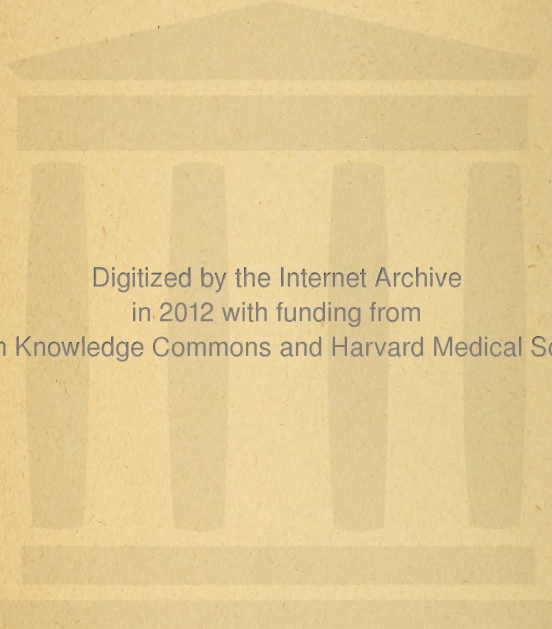




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A MANUAL  
OF THE  
Eclectic Treatment of Disease

DESIGNED FOR THE MANY

STUDENTS AND PRACTITIONERS

*Who Are Now Diligently Searching for Knowledge of the Most Direct  
Action of Drugs, as Applied to Exact Conditions of Disease.*

BY

*C*  
FINLEY ELLINGWOOD, M. D.,

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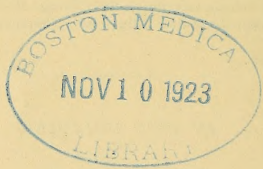
A MANUAL

Electric Treatment of Diseases

STUDENTS AND PRACTITIONERS

*F. S. L.*

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Finley Ellingwood, M.D.  
Chicago, Ill.



# Table of Contents.

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## DISEASES OF THE DIGESTIVE SYSTEM.

### DISEASES OF THE MOUTH AND TONGUE.

Catarrhal Stomatitis .....	21
Apthous Stomatitis .....	23
Membranous Stomatitis .....	25
Parasitic Stomatitis .....	27
Ulcerative Stomatitis .....	29
Mercurial Stomatitis .....	32
Gangrenous Stomatitis .....	33
Acute Glossitis .....	36
Chronic Glossitis .....	38

### DISEASES OF THE SALIVARY GLANDS.

Ptyalism .....	40
Xerostomia .....	41
Symptomatic Parotitis .....	42

### DISEASES OF THE PHARYNX.

Acute Pharyngitis .....	44
Chronic Pharyngitis .....	47
Croupous Pharyngitis .....	50

### DISEASES OF THE TONSILS.

Acute Tonsillitis .....	52
Chronic Tonsillitis .....	59

### DISEASE OF THE ESOPHAGUS.

Acute Esophagitis .....	64
Stenosis of the Esophagus .....	66
Dilatation of the Esophagus .....	68
Ulceration of the Esophagus .....	69

**DISEASES OF THE STOMACH.**

Acute Gastric Catarrh .....	71
Acute Toxic Gastritis .....	75
Phlegmonous Gastritis .....	78
Chronic Gastritis .....	80
Gastric Ulcer .....	97
Dilatation of the Stomach .....	107
Pyloric Stenosis .....	113
Hemorrhage into the Stomach .....	115
Cancer of the Stomach .....	117
Gastric Neuroses .....	124
Nervous Dyspepsia .....	124
Gastralgia .....	128
Hyperchlorhydria .....	131
Cardiospasm .....	134
Pylorospasm .....	134
Hyperistalsis .....	135
Nervous Vomiting .....	135
Eructations .....	136
Gastric Hyperesthesia .....	137
Gastric Anesthesia .....	137

**DISEASES OF THE INTESTINES.**

Diarrhea .....	141
Serous Diarrhea .....	141
Dysentery .....	144
Dysentery, Chronic .....	152
Catarrhal Enteritis .....	153
Colitis .....	157
Mucous Colitis .....	158
Ileocolitis of Childhood .....	161
Cholera Infantum .....	165
Cholera Morbus .....	171
Appendicitis .....	174
Constipation .....	184
Intestinal Obstruction .....	190

Dilatation of the Colon .....	194
Enteroptosis .....	195

### DISEASES OF THE LIVER AND GALL BLADDER.

Hepatic Hyperemia .....	199
Active .....	199
Passive .....	200
Hepatitis .....	203
Acute Suppurative .....	204
Cirrhosis of the Liver .....	207
Perihepatitis .....	212
Perihepatitis, Chronic .....	213
Jaundice .....	214
Jaundice, Catarrhal .....	214
Icterus Neonatorum .....	217
Acute Yellow Atrophy of the Liver.....	219
Amyloid Degeneration of the Liver.....	220
Fatty Liver .....	222
Carcinoma of the Liver .....	224

### DISEASES OF THE PANCREAS.

Pancreatitis .....	239
Pancreatitis, Chronic .....	242

### DISEASES OF THE PERITONEUM.

Acute Peritonitis .....	245
Chronic Peritonitis .....	255
Ascites .....	258

### DISEASES OF THE URINARY SYSTEM.

#### DISEASES OF THE KIDNEYS.

Hyperemia .....	263
Active Hyperemia .....	263
Passive Hyperemia .....	265
Acute Nephritis .....	267
Chronic Nephritis .....	276
Chronic Parenchymatous Nephritis .....	277
Chronic Interstitial Nephritis .....	284

Pyelitis and Pyelonephritis .....	293
Amyloid Kidney .....	299
Hydronephrosis .....	301
Nephrolithiasis .....	303
Perinephritic Abscess .....	309
Renal Cyst .....	311
Movable Kidney .....	312
Anomalies of Secretion .....	315
Anuria .....	315
Albuminuria .....	317
Hematuria .....	323
Hemoglobinuria .....	325
Pyuria .....	327
Glycosuria .....	330
Chyluria .....	331
Oxaluria .....	332
Phosphaturia .....	334

### DISEASES OF THE BLADDER.

Acute Cystitis .....	337
Chronic Cystitis .....	343
Vesical Hemorrhage .....	348
Irritability of the Bladder .....	349
Enuresis .....	351
Retention of Urine.....	353

### CONSTITUTIONAL DISEASES.

Lithemia .....	355
Diabetes Mellitus .....	358
Diabetes Insipidus .....	371
Chronic Rheumatism .....	375
Muscular Rheumatism .....	378
Arthritis Deformans .....	382
Gout .....	387
Uremia .....	396
Rickets .....	402
Scorbutis .....	407

Purpura .....	413
Hemophilia .....	416

## DISEASES OF THE BLOOD, LYMPHATIC SYSTEM AND DUCTLESS GLANDS.

Anemia .....	419
Secondary Anemia .....	420
Progressive Pernicious Anemia .....	423
Chlorosis .....	427
Leukemia .....	432
Pseudoleukemia .....	437
Myxedema .....	441
Cretinism .....	444
Addison's Disease .....	445
Goitre .....	448
Exophthalmic Goitre .....	452

## DISEASES OF THE SPLEEN.

Splenic Hyperemia .....	457
Splenitis .....	458
Movable Spleen .....	460

## DISEASES OF THE MUSCLES.

Acute Myositis .....	462
Progressive Spinal Muscular Atrophy .....	464
Progressive Neural Muscular Atrophy .....	465
Muscular Dystrophies .....	465
Myotonia .....	468

## SPECIAL DISEASES.

Heat Stroke .....	471
Obesity .....	476

## INTOXICATIONS.

Alcoholism .....	483
Opium Habit .....	493
Plumbism .....	497
Chronic Mercurial Poisoning .....	502

Chronic Arsenical Poisoning .....	503
Food Poisoning .....	505

### PARASITES.

Distomiasis .....	507
Tæniæ .....	508
Uncinariasis .....	511
Trichiniasis .....	512
Nematodes .....	516
Ascariasis .....	516
Pediculosis .....	519
Filariasis .....	520

### DISEASES OF THE NERVOUS SYSTEM.

#### DISEASES OF THE PERIPHERAL NERVES.

Neuralgias .....	522
Sciatica .....	527
Neuritis .....	531
Multiple Neuritis .....	533
Migraine .....	540

#### DISEASES OF THE SPINAL CORD AND ITS MEMBRANES.

Meningitis .....	544
Pachymeningitis .....	544
Pachymeningitis Externa .....	544
Pachymeningitis Interna .....	546
Leptomeningitis .....	547
Acute .....	547
Chronic .....	551
Hemorrhage into the Cord Tissue .....	552
Hemorrhage into the Spinal Membranes .....	554
Myelitis .....	556
Poliomyelitis Anterior .....	560
Syringomyelitis .....	563
Lateral Sclerosis .....	565
Amytrophic Lateral Sclerosis .....	566

Locomotor Ataxia .....	568
Hereditary Ataxia .....	574
Marie's Cerebellar Hereditary Ataxia .....	575
Acute Ascending Paralysis .....	575
Bulbar Paralysis .....	577

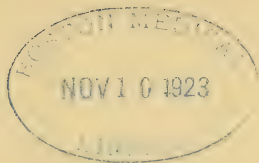
### DISEASES OF THE BRAIN AND ITS MEMBRANES.

Cerebral Meningitis .....	578
Pachymeningitis .....	578
Pachymeningitis Interna .....	579
Leptomeningitis .....	580
Encephalitis .....	581
Hemorrhage into the Brain .....	583
Cerebral Embolism .....	587
Cerebral Thrombosis .....	588
Thrombosis of the Venous Sinuses .....	590
Disseminated Sclerosis .....	591
Infantile Cerebral Paralysis .....	593

### FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM.

Aphasia .....	596
Infantile Eclampsia .....	597
Puerperal Eclampsia .....	601
Epilepsy .....	603
Chorea Minor .....	608
Hereditary Chorea .....	612
Paralysis Agitans .....	613
Neurasthenia .....	615
Tetany .....	623





## Diseases of the Mouth and Tongue.

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### CATARRHAL STOMATITIS.

**Synonyms:**—Acute catarrhal stomatitis; *stomatitis erythematosa*.

**Definition:**—An acute inflammation of the mucous membranes of the mouth, simple in character, and of less frequent occurrence in adults than in children. It may occur as a primary affection, or secondary to some constitutional disease.

**Etiology:**—When it occurs primarily, it may result from neglect of the mouth, or from bad teeth or from the cutting of teeth, or from wounds caused by foreign bodies in the mouth, which may or may not become infected; or from corrosion by strong acids or alkalis, or from irritating condiments, or hot food or hot drinks; and from the use of tobacco.

**Symptomatology:**—The constitutional symptoms are not marked except when the condition is a severe complication of other disease. There is **restlessness**, **slight fever**, an **accelerated pulse**, and usually some **nervous irritation**. Locally the **mouth** is at first **dry and hot**, and the membranes are red and tumefied, and soon become **exquisitely tender**, with then a greatly increased salivary secretion. Within the mouth the disease may be local—confined to the gums, or to one or the other cheek, or to the lips—or it may at once involve all the structures of the mouth. The **mucous follicles** may be **enlarged** and reddened, and the **tongue** may be **red and furred**, with en-

larged papillæ. Small **ulcers** may form on the edges or under the tongue and on the enlarged mucous follicles.

The soreness of the mouth greatly interferes with the taking of food, and in infants suckling is sometimes well nigh impossible. There is **loss of appetite** and a **craving for cold drinks**.

The acute manifestations of the disease usually terminate within a week. It is not intractable, usually yielding readily to simple measures.

**Treatment:**—**Aconite** should be administered for the fever and local irritation. Ipecac, given in small doses, will materially assist this remedy in allaying the irritation of the mucous membranes. If the membranes are dark red, **baptisia** should be given; if deep red, and the tongue be red and pointed, with red, elongated papillæ, **rhus toxicodendron** is the indicated remedy. It should be given in conjunction with aconite. For local measures I use an infusion of **white oak bark**, one ounce of the bark to the pint of infusion for adults, and of half that strength for infants. To this I add one dram of **boric acid**, or from two to four drams of the tincture of **myrrh**. This treatment is usually very prompt, and other local measures are not demanded. An infusion of **pinus canadensis** or **geranium**, are of service if other measures are sought for, but caustics and active local measures should be avoided.

In some cases the addition of **phytolacca** to the internal treatment is of much service; or if the membranes are very red and the tongue narrow, red and pointed at the tip, with a brown coat, the use of a few drops of the **tincture of iron**, freely diluted, every two hours, will favorably impress the condition. The mildly acid reaction of this remedy is important, under the circumstances named.

Conditions of the stomach which seem to act as complications should receive attention. **The food** should be very simple, bland, non-irritating, and readily digestible. When the soreness of the mouth is extreme, liquid food only must be taken for a time.

## APHTHOUS STOMATITIS.

**Synonyms:**—Follicular stomatitis; fibrinous stomatitis; disseminated vesicular stomatitis; *stomatitis aphthosa*.

**Definition:**—That form of catarrhal stomatitis in which there appears upon the edges of the tongue, and upon the mucous membranes of the gums and the cheeks an eruption of white patches, which soon develop into vesicles. The bases of the vesicles become red and inflamed, and later small round or oval discrete ulcers appear.

**Etiology:**—This form of stomatitis occurs more frequently in children under five years of age, but is not uncommon in adult life. It occurs as a complication to persistent gastro-intestinal disorders, and the consequent malnutrition, especially during dentition. It also accompanies anemia, tuberculosis, and the acute infectious and exanthematous disorders. It is more common in the spring and summer. No specific parasite has been isolated, but the presence of decomposing and toxic remnants of food, with bacteria, are undoubtedly exciting causes.

**Symptomatology:**—There is a slight fever, with worry and fretfulness. Distress and pain are expressed upon attempting to take food, as there is an exquisite tenderness and soreness, and often a burning sensation of the mouth and tongue. The tongue is coated, there is usually a loss of appetite, and either diarrhea or constipation may be present.

There is an increased secretion of saliva, which constantly dribbles from the mouth, and the breath exhales a peculiar, though not necessarily an offensive, odor.

The appearance of the vesicles is somewhat characteristic. These soon rupture, and the **aphthous ulcers** immediately develop. They are found on the inside of the lips and on the edges of the gums, along the frenum, on the edges of the tongue, and on the inside of the cheeks. A single one only may at first develop, but soon many appear.

When the condition accompanies the specific eruptive

or infectious fevers, the aphthæ tend to coalesce and ultimately to form large irregular ulcers, which characterize the form known as **confluent aphthous stomatitis**. The ordinary course and duration of the disease occupies about seven days, but where the patients are neglected, or where malnutrition or marasmus are present, or where there are conspicuous blood changes or a dyscrasia, the course may be greatly prolonged.

**Diagnosis:**—This is determined by the characteristic appearance of the membranes and the herpetic vesicle, from which the ulcer soon develops. The location of the ulcers on the sides and edges of the tongue and along the frenum is important in diagnosis. The extreme soreness and tenderness are characteristic.

**Prognosis:**—If all conditions be taken into consideration, the disease should readily yield to treatment. In apparently intractable cases constitutional measures, for the correction of blood faults or disorders of the stomach or bowels, and for the general upbuilding of the patient, are of the utmost importance. There will be no recurrence of the disease if all factors are effectually considered in the treatment.

**Treatment:**—The first consideration in the treatment of this disorder is **absolute cleanliness**. This is of the utmost importance; not only cleanliness of the mouth should be demanded, but cleanliness of the patient and his clothes and surroundings. The use of **aconite** and **phytolacca** is required to overcome the fever and allay local and glandular irritation. The latter remedy should be continued when the fever has abated. The mouth should be thoroughly cleansed by the free use of a dilute solution of **boric acid**, and all foreign particles must be gently removed from the teeth.

Antiseptic precautions—thorough sterilization—should be observed with the bottle and nipples in bottle-fed babies, and no rubber tubes should be used. Where the ulcers are deep, **hydrogen peroxid** should be freely applied, and the

cleansing solution again used. The use of a solution of one part of **colorless hydrastis**, two parts of distilled extract of hamamelis and three parts of water as a healing application is of service. This should be used every two hours. I have made an infusion of **alnus rubra**, **quercus alba** and **rumex crispus**, one ounce of each in about twenty-four ounces of water. For extreme intractable cases I have boiled this down to one pint, and have both thoroughly washed the mouth with it and have given it internally in teaspoonful doses four or five times daily. With this I have cured cases which were apparently intractable to all other measures. I have never obtained benefit from cauterizing ulcers. The use of the measures advised, and occasionally of **thuja** applied in full strength or diluted with one or two parts of water, will be found sufficient. Where it is desirable to stop the excessive secretion of saliva, **atropin** in 1/100 grain doses two or three times daily, will be sufficient. Where there is bluish discoloration of the tissues, **baptisia** will be of service, in conjunction with **phytolacca**, which is continued. **Echinacea** is of much value as an alterative if there is an unpleasant odor to the breath. It may be used to correct any dyscrasia present. Attention must be paid to the stomach and intestinal tract, and to the nervous system. Bland, non-irritating and easily digestible food only must be partaken of.

---

## MEMBRANOUS STOMATITIS.

**Synonyms:**—Croupous stomatitis; *stomatitis crouposa*.

**Definition:**—An inflammation of the mucous membranes of the mouth, more extensive in its involvement than the aphthous variety, and in which a false membrane is formed.

**Etiology:**—This disease is supposed to sustain an immediate relationship to diphtheria, developing either directly from the Klebs-Loeffler bacillus, or from streptococci or

staphylococci. It also follows gonorrhoeal and syphilitic infection in new-born babes. True diphtheria of the mucous membranes of the mouth presents many of the appearances of this disease.

**Symptomatology:**—The constitutional symptoms may be acute and violent, with general **muscular aching, headache, chilliness**, a rapidly rising temperature, **quick pulse** and perhaps a **mild delirium**. There is **anorexia, nausea** and progressive **debility**.

The exudate begins with the deposit of **small grayish patches** on a sunken base, which is red, hot, and exceedingly sensitive. These increase in size and become darker in color, of a dirty grayish appearance, and finally they coalesce, thus covering uniformly a considerable surface of the membrane. Patches of the exudate become detached as the disease progresses, and others replace them. The **mouth** is kept constantly **open**, the **tongue** is **swollen**, and there is constant **dribbling**. The **breath** soon becomes foul and exceedingly **offensive**, and both the salivary (especially the submaxillary) and the lymphatic glands become involved, the **face** and **neck** are **swollen**, the face sometimes presenting both a puffed or bloated and dusky appearance.

**Diagnosis:**—The diagnosis depends upon the exclusion of true diphtheria and upon the presence of characteristic membranous exudate.

**Treatment:**—The constitutional treatment for the acute symptoms should be similar to that of tonsillitis or of a mild form of diphtheria. **Aconite** and **phytolacca** are of first importance, with **belladonna** for the local congestion and to control the too free action of the salivary glands. Later **echinacea** and **baptisia** are indicated, and occasionally **rhus**.

I am impressed that the internal use of a mixture which contains six minims of dilute **sulphurous acid** and four grains of **sulphur** to each dram of **syrup of acacia** is of prime importance. A dram should be taken internally

every two hours, and each alternate hour a dram should be held in the mouth for a minute or two, and then ejected. No water should be taken immediately after this remedy, as its local influence is important.

