes, eczema.

1. *Sudamina.*—This consists in the appearance of a few or a crop of small transparent vesicles, under the cuticle, like a drop of water. They are very apt to take place where the gland—the skin—is in a state of depression. Then it pours out its secretion uncontrolled. They commonly make their appearance in rheumatism, phthisis, typhoid fever, or any form of exhausting disease.

2. *Herpes.*—Herpes, or tetter, is a transient, non-contagious affection, consisting of clusters of vesicles upon patches of irregular size and form.

It runs an indifferent course, depending on the cause.

There are several varieties, as *herpes preputialis*, when it occurs in the foreskin, or labia, the serum from which is highly contagious; *herpes circinatus*, when occurring on the scalp, blended with this, form spores or germs, essentially contagious; *herpes zoster*, or the shingles, in which the inflamed patches with their clusters of vesicles are arranged in the form of a band, encircling one-half the body.

3. *Eczema.*—This is a non-contagious affection, and consists of an eruption of small vesicles on various parts of the skin, closely crowded together, and often running into each other so as to form, on being ruptured, superficial, moist excoriations. The inflammation here, properly speaking, has terminated in an effusion of serum, a rupture of the vesicles, a drying up, forming scabs or crusts; the pain, heat, redness, swelling, give rise to depression of the nervous system and fever. There are numerous varieties chiefly designated from this cause, viz.:

Eczema simplex, minute vesicles on different parts of the skin without any redness.

Eczema rubrum, vesicles on an inflamed skin, heat, swelling, &c.

Eczema impetigoides, the same, but pain, heat, redness, swelling greater.

Eczema solaris, due to the heat of the sun.

Eczema syphiliticum, mercurialis, &c., when due to the action of either of those poisons.

Eczema infantalis, when it occurs as the result of a poison or mal-nutrition in infancy.

It must be borne in mind that all varieties of eczema are difficult to manage; still there are certain essentials that must be rigidly observed.

The condition of the stomach and bowels merit our most scrupulous attention — good diet, well digested and assimilated, no tardy digestion, no germs germinated in stomach.

Emunctories, as the bowels, kidneys and skin must be stimulated.

The eruption must be covered with fine cotton or linen cloth, several thicknesses, kept wet with warm water, and bicarbonate potassii, or glycerine and water, or lime water; kept moist all the time, and covered over with oiled silk. It must be rigidly kept from the action of air and light, so as to prevent the formation of germs on the abraded surface. The general treatment should consist in daily alkaline baths, nutritious diet, tonics and alteratives. Our best tonics consist in—

℞.—Comp. tincture cinchona, ℥ij;
Phosphoric acid, dil., ℥ss;
Glycerine, ℥ij.—*Mix.*

For an adult, one teaspoonful before meals. As an alterative:

℞.—Syrup yellow dock,
" frostwort, āā, ℥ij;
Iodide potassium, ℥ij.—*Mix.*

A teaspoonful every three hours

In children, keeping the eruption covered with benzoated oxide zinc ointment, and rectifying the mal-assimilation, following in with alteratives, are usually sufficient.

Order IV.—*Bullæ.*

Bullæ differ from vesicula merely in being large, and it is unnecessary to separate them into two orders. Bullæ consist of round superficial tumors, or vesicles, caused by effusion of serum, and beneath the epidermis, the bladders bursting in a few days, while their contents form thick crusts. Pemphigons and rupia are classed under this order.

1. *Pemphigus.*—This eruption is generally preceded by very severe constitutional disturbance, headache, fever, mal-nutrition, and then the appearance of large, red, circular patches, which increase in extent, and become covered with a large blister, or

bullæ, which either fade away on attaining their full size, burst, and are replaced by their brownish-colored incrustations. Its duration is variable.

2. *Pompholyx* is merely a variety of pemphigus, which usually runs its course in about eight days, and is unattended with fever.

Same treatment as for eczema, tonic and alterative, with generous diet, fresh air, and remedies that are highly constructive, will usually effect a cure.

3. *Rupia.*—This is but a modification of pemphigus, being so changed by debility, want, syphilis, mercury, improper diet, poisons, vitiated blood. It usually appears as an eruption of small, flattened bullæ, containing at first a thin serous fluid, which soon becomes purulent, and concretes or hardens in dark black scabs or rough incrustations. The margins of the surrounding skin inflame, soon serum is poured out, and thus the incrustation increases in circumference and also in thickness; when the crusts fall, they leave circular ulcers of various sizes, indisposed to heal. As this disease is associated with derangement of the digestive function, our first purpose must be to secure a normal condition of the chyloporetic viscera. The liver is usually sluggish, and butyreous fermentation takes place in the duodenum, between the albuminous and oleaginous articles of food, and the nutritive function is often in abeyance. To overcome these the secretions must be corrected by cholagogue cathartics, and the acid condition of the duodenum neutralized with alkaline carbonates.