In some cases, especially in youth or in adults, the dosage may be doubled. It must be strong enough to destroy the bacilli. A mouth wash of **hydrogen peroxid**, in from twenty to fifty per cent solution in water, will at times be of much value. Both the internal use and the local application of the infusion of **quercus alba**, **rumex crispus** and **alnus rubra**, mentioned heretofore, is of great value. Tonics must be given as soon as febrile symptoms abate; and restoratives, as the hypophosphites or glycerophosphates with quinin and strychnin will be needed in most cases.

---

## PARASITIC STOMATITIS.

**Synonyms:**—Thrush; *stomatitis mycosa*.

**Definition:**—A contagious fungous disease, specific in character, depending upon the presence of the saccharomyces albicans. It is characterized by the presence, on the mucous surfaces of the mouth, of small, soft deposits, or spots, whitish or yellowish white in color, but lightly adherent to the membranes, and tending to spread by coalescence until the entire membrane is covered.

**Etiology:**—The growth and development of the saccharomyces depends upon the presence of devitalized membrane and an acid medium. Children with unhygienic environment, poorly and carelessly fed, or those with disorder of the stomach or impoverished blood, are most likely to be attacked. It is more common among bottle-fed babies, and will occur during the progress of chronic diseases, as diabetes or cancer, or during convalescence from protracted fevers, especially typhoid and malarial fevers. This dis-

ease may be conveyed from one patient to another by the common use of knives, forks and spoons and bottle tips, and probably by kissing. A changed condition of the normal secretions, from alkaline to acid, is usually to be observed when thrush is present, causing an acid fermentation of minute particles of food.

**Symptomatology:**—**Heat**, or **burning pain**, or **extreme soreness** of the mouth, are the first symptoms observed. The **membranes** are **dry** and **red**, usually dark red or livid. The whitish spots first appear upon the **tongue**. They rapidly increase in size and coalesce until they cover the lips, cheeks and hard palate, and later the soft palate, tonsils, pharynx, esophagus, and even the stomach may be involved.

At first there is a **slight elevation** of the **temperature** and an acceleration of the **pulse**, with **restlessness** and **peevishness**. Later there is **anorexia** and some **diarrhea**. Occasionally the **gastro-intestinal disturbance** becomes persistent and somewhat intractable, and the patient becomes **emaciated** and **weak**.

**Diagnosis:**—The dry mouth and whitish spots on a slightly raised base are readily distinguished from the dribbling or salivation, and bleeding ulcers of aphthous stomatitis.

The fungus, which is readily seen under the microscope, determines the exact character of the disease.

**Prognosis:**—In favorable cases with hygienic surroundings, the prognosis is always good, as the disease yields quite readily to treatment. Where marasmus or cachexia are present the disease is of more serious import.

**Treatment:**—A thorough cleansing of the mouth is important. This should be done with an **antiseptic** solution having an **alkaline** reaction. **Sodium sulphite** or **sodium hyposulphite** in solution are available, or **lime water** with a **potassium chlorate** solution. These may be used as mouth washes or as sprays. A solution of **sodium bicarbonate**, twenty grains to an ounce of water, to which a

dram of specific **echinacea** is added, will be serviceable, or a solution of **sodium biborate** with tincture of **myrrh**.

Internally, the use of **phytolacca**, the **acetate of potassium**, two or three times daily, in from two to four grain doses, or **baptisia** and **rumex crispus** are necessary to correct blood faults; and **hydrastis**, **nux vomica** and **quinin bisulphate** should be given, both for their local and general tonic influence. Iron in some simple, easily appropriated form is essential.

It is important that **the diet** should in severe cases contain no starch or sugar, that acid fermentation be avoided, and the medicines must not be compounded with syrups. Milk alone, or boiled milk to which a little salt is added, or milk and lime water, may be given. Stale bread, thoroughly toasted, soaked in hot milk, may also be administered. The mouth should always be thoroughly washed at the end of every meal with some one of the solutions first named.

---

## ULCERATIVE STOMATITIS.

**Synonyms:**—Fetid stomatitis; putrid sore mouth; *stomatitis ulcerosa*.

**Definition:**—An inflammation of the mucous membranes of the mouth, specific and ulcerative in character, with an inclination for the ulceration to spread widely, and accompanied with extreme fetor of the breath.

**Etiology:**—The disease is undoubtedly of microbic origin, as it is plainly infectious in character, and occurs occasionally in epidemic form. The specific microbe, however, has not, as yet, been isolated. It occurs during dentition in children up to six or eight years of age, especially those uncared for and of unhygienic environment. It is not uncommon also among adults of bad habits who are careless of the mouth and teeth, especially those associated together

in an unhealthy condition, as those occupying poor-houses and jails, and soldiers in barracks. Children in asylums or "homes" are apt to be attacked in numbers. It also follows the specific infectious fevers, and scurvy. Those employed where lead is used and in the manufacture of phosphorus are especially liable to attacks. This condition is more apt to appear as precursory of other severe or protracted disease, when the patient has become greatly debilitated, the system devitalized and the blood impoverished.

**Symptomatology:**—There is usually a **mild fever** at the onset, with a slightly **accelerated pulse**, but this is often overlooked. There is marked loss of appetite, with some **nausea**, and occasionally **vomiting**, especially later, when the **putrid ulceration** is more deeply seated, when there is often also an offensive and somewhat intractable **diarrhea**.

There is **local tenderness** and **swelling**, which advances quite rapidly, the **gums** soon becoming very **red** and **spongy**, **bleeding** readily. There is a marked tendency for the **gums** to **separate** from the teeth and **slough**, leaving deep ulcers around the teeth, exposing the roots and loosening the teeth. In severe cases the **inflammation** may extend to the **periosteum of the alveoli**, and **necrosis** follow. The inflammation begins on the front of the gums and soon extends between the teeth, later involving the entire gums, the lining of the lips and cheeks. As the disease progresses the **tongue** becomes **dark red**, **swollen**, **pits easily**, and is tender, and the **salivary glands** are swollen. There is a **profuse flow** of **saliva** and a characteristic fetid odor occurs quite early. **Mastication** of food is often **impossible**, because of the soreness and pain.

The disease is at first acute in character, and extremely debilitating to the patient, and unless at once controlled, tends to become chronic.

**Diagnosis:**—The cachectic appearance of the patient, the fetid breath and the salivation will at once locate the disease, almost before the mouth is examined. The appear-

ance of the gums, soft and spongy; the peculiar pultacious exudate at the location of an ulcer; the characteristic dirty, ragged, deep ulceration, all unmistakably confirm the character of the disease.

**Prognosis:**—Specific treatment should allay the aggravating symptoms at once, although the disease is persistent in character, and with careless treatment often intractable and of long duration.

When the disease progresses to necrosis, deformity may follow. In greatly prolonged cases the debility becomes very great, with impoverishment of the blood, and from these causes death has resulted, although a fatal termination from this disease is rare.

**Treatment:**—This disease permits of no temporizing in the treatment. It must be treated positively and specifically from the start, and for that purpose it must at once be recognized. A simple, palliative, expectant course will permit the disease to become deeply seated, and constitutional infection and debility will become marked and difficult to overcome. **The patient should be isolated and kept scrupulously clean. The fever should be met with aconite** in small doses, and with this, **phytolacca** in drop doses, and **echinacea** in from three to ten drop doses should be given every hour at first. Subsequently, when the temperature becomes normal, the aconite should be omitted, and the other remedies continued, with **hydrastis canadensis** every two hours. This is important treatment. Locally, a wash should be prepared, of the **chlorate of potassium** one dram, tincture of **myrrh** two drams, and after first thoroughly cleansing the mouth with **hydrogen peroxid**, this should be used freely. There are some cases in which from the tendency to the formation of an exudate the use of dilute **sulphurous acid** will be of the utmost importance in the thorough destruction of such formation. To counteract the tendency to a breaking down of the tissues, or when that condition has occurred, the occasional direct application of echinacea of full strength, or the frequent washing of the

mouth with a solution of **echinacea** three drams, **thuja** one dram, distilled extract of **hamamelis** one-half ounce, water two ounces, will be of marked benefit.

Other tonic astringent washes will be found of service. I have obtained excellent results from the crude infusion of **alnus**, **quercus** and **rumex**, named in aphthous stomatitis. This is an unpalatable combination, and hence not frequently prescribed. I have combined **quercus alba**, **pinus canadensis** and **boric acid** with fine results. To this hydrastis or potassium chlorate could be added.

The tonic and restorative treatment in these cases is of the utmost importance. The patient should have hydrastis in some form constantly, and to this **nux vomica** and **iron** should be added when indicated. The **quinine bisulphate** may be added to these with benefit when there is much feebleness and necessity for quick restoration. The use of fluid extract of **cola nut**, fluid extract of the **red cinchona bark**, of each one ounce, in the elixir of hydrastis two ounces, a teaspoonful every two or three hours, will quickly restore the physical tone in this debility, as it will in many cases of disease when the debility has increased rapidly from the first. The use of **cod liver oil** and the **hypophosphites** is important where there is cachexia.

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## MERCURIAL STOMATITIS.

**Synonym:**—Mercurial ptyalism.

**Definition:**—That form of sore mouth which results from the inordinate use of mercury need not be described in detail, as it is now but seldom met with. When mercury was given by all physicians in excessive doses, it was of common occurrence.

**Treatment:**—After a thorough cleansing of the mouth, the **chlorate of potassium** is used almost exclusively by those experienced in the treatment of this disease. The

mouth is washed with a solution of the remedy and from three to six grain doses are given internally every three hours, for a day or two. All mercurials are withdrawn. A mild wash made of a solution of distilled extract of **hamamelis** and colorless **hydrastis**, in an infusion of **marshmallows**, may be used, or the chlorate may be dissolved in this infusion. If ulcers form, they should be treated as suggested for ulcerative stomatitis. **Atropin** in 1/100 grain doses may be given for the excessive flow of saliva, or this may be at times controlled by small doses of **jaborandi**.

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## GANGRENOUS STOMATITIS.

**Synonyms:**—Cancrum oris; noma; *stomatitis gangrenosa*.

**Definition:**—A grave affection of the cheeks and gums of children (rarely attacking adults), gangrenous in character, tending to spread rapidly, usually asymmetrical, fortunately of rare occurrence.

**Etiology:**—The disease occurs in children under seven years of age, seldom if ever in nursing infants; most commonly in those from three to five years of age, who are badly nourished, who inherit some dyscrasia, or who are raised in filth and in a bad atmosphere. It occurs more frequently in girls than in boys, and as the sequel of measles, smallpox, scarlet fever, typhoid and other severe, devitalizing disorders, such as typhus, pneumonia and those diseases in which the circulation of the blood, as well as its character, is greatly impaired. Those conditions which impoverish the blood and thus reduce the vitality of the patient may be followed by noma.

The disease is undoubtedly of infectious origin, but no specific cause has as yet been determined. The infection is probably of a mixed character. But little stress is now laid upon the theory that mercurialization is the constant cause of the disease. The contrary is too often proven,

but it undoubtedly occurs less often in the practice of those who but seldom use mercury.

**Symptomatology:**—The disease is of insidious approach, without pain or discomfort at first. There appears a **violet** or **purple spot** within the cheek, near the corner of the mouth, and there is some **swelling** and later **edema**. If the substance of the cheek is pressed between the thumb and finger at this spot, a **small, hard nodule** is distinctly outlined. This increases in size rapidly, breaks down, and an **ulcer** appears on the **darkened mucous membrane**, which is **phagedenic** in character, **sloughs** rapidly and has **ragged edges**. It gives off an **ichorous discharge**, with a most sickening, intolerable, gangrenous odor, and gangrenous tissue is soon thrown off in shreds. **Necrosis** progresses rapidly. The induration loses no time in extending to the entire **cheek**, which is **swollen, edematous**, and the face is distorted.

The disease may involve one cheek, with the gums and the jaw of that side, but it is seldom that both sides are attacked. The **teeth** are **loosened** and **sore**, the structure of the **jaws** are **eroded**, and finally the **lips** are **involved** in the destructive process. Usually perforation occurs within the first few days, and in rare cases within a day or two.

The constitutional symptoms develop rapidly and are plainly marked. There is **extreme depression** almost from the first. The **temperature** soon **rises**, the **pulse** becomes **rapid** and **feeble**, and symptoms resembling **typhoid** quickly appear. The **saliva**, which becomes mixed with the ichorous discharge and gangrenous shreds, is unavoidably **swallowed**, and **constitutional infection** is almost immediate from this source, increased by the inhalation of the gangrenous exhalations. Very soon the temperature rises to  $104.5^{\circ}$  or  $105^{\circ}$  F. **Diarrhea** appears and becomes most troublesome, prostration is extreme, and **delirium** supervenes, which soon passes into **stupor**. Often a **septic lobar pneumonia**, or other septic local inflammation, occurs from

the general septic involvement, and the patient rapidly succumbs, usually within from ten to fourteen days.

**Diagnosis:**—The characteristic phenomena when once developed are unmistakable. The difficulty lies in anticipating the disease and in making an early diagnosis. The location and character of the nodular formation, the gangrenous sloughs, the disgusting odor, the rapid extreme prostration, the high temperature, and other evidences of extreme septic involvement can hardly be misinterpreted.

**Prognosis:**—It is rare that recovery from this disease occurs, but when such is the case the gangrenous edges of the wound become clean and assume a clear red color, granulations form and cicatrization occurs, usually with considerable disfigurement, and often with deformity and restriction of the movement of the jaw. The return to health extends over a greatly protracted period, and is often interrupted by the appearance of other complicating disorders. The mortality as shown by statistics is about ninety per cent.

**Treatment:**—The prophylaxis of this disorder is of the utmost importance. It should be anticipated in the severe forms of those exhausting and devitalizing diseases which it more frequently follows. As soon as the **nodule** appears, **stimulation** of the circulation should be accomplished and dead tissue or sloughs should be separated and removed when formed. The ulcer should be thoroughly treated with **hydrogen peroxid**, **potassium permanganate**, or other active antiseptics, and in some cases it should be touched with **nitric acid**; it should then be cleansed and thoroughly swabbed with full strength **echinacea** and packed with gauze saturated with this remedy, and the gauze should be freely applied on the outside of the cheek and kept in place by proper bandages. In some cases the remedy should be injected into the tissues of the cheek. No one will have proper confidence in the power of **echinacea** to antagonize gangrene and restore the tone of the tissues until he has used it thoroughly. Its influence is little less

than marvelous in some cases. The agent should be given internally in from ten to twenty drop doses every two hours. The course above advised will tend to prevent constitutional infection, which is of the utmost importance, and will at once antagonize the influence of the sepsis in the blood.

Other internal measures will be suggested by plain, direct indications, which must be correctly interpreted. The strength must be sustained by stimulants and tonics. To children who are old enough to swallow a capsule, the following will be found valuable: **Hydrastin**, five grains; **quinin bisulphate**, thirty grains; extract of **nux vomica**, two grains; powdered **capsicum**, three grains. Mix and fill twenty capsules. Give one every two or three hours. With infants **quinin sulphate** should be administered by inunction twice daily. In other cases other tonics, such as the **hypophosphites** with **strychnin** and quinin should be given. The echinacea should be continued through the course of the tonic treatment. An excellent combination can be made of echinacea, hydrastis, **avena sativa**, and the fluid extract of **cola nut**. The patient must be fed with concentrated, **nourishing food**, administered at frequent intervals. **Rectal enemata** are sometimes demanded.

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### ACUTE GLOSSITIS.

**Definition:**—An acute inflammation involving the parenchyma of the tongue, characterized by swelling, pain and dyspnea, usually terminating in resolution, but occasionally ending in abscess.

**Etiology:**—The disease seldom occurs spontaneously. It results from burns, from hot food or beverages, or from corrosive acids or alkalies, or from accidentally biting the tongue, or from the bites of insects. The disease has occurred as the sequel of other acute inflammatory diseases.

**Symptomatology:**—There are but few premonitory symptoms. **Swelling** of the tongue develops rapidly, accompanied with distress and pain. The **tongue** is tender and some difficulty in swallowing is at once experienced. The swelling increases until the tongue may protrude from the mouth. The difficulty in swallowing increases, talking is impossible, and breathing is obstructed, producing great distress and ultimately threatening suffocation. The tongue is very sensitive and painful. It becomes discolored, is dark red and finally glossy, and may be very dry, cracked and fissured. Occasionally it is furred with a dirty white or yellowish white fur, and there is a profuse flow of saliva. The salivary glands also may be swollen.

With the onset of the disease the temperature rises to 103.5° or 104° F., the pulse quickens, the patient becomes restless and anxious, and the countenance shows great distress. The inflammation reaches its highest point in about three days, when all the symptoms gradually abate, until at the end of one week the disease has subsided. In cases where resolution does not occur and abscess forms, the abatement of the symptoms may not be marked until the abscess discharges spontaneously, which is sometimes the first evidence of its existence, as it is usually impossible to obtain fluctuation. The abscess is circumscribed, and is usually on one side of the tongue.

**Diagnosis:**—The pain and sudden swelling of the tongue and dyspnea are unmistakable evidences of the disease.

**Prognosis:**—The disease usually terminates favorably, as stated, by resolution. When occurring as a complication to or the sequel of severe prostrating disease, the prognosis must be guarded, and under these circumstances the disease becomes serious.

**Treatment:**—In the treatment of the case the internal use of **aconite** and **belladonna** at the onset is important to control the inflammation and to dissipate the developing primary congestion. A mouth wash should be used freely, consisting of two parts of a weak, strained infusion of

**white oak bark** (one-half ounce to the pint of boiling water, to which a dram of **boric acid** is added while hot) and one part of the distilled extract of **witch-hazel**. This should be taken freely cold, and held in the mouth, and at the height of the inflammation small pieces of ice should also be frequently taken and dissolved slowly. A mouth wash of an infusion of **marshmallows**, **hydrastis** and **sodium bichlorate**, or **potassium chlorate**, is of frequent benefit, but less immediately serviceable than the one first named. If the tongue protrudes, it should be frequently bathed with a solution of **sodium bichlorate** and **glycerin**, to prevent extreme dryness, or a soft piece of gauze saturated in the mixture may be kept applied. If septic infection is present, or if the glands are involved, the internal use of **echinacea** and **phytolacca** is important.

The inhalation of the vapor of steam, or steam from water to which a few drops of the **tincture of iodine**, or a few drops of the **oil of eucalyptus**, or a dram or two of the compound **tincture of benzoin**, is added, is of apparent benefit in a few cases. It seems to hasten resolution. Counter-irritation will afford some relief in the early stage of aggravated cases, but scarification as suggested by some authors is not advisable.

Only in extreme cases will it be necessary to resort to **tracheotomy** to relieve the dyspnea, but **rectal alimentation** is often essential to preserve the strength of the patient.

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## CHRONIC GLOSSITIS.

**Synonym:**—Chronic superficial glossitis.

**Definition:**—A chronic inflammation not of the substance of the tongue, but of the mucous covering of that organ.

**Etiology:**—This disease is more common to alcoholics and to persistent excessive users of tobacco. It may re-

sult from chronic disease of the stomach or chronic intestinal disorder. It is not a common disease.

**Symptoms:**—The patient is usually found to have been previously in poor health, and often has been greatly overworked, both physically and mentally. **Soreness** of the **tongue** has long been complained of. The surface is found to be persistently reddened, sensitive, slightly furrowed and cracked, especially at the base, while the tip may show an absence of papillæ and be smooth and glossy. This condition may occur in peculiar shaped patches on the surface of the tongue.

**Diagnosis:**—The various forms of stomatitis must be excluded. The unusual appearance of the organ and the persistent character of the disease will be confirmatory.

**Treatment:**—After the irritating causes are effectually removed, more can be accomplished for permanent relief by the treatment of the constitutional symptoms, or of the gastro-intestinal tract, than by local measures alone. I give internally the indicated course to relieve excessive acidity or to supply deficient acids. Then I depend upon the persistent use of **hydrastis** and **collinsonia**, with or without **phytolacca** as seems best. The **carbonate of iron** and small doses of **nux vomica** may also be needed. Locally I have depended upon an infusion of **white oak bark** and the tincture of **myrrh**. A mild infusion of **geranium** or of **pinus canadensis** with **marshmallows**, to which **boric acid** is added, will be excellent in some cases. The treatment must be persisted in.

## Diseases of the Salivary Glands.

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### PTYALISM.

**Synonyms:**—Hypersecretion ; salivation.

**Definition:**—An abnormal secretion of saliva.

**Etiology:**—As an idiopathic disorder this disease is seldom seen. Occasionally in irritable, nervous children it appears, and it is present sometimes during an hysterical attack as a neurosis. In some adults there is a tendency to too free secretion when the patient is talking. The commonly observed cases occur as the result of the action of remedies which irritate the salivary glands or act as stimulants to the secretion, as jaborandi, tobacco, the iodids, mercury and muscarin. It results from disease of the mucous membranes of the mouth, as the various forms of stomatitis, and it is present at some time during the course of the infectious diseases, especially the exanthemata. It may be present during some forms of disease of the stomach, and at times, during the course of uterine disorder, and often during pregnancy. In diseases of the medulla oblongata, or of the nerves of the face, as facial neuralgia or odontalgia, it may appear. When the symptom occurs in infants or in feeble-minded persons, it is due usually to the fact that the normal saliva is not swallowed, and this in itself may cause an undue secretion.

**Treatment:**—Usually when the condition appears during the course of other disease, no special treatment is advised for this condition alone. The use of *belladonna* in frequent doses may be necessary in rare cases. Small, fre-

quent doses of **jaborandi** will sometimes control it. When it occurs from excessive medication, the condition usually ceases when the remedy is stopped and after any that remains in the system is eliminated. In mercurial ptyalism, however, the cause is slow of elimination, and irritation of the glands is established, which continues sometimes for weeks after the agent is withdrawn. This must be treated with **potassium chlorate**. The remedy must be given in from three to five grain doses internally every three hours, and a wash should be prepared of this agent, with **hydrastis** and **hamamelis**. In the nervous forms of the disease, **hyoscin**, **camphoric acid**, the **monobromate of camphor**, or the **bromids** may be used. Attention should be paid to the general improvement of the patient, and tonics often are demanded.

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## XEROSTOMIA.

**Synonyms:**—Dry mouth; aptyalism.

**Definition:**—Partial or complete suspension of the salivary secretion.

**Etiology:**—This condition occurs during the course of severe fevers and acute inflammatory disease. It is common in some forms of chronic disease, notably in diabetes, and in those who necessarily breathe through the mouth, especially if the glands do not act freely normally. The condition may be due to nervous shock or to severe mental impression, in females, especially during hysteria. In these cases it is a neurosis.

**Symptomatology:**—The mouth and tongue are dry, and mastication, swallowing and talking are difficult and often somewhat distressing. The **tongue** is **red** and often cracked, and the mucous membranes of the **mouth** are **red, glazed, fissured** and tender. The **digestion** is **impaired**, the **appe-**

**tite is lost**, and symptoms of gastric or gastrointestinal disorder may appear.

**Treatment:**—Immediate relief during protracted fevers is obtained from the use of **glycerin** diluted with two or three parts of water, to which a little **lemon juice** or a few drops of **hydrochloric acid** are added. The indications are often those which are allayed by the use of **acids** internally, and this course frequently restores the temporarily suspended secretion. The use of **jaborandi** every two hours, in five minim doses will sustain the secretion while the conditions continue which cause the suppression. Occasionally large doses of this agent will temporarily restore it, but this may result in excessive secretion for a short time, to be followed by even more complete suppression.

The use of **chewing gum** during fevers is often of signal service in restoring the salivary secretions, and is not disagreeable to the patient. Small doses of **turpentine** will effectually restore secretion often. When the condition is plainly a neurosis, the nervous system must receive attention, and restorative tonics must be resorted to. The **galvanic current** is often productive of satisfactory results, especially if used in conjunction with other indicated measures.

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## SYMPTOMATIC PAROTITIS.

**Synonym:**—Parotid bubo.

**Definition:**—An acute inflammation of the parotid gland, occurring secondary to other diseases, usually to acute infectious inflammations, and having a marked inclination to suppuration. This disease should not be confounded with mumps. It should be also borne in mind that the inflammation may extend to the other salivary glands at the same time.

**Etiology:**—This disease may occur during the course of the infectious fevers, including pneumonia and rheuma-

tism, and is not uncommon as a complication of pyemia, typhoid, typhus, erysipelas and dysentery, and in rare cases it is present with measles and scarlet fever. Gowers calls attention to the fact that inflammation of these glands will occur in peripheral neuritis accompanying facial paralysis. Recent authorities refer this disease to injuries or to disease in the abdomen or in the pelvis, and especially to injuries of the testes or ovaries. It may occur from menstrual irregularities or during the period of gestation.

**Symptomatology:**—The symptoms are similar to those of mumps, except that the development of the inflammation occurs following injury or during the progress of other disease, and is not so abrupt as in mumps. It may be even insidious in some cases. There is a tendency to dusky, livid discoloration of the gland and speedy suppuration.

**Treatment:**—**Aconite** and **phytolacca** are of first importance in the early treatment of those cases which result from an injury, either immediate or remote. In those cases where other inflammatory disease is present, the treatment must be adapted to the other diseases, or an adjustment of the treatment of both diseases should be correctly made. If there is a probability that septic infection has caused the inflammation, **echinacea** should be given freely from the onset. Heat should be applied, and as soon as fluctuation can be determined, the **abscess** should be freely **opened** and dressed antiseptically. In a certain class of cases the use of **echinacea** or of **calcium sulphid** will prevent this complication, or will abort it, if not too far advanced. If given from the first appearance, they will usually prevent suppuration, which is important.

# Diseases of the Pharynx.

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## ACUTE PHARYNGITIS.

**Synonyms:**—Sore throat; *pharyngitis acuta simplex*.

**Definition:**—An acute inflammation of the mucous membrane of the pharynx, characterized by a catarrhal secretion, by local congestion, and infiltration of the sub-mucous tissues, and occasionally involving the entire pharyngeal structures.

**Etiology:**—Exposure to cold is the most common exciting cause of this form of sore throat. Damp atmosphere in the fall or spring, or when the vitality of the patient is somewhat reduced, will bring on an attack. It occurs also during the progress of infectious fevers, especially scarlet fever and measles and la grippe. Chronic nasal or gastric catarrh will predispose to attacks of pharyngitis. Those addicted to the use of alcohol and tobacco are especially liable to it.

Occasionally it will occur in epidemic form when the infectious origin cannot be questioned. It is common to those who are confined in poorly ventilated apartments and those who inhale dust or irritating vapors; also to those who have a tendency to rheumatism or gout, and it sometimes accompanies chronic tonsillitis.

**Symptomatology:**—Soreness of the throat experienced upon an attempt to swallow is the first symptom of this disease. This is accompanied with dryness and stiffness of the muscular structures of the throat, with fulness and ultimately with **pain**. The **membranes** will be seen to be **red** and **swollen**, and the capillaries injected. Soon a thick

mucous secretion induces **frequent hawking** to clear the throat. There may be **hoarseness**, and some **roaring in the ears** or temporary deafness, from closure of the Eustachian tubes.

Later the inflammation extends to the posterior pillars of the fauces or to the tonsils or larynx. The lymph glands swell, the **muscles** of the neck are **stiff**, and movement induces pain.

Very early in the history of the disease, usually about the time the soreness of the throat is first observed, there is a **slight chill**, with a **rise of temperature**, some **malaise** and **indisposition**, a slight **headache**, **dry skin**, and arrest of other secretions. The **tongue is coated** and the **appetite is lost**.

**Diagnosis:**—The reddened and swollen appearance of the throat, and the absence of a coating or exudate except that of an ordinary catarrhal discharge, are the characteristic appearances. The constitutional impression is mild, not extreme or accompanied with depression, as in tonsillitis or in the exudative forms of throat disease.

**Prognosis:**—The prognosis is always favorable, as the disease is readily amenable to treatment. A severe attack, especially in one of feeble constitution, predisposes to future attacks from simple causes.

**Treatment:**—The patient should have a hot mustard **footbath**, and hot drinks should be taken to induce gentle perspiration. He should then be put to bed and warmly covered, and the mild perspiration should be encouraged for several hours. A compress wrung out of equal parts of **vinegar** and water should be applied to the throat, cold, and covered with a warm, thick flannel bandage. It should not be removed until nearly dry, when it should be replaced as before, unless there has been a prompt and conspicuous abatement of the symptoms.

The tendency to acute congestion, with the chill and fever, will be met with **aconite** and **belladonna**. I have often given no other internal treatment. Ten drops of the

tincture of each in three ounces of water, a teaspoonful every hour, will meet the indications in the uncomplicated cases. There seems to be a peculiar susceptibility to aconite in all throat cases, as the agent has an affinity for these structures. Belladonna dispels the local engorgement and induces an equalization of the circulation, and thus obliterates the underlying pathological elements of the disease. It is indicated if there is a bright redness of the tissues. If there is a dull purplish redness, capsicum, locally and internally, will be found to exercise a better influence. If the tongue is coated with a yellowish or brownish coat, and the membranes are dusky red, **baptisia** or **echinacea** should be given with aconite. Later in the history of the case **collinsonia** should be given with aconite.

The internal use of the **tincture of iron** was popular with the older physicians to antagonize the tendency to sepsis in these cases. Because of the excess of hydrochloric acid which it contains, it is useful when an acid is indicated—where the membranes are deep red and where the tongue is pointed, thin, dry and red, and coated with a dirty or brownish coat. If the mouth is persistently dry, two or three drop doses of **jaborandi** should be given, and a gargle may be used of **glycerin** and water. For extreme hoarseness the patient should inhale over a cube of loaf sugar which is allowed to slowly dissolve on the tongue, on which two drops of dilute **nitric acid**, or two drops of **oil of turpentine**, or two drops of the **stillingia liniment**, are dropped. If the sense of tightness and constriction in the throat is great, a few drops of **stillingia liniment** should be applied externally under the wet compress.

Throat washes or gargles are needed only in the severe cases of this disease. A mild infusion of **white oak bark** and **hydrastis**, to which a little **sodium borate** or **potassium chlorate** is added, will be useful, or a saturated solution of **boric acid**, three parts and distilled extract of **witch-hazel** one part, makes an excellent gargle. Severe gargles or irritating applications to the inflamed membranes are con-

tra-indicated. The inhalation of steam from water on which four or five drops of the **oil of turpentine** or the **oil of eucalyptus** are dropped, is very soothing. A **spray** is sometimes useful, but I have seldom found this method of treatment necessary.

To prevent a return of the disease the patient should avoid cold, damp air, and especially night air, for quite a period. He should improve the general tone of the system, and it is a good plan to bathe the throat and upper part of the chest with cold water every morning, followed with a rubbing of **dry salt**. A cold salt-and-water gargle should be used twice daily, and if the tendency to return is strong, or if there have been two or three previous attacks, the patient should take internally for some weeks a mixture which contains ten minims of **specific collinsonia**, five minims of **specific hamamelis**, and one grain of **ammonium chlorid**. This is especially indicated if the membranes continue red, engorged and irritable.

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## CHRONIC PHARYNGITIS.

**Synonym:**—Pharyngeal catarrh.

This disease exhibits different characteristics in different cases. Those conditions known as granular or follicular pharyngitis and hypertrophic pharyngitis, or these when involving the naso-pharynx, are varieties.

**Definition:**—A chronic inflammation involving the pharyngeal or naso-pharyngeal mucous membranes.

**Etiology:**—This condition is more common in certain climates, especially on the Atlantic seacoast in the United States and in the region of the great lakes.

Those subject to chronic nasal catarrh and those who have had previous attacks of acute pharyngitis are especially liable to chronic development of this disease. It occurs among those in poor health, who are subject to

mental overwork. Those who are addicted to smoking and to the use of alcohol, those who habitually strain the voice, especially in the open air; "stump" speakers, street venders and auctioneers are especially liable to attacks. It is common among teachers and clergymen and army officers. It is caused also by the persistent use of hot drinks, by the continued inhalation of irritating vapors, and by constant exposure to a cold, damp atmosphere.

Those who have some chronic obstruction within the nasal passages often seem to suffer from this disease, and there is a class of cases in which the disease is induced by chronic stomach disorder.

**Symptomatology:**—An almost constant inclination to clear the throat by **hawking** is a prominent early symptom. There may be a continued slight **change** of the **voice** and **hoarseness**, with **dry, hacking cough**. Prolonged use of the voice may be followed by irritability and fatigue and by extreme huskiness and partial failure of the voice, until the fatigue is recovered from. **Dryness** of the **throat** is commonly complained of, with **tickling**, and occasionally there is a viscid, sticky secretion. The **cough** may persist at times, and again it occurs as a persistent hacking, spasmodically or in paroxysms, and affords no relief.

Early in the history of the case the **mucous surfaces**, especially in the catarrhal variety, are **red**, irritable in appearance, and covered with closely adherent mucus or muco-pus. The **uvula** is **relaxed** and elongated, and there is a **nasal "twang"** to the voice.

In the **hypertrophic form** the **membranes** are **swollen**, thickened and red, and the follicles are greatly enlarged, resembling small polypi. In the **atrophic form** the **membranes** are **thin, smooth**, sometimes **pale**, and sometimes presenting a dusky appearance. There is no swelling of the membranes, and the **pharyngeal vault** seems wide or **cavernous**.

These patients are usually feeble and nervous. In many

cases there is some neurasthenia, but occasionally the general health is not impaired.

**Diagnosis:**—The diagnosis depends upon the recognition of the phenomena described, and the exclusion of those characteristic of other throat disorders.

**Prognosis:**—Those who completely change their habits in order to avoid the causes of the disease can be promised a cure. Those suffering from chronic disease are not liable to be permanently benefited. In all cases there is a liability to a recurrence of the disease.

**Treatment:**—Any impairment of the constitution must have first attention. The nervous system must be restored, the stomach must be put into the best possible condition, and the environment must be in every way favorable. Everything that has seemed to exercise a causative influence must be sedulously and persistently avoided, especially any prolonged use of the voice, and smoking.

The following should be given for a few weeks at the inauguration of the treatment, both for its general and for its local toning influence: **Specific hydrastis** one-half ounce, **specific collinsonia** one ounce, tincture of **nux vomica** two drams, **simple elixir** sufficient to make four ounces. Of this a teaspoonful should be given four times daily. When there is loss of appetite and atonicity of the stomach, half of a dram of the tincture of **capsicum**, or two drams of **specific xanthoxylum**, should be added to the above. If the patient is at all anemic, its influence is enhanced by the addition of a dram of the **carbonate of iron** in powder, shaking the bottle before taking. In neurasthenic patients complete rest must be enjoined and change of environment.

The use of the **ammonium chlorid** is of value in its influence upon the mucous membranes. It should be taken in five grain doses four times daily. In those cases where the urine has a high specific gravity, and contains a great excess of urea, urates or uric acid, the **benzoate of ammonium** will be of service, in six, eight or ten grain

doses four times daily. Elimination must receive careful attention, and lithemia undoubtedly exercises an important influence in the causation of this disease.

Local measures are important. Where the tissues are relaxed and of dull or purplish hue, an infusion of **capsicum** as a gargle is specifically indicated. The infusion of **white oak bark** advised in other throat troubles as a gargle will render much service here if to eight ounces two drams of the tincture of capsicum and one dram of **boric acid** be added. The addition of the distilled extract of **witch-hazel** is important when there is discomfort or aching in the throat.

The use of the **galvanic current** will render much service in the ultimate cure of this disease, and the **galvano-cautery** is generally used by specialists to destroy the follicular enlargements and to reduce the hypertrophy of the tissues.

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## CROUPOUS PHARYNGITIS.

**Synonyms:**—Membranous pharyngitis; *pharyngitis croup-osa*.

**Definition:**—An acute, superficial inflammation of the mucous membranes of the pharynx, characterized by a false membrane, which develops with the desquamation of the epithelium.

**Etiology:**—This form of pharyngitis results from infection by the streptococcus pyogenes, or by the pneumococcus. It occurs in adults as well as in children, and in those of reduced general health, or those debilitated, who are exposed to damp, cold weather, in unhygienic localities, or who have been exposed to the contagion of severe epidemic disorders.

**Symptomatology:**—The patient has all the symptoms of a severe sore throat, with the initial malaise, chill, fever and general systemic disturbances, but the disturbance is

not as severe as that of diphtheria, nor the subsequent debility as great as that following a severe case of tonsillitis.

**Diagnosis:**—The presence of the characteristic micro-organism as above named, and the absence of the Klebs-Loeffler bacillus, with the pseudo membrane, determine the character of the disease. The mucous membrane is not deeply involved and deep ulceration does not occur. Upon forcible removal of the false membranes the tissues bleed quite readily, as in diphtheria. The membrane covers the mucous surface in small, thin, yellowish white patches, and there are small vesicles or minute ulcers beneath it. The absence of severe constitutional disturbance will assist in determining the character of the disease.

**Prognosis:**—These cases, if uncomplicated, invariably recover.

**Treatment:**—The premonitory chill and fever should be treated with **aconite** and **phytolacca**. The surfaces should be thoroughly washed with equal parts of **hydrogen peroxid** and water, and subsequently with distilled extract of **hamamelis** two parts, colorless **hydrastis** one part, water five parts. The use of four ounces of the **infusion of white oak bark**, to which a dram of **potassium chlorate** has been added, will be useful. In some cases soothing washes are required. Tonic treatment should be carefully adapted to each individual case.

# Diseases of the Tonsils.

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## ACUTE TONSILLITIS.

**Definition:**—An acute inflammation, involving either the mucous covering of the follicles or the parenchyma of the tonsils, characterized by swelling and pain, and occasionally resulting in chronic enlargement.

When the mucous membrane of the tonsil or tonsils only is involved, the inflammation is designated as **superficial or catarrhal tonsillitis**; when the inflammation extends to the follicles, resulting in a cheesy exudate from the tonsillar crypts, it is described under the name of **follicular tonsillitis**, which is designated also as **acute lacunar tonsillitis**. Parenchymatous tonsillitis comprehends an involvement of the entire structure of the tonsil, and in this form there is a marked tendency toward suppuration. It is especially designated as **suppurative tonsillitis, tonsillar abscess or angina tonsillaris**. It is commonly known as **quinsy**.

**Etiology:**—The disease seldom occurs in infancy, but is most common in children from five to fifteen years of age and in early adult life. The suppurative form occurs more frequently in adults. One attack seems to predispose a patient to future attacks, and those of lymphatic temperament or of a scrofulous diathesis are especially liable. Males are more frequently attacked than females. This is probably due to the fact that their habit and employment expose them to attacks and induce the conditions most favorable to the disease.

Patients suffering from rheumatism are especially liable

to attacks, and, on the other hand, from twenty-five to thirty per cent of the patients who suffer from follicular tonsillitis subsequently develop rheumatism. The phenomena which seem to confirm a diagnosis of rheumatism may occasionally be due to septic arthritis or endocarditis, due to constitutional infection from the tonsils or from the products of the development of micro-organisms.