I esteem these combinations; grading the doses to suit adult age:

℞.—Podophyllin, gr. i;
Leptandrin, grs. viii;
Irisin, grs. viii;
Aloes, grs. iv.—*Mix.*

Div. in pil No. viij.

Sig.—One pill at bed-time. This generally secures a natural evacuation in the morning, and restores a healthy action in the chyloporetic viscera. As rupia is almost universally associated with scrofula, or syphilis, and attended with impaired vital force, it is a good plan to give a tonic, in combination with an alkali, as in this manner:

℞.—Tinct. chinchona, comp., ℥ii;
Fluid ext. dulcamara, ℥vj;
Liq. potassæ, ℥ii.—*Mix.*

Sig.—Dessertspoonful thrice daily in water, or, what is decidedly better, a wine-glass of the infusion of yellow dock. Large doses of alkalies, by impairing the integrity of the gastric function, perpetuate rather than overcome the butyrous fermentation; the acid condition of the intestinal canal being

remedied, it is well to discontinue the use of the alkali and substitute in its place nitro muriatic acid, or, if the stomach be offended at this, elixir pyrophosphate of iron, quinia and strychnia may be substituted in dessertspoonful doses; to the above half a drachm of the syrup iodide of manganese may be very advantageously added. If these means are not adequate to the cure, cod liver oil with the iodide of manganese should be tried. In children most excellent results are obtained from the lacto phosphate of lime and iron with cod liver oil.

Local treatment.—Puncture the bullæ, let the fluid escape, and coat the skin with collodion. If a scab forms over the sore remove it and pencil the ulcer with the following lotion:

℞.—Acidi carbolici, grs. viij;
Glycerinæ, ℥i.—*Mix.*

This is decidedly preferable to lotions of nitrate of silver, nitric acid, bichloride of mercury, tincture of iodine, or the sulphate of zinc. The ulcers should be washed at least three times a day with a strong decoction of bayberry and hamamelis.

Order V.—*Pustulæ.*

This properly corresponds to an effusion of plastic lymph, produces thickening. The lymph is usually infused between the cuticle and cutis vera in small patches, or pustules are usually scattered irregularly; sometimes in clusters the lymph is apt to break down into purulent fluid, giving us scabs or permanent cicatrices. The diseases classed under this order are ecthyma and impetigo.

1.—*Ecthyma.*—This is usually preceded by acute inflammation of the skin, following which lymph is effused in large round prominent patches, occurring upon any part of the body; the pustules are usually distinct, seated upon a hard inflamed base, and as the lymph breaks down form thick dark-colored scabs, which have superficial ulcers, followed by cicatrices; it usually depends upon mal-assimilation, the generation of poisons in the alimentary canal, or to some species of toxæmia. Young persons are more commonly affected.

The treatment should consist in the use of warm alkaline baths, gentle cholagogues, alteratives and tonics, and a dressing of the white oxide of zinc ointment with iodide of potassium.

2.—*Impetigo.*—This is a severe non-contagious inflammation of the skin, characterized by an eruption of small hemispherical or flattened pustules in clusters, and forming thick, rough, yellow scabs, or incrustations. From beneath these incrustations, a discharge takes place; the crusts become thicker and larger; and they fall off, leaving a raw surface. The mode of distribution caused a division of the disease in several varieties.

Treatment.—This affection in all its various forms is best treated locally by the constant application of the alkaline wash, during the time constantly kept moist, and the benzoated oxide of zinc ointment diluted with glycerine; olive oil and lime-water is also an excellent soothing dressing.

Elder ointment; a decoction of phytolacca; a lotion of oxalic acid, carbolic acid or creosote in glycerine; gutta percha in chloroform; hydrocyanic acid lotion; vapor baths, are always beneficial.

The constitutional treatment is all important, the secretions should be stimulated, the diet improved, and the following remedies will meet the indications of all the various forms: sulphur, iodine, stillingia, rumin, irisin, gold, phytolaccin, belladonna, lycopodin, &c.

Order VI.—*Parasitici.*

This order may very appropriately be divided into two groups; according as the parasite belongs to the vegetable or animal kingdom. The cutaneous affections depending on a parasitic plant are—tinea tonsurans, tinea favosa, tinea decalvaris, tinea sycosis, and chloasma; while the disease produced by a parasitic insect is scabies. All are contagious.

1. *Tinea Tonsurans.*—This is a chronic contagious disease, caused by a parasitical plant; common name, ringworm. It may occur in any part of the body, but the head is the most frequent seat of the disease.