The disease occurs frequently in damp weather in the fall, is quite common in the spring, and is especially prevalent during an open winter. Abrupt changes of the weather, more or less extreme, induce it. It follows the breathing of smoky air or atmosphere charged with gases, especially with sewer gas. It occasionally follows the specific infectious fevers, especially scarlet fever, measles and erysipelas.

**Symptomatology:**—There are some essential distinctive features in the symptoms of the different forms of this disease. In **simple catarrhal tonsillitis** the patient complains of **soreness** in the **throat** with considerable **difficulty in swallowing**, before any constitutional symptoms are apparent. Simultaneously with some **lassitude** and **indisposition**, there is a slight chill, soon followed by fever, in which the **temperature** reaches 102.5° F., the **secretions** are **suppressed**, there is slight **headache**, **anorexia**, and occasionally nausea.

The **throat** is **red**, **dry** and **glazed**, and one gland usually is slightly swollen. The **pain** in swallowing increases, extending to the ear on the affected side, and the **lymphatic glands** **swell** and are tender on pressure. The early dryness of the throat is soon followed by an **outpour** of thin **mucus**, or a thicker muco-pus, which may become sticky, and induce, in efforts at its dislodgement, a slight irritating **cough**. The **inflammation** may extend to the **pharynx**, or nasopharynx, and ultimately involve the **middle ear**. The disease is sudden in its onset, and will terminate spontaneously in three or four days.

**Follicular tonsillitis** is most common in youth and early

adult life. The onset of this form of the disease and the constitutional involvement are much more severe than in the simple form just described. The attack is preceded for a day or two by **malaise** and marked **indisposition**, with a tendency to muscular **aching**. Usually on the second day of indisposition the aching increases, there is a severe **headache**, and a sharp **chill** occurs, quickly followed by **high fever**. The **face** is **flushed** and the capillary circulation of the entire head and face is very full. The general distress becomes extreme in some cases, and as the disease progresses there is an acute **debility** or exhaustion, out of all proportion to the real seriousness of the disease, resembling that of diphtheria or of the severe infectious fevers. From this, however, the patient rapidly recovers.

The **temperature** increases until it reaches  $104^{\circ}$  or  $105^{\circ}$  F. within the course of three or four hours. Nausea is common at the onset of the **fever**, and **vomiting** occasionally occurs. The tongue is dirty and heavily furred and there is a general arrest of the secretions.

The **soreness** of the **throat** soon attracts the attention of both the patient and the physician to the cause of the severe constitutional manifestations, but this is not at first severe. The throat symptoms of extreme pain and of **difficult swallowing**, which later are due both to the muscular stiffness and to the developing **tenderness** in the **glands**, develop during the first twenty-four hours following the chill.

Upon examination, **both tonsils**, usually, in this form of the disease, are greatly **swollen**, one more than the other. The swelling increases until the throat may be closed, the tonsils meeting at the uvula, and are intensely congested and angry looking. As the disease progresses the mucous membrane between the crypts becomes covered with a muco-purulent exudate, and there are prominent yellowish white **spots** scattered over the surface of the tonsils, where the **crypts** give off a **cheesy substance**, which may be squeezed out of the follicles and wiped off. These exudates

soon cause the breath to give off an offensive odor. The extreme swelling of the glands and the **muscular stiffness** greatly interfere with the opening of the mouth or examining the throat. The cervical **lymph glands** usually become **enlarged** and very **tender**. In some cases small **abscesses** develop within the **follicles**, and again, the **exudate** which fills the lacunæ may become **calcareous** or chalky in character and may be thrown off as small concretions.

This disease runs its course in about ten days, reaching its height at the end of the fourth day.

Frequently it leaves the tonsils in a state of chronic enlargement. **Endocarditis, pericarditis, pleuritis and nephritis** have developed so soon after tonsillitis as to suggest that disease as the cause of their appearance.

In the form of the disease known as **parenchymatous tonsillitis**, or **quinsy**, the inflammation in the throat at times progresses so rapidly that **free suppuration** occurs on the second or third day. While this may occur without severe constitutional symptoms, the patient making great complaint, often, of the throat, but refusing to go to bed, usually the constitutional symptoms are even more severe than in the follicular variety. Quickly following the **chill**, which may not be a severe one, the **temperature** may reach 105° F. within two or three hours, and the **pulse** 125 or 130 beats per minute. There is extreme **restlessness**, and **delirium** is not uncommon.

**Dryness** in the **throat** and frequent swallowing, with the early premonitory symptoms, suggest the location of the disease. A patient who has had the disease will foretell an attack before the characteristic evidences appear. The pain appears early and is very severe. It will be located in the throat in the adjacent muscular structure and in the ear on the affected side.

Usually only one **tonsil** is involved. This becomes enormously **swollen** and **edematous**, is usually of a dull or **dark red color**, is smooth or shining on the surface, and is not covered with an exudate or dotted with follicular patches,

as in the other varieties, unless one or both of the other varieties occur at the same time. The **uvula** may also become involved in the inflammation, and may be so greatly enlarged as to cause much distress. **Deglutition** is very **painful** and **difficult**, sometimes almost impossible, and always avoided. **Respiration** is **impeded** and a slight **cyanosis** may appear. In some cases there is an aggravating, hacking cough.

There is soon a complete **loss of appetite**, the **tongue** is heavily coated, the inflamed parts are bathed in a thick, ropy mucus, or muco-purulent secretion, and the **breath** is exceedingly **offensive**. The **skin** and **mouth** are dry, the **bowels** obstinately **constipated**, and the **urine** is **scanty** and highly colored, with high specific gravity, sometimes containing a small quantity of albumin. The muscles of the **jaws** become **stiffened**, and with the **swelling** of the **sub-maxillary glands**, which frequently occurs, it becomes almost impossible for the mouth to be opened, rendering examinations difficult or impossible.

As the suppurative stage approaches, usually about the third day, all the symptoms become aggravated. The patient becomes **anxious** and greatly **distressed**, there is constant **moaning**, and he is inclined to assume a partial sitting posture, because of the **difficulty in breathing** upon lying down. **Talking** is **painful** and well nigh impossible, and the voice is greatly altered. Spontaneous rupture gives immediate and almost complete relief.

The **rupture** may occur while the patient is lying down or during sleep, when **strangulation** may result, as the quantity of foul, bloody pus is sometimes quite considerable. With the discharge of the pus the pain is gone, the soreness and muscular stiffness subsides and the swelling disappears, but the patient is very weak.

In an occasional case the **suppuration** may involve the adjacent **cellular tissues** between the tonsils, and the pterygoid muscles, and may gravitate downward to the clavicle. This is a rare termination, as is also edema of the larynx,

which has occurred in a few cases. This inflammation is more liable to terminate by resolution in children than in adults, although prompt specific treatment from the onset should so end nearly all cases.

**Diagnosis:**—The diagnosis of tonsillitis is first suggested by the enlargement of one or both of the tonsils, with the characteristic appearance of the enlarged gland or glands. The other evidences which have been named are confirmatory, except in follicular tonsillitis, when it is sometimes difficult to exclude diphtheria. The pultaceous yellowish white spots or patches of the follicular form should be readily distinguished from the continuous membranous deposit of diphtheria, which is tough and resistant on a red, sunk base and is ashen-gray in color. The presence of the specific bacillus under the microscope is confirmatory of diphtheria.

**Prognosis:**—The ultimate recovery of all cases may be assured if no accidents or extreme complications arise. The disease is very amenable to treatment.

**Treatment:**—The different forms of acute tonsillitis are treated similarly, except when severe or unusual indications suggest special treatment. In my earlier practice I used three remedies with great success in the various forms of this disease. The intense local congestion and capillary engorgement suggested **belladonna**. The hot, dry membranes and sharp fever, with hard, sharp, quick pulse, pointed to **aconite**, and the glandular involvement suggested **phytolacca**. My subsequent experience has proved the positive value of these three remedies, and of the latter remedy more especially where the lymphatic glands are involved or where suppuration threatens early, in quinsy. If belladonna and aconite be given early in prompt, efficient doses, the disease terminates quickly by resolution, with speedy abatement of all symptoms.

At the onset, to facilitate the action of internal medication, the patient should have a thorough, hot **mustard foot bath**, which should be continued and the water kept

pungently hot until the patient perspires freely. A **compress** wrung out of equal parts of vinegar and water, cold, should be applied to the throat and covered and retained with a few layers of dry flannel, during the active stage. This should be renewed once or twice.

In the severe forms of the disease, when the muscular aching is extreme, twenty drops of specific **macrotys** may be added to a four-ounce mixture which contains, for an adult, from ten to fifteen drops of the tincture of aconite, with twenty drops of the tincture of belladonna. When the exudate is pronounced in the follicular form, I at once administer a mixture composed of **sulphurous acid** one and one-half drams, **sulphur** one dram, in two ounces of syrup of **acacia**, in dram doses, every two hours. This speedily removes all exudates and destroys the fetor. In mild cases no gargles are needed. Usually it is desirable to keep the throat and mouth clean with a saturated solution of **boric acid**.

When there is nervous irritation, or when the muscles of the neck are very stiff and sore, I give **gelsemium** in full doses, from one to three minims, every two hours. It can be combined with **macrotys**, in one drop doses, with excellent advantage. Many of our physicians believe that **vestrum** has a specific influence in abating the local inflammation. I have not needed it except with which to paint the tonsils, in those cases where they were greatly swollen, dark, smooth and shiny. It is very useful in such cases.

In the **parenchymatous** or **suppurative form** of the disease, the treatment should be begun promptly with the tincture of aconite ten drops, tincture of belladonna twenty drops, specific **echinacea** three drams, in four ounces of water, a teaspoonful every hour for the first day. The throat should be gargled with a decoction of **white oak bark**, one ounce to the pint of water, to which is added a dram of boric acid and six drams of echinacea. This course will usually prevent suppuration and cause the disease to run a mild course. If measures for the prevention of sup-

puration are unavailing, fluctuation should be discovered early, the **abscess opened** and the throat thoroughly washed and kept clean with an active antiseptic gargle.

There is no doubt that **guaiac** will exercise a favorable influence upon this disease, but I have not needed it, and have seldom used it, because of its ready precipitation and bad taste. Its use is objectionable to most patients, and I have found the other measures superior.

I make it a point to build my patients up as rapidly as possible after a severe attack of this disease with stimulating tonics. I have excellent results from **hydrastin**, **nux vomica** and **quinin bisulphate**. If it seems necessary to use measures to prevent chronic enlargement, I put the patient on the **tincture of iron**, or on this remedy alternated with **phytolacca**, and continue these remedies for a number of weeks.

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## CHRONIC TONSILLITIS.

**Synonyms:**—Chronic hypertrophic tonsillitis; hypertrophy of the tonsils.

**Definition:**—A chronic enlargement of the tonsils, affecting either one or both of these glands, and involving usually the pharyngeal tonsil as well.

It is a condition of hyperplasia, or actual overgrowth of both the fibrous and the lymphoid structures of the gland, and is most common in children.

**Etiology:**—This disease is common in children from five to twelve years of age, occurring more frequently in boys than in girls, and less often in boys with dark eyes and hair than in blondes—the light-haired and blue-eyed boys, especially those of somewhat relaxed muscles, less hardened and compact, or those who inherit a tendency to scrofulous, syphilitic or other diatheses, and whose environment has been unhygienic or who have been somewhat neglected. I have seen, however, some most stubborn cases among

boys who were most carefully reared, really pampered, often the only boy, who received too much attention and was too fully protected from hardening and toughening influences.

The disease is usually the result of a previous attack or of repeated attacks of tonsillitis in the acute form. It also occurs as the result of diphtheria, scarlet fever, measles and la grippe, and in those who have a tendency to rheumatism. It is complicated frequently with chronic disease of the pharynx or nasal passages, and may be either the result or the cause of chronic nasal catarrh, or catarrh of the middle ear. Adenoids may serve as a cause, and when the cause has been long present, these patients, largely from the habit of mouth breathing, are apt to have a vacant expression to the countenance, an expression of stupidity or lack of intelligence.

**Symptomatology:**—While the disease has just been described as resulting from other previous disorders, it may come on insidiously with but few symptoms which will attract attention, until the physician is consulted for **labored breathing** through the widely opened mouth when the child is asleep, **noisy snoring**, irregular and greatly **disturbed breathing**, causing **restlessness** and sudden awakening, **choking**, **screaming** or crying out without cause for alarm. The **sleep is broken** and disturbed, and there is **nightmare** or **night terrors**. This group of symptoms may be present in all cases, whatever the cause.

The condition persisting, changes gradually take place in the appearance of the patient and in his growth and physical and mental development out of all proportion to any danger to life. In extreme and greatly prolonged cases the **child is dull**, **listless** and **apathetic**, takes but little interest in study or play, becomes **morose** or **irritable**, and **quarrelsome**, and presents a foolish or **silly expression**. The **eyes are heavy**, the **mouth always open**, and the **nose "pugged"** or stunted. The body is apt to be somewhat dwarfed and the chest imperfectly developed,

the **breast** is **barrel** or **funnel shaped**, or the child is pigeon breasted, the breast being narrow and the sternum prominent at the top, or depressed below.

At first only one **tonsil** may be involved, but ultimately both are **enlarged, dusky** and sometimes **hard** and tough to the knife. They are sometimes dry from the mouth breathing, but often covered with thick, tenacious mucus, which is expectorated with constant effort in the older patients. The **uvula** is **displaced**, relaxed and irritating, and a constant, hacking cough, or even an asthmatic cough, may be present. The tonsillar crypts are filled with yellowish white, cheesy deposits, which give off a fetid and often disgusting odor, causing the breath of these patients, especially of the adults, to be notoriously bad.

Ultimately the **roof of the mouth** becomes **arched**, the upper **teeth project**, and there is in an occasional case a distinct angle in the center of the prominent superior maxillary bone. From occlusion of the eustachian tubes, or from **catarrhal thickening** of the mucous lining of these **tubes**, disease of the middle ear and **tinnitus aurium** and **chronic deafness** may result, as well as impairment of the taste and smell.

Patients in whom the disease is intractable or becomes aggravated and prolonged, may develop chronic headaches, or may become anemic, may suffer from **defective vision**, or **palpitation, enuresis** or **obstinate constipation**. The development both of the body and mind is slow, imperfect or perverted, and there is a peculiar **susceptibility** to attacks of the common infectious or **contagious diseases** of childhood, which are apt to be more severe with these patients.

**Diagnosis**:—The diagnosis is readily made by the appearance of the enlarged tonsils, which are not readily influenced by any course of treatment. The absence of acute pain will distinguish the disease from malignancy.

**Prognosis**:—The disease is not fatal, but it is not readily amenable to medical treatment, and its persistence can be

anticipated. When the changes are distinctly fibrous in character, a cure is much more difficult than when they are lymphoid.

**Treatment:**—The benefit to be derived from medicinal treatment in this disease is principally prophylactic. It is possible to anticipate the occurrence of chronic hypertrophy when there have been repeated attacks of acute tonsillar inflammation. The physician should undertake to reduce an enlarged tonsil immediately following an acute attack, by the application of **mild astringents**, and by specifics internally. I have succeeded admirably with the persistent use of **phytolacca** in from two to five drop doses, four times daily, accompanied with a gargle of the **tincture of iron**. Occasionally it is a good plan to apply a diluted solution of **ferric chlorid in glycerin**. Occasionally the external use of the tincture of **iodin** is of some benefit. Other stimulating astringent solutions will be found serviceable in the early stage of the disease, when there is great relaxation of tissue. The tincture of **capsicum** or the **tincture of myrrh**, in a mixture of equal parts of the distilled extract of **witch-hazel**, and a decoction of **white oak bark**, will be useful in this condition, if persisted in. Occasionally the application of **thuja**, full strength, or a few drops of a mixture of equal parts of **thuja** and **glycerin**, injected into the structure of the tonsil every second or third day, will be of much benefit.

When the condition has become established, and especially when the structural change is of fibroid character and the enlargement is hard and unresisting, medical treatment is of but little if any benefit. **Amputation of the tonsils** in these cases is demanded. This course is sometimes of immediate benefit in every way, resulting in a complete metamorphosis of the patient, both in regard to the condition of his general health and in his mental condition. Immediate improvement of a long train of symptoms follows, and in children of imperfect development rapid and healthful growth supervenes.

In the more intractable incipient cases, and in those where the changes are lymphoid in character, the application of the **galvanic current** will be found of much value, and occasionally in the severer cases the use of the **galvano-cautery** will result in a permanent cure.

In an occasional case the tissue of the gland will become renewed after removal, and secondary chronic enlargement must be anticipated. While most of the symptoms will show relief from the removal of the glands, constitutional treatment is often of the utmost importance to promote a speedy restoration to health. The use of **iron tonics** and general restoratives is important. Other tonics should be selected with reference to the necessity of the exercise of a direct influence upon the stomach, nervous system, or in the restoration of the blood, or upon the functional action of the large glandular organs. **Change of scene, careful bathing, regular habits** and the use of **nutritious, easily appropriated food** will materially conduce to the desired results.

# Diseases of the Esophagus.

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## ACUTE ESOPHAGITIS.

**Definition:**—An acute inflammation of the esophagus, involving either the mucous membrane alone or the sub-mucous structures, or both.

**Etiology:**—This disease seldom occurs from the ordinary causes of other inflammations, such as exposure to cold or suppression of secretions. It is caused by burns, by irritating substances, and from the accidental or other administration of caustics, such as concentrated lye and strong acids. Direct traumatism as a cause is very rare, although the swallowing of a fragment of oyster shell or a spiculum of bone, or sharp fish bones, or hard, angular substances, have in rare cases induced it.

The disease may occur in conjunction with other mouth or throat disease, as in the extension of thrush, or pharyngitis, or some cases of aphthous stomatitis. It will occur in a specific form from diphtheria, or it will follow scarlet fever, measles and smallpox. It occurs also as a sequel to typhoid and typhus fevers, and occasionally follows pneumonitis. Malignant disease of the esophagus is not uncommon.

**Symptomatology:**—The disease seldom develops with a marked chill, but there is general **indisposition**, a mild **fever**, with soft, **quick pulse** and considerable **prostration**. The mucous lining of the **esophagus** is **red** and **swollen**, there is a sensation of **smarting** or **burning**, with pain under the breast bone. **Swallowing** requires much muscular effort, is more or less **painful**, and may ultimately become

impossible. Irritation resulting in spasm of the esophagus may cause the food to be regurgitated whenever an effort at swallowing is made. There may be a **discharge of thick mucus** or of mucus and pus, and in cases where caustics or active irritants have been taken, **hemorrhage** may occur. This may be a quite constant, mild discharge of blood, or there may be an occasional severe hemorrhage. There may be ulceration, in which case there is apt to be subsequent **constriction** or **stenosis**. Where there is a membranous exudate, it is apt to be an extension from the larynx or trachea, often of diphtheritic origin, and there will be **difficulty of breathing** as well as of swallowing.

**Diagnosis:**—Pain on the ingestion of food or upon any effort at swallowing is the first suggestion. The sensation of burning and extreme tenderness with the presence of a bloody mucus or muco-pus, with a tendency to a rapid increase of all the symptoms in acute cases, will confirm the diagnosis.