2. *Tinea Favosa.*—This, like the above, is a parasite disease, commonly affecting the scalp, in the form of small cup-shaped, dry, bright yellow crusts; each containing a hair in its centre, and sometimes resembling a piece of honey-comb. The scabs increase in size, and are highly contagious. This cryptogamic parasite causes yellow, distinct pustules, which are very itching and corrosive.

3. *Tinea Decalvans*—Is easily recognized by the perfectly smooth bald patches which result from the hair falling off. The hair falls off one or more circular or oval spots; leaving perfectly smooth, bald patches, which vary in size.

4. *Tinea Sycosis.*—This is also another species, characterized by inflammation of the hair follicles, causing successive eruptions of small accuminated pustules, occurring most frequently on the chin and other parts occupied by the beard; it seldom occurs on the scalp. It is caused by a cryptogamic parasite.

5. *Chloasma.*—Chloasma, or liver spot, makes its appearance generally on the front of the chest, or abdomen, in the form of small spots of a dull reddish color, which gradually increase in size and assume a yellow tint. It is highly contagious, and is caused by a cryptogamic plant.

Treatment.—The treatment is the same in all the varieties. First of all, cleansing is of the greatest importance; then separation of the scabs or incrustation by poultices, the improvement of the general health, and to insure a perfect cure, destruction of the spores of the parasitic plant. For this purpose, the following lotions and ointments are highly esteemed. The oil of cade, lime and carbonate of soda, each one part; lard, thirty parts; sulphate of copper, one part; alum, three parts; lard, thirty parts; the sulphuric acid lotion; lotion of the sulphite of soda; pitch ointment; phenol sodique; creosote ointment; iodide sulphur, &c.

In all cases the local treatment should be combined with constitutional measures, calculated to produce a change—alteratives, warm clothing, good diet, tonics, iron, cinchona.

6. *Scabies.*—Scabies, psora, or the itch, is a contagious disease—contagious in the sense which implies actual contact—a vesicular eruption, appearing with watery heads, attended with great itching; the irritation being increased by warmth. This affection may attack every part of the body, but it attacks by preference, the finer portions of the skin, inside of the fingers, arms, legs, &c.

The cause of the disease is an insect called the acarus scabici, which is found about a line from but not in each vesicle.

Treatment.—This affection is readily cured by using any of the following remedies: sulphur ointment; inunction with lard; sponging with benzine; anointing with oil of bergamot; or a liquid sulphuret of lime; or an alcoholic solution of staves-acre; or a lotion of sulphate of copper; or iodide of potass; a lotion of chloride of lime; phenol sodique; an ointment prepared by boiling some oil with an excess of lye, composed chiefly of caustic potash and crude carbonate. This is employed by saturating a coarse towel with it and applying, rubbing every part. An ointment, which is highly esteemed, is as follows:

℞.—Sulphur, oil of cade, āā ℥ij;
Alkaline soap, ℥v.—*Mix.*

The patient's apparel, as well as the bed-clothing, should be thoroughly cleansed.

If the disease has lasted long, and the constitution sympathises, a course of alteratives and tonics should be resorted to, and to meet special indications the following remedies will be found appropriate: rumin, muriate of ammonia, juglandin, and iodine.

Order VII.—*Papulæ.*

In the treatment of all diseases of the skin we must ever regard it as an external lung; an aerating mechanism spread out

over the entire surface of the body. Both lungs and skin abstract oxygen from the atmosphere, which they replace by carbonic acid and watery vapor. A healthy cuticle must be freely permeable by elastic fluids. The skin is profusely perforated by valvular orifices, openings of the sweat ducts—and is the grand drainage pipe of the body. A healthy skin is important to perfect health, for if it be obstructed by disease more labor is thrown upon the kidneys and lungs, which are apt to be over-worked and become diseased. The skin is also a great decarbonizing organ, and if its function is impaired it throws all the work of decarbonization on the liver, hence disease of that organ; carbon, also, is retained in the blood, which acts as a poison on the great nerve centres, hence the propriety of appreciating skin diseases in all their varied ramifications.

Papulæ or pimple, is a small, solid, acuminated elevation of the cuticle, resembling an enlarged papillæ of the skin, generally terminating in resolution, desquamation or ulceration of its summit. Papular eruptions are usually preceded by itching, rarely by fever, form slowly; and are not contagious; appear on any part of the body; vary in their duration from a few weeks to as many months. Lichen and prurigo are the diseases of this class.

1. *Lichen.*—This is a papular affection, readily recognized by the minute, hard, red elevations of the skin, together with the most annoying and intolerable pruritus. There are several forms of the disease.

The eruption which is often seen in infants during the period of dentition, and known as the *red gum, or tooth rash*, is a form of lichen. In these cases the papillæ may be red or white. Sometimes the eruption appears in the palms of the hands, the arms and legs, when it receives the vulgar appellation of *salt rheum.*

The eruption now and then comes out in a mild form upon the trunk or extremities, attended with heat, and troublesome itching on becoming heated. This variety is known under the designation of prickly heat.

The *lichen agrius*, in which the papillæ are more inflamed, and developed on an erythematous surface, which appears hot and painfully distended. In a short time the inflammation diminishes, and the papillæ become covered with a furfuraceous desquamation, or their points are scratched off; the skin around them becomes fissured into deep and painful cracks, and a seropurulent fluid exudes, forming thin, scaly crusts. The itching, tingling and smarting is often very intense. There is usually fever, nausea, headache, rigors, and other symptoms of constitutional disturbance; and though in mild cases the symptoms

may subside, and the eruption die away in about fourteen days, yet in severe varieties the disease is prolonged for months.

Causes.—Irritation of the stomach and intestines from errors in diet, worms and teething. Protracted exposure to heat, &c.

Treatment.—Tepid alkaline baths twice daily, mild laxatives, as juglandin, irisin, and drinks of water medicated with nitro-muriatic acid, or a decoction of the vegetable alteratives.

The local irritation is quickly relieved by a lotion of lead water, and hydrocyanic acid, hydrochlorate of ammonia, and vinegar.

Lichen simplex, lichen pularis and lichen circumscriptus require but little treatment more than regulation of the diet. Acidulous drinks, acid fruits, mild laxatives, and lotions of the spirits of mindererus, to which one grain of the cyanide of potassium may be added to each half pint.

Lichen agrius requires tonic treatment, with regulation of the bowels. One grain of the sulphate of iron, one drachm of the sulphate of magnesium and twenty drops of aromatic sulphuric acid may be given thrice daily in an ounce of the infusion of orange peel, or other agreeable menstrum; or nitric acid may be given, with quinia and strychnia. The syrup, iodide of iron and manganese, may be given in half-teaspoonful-doses thrice daily. Locally, sulphur ointment, lotions of nitro-muriatic acid, glycerine and carbolic acid.

Lichen livictus.—The best remedies are cod liver oil, the syrup of the superphosphates of iron, quinia and strychnia, elixir pyrophosphate of iron, quinia and strychnia, and generous diet.

Prurigo is believed by some authors to be a severe form of lichen. The papillæ are, however, larger, more isolated and distinct, and scattered over larger surfaces than those of that affection. The eruption is sometimes of a red or pinkish color, at other times white, like the surrounding skin, and attended with the most intense itching and stinging. The disease appears in all parts of the body.

Prurigo is often a chronic affection, lasting for months and years, and causing great discomfort and even misery. Patients afflicted with it scratch and tear themselves till the blood flows, their sufferings being aggravated by warmth.

Three varieties embrace the chief ones. The first is *prurigo mitis*, mildest in form; the second, *prurigo formicans*, where the itching is combined with a sensation like the creeping of ants or the stinging of insects; and the third, *prurigo senilis*, occurs in old persons, and is the most obstinate.

In this disease the abdominal visera is almost always disordered and this disorder seems intimately associated with the

constitutional lesion upon which the disease depends. A full dose of anti-bilious physic, or one grain of podophyllin with five grains of the compound extract of colocynth should be given at once, and the intestinal canal should be kept free from an accumulation of fœcal matter by a pill composed of one-sixteenth grain of podophyllin, ½ grain of aloes, and two grains of rhubarb, given at bed time, or by sulphur and cream of tartar; as a rule the latter combination will yield the best results. Give as an alterative tonic

℞.—Syr. stillingæ, comp., ℥iv;
Syr. manganesii, iodidi, ℥ss;
Tinct. cinch., comp., ℥j.—*Mix.*

Sig.—Dessertspoonful thrice daily, alternating with

℞.—Tinct. gentianæ, comp., ℥iv;
Potassii, bicarb., ʒiij;
Fl. ext. stillingæ, ʒiij;
Aquæ, q.s., ad., ℥viij.—*Mix.*

Sig.—Take a dessertspoonful thrice daily.

If the disease seems to be associated with disorder of the menstrual function, with leucorrhœa, or with pregnancy, these relations must be considered. If with pregnancy, no treatment will prove more than palliative until delivery, when the disease will generally disappear; if with leucorrhœa, the leucorrhœa must receive proper attention; if the menstrual function be deranged it must be corrected; if chronic engorgement of the uterus be present the uterine trouble must be cured. It is only by judicious management of associated disorders that the physician can hope to control this malady. I have known an enema of lime water, or a dose or two of santonin to cause an obstinate case, which had defied the usual remedies, to disappear within forty-eight hours, the cause being worms in the rectum. Successful treatment in this, as in nearly all diseases, depending upon tracing the ailment to its prime cause; and just here is found the dividing line between the scientific physician and the charlatan, a boundary the highest diploma cannot prove a passport over, but which will not oppose ths passage of the student trained in investigating causes.