**Prognosis:**—In mild cases and in cases where there has been no great injury to the structure of the tube the prognosis is favorable, but where the cause has been severe, or where there has been much local irritation or severe injury to the structures of the esophagus, as when strong caustics have been taken, or where there is extension of mouth, or throat disease, resulting in deep ulceration or the formation of pus, the prognosis must be guarded, as stricture may occur, with even permanent occlusion and death.

**Treatment:**—For the constitutional symptoms the use of small doses of **aconite** or aconite and **arnica**, in the proportion of from five to ten drops of each in a four-ounce mixture, a teaspoonful every hour, will be of service. Small doses of **hamamelis** and **collinsonia**, about five drops of each every hour, will exercise a beneficial influence. Where there is much destruction of tissue, the use of **echinacea** or **echinacea** and **baptisia**, in an infusion of **marshmallows**, to which a little **boric acid** has been added, should be given. The patient should have small quantities of **crushed ice**,

and may be fed with **ice-cream** or **iced milk**, in small quantities, repeated at intervals of perhaps ten or fifteen minutes, when the sensation of burning is extreme, for perhaps two hours at a time. The food should be given in a bland and unirritating form, and in severe cases of the disease only liquids should be given by the mouth. In some cases this should be avoided and all foods should be given per rectum.

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## STENOSIS OF THE ESOPHAGUS.

**Synonyms:**—Stricture of the esophagus; esophageal stricture.

**Definition:**—A secondary condition, resulting in the reduction of the lumen of the esophagus, either by external pressure, by fibrous or other degeneration of the structure of its walls, or by cicatricial contraction, after local injury or ulceration.

**Etiology:**—A case which the writer observed very recently resulted from extraneous adhesive inflammation, there being but little disease within the tube. The use of caustic potash, carbolic acid and arsenic for suicidal purposes is probably the commonest cause. The ingestion of any corrosive substance will induce this condition, from cicatricial contraction. Ulceration as the result of other disease or the presence of malignant disease causes stricture. The condition usually occurs behind the cricoid cartilage, opposite the point of bifurcation of the trachea. It may also be caused by the presence of a polypus within the esophagus, or from the pressure of a tumor external but contiguous to it, or from an aneurism. A gunshot or knife wound or other direct injury to the esophagus may result in contraction during the repair of the injury. Contractions are described as single or multiple, symmetrical or asymmetrical annular or cylindrical.

**Symptomatology:**—The first evidence, which is usually

overlooked, is mild **difficulty in swallowing**. This slowly and steadily increases in proportion to the severity of the disease. Other symptoms of the condition will vary according to the character of the causes which have produced the disease, upon the location of the obstruction, and upon its completeness. Early in the history of the case there is a **sense of constriction** in the neck or in the lower part of the throat, with a **dull pain**, which becomes tensive upon swallowing solid substances. When the **stenosis** becomes extreme, **regurgitation of the food** may at once take place, but after the condition has existed for a considerable time, as is elsewhere stated, dilatation occurs and the food may be retained for two or three hours, to be then rejected in a state of partial decomposition. This substance will contain no gastric juice or products of digestion, thus showing that it did not reach the stomach. If the mucous lining of the esophagus be denuded, or if there is a local ulcer, the **pain** after the food is swallowed may be **excruciating**. It will be observed by an intelligent patient that there is not only **mechanical obstruction**, but that difficulty in swallowing also results from **weakness** of the **muscular structure of the esophagus**.

As the condition continues, the patient's health is undermined, he becomes **emaciated**, and if there is malignant disease, the characteristic **cachexia**, with continued dull, heavy **pain** and increasing **dysphagia**, are prominent symptoms.

**Diagnosis:**—It is not difficult to determine that there is obstructed swallowing, but it is not a simple thing to ascertain, in all cases, whether the symptoms are due to simple obstruction or to dilatation of the esophagus. A bougie introduced into the esophagus will pass the obstruction with difficulty, if at all. In case of dilatation the bougie can be moved about above the point of constriction with some freedom. Where dilatation is present, which is not caused by stricture, the sound will easily enter the stomach. An effort should be made, upon the introduction of the

bougie, not only to determine the presence of the stricture, but to ascertain, if possible, the cause of the stricture. In all cases hysterical spasms should be excluded.

**Prognosis:**—These cases seldom result favorably, as the causes are usually extreme and severe. The prognosis should always be guarded.

**Treatment:**—Medical treatment is of no avail. The **galvanic current**, properly applied, by an experienced physician, is sometimes of much service. In reflex cases the cause may be removed, when found, by proper medicinal treatment; medicine will also benefit hysterical cases. Usually **surgical treatment** only is productive of good results.

**Bougies** properly introduced will overcome some of the cases if the treatment is systematically and persistently conducted. They are especially valuable in overcoming cicatricial contraction. Where there is malignant disease this course is seldom available, often causing great pain and an aggravation of all of the symptoms. Where the obstruction is complete, a surgical operation must be performed as a final resort.

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## DILATATION OF THE ESOPHAGUS.

When from any cause there is stricture of the esophagus near the cardiac orifice of the stomach, a gradual dilatation of the walls of the esophagus is apt to occur above the stricture. This results from distention and from degeneration of the structure of the muscular coats, is usually localized in character and occurs more in the form of a diverticulum. Dilatations of this kind are found, in rare cases, in patients of relaxed fiber who bolt their food without proper mastication. Occasionally dilatation may occur uniformly throughout the entire extent of the tube. This is classed as **diffused dilatation**, and is atonic in character

and may be congenital. Fatty degeneration of the muscular wall of the tube may result in diffused dilatation, also.

**Symptomatology:**—Persistent **difficulty in swallowing** is the commonest symptom of dilatation. **Regurgitation** may follow, not immediately, as in stricture, but occurring in from one to three hours after eating. The substance regurgitated may be partially decomposed and it may cause **strangling**. Occasionally the decomposition or fermentation of the retained food induces **irritation** and **an actual inflammation**, which may be conveyed to the walls of the stomach. When this occurs the regurgitation may be immediate and resemble that of stricture, rendering a diagnosis difficult. Sometimes a considerable quantity of water will be retained for some time, in a diverticulum.

**Treatment:**—But little is accomplished by treatment in these cases, as medicine will not influence the actual condition. There may be indications for specific remedies, which, when met, will produce temporary alleviation of the symptoms or conditions depending upon the dilatation, or which may entirely cure them, but the dilatation will yet remain. The use of the **galvanic current** is of service in some cases, and in the early stage of the milder cases there is no doubt that the persistent use of **hydrastis canadensis**, with or without **collinsonia** and **hamamelis**, will retard the progress of the condition, and may prevent further development.

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## ULCERATION OF THE ESOPHAGUS.

Simple ulcers in the form of erosions or follicular ulcerations, as well as necrotic ulcerations from other causes, such as an extension of aphthous ulceration of the mouth, are not uncommon in the structures of the walls of the esophagus. Ulcers at the lower end of the esophagus sometimes occur, similar in character to those found in the wall of the stomach.

These ulcers cause **difficulty** in **swallowing** and often much local pain. The simpler form may heal readily upon carefully advised treatment. The severer forms may result in **constriction** or in **perforation**. Cases have been found in which there was **rupture** from the perforation into the posterior mediastinum, or into the aorta, with fatal results.

**Treatment:**—The treatment of these cases is largely symptomatic. A careful prescriber will be able to select from our remedies those specifically indicated and will adjust local measures to the best possible advantage. The use of **mild antiseptic solutions** which can be slowly swallowed, conjoined with the use of **hamamelis** and **geranium maculatum**, will be of material benefit. The use of **geranium** and **hydrastis**, as in ulcer of the stomach, will be of signal service in many cases. If the esophagus is irritable, the food should be given per rectum for a few days.

# Diseases of the Stomach.

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## ACUTE GASTRIC CATARRH.

**Synonyms:**—Acute gastritis; acute catarrhal gastritis; gastric catarrh; acute dyspepsia.

**Definition:**—A catarrhal inflammation of the mucous lining of the stomach, characterized by swelling, general hyperemia and deficient secretion, accompanied with an excessive outpour of mucus and attended with both local and constitutional symptoms.

There is a difference of opinion between different writers as to whether an actual inflammation of the coats of the stomach is or is not present in this disease. The pathological characteristics, however, seem to be those of a mild inflammation in all forms, but they are distinctive only in the severer forms.

**Etiology:**—The causes which predispose a patient to an attack of this disease are impaired health from any cause, improper surroundings, bad hygiene, imperfect nutrition, a tendency to a malarial or rheumatic condition, and chronic conditions which involve the large glandular organs. It is also apt to occur during the convalescence from acute disease and in patients suffering from chronic nervous disorder. The immediate causes are cold and the taking of improper food. By far the larger percentage of cases depend upon dietetic causes. The habit of rapid eating, without mastication; of eating heavy, indigestible food at all meals; of taking food too highly seasoned with acids or the stimulating condiments, and the taking of canned foods and partially decomposed or tainted meats, or the habit of

overloading the stomach, or of drinking a large quantity of fluids during the meal, or of taking the food too hot or too cold, and the excessive use of coffee, are all at times to blame for the occurrence of this disease.

The condition occurs most frequently in adults, with those who are addicted to the use of alcohol, and those who have a tendency to gout, syphilis or tuberculosis.

**Symptomatology** :—This disease exhibits a somewhat different train of symptoms during childhood than is found in adult life. The symptoms with children are somewhat more active or violent, and the course of the disease is shorter, with a more abrupt and satisfactory termination. The condition is ushered in with **fever**, accompanied with **nausea** and **vomiting**. The child complains of **distress in the stomach**, which occasionally amounts to an acute **pain**. The **temperature** does not exceed 102.5° F. At first the **bowels** are **constipated**, but on the second or third day there is a **diarrhea**, accompanied with colicky pains. The **pulse** is sharp, hard and quick, the **tongue** is coated with a uniform white coat, dotted with red spots from enlargement of the papillæ. The **mucous membranes** of the **mouth** are deep red and dry, and the breath is offensive. The **skin** is dry and harsh, inclined to eruptions. The **urine** is scanty, of high specific gravity and high color.

With adults the first symptoms are those of **loss of appetite** and imperfect digestion. A very common symptom is the **sensation of fulness** in the epigastric region, when but very little food has been taken. With some patients this amounts to a sensation of distention, producing great discomfort. There is a **steady, dull pain** during the presence of food in the stomach, with occasional excessive **eructations** of gas, accompanied with **nausea** and **vomiting**. The **tongue** is heavily coated, and the bowels are constipated. These local symptoms, with proper care, may abate before constitutional symptoms develop. These appear on about the second day. There is **headache**, which at times is extreme, with **lassitude**, indisposition, **mental dulness**, and

occasionally **nervous irritability**. The temperature rises to 103° F. and the **pulse** is sharp, hard and quick. These symptoms may continue for several days, when, with proper care, they slowly abate, leaving the patient comparatively well, but with a sensitive stomach, which must be treated with care for from ten days to two weeks subsequent to the acute attack. In childhood a complete restoration may occur in two or three days.

**Diagnosis:**—With children it is frequently with difficulty that this disease, in its early stages, is distinguished from other fevers. Acute enteric fever and other acute infectious fevers, in childhood, may begin with much the same symptoms. Persistent distress in the stomach alone, with local tenderness and vomiting, accompanied with slight fever, are the characteristic evidences. Occasionally with children a rash appears on the second or third day, which may be mistaken for scarlet rash. With adults the diagnosis depends upon the presence of persistent circumscribed soreness, with steady distress in the stomach, accompanied with some febrile action.

**Prognosis:**—The prognosis is good in all simple, uncomplicated cases. There is a tendency to a recurrence of the disease upon any indiscretion in the taking of food, and recurrences may result in chronic gastritis.

**Treatment:**—With children it is a good plan to give an enema, or a high colonic flushing at the onset. If there is vomiting, the patient should drink **warm water** or take a **mild emetic** in warm water, and thus wash out the stomach. This should be followed with a small dose of the **subnitrate of bismuth**, and with this **aconite** and **ippecac** should be given in small doses. Five drops each of the tinctures of aconite and ippecac, in a four-ounce mixture, should be given in dram doses every half hour until there is some abatement of the fever. In an occasional case the tongue will be pale, thick and broad and coated with a white, moist coat. In these cases our neutralizing cordial—the syrup of **rhubarb** and **potassium compound**—is of great benefit.

This is sometimes sufficient to cause an abatement of all the symptoms. If the vomiting is persistent with these indications, I would administer, every fifteen minutes, a teaspoonful of a mixture of twenty grains each of **sub-nitrate of bismuth**, and **ingluvin**, in two ounces of water, thoroughly shaken before administration. There is a tradition handed down in our school, from the early days of Dr. Scudder's time, that an infusion of **peachtree bark** will control vomiting. I have never been able to obtain such a result from this remedy, although I have experimented with it in all forms and with all classes of patients. I have had much better results from **ingluvin**, or a trituration of **ipecac**. For the febrile symptoms **aconite** exercises a satisfactory influence, not only upon the temperature, but through the nervous system upon the gastric irritability as well, and through its influence upon the terminal filaments of the gastric nerves upon the capillary circulation of the mucous membrane of the stomach. Where nausea and vomiting are persistent, five grains each of **ingluvin** and **bismuth subnitrate** may be given every two hours.

Where there are evidences of an excessive gastric acidity, **neutralizing cordial**, or **lime water**, or the **bicarbonate of sodium**, should be given freely for from twelve to eighteen hours. If the secretions are deficient and the mucous membranes are dry and red, **hydrochloric acid** will be indicated. Its best results are obtained from the frequent repetition of doses of from three to five minims, well diluted.

If the bowels are constipated, a single dose of **magnesium sulphate** at the onset will be sufficient, if followed every day with a colonic flushing. Where the tenderness over the stomach is very great, with much pain, **libradol**, applied for six or eight hours, will give much relief. If soreness only is complained of, **antiphlogistine**, applied hot, should be kept on for twenty-four hours. In severe cases a **mustard plaster** may be first applied over the stomach, and occasionally sharp counter-irritation over the dorsal region of the spine will be of immediate benefit.

With adults **complete rest to the stomach** for a considerable period of time is essential in many cases. In all cases food should be denied the patient for a few hours at the onset, and small pieces of ice should be taken to allay the thirst. Ultimately milk to which a little salt has been added may be given, and later a piece of dry, buttered toast. The patient may drink freely of hot water, or of hot water to which a little milk has been added.

The subsequent care of these patients is important; the diet should be selected with reference to the condition of the stomach in each particular case.

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## ACUTE TOXIC GASTRITIS.

**Definition:**—A violent, acute inflammation of the stomach, induced by powerful irritants and corrosives.

**Etiology:**—The larger number of suicides are caused by ingestion of irritating and corrosive poisons, which induce this disease, resulting in death. This class of remedies is also taken accidentally. The commonest of these agents are caustic potash in the form of concentrated lye, and ammonia, carbolic and oxalic acids, the mineral acids, phosphorus, arsenic, antimony and mercury. An overdose of elaterium, croton oil, and some other of the irritating vegetable substances, or a large quantity of mustard retained in the stomach, will produce this disease.

**Symptomatology:**—This is a most violent and serious disorder. The symptoms follow very quickly upon the ingestion of the poison. **Extreme pain** in the epigastric region, quickly followed by violent **vomiting**, are the first symptoms. The **pain is intense and burning** in character, and will usually extend to the throat and mouth. With arsenic the burning sensation is that of a coal of fire in the stomach, the heat and burning radiating from a definite, readily localized, circumscribed spot. The vomiting in-

creases, the vomitus consisting of a large quantity of mucus, blood, and ultimately shreds of membrane. The **thirst** is **intense**, and is not quenched with water. The abdomen and stomach soon become distended, and the stomach is exquisitely sensitive upon pressure. Usually the **temperature** falls from the first, but in an occasional case the temperature will rise rapidly until it reaches from 104° F. to 105° F. The **pulse** becomes rapid, and soon feeble and compressible. The **skin** is cold and clammy often, and is covered with a free cold sweat. The **expression of the face** is drawn and anxious, and **prostration** develops very rapidly. In those cases in which death is not immediate, a toxic inflammation may develop in the glandular organs. There may be a complete **suppression of bile**, with marked **jaundice**, or acute septic **nephritis**, with perhaps severe **hematuria**. The patient becomes rapidly dull, taking no interest in the surroundings, **stupor** and finally **coma** develop, and occasionally **convulsions** occur.

It would be interesting at this point to describe the specific action of each of the poisons named, and detail the exact symptoms, but the general influence upon the stomach is so similar that this is not necessary.

**Diagnosis:**—The diagnosis of a serious stomach lesion is not difficult, but it is occasionally impossible to determine by what agent the condition has been induced. The treatment will prove more satisfactory if this knowledge is obtained. Death often occurs before it is possible to determine the cause. Carbolic acid turns the membranes white, and exhales its characteristic odor. Nitric acid turns the membranes yellow, and has but little odor. With sulphuric acid the parts are turned brown or black. The alkalis produce a brownish discoloration. Arsenic and phosphorus have the characteristic burning, and with phosphorus there is more rapid prostration.

**Prognosis:**—The prognosis is usually grave. When a chemical antidote can be immediately administered, death may be averted, but serious symptoms may be present to

demand careful treatment for a number of weeks. In an occasional case the local inflammation seems to be yielding to the treatment, the outlook appears favorable, when general peritonitis supervenes, resulting in death.

**Treatment:**—The treatment of these cases resolves itself, first, into neutralizing or antagonizing the effect of the poisoning; second, in relieving the disastrous effects of the agent upon the stomach; and third, in the restoration of the patient. In antidoting the effect of the poison it is important, as has been stated, that the character of the poison should be known. With the immediately corrosive agents it is a waste of time to endeavor to protect the walls of the stomach by the administration of a simple oil. The **chemical antidote** must be at once administered. With the alkaline poisons, **dilute vinegar** will be found of immediate service. This agent will also neutralize the effect of carbonic acid, as quickly as other better known antidotes. For the mineral acids a dilute solution of **caustic potash**, or a solution of common **washing soap** in cold water, should be drunk freely, in the absence of more scientific antidotes. This should be followed by copious draughts of warm water. Phosphorus is antidoted with an **old oil of turpentine**, and arsenic with **ferric hydrate**, and the mercuric bichlorid with **raw eggs**.

When the irritating agent is neutralized, hot applications should be applied over the stomach and perhaps slight counter irritation or heat to the spinal column. Remedies soothing to the stomach, such as simple oils, **mucilaginous drinks**, and the **subnitrate of bismuth**, may be immediately administered. Where severe pain is present, a hypodermic injection of **morphin** must not be delayed, and often stimulants by this method are demanded to prevent or counteract the shock. No food of any kind must be taken into the stomach, rectal feeding being resorted to. If extreme depression is present, the one-sixtieth or the one-fortieth of a grain of **strychnin nitrate** may be given every two or three hours hypodermically for the first two days.

As the symptoms improve, the treatment must be adjusted to the demands of each day. When it is deemed proper to administer food by the stomach, it must be selected and administered with the utmost care by rules which must be strictly enforced by the nurse.

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## PHLEGMONOUS GASTRITIS.

**Synonym:**—Acute suppurative gastritis.

**Definition:**—An inflammation of the tissues of the stomach, resulting in suppuration within the sub-mucous structures, ultimately extending to the muscular coat.

**Etiology:**—The disease appears at all ages of adult life, very rarely as a primary disorder. Usually it follows as a sequel to acute infectious fevers, notably those strictly designated as septic fevers. It is common to alcoholics, occurring more frequently in males than in females. It may occur in a circumscribed form, known as stomach abscess, in which the symptoms are not necessarily severe, or it may occur in a diffused form, involving the sub-mucous structures of perhaps the entire organ, in which case it produces profound constitutional disturbances, runs a rapid course and terminates in death. The disease is fortunately of rare occurrence.