Local Treatment.—All ointments are objectionable; owing to their tendency to oxidize they become speedily irritating and offensive, and should not be used unless they are followed by saponaceous ablutions every ten or twelve hours. It is usually better to apply lotions—these may be composed of biborate of sodium, chloride of ammonium, chlorate of potassium, and pyroligneous acid and carbolic acid, to which cyanide of potassium may be added, in the proportion of a grain to the ounce.

If the above treatment, local and constitutional, prove unavailing, the last reliance must be placed in the use of fluid extract of taraxacum and nitromuriatic acid.

Order VIII.—*Squamæ.*

The term squamæ is applied to the scales of degenerated, thickened, dry epidermis, which cover minute papular elevations of the skin; these scales or particles of scurf being readily detached, though they are reproduced by successive desquamations for a long time. The scales or scurf are the result of a morbid secretion of the epidermis. Their formation gives rise to but slight constitutional disturbance, and to more local heat and itching; while none of the squamous diseases are contagious, though they are very chronic in their duration. Lepra, pityriasis and ichthyosis are the most common diseases included under this head.

Lepra.—There are several forms of lepra; *lepra alphoides* when the patches are small, white, and long standing; *lepra syphilitica* when the result of syphilis—then the patches are copper-colored; and *lepra vulgaris*, which is the most common variety. This is a non-contagious, chronic eruption, consisting of red, scaly, circular patches, of various sizes, scattered over different parts of the body, but more frequently in the vicinity of the joints, especially near the knee and elbow; by degrees the patches increase in size and number, and extend along the extremities to the trunk.

Causes.—Some believe the disease to be hereditary, but it would seem to be caused most directly by agents that depress the vital forces, as improper food, insufficient ventilation and clothing, filth, deteriorated blood.

Treatment.—In this affection of the skin we have an excessively depraved and broken down condition of the blood, consequently the diet should be such as contains all the elements of blood; and all acids, or articles of diet capable of creating or becoming acid must be positively prohibited. Vapor baths of iodine and sulphur every two or three days, with the daily use of the alkaline bath, are excellent auxiliaries to the constitutional treatment.

The lepra vulgaris is the most obstinate of all curable diseases, being very slowly impressed by remedial agents. The indications are to keep the bowels soluble by minute doses of podophyllin and leptandrin—about one-twelfth grain of the former to one-half grain of the latter. The fluid extracts of taraxacum and dulcamara, with nitromuriatic acid, form the most reliable combination of agents for internal use; to these the sulphate of quinia may be added, if there be, as there usually is, a considerable depreciation of vital force. If there be anæmia, tincture of the chloride of iron and phosphoric acid, with quinia and strychnia, may be given thrice daily; and if

there be a tendency to emaciation, resort to cod-liver oil. The cod-liver oil may be given with an equal amount of the extract of malt, or with an aromatic bitter tincture, or may be flavored so as to disguise the taste in this manner:

℞.—Ol. morrhuæ, ℥xii;
Ol. cinnamonii, gtts. xxiv;
Ol. aurant. cort, gtts. xxiv;
Ol. myrbanæ, gtts. xl.—*Mix.*

Sig.—Tablespoonful thrice daily.

The oil of myrbane has precisely the odor and taste of the oil of bitter almonds, but being destitute of poisonous properties, is preferable for flavoring purposes.

If the disease seems to defy the above-mentioned agents, the compound syrup of stillingia, with the fluid extract of dulcamara, and small doses of iodide of potassium may be given for one or two months. To these, small doses of the tincture of cantharides may be very judiciously added in a large proportion of the cases. As the disease is eminently chronic, the treatment must be equally chronic.

Lepra aphoides is merely a long standing lepra vulgaris, with a smaller and whiter eruption, and requires a very similar course of treatment.

Lepra syphilitica being but an expression of a constitutional syphilis, must be treated as such. The syrup of the iodide of manganese is the agent possessed of the greatest potency. It should be given with the fluid extracts of stillingia and poke root, and continued week after week and month after month until it effects a cure. If the digestive system be good, a couple of drops of the tincture of iodine may be added to each dose, and the amount increased to five drops. If there be an impoverished condition of the blood, cod-liver oil and the syrup of the superphosphates of iron, quinia and strychnia may be given. The formula is—

℞.—Ferri sulphatis, grs. 800;
Sodii, phosph., grs. 740;
Sodii, acetatis, grs. 260;
Quinia (pure alkaloid), grs. 192;
Strychina, grs. vi;
Aquæ, aurant. florum, ℥x;
Acidi, phosphorici, (syrupy S. G., 1, 5,) ℥iiss;
Syrup, q. s., ad, ℥xxiv.

Dissolve the sulphate of iron in four ounces of boiling water, and the phosphate and acetate of sodium in eight ounces of boiling water. Mix, wash the precipitated phosphate of iron, and squeeze all the water from it that is possible. Then rub the phosphate of iron, quinia, and strychnia with the orange flower water, dissolve in the syrupy phosphoric acid, and filter

into sufficient syrup to make twenty-four ounces. Of this a teaspoonful containing three grains of the phosphate of iron, $1\frac{1}{4}$ grains phosphate of quinia, and $\frac{1}{32}$ grain of the phosphate of strychnia may be given thrice daily. Or the syrup iodide of iron and manganese may be given in half-teaspoonful-doses thrice daily.

Local Treatment.—Warm baths; lotions of carbolic acid; external applications of nitro-muriatic acid solution, made of the strength of half an ounce of the acid to the gallon of water. Tar ointment.

Psorias.—Psoriasis, or dry tetter, is a chronic, non-contagious inflammation of the derma, characterized by the development of patches of various extent and form, slightly raised above the level of the skin. A course of remedies internally should not be neglected, as *iodine*, *stillingia*, *nitromuriatic acid*, *phosphorus*, *cinchona*, *muriate of gold*. Locally we have found the simple alkaline lotion good; better still, a lotion of the sesquicarbonate ammonia, phosphorus rubbed up in some ointment, baths of an infusion of flax-seed; milk, glycerine, should not be overlooked; a lotion of water, acidulated with nitromuriatic acid, a lotion of sulphuret potash, ℥j; water, ℥iij, once a day. But the best formula that I have ever used is the following

℞.—Borax, grs. xv;
Glycerine, ℥j;
Aquæ, rosa, ℥ij;
Otto rosea, grs. x.—*Mix.*

Apply every night.

Ichthyosis.—Ichthyosis, the fish skin disease, is characterized by the development, upon one or more more parts of the integuments, of thick, hard, dry, imbricated scales of a dirty gray color, resting upon an uninflamed surface, and unattended by heat, pain, or itching. Ichthyosis is usually a congenital disease, and lasts during life.

Treatment.—In our efforts at cure there are three indications to be fulfilled: Augment the action of the capillaries of the skin by the proper remedies; improve the secretions generally by a generous diet, vigorous exercise in the open air; and aid the action of these means by topical remedies to stimulate the skin, to assist the separation of the diseased papillæ. For the purpose of fulfilling these indications, a rigid alterative course, giving such remedies as yellow dock, phytolacca, dulcamara, stillingia, gold, &c. Simple warm and alkaline baths are the only local remedies of any utility.

Order IX.—*Tubercula.*

The diseases belonging to this order—elephantiasis, molluscum, acne, lupus, frambœsia, and keloid—characterized by the formation of small, hard tumors or tubercles, more or less prominent, circumscribed in form, and persistent. The tumors may ulcerate at the summit, or they may terminate in suppuration. Tubercular diseases are slow in development, very chronic, peculiar to certain regions; their symptoms are characteristic. The general appearance and cachectic condition.

Lupus is the only form of the tubercula with which we are acquainted, and is best treated by those remedies useful in scrofula.

Elephantiasis.—These two varieties, elephantiasis græcorum, and elephantiasis arabicum.

Lepra Græcorum is an hereditary and contagious disease, terrible in its character, generally incurable.

There are three forms: 1. The squamous or scaly. 2. The crustaceous, in which the skin is covered with crusts. 3. The tuberculous.

Symptoms.—Dusky red or livid tubercles of various sizes on the face, ears, extremities; thickened or corrugated state of the skin; diminution of its sensibility; falling of the hair, except that of the scalp; hoarse, nasal, or lost voice; ozæna; ulcers of the surface, and extreme fetor.

Elephantiasis arabicum is characterized by greater swelling and induration of the skin, and areolar and adipose tissue, producing marked deformity.

It frequently attacks the lower extremities, causing swelling so great that the limb becomes double its natural size. There is hardness, severe pain, thickening, and an appearance resembling the leg of an elephant. This disease usually continues during life.

Molluscum.—This affection, called from the resemblance of the tubercles forming it to the eminences growing on the bark of the maple tree. It consists of small tumors varying in size from a pea to a pidgeon's egg, sometimes of a brown color; sometimes has a broad or narrow base. It is a rare disease, does not produce much inconvenience, generally remaining stationary during life.