**Symptomatology:**—Usually there is an initial **chill**, quickly followed by an abrupt rise of the **temperature** to 104° or 105° F. The evidences of severe illness are immediately apparent. There is severe **pain** in the stomach, radiating over the entire abdomen, which is distended, and which is often, especially in the diffused variety, quite tender. Over the stomach the tenderness may be exquisite. There is often severe **vomiting**, difficult of control. The vomitus is composed of bile mixed at first with the fluids of the stomach; ultimately the substance is brown or black in color, containing blood. Pus is found, if at all, in those

cases which may be considerably prolonged. Quite quickly the symptoms assume the character of a low typhoid type. The patient becomes **jaundiced**, there is **mental dulness**, **stupor** and **coma** follow, and **death results**. The seriousness of the disease depends both upon the extreme septic infection and upon the involvement of so important an organ as the stomach.

**Diagnosis:**—The diagnosis is difficult, the presence of the disease being determined by the profound toxemia exhibited by the development of typhoid symptoms in conjunction with the other indications.

**Prognosis:**—The prognosis is always unfavorable. Usually death results within a few days. In an occasional case the symptoms may be milder, but there is chilliness, with erratic temperature, increasing prostration and ultimate death.

**Treatment:**—The treatment is very unsatisfactory. If the suppuration could be anticipated, favorable results could be obtained, but this being impossible, but little is accomplished by medicine. Remedies that exercise a soothing influence upon the stomach should be used in conjunction with **echinacea**, **baptisia** and **calcium sulphid**, to prevent or retard the development of pus and to antagonize pyemia. Echinacea has proven to be a most valuable remedy in this latter named condition. Later the soluble **ferric iodid** would be beneficial. Food should be administered per rectum at first, later easily digestible or pre-digested foods only should be given. At the onset, when pain is severe, hypodermic injections of **morphin** should be administered, as in the toxic form of this disease, and perhaps **strychnin**, to support the strength.

## CHRONIC GASTRITIS.

**Synonyms:**—Chronic catarrhal gastritis; chronic gastric catarrh; chronic catarrh of the stomach; chronic dyspepsia; chronic catarrhal dyspepsia.

**Definition:**—A chronic catarrhal inflammation of the mucous membrane of the stomach, characterized by a free outpour of mucus and changes in the quantity and character of the gastric juice, permitting fermentation of the food and otherwise interfering with the normal digestion, resulting in marked local and constitutional symptoms.

**Etiology:**—The causes of this disease are similar to those of acute gastritis. These being long continued, result in the changes which interfere with secretion from the mucous membrane and from the various gastric glands, resulting in changes in the quantity of the gastric juice, or irregular changes in the quantity of the several constituents of this fluid, thus causing deficient, excessive, irregular or imperfect gastric juice. This imperfect secretion is itself a potent cause of those symptoms which are directly referred to the stomach. Deficient hydrochloric acid results in an increase of abnormal ferments, as it is the function of this acid to destroy these micro-organisms. These ferments, as stated farther on, produce substances which exercise a mischievous influence. Furthermore, an excess of mucus, alkaline in character, neutralizes much of the already deficient hydrochloric acid, encouraging the formation of butyric and lactic acids, and covering the ingested food, it interferes with the direct action of the imperfect gastric fluids.

Two most common causes are the use of alcohol and tobacco, and bad habits of eating. There are probably but few who are addicted to the use of alcohol who are entirely free from this disease. Tobacco, stimulating undue secretion of saliva, and causing local irritation, is a conjoint cause with alcoholism. Among the bad habits of eating are too rapid eating, which is very common, im-

perfect mastication and consequent imperfect insalivation, the eating of too much food, eating at irregular times or in irregular quantities, the use of strong coffee, and the taking of liquids with the food, and the taking of the food or beverages either too hot or too cold. The too free use of liquids with the food dilutes the gastric juices to such an extent as to interfere with the proper exercise of their function, thus making it necessary at times for the food to remain in the stomach until the fluid has passed out, permitting fermentation and acting as an irritant. The taking of irritating condiments or of irritating substances, as medicine, and the pernicious habit, so common to American people, of depending upon the regular use of physic to overcome intestinal inactivity are frequent causes. Chronic medication is a bad habit, and may lead to chronic dyspepsia. For this the physician and the manufacturing pharmacist are in part to blame.

Another fault is lack of care of the mouth and teeth, which results in imperfect mastication or insalivation, or from decomposition of food particles in the mouth, which permits the introduction of bacteria into the stomach.

Local congestions are a common cause of this disease. Congestion of the portal circle, or chronic hepatic congestion, or other affections of the liver, notably cirrhosis, chronic pulmonary congestion, and anything that will induce imperfect heart action, will lead to it. Other conditions to which this disease is secondary are tuberculosis, anemia, chlorosis, syphilis, chronic malarial disorder, Bright's disease and diabetes. It is exceedingly common in patients suffering from the uric acid diathesis—lithemia—consequently rheumatic and gouty patients are especially liable to it as a complication. Patients suffering from cystitis, or other disease of the bladder or urethra, or who are recovering from acute kidney disease, and patients suffering from disease of the uterus, ovaries or fallopian tubes are apt to be sufferers from chronic gastritis. It is also very common among patients who suffer from

prolapsus of the bowel, rectal ulceration, fissures and hemorrhoids. The theory of the reflex influence of irritation at the anal sphincter in the causation of this and other chronic ailments is largely overestimated.

This disease is frequently of nervous origin. It is quite common with neurasthenic patients. With some of these patients it is one of the primary causes of the disease, but in a large number of neurasthenics it is the natural result of seriously impaired or deficient nerve tone, and consequent deficient nerve action. This results also in some cases in deficient functional operation of all the vital organs. While the deficiency is seen in a single organ only, it is frequently observed to be uniform in all the vital organs.

**Symptomatology:**—There is considerable variation in the symptoms of the various cases of chronic gastritis. But few are characteristic. At first there is an **erratic appetite**, with long periods of **anorexia**. Occasionally the appetite is abnormal, both in the desire for an excessive quantity of food and in the desire for substances that are plainly injurious, or for inordinate quantities of certain foods or condiments. Usually even a small quantity of food will produce a **sensation of distention** or oppression in the gastric region, a sensation of extreme fullness, or a sensation as if a hard substance was within the stomach, producing **discomfort** or steady, **dull pain**. The pain may be griping in character, occasionally with a sensation of **burning**. At other times there are **eructations of gas**, either at the beginning of the meal, or most frequently, however, from one to two hours after eating. Occasionally there is **regurgitation** of partially digested food, or food mixed with the gastric secretion, or a free regurgitation of an acid watery fluid (**pyrosis**, water-brash). With neurasthenic patients I have observed regurgitation, at the end of each meal, of food which is apparently unchanged and unmixed with the stomach secretions.

The **tongue** presents a variety of appearances. When there is excessive acidity, the tongue is broad and thick, sometimes filling the mouth, and, with the **mucous membrane** of the mouth, is **pale**. The tongue is flabby and easily indented with the teeth, and is coated with a moist, uniform white coat. When there is **disturbed liver action**, there is a yellow stripe in the center of the tongue, which may become brown. When there is extreme **inactivity** of the **stomach** under these circumstances, the white coat becomes heavy, and may be yellowish or dirty white in color. Where there is a **deficiency** of the **acids** throughout the system, the mucous membranes of the mouth are dark, the tongue is dark, and there may be only a slight brown coat in the center. When with deficient acidity there is extreme atonicity, the tongue becomes glazed, a violet or scarlet color, and is usually dry. When there is a **deficiency** of the **hydrochloric acid** only, I have observed the tongue to be nearly normal in appearance, with greatly elongated papillæ, which are coated white on the tips, but show red at the base through the coating. When this disease is complicated with **intestinal inactivity**, and **chronic constipation** or intestinal irritation are present, the tongue may be very rough, fissured and indented and the papillæ of irregular length.

There is usually a **bad taste** in the mouth; this is especially complained of upon rising in the morning. **Nausea** is not uncommon, and **vomiting** frequently occurs, especially in alcoholic gastritis, when it occurs before breakfast and causes a disgust for food.

**Flatulence** is a distressing symptom, and is a common cause of pain. **Acute pain** may occur immediately food is taken into the stomach, or it may not occur until gas accumulates, from one to two hours after eating. In other cases there is a **tender, sore** sensation in the stomach, increased on pressure, with increasing **tensive pain**, which occurs from two and a half to three hours after eating, or just before the next meal. This I have attributed in part

to the immediate contact of the inflamed walls of the stomach, when collapsed after the expulsion of the stomach contents. **Fermentation** sometimes causes **spasm** of the **pylorus**, or a simultaneous spasm at both the pyloric and cardiac orifices. This causing the gases to be retained, may induce **excessive distention**, with severe pain. **Palpitation** from this distension, and in some cases from the presence of any quantity of gas, becomes a very troublesome and alarming symptom with many patients. I have especially found this true of neurasthenic patients, when the palpitation will induce extreme exhaustion, cold sweats, a rapid, irregular and easily compressible pulse, and apparently threaten a serious termination, alarming not only the patient, but the attending physician. From this exhaustion or extreme weakness the patient may be from two to six days in recovering. I have not observed any more serious results than this.

Other patients suffer from **vertigo**, exhibited in several forms. There may be simple dizziness or an interference with the vision, as from floating objects before the eyes or an impossibility to see but one-half of each object, or an obscuring of only that portion of the object immediately before the eye. I believe many of these remote symptoms are due to auto-intoxication from the absorption of toxins from the undigested, fermenting food and from the direct absorption of the gases.

From the imperfect character of the digestive fluids, and from inaction of the muscular coats of the stomach, the **digestion** of food **proceeds** very **slowly**, often food being vomited or regurgitated that was known to have been taken at least twenty-four hours previously. In other cases, either from the presence of undigested food or from muscular irritation inducing **increased peristalsis**, there may be a large, free bowel movement immediately after each meal, usually accompanied with colicky pain.

Another common symptom is **dulness** and **drowsiness** after eating. This is so great with some patients as to

make it impossible for them to accomplish anything until they have taken a nap. This class of patients are those most likely to suffer from insomnia. They pass restless, sleepless nights, rise in the morning with considerable exhaustion, and suffer from more or less **headache**. This latter condition is very common among dyspeptics. It may occur after the taking of each meal, or when the food should have been digested and the stomach emptied, just before a meal, or there may be some dull discomfort nearly always present. With others the **headache** is **paroxysmal**. It appears once in from eight to fourteen days, and gives premonition of its approach by increased stomach disorder and eructations of gas, nausea and mental and physical depression. As the headache increases the patient vomits frequently, and nausea is more or less constant for a period of from one to three days. This is known as "**sick headache**." It is more common when there is excessive acidity than when the acids are deficient. Occasionally, as in intestinal irritation, a reflex cough is present, which is often a misleading symptom. These patients, as the disease persists, become irritable, morbidly sensitive, weak, indisposed to mental or physical exertion, hypochondriacal or hysterical, emaciated and anemic. Eruptions of the skin occur, among which furuncular eruptions, severe acne, eczema, lichen, urticaria and herpes are the commonest disorders.

It is of but little avail to undertake to cure these eruptions by local measures. Anders believes that if so cured, the gastric trouble increases. The cure of the stomach disorder, and ultimately of all the constitutional conditions which it has entailed, will be followed by amelioration of these eruptions, which will then promptly yield to local measures.

**Diagnosis:**—There are a few classic symptoms in this disease, in the absence of even a part of which it is difficult to differentiate between uncomplicated gastritis and other disorders of the stomach. The diagnosis depends

largely upon the slow development of the disease, upon the presence for a long period of indigestion, with a sensation of fulness or apparent distention upon the taking of but little food. Upon examining the contents of the stomach, a large quantity of mucus is found; there may be either an excess or a deficiency of hydrochloric acid, with a great increase of butyric and lactic acid. Imperfectly digested food, or the products of the decomposition of food, will be found in the stomach at all times. It may be distinguished from gastric ulcer by the circumscribed tenderness and pain of the latter condition, with the occasional vomiting of blood. However, ulceration sometimes occurs during the course of chronic gastritis. From cancer of the stomach it may be distinguished by the fact that in this latter condition there is an excess of lactic acid and an absence of hydrochloric acid, and later by the vomiting of coffee-ground material. As cancer progresses there is usually local hardening and enlargement, with cachexia.

**Prognosis:**—In uncomplicated cases the prognosis is in every way favorable, provided the patient's co-operation with the physician in carrying out the curative measures is assured. Complication with constitutional dyscrasia or other severe organic disease, gastric ulcer or tumor, or cancer renders the prognosis doubtful or unfavorable.

**Treatment:—Hygienic Measures.**—Whatever measures are adopted in the treatment of this disease, three things are essential: First, the physician must have the complete confidence of the patient; second, the patient must be willing to faithfully carry out the instructions of the physician; and third, all habits of the daily life, either the domestic or business life, and habits of eating, which have exercised an influence in the causation of the disease, must be abandoned.

In severe cases it is necessary for the patient to have a **complete change**, as this condition is most common in people of sedentary habits. The careful adoption of a

course of **outdoor exercise** is important. If the patient has had no opportunity for physical exercise, or has been using the mind at the expense of the body, as is quite common, much care must be exercised lest this should be overdone at the first. Walking, bicycling or horseback riding are the commonest recreations, but may easily be carried too far. In no case should the patient suffer much fatigue from the exercise. It can easily be adjusted to the strength of the patient and slowly be increased as the strength increases. One patient, of his own accord, purchased a quantity of cord wood and a wood saw, and beginning carefully, sawed and split enough wood each day only to meet the essential requirements of that day for physical exercise. He found this all-sufficient.

Patients suffering from mental exhaustion often will find complete relief of the gastric symptoms by leaving their work entirely and spending a few weeks, **fishing, boating or mountain climbing**. This has resulted in a complete cure in several cases under my observation. **Bathing** is important to these patients, but should not be overdone. Those of good vitality may obtain the best results from cold bathing, or from a hot bath followed by a cold shower. Those of poor vitality should have a medium warm bath, twice each week, followed by a salt rub. Lithemic patients of reasonable vitality should have a hot bath or a Turkish bath, with proper care protracting the perspiration as long as consistent without inducing exhaustion.

Where there is extreme soreness or tenderness in the region of the stomach, good results are attained by applying a cool, wet **compress over the stomach** at bed time, which should be covered by several thicknesses of a wool or silk bandage. In winter time patients suffering from this disease should be carefully and **warmly clothed**, as they are often deficient in power to resist cold.

An early examination of the urine is important in all cases, to determine the manner in which **metamorphosis and elimination** are taking place in the system, what the

habits of the system are in elimination, and what is the condition of the fluids of the body at that time. Three of the constituents of the urine must be estimated upon—uric acid and the urates, the phosphates, and sodium chlorid. I believe there is a certain class of cases in which sodium chlorid is present in excessive quantity in the urine that would be materially benefited by omitting this substance from the food entirely for a period of from three to six weeks. If lithemia is present, this condition must be overcome; if the waste of phosphates is excessive, these must positively be restored to the system.

**Dietetic Measures:**—No measures that may be adopted in the treatment are of as much importance as the **dietetic measures**, and an arbitrary course with all patients alike is by no means advisable. An intelligent patient will soon have made observations which will be of importance to the physician in adjusting the diet, if he wisely allows himself to be guided by them. In severe cases it is a good plan to begin the treatment by a **fast** of from eighteen to twenty-four hours, permitting only water, or water to which a little milk is added. On the second day the patient may sip hot milk, and eat either a graham cracker three or four times during the day, or a piece of dry toast or zwieback.

If there is a scanty quantity of urine, with high specific gravity, I exclude meats from the diet for two or three weeks, and advise the patient to eat toast and non-acid fruits. These, however, may usually be selected according to the taste of the patient, advising those in season, when possible. One of my patients was cured by adhering to an almost exclusive diet of ripe grapes. At breakfast the patient should have a cooked cereal, or some palatable cereal food which he may select according to his own taste. Oatmeal is about the only cereal that I have found to be objectionable, and this may be readily appropriated with some patients. With others there may be times only when it is not digested. With this he should take some fruit,

or a dish of sauce and a glass of milk; this may be drunk hot, if preferred.

Upon rising in the morning, the patient may drink a full glass of cold water, and perhaps eat a ripe apple. I have advised patients who were very weak to have a glass of hot milk, to which a pinch of salt was added, brought to the bedside when they were first awakened. This they should drink without the patient being disturbed, and lying quietly on the right side, he should compose himself to sleep for perhaps a half hour longer. This milk, passing into the duodenum, it is claimed, will be absorbed with ready digestion, and will impart much necessary strength and supply food that would require much effort on the part of the stomach later to digest. As the use of fluids during the meal is often detrimental, it is advisable for the patient to take a drink of water, if necessary, before each meal. The arbitrary rule which advises the taking of from eight to twelve ounces of hot water before all meals is usually a good one.

However much a patient dislikes to be put on a rigid diet when this simple course is suggested to him as preliminary, he will seldom complain at being obliged to follow it closely for a couple of weeks, at which time the observation of the physician will enable him to suggest a course which will be agreeable to the patient, and which may be followed indefinitely, or as indicated later. At that time the physician will adroitly enlist the patient's judgment to assist him in planning a beneficial diet. He should begin not by naming those substances which are to be excluded, but to name the most agreeable articles which are to be permitted. I believe it advisable with nearly all patients to permit a small quantity of food about once in three hours, with regularity, rather than insisting on three full meals each day. But few patients, unless the condition is very severe, will submit to this readjustment of the hours of eating.

If the patient becomes hungry from ten to eleven o'clock,

he may have a few crackers, salted, or graham crackers, with a few sips of water. If he desires dinner at the noon hour, he may have a baked potato, and if meat and coffee are not excluded, a piece of roast beef which is devoid of fat, and some lettuce. He may drink a cup of coffee made by heating a half of a cupful of milk or cream and adding to this as much weak coffee, with sugar, to suit the taste. At supper time he may eat two or three soft-boiled eggs, another baked potato, if he desires, and fruit or sauce. This course should be varied on consecutive days, for three or four days, when he may return again to the same course. As stated, no prescribed method can be rigidly enforced. It must be adjusted to each patient. I have found many patients to be able to take a very light breakfast; late in the morning, a soft-boiled egg; an oyster stew or raw oysters, or carefully prepared sweetbreads, at noon. During the late afternoon he may eat a few crackers or drink a glass of milk, or take a dish of ice-cream, and may have his meat dinner at six o'clock, as advised above for the noon hour. When these patients are suffering from more or less debility or nervous exhaustion, restless nights or insomnia are not uncommon. I have found it of great benefit to allow them to drink a glass of hot milk or a bowl of hot beef tea, prepared from the extract of beef, to be taken with dry crackers or with graham crackers, the last thing before retiring.

The patient must learn that the condition of the mind has much to do with the digestion; that worry, anger, undue excitement, mental concentration and exhaustion will all interfere with the digestion. He must sit down to his meals free from all these things, must have an abundance of time, must eat slowly, and if possible with the pleasantest of surroundings, and, as stated, must thoroughly masticate the food. He must compose himself to quiet and rest after eating and must do no mental work. If inclined to dulness or sleep, there is no objection to taking a nap.

In most cases with patients above middle life this is very desirable.