Acne.—This is a pustular affection, characterized by small pustules with deep red bases, generally appearing upon the nose, face, forehead and shoulders, first in the form of a thickening, redness, and induration of the integuments, from which continually proceed suppurating points or tubercles. The

parts affected often acquire a depth of redness and a conspicuousness, which is annoying to the patient. There are several varieties:

Acne simplex, acne indurata, and acne rosacea; the characteristic distinctions of which are indicated by their names.

Treatment.—In the treatment of the different varieties, regular secretions, skin, liver, kidneys. For this purpose give the patient every night a pill of the following

℞.—Juglandin;
Leptandrin;
Euonymin, āā, xx;
Extract nux vom., grs., iij.—*Mix.*

Make twenty pills.

This will operate specially on the portal system. Three times during the day, two grains of iodide potass. If that fail, the iodide of iron, or the acid solution of iron, in suitable doses. The constitutional treatment by the most positive alteratives, careful regulation of the diet, abstinence from wine and stimulating articles of food; baths constitute the appropriate treatment.

Locally, various remedies are successful, as

℞.—Sulpur ointment, ℥j;
Muriate ammonia, ℥ss.—*Mix.*

Or an ointment of the iodide of sulphur; apply before retiring to bed.

An excellent lotion for sponging the affected parts during the day is composed of the following

℞.—Hyposulphite of soda, ℥ij;
Sulphate of alumina, ℥iss;
Rose water, ℥vij;
Cologne water, ℥ss.—*Mix.*

The hydrochlorate or acetate of ammonia answers equally well.

Frambœsia.—This disease is ushered in without any precursory symptoms, when suddenly a part of the skin about the face, scalp, axilla, or genital organs, is found covered with small spots of a dusty red color, which gradually become converted into large tubercles, isolated at their summits, but collected together at their bases, and bearing a strong resemblance to raspberries in color and form. The tubercles are generally hard, covered with dry scales, and are sometimes inflamed. If the inflammation spreads, ulceration soon sets in, and a yellow sanious discharge results, which forms scabs around the tumors. The internal treatment should be the same as laid down for scrofula and tuberculosis; locally the best remedies are painting the part with strong acetic acid, or pyroligneous acid, or a

solution of carbolic acid. The internal treatment is chiefly to be depended on.

Keloid.—The most common appearance of the affection is small, flat, painful tumors, several inches in diameter, raised above the level of the skin—having irregular forms, with slight depressions in their centres, covered with wrinkled epidermis. Sometimes the excrescence is in vertical streaks resembling leather, in every variety of shape and conceivable form; at other times it resembles a cicatrix left by a burn, which, though soft on the surface, communicates a sense of density and resistance on pressure. The disease slowly develops itself, sometimes ulcerates, and sometimes disappears spontaneously. It occurs on every part of the body. Treatment of any kind seems powerless over it.

Order X.—*Maculea.*

Under this head may be classed all those changes of color of the skin from any cause.

General Remarks.—In all cases of skin disease, after the vitiated secretions have been thoroughly rectified, an alterative and tonic treatment are imperatively demanded, as phosphorus, iron, cinchona, good diet, hygiene, positive and thorough. In nearly all cases, sedatives, both locally and internally, are indispensable to overcome excessive irritation; indeed I regard a judicious use of anodynes essential to the cure of all forms of disease. Baths in all their endless variety, are useful in skin diseases; and the steady local bath, in the form of moist alkaline application in eczema, is of priceless value.

The natural baths and mineral springs of our country are undoubtedly beneficial in chronic cases.

BURNS.

The degree of heat that can be borne by the human body before it causes inflammation is very variable, depending upon the power of vital resistance on the part of the person, and the medium through which the heat is applied. Boiling water 212° Fahr., will scald, whereas heated air of the same temperature will scarcely produce an erythema.

Authors usually divide burns into three classes as they find them on the patient—*erythema*, *vesication*, *ulceration*.

The local symptoms are then either the redness or blisters, or ulceration, with burning, tingling in the affected part. The constitutional symptoms are very important, consisting first

in a condition of prostration, followed by imperfect reaction and a fever.

If, however, a larger area of the skin be involved, the insensible perspiration is perfectly checked, and thrown in upon the serous membranes of the brain, chest and abdomen. This may give rise to serious complications from the presence of a fluid in these three great cavities, as compression of the brain with stertor, difficulty a breathing from compression of the lungs, or abdominal viscera. Besides these, reflex irritation may give us convulsions, tetanus, and various nervous affections.

The dangers, therefore, dependent upon burns, are from the shock; from the fever, serous effusion and reflex action; and, from the long process of suppuration caused by extensive burns.

Our prognosis should be guarded if one-half of the body is scalded, unfavorable if two-thirds be affected.

The treatment of burns is very varied, but it embraces the following leading indications, to wit: general diffusible stimulants in the stage of shock, arterial sedation with aconite if there be fever, and under all conditions supporting and building up the system with good diet and tonics. If there is serous effusion, digitalis, diaphoretics and diuretics should be given; if there is any tendency to reflex irritation, ethereal tincture of lobelia, followed by bromide of potass and tincture calabar bean.

The local treatment of burns should be the immediate application of a powerful stimulant to get a renewal of life in the part, and to exclude air and light. The moment a stimulant of sufficient power is applied to get up an equilibrium *pain ceases*. The remedy best suited for all classes of burns is carbolic acid mixed with olive oil. If the mixture is of the proper strength and freely applied to a burned surface and kept there resolution is immediate—it stimulates the necessary renewal of life, it coagulates the albuminous surface of the part, causes an eschar to form, and effectually prevents the formation of an ulcer.

COLD.

This, if of sufficient intensity, produces precisely the same conditions as heat—*erythema*, *vesication*, *ulceration*—and are classified under a general term chilblains, or frostbite.

Freezing of the entire body, which was so common before the introduction of railroads, is now almost unknown. When this took place the body commenced to freeze from without inwards. While this was in process, drowsiness, coma, difficulty of breathing took place, which was caused by a determination of blood inwards and effusion of serum into the three great cavities—and death.

The practice of taking the patient into a cold room and rubbing him with snow was a good one, as it permitted the body to thaw from within outwards, and prevented any breaking down of structure.

Chilblains, or frostbite, is commonly met with on those portions of the body where the circulation is languid—as the toes, ears, nose, hands—and is accompanied with the usual burning or tingling. Persons exposed to the action of cold, and especially those of feeble health; servant girls sleeping in attics, with no fire; in their damp stockings, are most obnoxious to frostbite in cities.

The best treatment is the immediate application of a powerful stimulant. For a mild case the following is excellent:

℞.—Muriatic acid,
Tincture opium, āā ℥j;
Water, ℥ij.—*Mix.*

Apply frequently.

For more aggravated cases carbolic acid and glycerine in the same proportions as for burns.

CARBUNCLE OR BOIL.

This consists of a follicular inflammation of the skin, an irritation, effusion of lymph in the sac of a follicle.

The cause is malassimilation, indigestion, the elaboration of a poison or germ in the stomach, that is taken up into the circulation, and which nature eliminates by the follicles of the skin.

The symptoms are constitutional disturbance, rigors, febrile exacerbation, maldigestion, bowels constipated, tongue coated with heavy brown coat, skin dry, headache, &c., with a follicular irritation of the skin, effusion of lymph into the follicle, which assumes a hard base, points, and is red and inflamed; additional rigors take place, and the lymph breaks down in the sac.

Sometimes they are confined solely to the nape of the neck, or nates; in other cases they are equally diffused throughout the body.

In the successful treatment of boils, an emetic of comp. tinct. lobelia should be administered daily, and be preceded by copious alkaline drinks. This should be followed with a dose of podophyllin and leptandrin; a warm alkaline bath; then follow with antiseptics to destroy the germ productions in the stomach and blood.

Any good antiseptic will answer—as yeast or permanganate, muriatic acid, chloride of potass.

As a tonic, to promote a better condition of digestion assimilation, nothing can excel the following:

℞.—Comp. tinct. cinchona,
Syr. Simplex, āā, ℥ij;
Nitromuriatic acid, ℥ij;
Hydrocyanic acid, gtts. xx.—*Mix.*

Sig.—A teaspoonful every four hours.

Local treatment resolves itself into a discutient or abortive measures, which consist in applying the succus of belladonna, spread on leather over the boil. This will be effectual, provided no lymph has broke down, no pus has formed, which will be known by the rigors, by the yellow appearance, by its pointing becoming pyramidal in shape, &c.—then the plan of treatment must be either a deep crucial incissions through the boil, or else burning the indurate mass with caustic potassa, then following its application with poultices of slippery elm or flaxseed.

In cases of great malassimilation carbuncles may appear over the entire body. Such cases are attended with fever and danger, from the fact that great contamination of the blood exists from the evolution of large masses of germs in the stomach, which the vital forces are incapable of eliminating even by the skin, and the force of the germ poison is thrown upon the mucous membrane of the stomach, causing gastritis, so that in all cases emetics of lobelia are peculiarly indicated, followed by antiseptics. As to the nature of the antiseptic, it is necessary to give one that will be readily assimilated—as yeast, or permanganate; carbolic acid, though an excellent antiseptic, is quite inadmissible, from the fact that it cannot be assimilated into the blood to any great extent.

The best prophylactic for boils is, good healthy diet, changed frequently; attention to the condition of the secretions, bowels, kidneys, skin; moderate exercise in the open air; change of scene, of society, of all things essential to a high grade of physical and mental life.