If the patient finds, after the physician has advised an article of diet, that it cannot be taken without discomfort or disturbance of the digestion, he is to avoid it until the physician can be consulted. On the other hand, if he finds that substances which the physician has advised him to avoid can be taken with relish, do not disturb the digestion and seem to him to be beneficial, he may partake of them sparingly until he can state these facts to the physician, who should be governed in his advice by the patient's suggestion.

It will be observed that some patients will do much better, not only in avoiding liquids at meal times, but in taking their food as dry as possible. I have found that with these, juicy meats are digested with difficulty, and soups and broths will produce much discomfort. With these I advise dry toast, a cooked or malted cereal, with the least quantity of milk or cream and dry meats. The thoroughly broiled thin slices of steak, or the outside cuts of roast beef or mutton, are preferable, avoiding pork and veal. I have found other patients who could eat chipped dried beef, either uncooked or cooked in thickened milk, or cold boiled tongue, without discomfort. Occasionally purees may be taken when thin soups are in every way objectionable. Broths are always preferable to soups.

Occasionally it becomes necessary to put the patient upon a milk diet alone for several days. This with me has occurred only in rare cases. When the symptoms have abated the patient may have broiled, tender beefsteak, rare, roast beef, roast mutton, and occasionally a limited quantity of roast turkey. He must avoid fried meats, boiled or fried chicken, all gross vegetables and fruits pronouncedly acid, pork and veal in any form, and all cured meats, except as stated. Hot bread, biscuits, griddle cakes, pastries, puddings and pies are detrimental, almost without exception. Rice, macaroni, tapioca and sago, properly

cooked, will be acceptable to nearly all patients. Fats are to be avoided, with the exception of butter, which seldom produces discomfort; cream is acceptable to most patients, as well as buttermilk, whey and kumyss.

In the adjustment of food to the individual patient, during the treatment of this disease, it will be observed that food, objectionable either in taste or in its influence at one time will later become acceptable and beneficial; on the other hand, that which produces no discomfort for a period of time may finally become unpleasant and injurious. Again, other foods can be taken with relish and benefit at given periods, as once each week, or for two or three days at a time, every two weeks.

I have found cases where the stomach was exceedingly sensitive to any substance, with much severe pain, and when digestion was feeble and imperfect, to be greatly benefited by the application of a **moist hot compress** over the stomach, regularly after each meal, the patient lying down quietly the while, and if possible composing himself to sleep.

**Medicinal Measures:**—In the early stage of the treatment I endeavor to adjust an artificial **digestive** to each patient's individual necessities, so that as much as possible of the stress of the digestion be taken off of the stomach, and to insure the complete digestion of the ingested material. If an excess of the acids is present, as evidenced by the characteristic phenomena, the administration of from fifteen to thirty grains of **sodium bicarbonate** in one-fourth of a glass of water, twenty minutes after eating, will neutralize the excess of acids and promote digestion. When **hydrochloric acid** is deficient in the stomach, from ten to thirty minims to a full quantity of water may be given after eating, every half hour, until three or four doses are taken. **Pepsin** is of value in a limited number of cases. **Pancreatin** will materially assist in the digestion of fats, but is best given in conjunction with an **alkali**. It is available when there is distress from

an hour and a half to three hours after eating. **Taka-diastase** is of value in the digestion of starch. It prevents constipation, flatulence, malaise and vertigo. **Ingluvin** is of service where there is loss of appetite with persistent nausea and evident gastric irritation, and where with these symptoms the tongue is red, thin and pointed. It will be found serviceable when gastritis is present with pregnancy. I have found **paw-paw** to cover a larger number of these faults of digestion than any other one remedy. It may be given in either an acid or alkaline medium. It prevents fermentation, assists both in the digestion of starches and of fats. I have been able to relieve pain in the stomach more quickly with this remedy than with either of the others, when the pain was due to the presence of undigested substances.

**Lavage** of the stomach is a serviceable measure in some cases. In others it is detrimental. Its influence can be determined by a trial. If beneficial results are apparent, it may be repeated at longer or shorter intervals as seems desirable. If the benefits continue, it should be continued. If no benefits are apparent from its use, or irritation or other undesirable results occur, it should be repeated or continued with caution. The introduction of the lavage tube is disagreeable to most patients, but if they can be made cognizant of its benefits they will not seriously object to its repetition, until finally they become used to it. With some the sensitiveness of the throat is so great as to prevent its use. For this irrigation, plain warm water, or the **physiological salt solution**, or a dilute solution of **boric acid**, may be used. With weak patients, or where gastric ulcer is thought to be present, one volume of milk may be added to four or five volumes of water. Where the acidity of the stomach is extreme, a solution of **calcined magnesia** may be used and allowed to remain within the stomach for a short time.

The single remedy which I am inclined to think has exercised the most direct influence in the relief and cure

of this disease is **hydrastis canadensis**. Almost the entire profession of Eclectic physicians will corroborate this statement. I have been able to persuade other physicians to use it, and have observed that their results were equally satisfactory. Any of the pharmaceutical preparations of the drug will exercise a beneficial influence. Where the case is of somewhat recent origin, from five to ten grains of the powdered drug may be given in capsules after each meal. Where there is dilatation of the stomach and muscular relaxation, I would give the colorless hydrastis, with a good fluid extract of hamamelis or collinsonia. Where there is ulceration, I would use hydrastin or the hydrochlorate of hydrastin.

Other fluid preparations of this remedy, or a well prepared elixir, can be administered almost ad libitum, but always with reference to its influence upon the individual patient. It very seldom if ever produces gastric irritation. For simple cases I have for years prescribed the yellow **alkaloid of hydrastis**—**hydrastin** or **berberin**—in capsules, with **nux vomica**, **xanthoxylum**, or **capsicum**, and perhaps a small quantity of the **carbonate of iron**. This combination has a very wide influence. It improves the function of the gastric glands, it corrects the secretions of the gastric fluid, it restores tone to the mucous membrane, it improves the tone of the nervous system, both locally and in general, and materially benefits the functional action of the large glandular organs, and restores the character of the blood.

A number of physicians attest to the power of hydrastis in its direct influence upon the digestion. The remedy is in no sense a digestive, but it improves and enforces the influence of all the other digestives.

When the tendency to fermentation is extreme, and the tongue is coated with a pasty yellowish or yellowish-white coat, the **sodium sulphite** or the **sodium hyposulphite** in doses of from five to ten grains should be given every three hours for a few days. When the outpour of mucus is large,

**bismuth sub-nitrate** is indicated. It must be given in from ten to fifteen grain doses, of a pure salt, every three hours. Smaller doses at shorter intervals will not prove so satisfactory. It is indicated when pyrosis is an aggravating complication. **Bismuth sub-gallate** may be given in uncomplicated cases of recent origin. **Strontium bromid** may be prescribed in from fifteen to thirty grain doses every three, four or five hours, when with local tenderness, hyperacidity and flatulence there is a nervous irritability or excitability, with or without insomnia.

The pronouncedly chronic cases, with excessive hyperacidity, are especially resistant to curative measures of any kind. They represent an aggravated and intractable form of the disease. For these cases I have frequently advised Prof. H. K. Whitford's method, which, if correctly adjusted with auxiliary treatment, gives satisfactory results. He uses the following formula, carefully prepared, of the very best drugs:

℞ Hydrastis, pulv.  
Ginger, pulv.  
Colombo, pulv.  
Bismuth subnitrate, aa ℥i.  
Magnesium carbonate, ℥iv.

Mix. Sig. From half to a teaspoonful of this may be given in two ounces of water, after eating.

When first used it may be given for a few days every three hours. Where the hyperacidity is extreme, an equal quantity by weight of pure **sodium bicarbonate** is added, and the remedy is given every three or four hours in about the same doses. When the patient is feeble or anemic, the precipitated **carbonate of iron**, in doses of one or two grains to every half dram of this powder, may be given. I have added **capsicum** or **xanthoxylum** in the real atonic cases with poor capillary circulation, and have been pleased with their action. This combination is not pleasant of administration, but it is so prompt in its action that

the patient will take it after the first few doses without complaint.

In cases where excessive mucus secretion is persistent, with tenderness, or when doubt may exist as to the probable presence of a small ulcer, I am partial to the action of **geranium maculatum**. Ten minims of the specific remedy every two or three hours, which may, if preferred, be given in conjunction with **hydrastis**, will exercise a desirable influence, especially if the ulcer is actually present.

When a pyloric stricture with spasm is the cause of acute pain, a simple course will sometimes give prompt relief. Add fifteen drops of the tincture of **lobelia seeds** to four ounces of water, and give a teaspoonful every fifteen minutes until the pain has abated, which should not require more than four or five doses. Where torpor of the liver complicates cases of hyperacidity, especially if constipation results from the torpidity, **sodium phosphate** should be given in full doses. From ninety to one hundred and twenty grains of an effervescent preparation may be taken upon rising in the early morning, and thirty grains may be taken before meals. I have obtained good results from an **elixir of hydrastis** to which the tincture of **leptandra** in one or two minim doses is added, or the use of **leptandra** and **nux vomica** in a little **port wine** will be found to be excellent. In some cases **chionanthus** will be indicated.

For the diarrhea, or where there is colic and loose bowel movements after each meal, I have obtained excellent results from the use of five minims of **Fowler's solution of arsenic**, taken at the end of each meal. For the palpitation, which in a few nervous cases becomes an alarming complication, I use the tincture of **ginger**, or **peppermint**, or an infusion of **capsicum**, freely. For the nervous regurgitation of food occasionally present, from ten to twenty drops of specific **eupatorium perfoliatum** (boneset) every two hours has been sufficient.

Constant vomiting, which I have found to be rare, should be treated with free evacuation of the bowels, aided by a

high colonic flush and careful gastric lavage. A mixture of one dram each of **bismuth** and **ingluvin** in three ounces of cinnamon water should be well shaken and given in teaspoonful doses every half hour, or hour for short periods.

As the total symptoms improve, careful tonic treatment should be adjusted to each patient.

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## GASTRIC ULCER.

**Synonyms:**—Simple ulcer; round ulcer; peptic ulcer; rodent ulcer; *ulcus ventriculi*.

**Definition:**—An ulceration of the mucous memberane of the stomach, which may also penetrate the sub-mucous tissues and the muscular coats of the stomach, inducing perforation. It is local, distinctly circumscribed, and often well defined. It usually occurs as a single ulcer, but two or more may exist at the same time, scattered over a portion of the walls of the stomach, or a group of smaller ones may coalesce to form one large one.

The presence of ulcer is characterized by circumscribed tenderness on pressure, pain, vomiting and hematemesis.

**Etiology:**—No satisfactory explanation has as yet been given why the stomach is not digested by its own fluids. When this is understood, the reasons for the occasional occurrence of peptic ulcer will be at once explained. Local impairment of the inherent vital power of resistance, while the real cause, is not sufficiently explanatory. The ulcer is caused by the actual digestion of the tissues in a circumscribed area of the stomach wall. This is impossible if uniform vital resistance is maintained in the tissues. Impairment of this resistance is attributed, first, to alkalinity of the blood in the capillary circulation of the organ, or to greatly increased acidity or deficient alkalinity of the tissues. Gastric hyperacidity undoubtedly predisposes to it.

It may be due to an embolus, by which a small branch of the gastric artery is occluded; it may be also induced by an external traumatism, by a lesion from the action of corrosives or irritants, or from the ingestion of excessively hot beverages. Conditions that result in constitutional debility, or the general impairment of the blood or tissues of the body, will lead to it.

It is more common among females than males, is present often in anemic patients and in those suffering from chlorosis or from chronic amenorrhea. Those who subject themselves to habits of dress or occupation which impede the circulation of the stomach are liable to it, as women who wear tight corsets, sewing women, and women of sedentary habits—and, among males, shoemakers and tailors.

It is most common during the active period of life, between twenty and forty-five years of age; children and those of advanced age are seldom attacked. It is more common among those who are insufficiently fed and clothed than among the wealthy. Stockton and other pathologists claim that the disease is of nervous origin, and there are cases in which there seem to be excellent grounds for this conclusion.

There is no doubt that ulcers occur in conjunction with chronic gastritis and are not diagnosed. There are cases of severe ulcer that are diagnosed and treated as cancer. The condition is probably more common than is generally supposed, as ulcers or their scars are found in nearly five per cent of all autopsies.

**Symptomatology:**—There are in reality three types of gastric ulcer. The first is that in which there is simple erosion of the mucous surface; the second penetrates the mucous and sub-mucous tissues; the third involves all the structures and may perforate the wall. In typical cases of this disease there are certain symptoms which are well classed as pathognomonic, or even classic. There is a characteristic distinctly **localized pain**, of an intense burning or gnawing character, usually just below or a little

to the right of the xiphoid cartilage. Some pain may be more or less constant, and this depends upon the presence of coexisting gastritis, but the intense pain, usually paroxysmal, follows the taking of food, and disappears as the stomach becomes empty. It will disappear at once if the stomach is artificially evacuated with an alkaline solution. At other times reflex or other sympathetic nervous irritation may cause a diffused pain, which cannot be attributed to the taking of food, and is not relieved by evacuants or digestives. When perforation is imminent, the irritation to the peritoneum will induce a characteristic sharp, cutting pain, which will persist and increase with the occurrence of perforation. The actual location of the pain is of much importance in the diagnosis. In obese patients—those excessively fat—an exact location of the pain is impossible.

At first there may be considerable nausea, and later **vomiting** occurs quite frequently, usually after each meal. As the ulceration progresses the vomitus is excessively acid and may be streaked with blood, and finally there may be a considerable quantity of dark coagulated blood. In extreme cases, especially after violent physical exertion, the hemorrhage into the stomach may be very severe, followed by prostration, shock, cold sweats and rapid and feeble heart action.

If vomiting occurs during the hemorrhage, it may be observed that the blood is clear, light colored and free, coagulation not having taken place. This is the result of the perforation of an artery. Venous blood is usually very dark and coagulated when vomited. Blood passed from the bowels renders the fecal matter black or tarry in appearance. Coffee-ground vomiting in gastric ulcer is due to the slow oozing of the blood from the venous capillaries into the gastric juice, where the oxyhemoglobin is converted into hematin. The blood corpuscles are destroyed by the action of the juice. In very rare cases the patient will exhibit the symptoms of **severe hemorrhage**, with

**vertigo, prostration, shock, feeble pulse,** and yet no vomiting of blood occur, but subsequently large quantities of coagulated blood will appear in the feces. This may be observed on several occasions, increasing in severity until death occurs. A part of the blood will have been digested and reabsorbed.

Early in the history of these cases the appetite is lost, the patient suffers from indisposition, and because of imperfect nutrition he becomes enfeebled, emaciated, and if the hemorrhage is at all persistent, very anemic.

In mild cases the **temperature** and **pulse** are not affected. As the disease progresses and hemorrhage becomes severe, the temperature may be sub-normal at the time of a hemorrhage, to increase subsequently to perhaps 100° or 101.5° F. The pulse is at first full, round and slow; when prostration or shock occurs it becomes rapid, feeble and easily compressible, sometimes irregular.

**Diagnosis:**—The diagnosis of this disease depends upon the typical symptoms. The intense localized pain, the exquisite soreness over a circumscribed area, with usually absence of diffused tenderness in the walls of the stomach, especially if excessive acidity be present, are presumptive evidences of the disease before hemorrhage appears. Free hemorrhage, as stated, is an absolutely pathognomonic symptom. In the absence of these symptoms, the existence of the condition is to a certain extent conjectural, and yet as the time passes—for the disease is one of long duration, exceedingly chronic in character—careful observation will exclude other conditions and tend to confirm the presence of this. The pain is more sudden and more severe than in gastritis, and is seldom if ever relieved by food, as it often is, temporarily, in that disease. As the disease progresses the general health is more impaired than in gastritis or gastralgia, and regulation of the diet gives relief, as is not true in gastralgia. A hardened mass may be found present which is only to be differentiated from cancer. This differentiation is promoted by

the fact that in cancer there is an absence of hydrochloric acid, while in ulcer there is excessive hydrochloric acid.

**Prognosis:**—Simple recent cases, or cases of erosion, are amenable to treatment. The mortality in the chronic cases is estimated at from twelve to fifteen per cent. Complications of any character increase the danger. If recovery from ulceration occurs, cicatrization may cause chronic gastralgia, or there may be chronic spasm or permanent constriction of the pylorus from this cause with subsequent dilatation.

There is constant danger of relapse in cases of apparent cure. Those ulcers situated near the pylorus are more difficult to cure. In 125 cases of cancer of the stomach, Graham found ulcer present in 60 cases, nearly fifty per cent, furnishing proof of the oft-repeated assertion that gastric ulcer furnishes a fruitful ground for the development of cancer cells.

**Treatment:**—Many of the indications for the treatment of gastric ulcer closely resemble those of chronic gastritis, and should be met in much the same manner. This is especially true of all that is suggested in the rigid dieting of the patient, or in the exclusion of all food from the stomach when the extreme pain is instituted or aggravated by it. There is this important addition: if ulcer is strongly suspected before hemorrhage has appeared, the patient must at once be relieved of all anxiety, responsibility and care; must cease all work and go to bed and remain quietly and contentedly in bed until the symptoms are entirely relieved. To accomplish this may require a period of several weeks. If hemorrhage is an early symptom, thus confirming the diagnosis, this course at once enforced renders the prognosis much more favorable.

In ulcer the evidences of hyperacidity are usually plainly apparent, and these should receive the first attention. In the early stages the **carbonates** or **bicarbonates** of **sodium calcium**, or **magnesium** may be used, with which to neutralize the acids, but in the severe cases where perfora-

tion is at all imminent, **calcined magnesia—magnesium oxid**—should be selected, as there is no carbonic acid gas, which may distend the stomach and induce perforation, given off in the process of the neutralization of the acids with this agent, as is the case with carbonates.

The prompt use of an alkaline remedy during an acute attack of pain, in ulcer, will often give immediate relief. In early cases a half teaspoonful of the sodium bicarbonate in one-third of a glass of water will be very satisfactory, if the gas readily escapes from the stomach. This should be promoted by keeping the patient in a sitting posture for a short time after taking the draught.

The use of **subnitrate of bismuth** is attended with good results at this stage. It relieves local irritation and pain, antagonizes an excessive outpour of mucus and relieves the excessive acidity, both of the fluids and of the tissues, promoting resolution and a minimum cicatrization in the final healing of the ulcer, which is greatly to be desired. The agent should be given in large doses, preferably in warm water, when the stomach is empty, the patient lying quietly upon the back for from half an hour to an hour after taking the remedy. From thirty to sixty grains of a pure salt may be used in this manner, once in five or six hours. Fleiner advises as high as half an ounce at a dose. Often when nausea is present, five grains of bismuth subnitrate may be given in a tablespoonful of warm water, every fifteen minutes, for three or four hours, the patient lying quietly the while and subsequently. Occasionally the **sub-gallate of bismuth** will be serviceable; or **liquor bismuthi** will be found the superior remedy. Where fermentation is pronounced from excessive acidity, sodium sulphate in fifteen grain doses will be the most available alkaline salt, or the **sodium hyposulphite** is of much service.

The use of **alkaline laxatives** is of importance. The Saratoga waters are accessible, or Carlsbad or Hunyadi, in proper doses, may be used. Or in some cases **magnesium**

**sulphate** will give good results. This may be given in single full doses, or in occasional broken doses, of an effervescing preparation, drunk immediately the gas has escaped.

The **bromids**, with me, have seemed to exercise a soothing influence on the local condition, inhibiting the secretion of acids, or neutralizing the acidity, relieving pain, and quieting nervous irritation. The **strontium bromid** in from fifteen to twenty grain doses will probably be the best of this class of remedies. The potassium bromid should be avoided, as it is a local irritant. If **opium** or **morphin** are to be given, by the mouth, in any case of ulcer, they should always be given in conjunction with a bromid or with a small dose of **gelsemium** or **hyoscyamus**, if there be restlessness and nervous irritability.

Of our specifics in gastric ulcer and the conditions that lead to it, I am partial, first, to **geranium maculatum**. I consider this a most valuable remedy. It may be given alone in fifteen minim doses, every three hours, or in conjunction with ten minims of colorless hydrastis. I have recently had renewed confirmation of the efficacy of this course in the case of a lady music teacher, who had been in bed three months, had had repeated hemorrhages and had become extremely anemic. Geranium has a tonic influence in restoring a normal condition of the tissues, in reducing the quantity of acids secreted, in promoting the healing processes, and is of direct service if there is any hemorrhage whatever. In its every influence its action is promoted by hydrastis, best in small doses of a non-irritating preparation. **Hydrastin** or **hydrastin hydrochlorate** in small doses will greatly promote the healing of the ulcer; **echinacea** in small doses will exercise this influence also. **Collinsonia** can be given during convalescence, either alone or with reduced doses of geranium, or with small doses of hamamelis, for its influence on the capillaries of the stomach. The use of the **precipitated carbonate of iron** during convalescence is important. It acts directly on the

walls of the stomach and upon the gastric secretions and directly overcomes the anemia.

The hemorrhage sometimes demands the entire attention. Usually geranium will be sufficient, especially where hemorrhage occurs early. The tincture of the oils of **cinnamon and erigeron** in fifteen minim doses will stop the flow of blood, but if repeated more than three or four times will irritate the stomach. A full dose may be given in an emergency, to be immediately followed by a hypodermic of **ergot**. I have used gallic acid in ten grain doses every hour with good results. Every hemostatic failed in one extreme case until I used five grains of **lead acetate** every hour or two for a few doses. When extreme prostration follows hemorrhage, hypodermoclysis with the **normal salt solution** must be resorted to. This solution may often be given per rectum, every eight, twelve or eighteen hours, or as needed, with great advantage in sustaining normal heart action and the strength of the patient, and in restoring the normal liquids to the circulation. It directly prevents the annoying thirst so common with these patients.

**Dietetic Measures:**—That which is altogether the most important consideration in the treatment of these cases is the food of the patient and the method of its administration. There is to be considered: (a) the effect of the food in the stomach upon the ulceration; (b) the effect of the gastric juices upon the ulceration; (c) and the imperative demand of the patient for nutrition. (a) Absolute rest of the stomach must be attained. Food of any character acts as an irritant, and pain, nausea and vomiting are increased by it, and occasionally hemorrhage is directly induced. (b) The process of ulceration depends upon the presence of the acid gastric fluids, and it is impossible for food to be taken into the stomach without inducing an outpour of these fluids, and thus directly facilitating and promoting the process of the ulceration. (c) The serious impairment of the function of the stomach results in pro-

gressive general debility and rapid emaciation, in spite of all nutriment which it is possible to supply by natural means. Unless this be overcome, all other measures are useless.

When the diagnosis is clear at the onset, or even if gastritis is known to be present and it is suspected that there is ulcer, the patient should be kept quietly in bed and no food whatever be given by the stomach for a period of several days. This is imperative if hemorrhage has confirmed the diagnosis.

In rectal feeding the intestinal canal must be kept clean and devoid of irritation. It must be thoroughly irrigated when this course is instituted, and it must be washed out before each feeding. I have used predigested milk alone, or with an egg, or half an ounce of beef juice freshly extracted and diluted, a half ounce of cream diluted, or half an ounce of bovine, or there may be given combinations of cream, milk and eggs, or an egg may be given with the meat juice—one of these every four, five or six hours, warm.

If there is local irritation, the enema should be preceded by an ounce of warm starch water to which is added from eight to twelve drops of the tincture of opium. The opium should be omitted when possible. Occasionally this agent must be added to the food. After a few days, if the condition of the stomach is favorable, the quantity or frequency of the rectal enemas may be reduced, and small quantities of carefully prepared and measured nutrients may be given by the stomach at stated intervals; occasionally the meals given in the stomach may be alternated with the rectal feeding.

When stomach feeding alone is depended upon, I am convinced that food administered in smaller quantity every two or three hours is preferable to a full meal three times within twenty-four hours. The same article of diet may be given at every meal for two or three days, and then a complete change be made, coming back to that substance

after perhaps twelve or fourteen days; but a better plan is to change each meal so that the patient will not tire of one food.

Peptonized milk is acceptable to the stomach. An egg thoroughly beaten may constitute one meal, or the white of an egg may be beaten and stirred in milk, hot or cold, or given in a small glass of water. Whey, buttermilk, kumyss, matzoon, and malted milk may be used in turn as is acceptable to the patient; some one of the proprietary milk foods of several of the well-known manufacturers can often be very acceptably adjusted to the patient.

Twenty years ago I accidentally discovered the immense advantage obtained from the careful use of pure ice-cream in this class of cases. I have continued its use with great satisfaction and success. It should be made plain, of pure constituents, with a simple flavor, and should contain but little or no sugar, if so acceptable, and must be prepared fresh on the day used; it must not be made in quantity and kept over. I have used bovine for several years with much satisfaction. I have given it in water, in milk, and in other combinations, and have always found it acceptable. In extreme cases I have given it exclusively in half-dram doses or dram doses every hour, and to children with extreme gastric irritation and emaciation I have given ten-drop doses every fifteen to thirty minutes for considerable periods.

Gastric lavage is desirable in these cases, but in an occasional case it is attended with danger both of perforation and of increasing the irritation. The drinking of a large quantity of hot water early in the morning, or both morning and evening, will sometimes accomplish the desired results without the inconvenience and danger of the introduction of the stomach tube.

Surgical measures in the advanced stages of gastric ulcer are authorized, but have not become popular. This course is really the only available procedure when perforation has occurred, and should not be neglected, as it may save

the life of the patient. More than eighty per cent of those who have been operated upon within twelve hours after perforation has occurred have been saved.

The tendency to relapse in gastric ulcer makes it obligatory upon the physician to direct the diet of the patient and to retain a strict oversight of his health for at least a year after the ulcer has apparently healed. A tendency to recurrence of the acidity and other conditions which make ulcer possible must be contended against, by proper adjustment of all habits of eating and habits of the daily life.

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## DILATATION OF THE STOMACH.

**Synonyms:**—Gastrectasis; gastric ectasy; *gastrectasia*.

**Definition:**—A stretching of the walls of the stomach from loss of muscular tone, propulsive power or contractility, thus increasing the capacity of the stomach by increasing the size of the gastric cavity. The condition may be either acute in character, or it may develop gradually and assume a chronic form.

The average capacity of the adult stomach is about three pints (1,600 cc., Ewald). This may be increased to six or eight pints (3,000 or 4,000 cc.). In exceptional cases the distention may become enormous.

There may be an overgrowth of the muscular structure of the walls, the fibers becoming thicker as they increase in length, but usually the walls become thin and stretched, and occasionally the muscular fibers become atrophied and disappear, and their place is filled by connective tissue. Neither is the dilatation uniform in all portions of the stomach wall. The stretching may occur in the greater curvature or in the fundus, leaving the structure of the lesser curvature undisturbed, thus causing the cardiac and pyloric orifices to seem to be nearer to each other than normal. Or the dilatation may occur in pockets or in

irregularly shaped bulgings, with bands or cicatrices between them, causing the so-called hour-glass stomach. The muscular structure in the region of the pyloric and cardiac orifices when undilated may be thickened, while the walls of the expanded portion may be greatly thinned.

The stomach is usually found to contain a large quantity of dark colored fluid. The walls are usually thinned, except at the pyloric opening, where they are thickened. The rugæ are effaced, the mucous membrane is smooth and softened, and presents the picture of chronic catarrhal gastritis in its various stages. Microscopically the glandular structure is seen to have suffered extensively; the tubes may be visible, but are widely separated. The muscle fiber may be normal in appearance, but interspaces between the muscular fasciculi are enlarged and traversed by strands of connective tissue.

**Etiology:**—**Acute dilatation** is a rare form of this disorder. It results from degeneration of the structure of the stomach walls during the course of the severe infectious fevers. It may occur from the drinking of effervescing drinks, or the drinking of effervescing substances in suspension, which dissolve, react and liberate gas after being drunk; it occurs from sudden obstruction of the pylorus, and also after the prolonged administration of anesthetics; from extreme muscular relaxation; from severe nervous shock, and from paralytic distention (Flagge). The chronic form is usually the result of pyloric stenosis.

Tumors of the pylorus or adjacent organs, cicatricial contraction due to ulcer, or hypertrophy of the muscular fibers of the stomach in the pyloric region from any cause, may result in dilatation. Repeated overdilatation with food or drink is a frequent cause of atonic dilatation. The stomachs of all habitual beer drinkers are usually dilated.

Gastroptosis, produced by muscular strain, tight lacing, enlargement of the liver or spleen, is occasionally among the causal factors. Gastrectasis is not uncommon in chil-

dren, especially in those poorly nourished. The symptoms may be so masked, however, that a diagnosis is not made, but the fact has been frequently verified by autopsy. It is usually a disease of middle life.

**Symptomatology:**—**Dyspeptic symptoms** are the first to appear. There is fulness after eating, pyrosis, belching of gas, pain on pressure over the stomach, a foul breath, coated tongue, constipation and occasionally vomiting, anorexia and discomfort. The **vomiting** is characteristic. It is not frequent, but may occur at intervals of from three to five days, usually in the night, and is large in quantity. The vomitus is dark brown in color, acid in reaction, and consists of the food in various stages of digestion and decomposition which may have been eaten several days before. In cases where there is extreme dilatation the vomiting does not give the desired relief, as it is seldom that all of the contents of the stomach will be evacuated in a single attack of vomiting.

The formation of **gases** due to **food decomposition** further distends the already dilated stomach, while the weight of the food accumulation tends to drag the stomach lower in the abdominal cavity. This causes a distressing sensation of dragging down and distention, finally very difficult to bear.

Compensatory hypertrophy may take place for a time in the walls, but sooner or later an absolute insufficiency and atony occur and the stomach becomes enormously dilated. There is an **abnormal dryness** of the tissues of the body and frequently peculiar nervous symptoms are present. These show themselves first as a spasm of the muscles of the leg and arm, the pain extending over the body generally, and there may be loss of consciousness. Kussmaul was the first to associate these **tetanic spells** with gastrectasis. During all the time there is a ravenous appetite and great thirst.

**Diagnosis:**—The physical examination will show a depression in the gastric region when the patient is stand-

ing and a **bulging** at or just above the umbilicus. With the patient supine this is not so noticeable. Occasionally peristaltic waves may be seen, but they are rare. The outlines of the stomach may be made quite distinct by inflating it with an effervescing draught, always remembering that a large quantity may be necessary to fill it sufficiently full for diagnostic purposes. Percussion will at this time aid in outlining the dilatation, determining its location and extent. The viscus should then be filled with water, its quantity noted and the location verified. The deglutition murmurs should be noted, as they may be of value in determining the amount of displacement. The length of the stomach tube is also noted, remembering that in the normal condition the tube will pass about twenty-four inches before it comes in contact with the greater curvature, while in gastrectasis it may pass twenty-eight inches or more. Absorption is tested by giving potassium iodid in two grain doses, in a capsule, and the saliva tested every five minutes until the presence of iodine is demonstrated by its well known reaction with starch. The motility is best judged by the salol test. The chemistry of the stomach contents should here be noted. Hydrochloric acid may be found absent or in excess. The organic acids are usually present—i. e., lactic, butyric or acetic acids. Carbonic dioxid, hydrogen sulphid and other gases are formed. With these clinical evidences and with the recognition of a causal factor it should not be difficult to make a diagnosis. (N. A. Graves.)

The diagnosis is facilitated by the use of the electric light method (Einhorn), or by the gastric sound (Turck). In using the electric light the stomach is filled with water and the light is introduced into the fluid. In a dark room, with a patient who has no excess of fat over the abdominal walls, the size of the stomach can be readily determined by the area of the light, which is clearly outlined. If forty grains of sodium bicarbonate be added to each pint of

water before introduction, or if other fluorescent solutions be used, the outline is more distinct.

With the gastric sounds introduced and passed against the walls, the tip is felt for, from the outside, and followed as it is moved around within the expanded cavity.

The diagnostic symptoms of the acute form are sudden occurrence of the symptoms, incessant vomiting, greatly relaxed abdominal walls, and especially the profound prostration and threatened collapse. In the chronic form there are the physical signs above named, and the occasional vomiting of large quantities of food which has remained in the stomach for one or more meals, and the chemical character, also, of the vomitus.

**Prognosis:**—Chronic gastritis offers a very unfavorable prognosis, especially when the disease is recognized late and is associated with nervous symptoms.

**Treatment:**—In the treatment of this condition an effort should be constantly made to reduce the amount of work the stomach must do, either in the digestion or in peristaltic action, in evacuating its contents into the intestines. Fluid and food must not be allowed to accumulate in the stomach. The food should be selected with the utmost care, and taken at regular intervals during the day. At night, before the patient retires, the stomach should be thoroughly washed out during the early part of the treatment; later, after perhaps two or three weeks of favorable progress, **lavage** should be performed every two, three or four days.

The patient should early be taught to wash out his own stomach, as it is often necessary to continue this measure for a long period. For this stomach lavage, a mild solution of **sodium sulphite**, two per cent, or **sodium bicarbonate**, or a three per cent solution of **boric acid** is of service; occasionally a one per cent solution may be used. This process prevents fermentation and further dilatation, cleanses the walls of the stomach, removes all irritation,

especially nausea and vomiting, and conduces to inactivity and complete rest.

In the administration of food, there should be considered: (a) an exact and regular quantity; (b) the selection of that which will digest readily and does not tend to ferment; (c) the taking of an abundance of time for each meal, with avoidance of haste, anxiety and worry; (d) the thorough mastication and insalivation of the food; (e) the use of properly selected artificial digestives.

The patient should have the largest meal in the morning; it should consist of peptonized milk, six or eight ounces, an egg, with stale bread, toast or zwieback. He may also have some scraped beef, or a small piece of rare broiled steak. Following this, there should be some digestive, such as the **essence of pepsin** or **pancreatin**, the latter being best taken an hour after breakfast. At noon he should have a meal similar to the one taken in the morning, with the addition perhaps of a baked potato. He may at this time have a small piece of roast beef, well done. Perhaps half an hour after eating, the stomach should be submitted to gentle massage, the hand passing from below upward, and from the left to the right, or from the fundus of the stomach to the pylorus, in order to assist the stomach in emptying its contents into the duodenum. For the evening meal there should be a small quantity of peptonized milk, or cream, or a teaspoonful or two of **bovinine**; a small piece of toast over which hot water is poured, the toast then well buttered; or **graham** crackers with a small bowl of hot beef tea may be given.

The physician should study to select those foods the larger portion of the digestion of which is accomplished in the intestinal canal. The free drinking of water, or the taking of a large quantity of fluids, must be persistently avoided. The patient must eat but little food that contains free starch or sugar, and alcoholic drinks of all kinds must be avoided. Occasionally it will be desirable

to give the stomach a complete rest for a time after lavage, and to feed the patient by rectal enemata.

In the selection of medicines, those which increase muscular tone and improve the nerve power are of the most importance. For this purpose **strychnin** and **hydrastis**, with **electricity**, either the **galvanic** or the **faradic current**, selected according to the immediate indications, will be serviceable. Any excess of acids must be neutralized, and a tendency to fermentation must be anticipated or antagonized by the use of **sodium sulphite**, or a drop or two of **carbolic acid** in emulsion. **Charcoal tablets** are a mild and **efficient antifermentative**. Occasionally it will be well to give the patient **hydrastis**, ten minims; **collinsonia**, fifteen minims; **ergot**, five minims; with thirty minims of **syrup of licorice**, half an hour before meals and at bed time.

The treatment of **acute cases** should be conducted with great caution, and with consideration of the serious nature of the condition. The patient should be kept perfectly quiet, and all anxiety and worry must be rigidly excluded. The stomach should be at once thoroughly washed out, and all food for three or four days should be given by enema. To satisfy thirst, the patient may have water by the rectum or an injection of the **normal salt solution** every ten or twelve hours. A tight bandage around the stomach should be applied and **strychnin**, one-fortieth of a grain, or **atropin**, one one-hundredth of a grain, or **hydrochlorate of hydrastin**, one-fourth of a grain, should be given every two hours.

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## PYLORIC STENOSIS.

There is a condition which involves overgrowth of the muscular fibers in the region of the pylorus, which is distinct from the conditions previously named and must have separate treatment. The walls of the stomach may become

thickened by undue development in the connective tissue, which, while it will decrease the size of the cavity, will increase the actual diameter of the organ. Another form is known as **congenital hypertrophic stenosis**. Those forms of stenosis which are associated with the development of disease of contiguous organs, and those due to disease either of fibrous development of the stomach walls or of thickening from gastric ulcer contiguous to the pylorus, or stenosis from the presence of cancer, are not included under this head.

**Symptomatology:**—Exclusive of the symptoms of the last three named conditions which are given elsewhere, there is a sensation of fulness almost universal with the taking of food, there is tenderness, a dragging sensation, pressure and later pain, nausea and vomiting. In the larger proportion of cases there is deficiency of hydrochloric acid in the gastric fluid, emaciation and diminished strength.

In congenital stenosis, the vomiting occurs about the third day of the child's life without apparent cause, is sudden, and very persistent. The vomited matter never contains bile, and the food is usually but little changed. The condition is serious, exhaustion and emaciation following rapidly, with death within a few weeks.

**Treatment:**—The treatment will be symptomatic, the measures being applicable which are suggested in other cases. No specific plan can be outlined. In the congenital form, if the diagnosis is made early, everything should be excluded from the stomach, if possible, and feeding be done through the rectum for a period of from ten to fourteen days, at which another effort can be made to feed through the stomach. This can be continued, if no symptoms of retention or decomposition of food appear.

## HEMORRHAGE INTO THE STOMACH.

**Synonyms:**—Gastric hemorrhage; *gastrorrhagia*.

**Etiology:**—Hemorrhage into the stomach is not always due to disease of that organ, and should not be classed as a disease, but as a symptom only.

Those causes which most frequently induce hemorrhage are: (a) diseases of the walls of the stomach, which are heretofore described, involving the blood vessels, such as gastric ulcer and cancer. The ulceration of chronic gastritis, or the profound congestion of acute gastritis, especially that which results from the ingestion of irritants and corrosives, induces hemorrhage. The condition may follow diseases of the blood vessels, as (b) aneurism of the arteries, or fatty degeneration of the local blood vessels, or varicose veins, in the gastric walls; (c) diseases of the liver affecting the portal circulation, as cirrhosis, cancer or tumor, or thrombosis; (d) diseases of the spleen; (e) chronic disease of the heart or of the lungs; (f) severe prolonged infectious diseases, which induce serious changes in the blood, affecting its coagulation, as typhus, yellow fever, cholera, smallpox, and, rarely, scarlet fever, diphtheria and measles; (g) cancer in some contiguous organ, penetrating the stomach walls; (h) traumatism, as gunshot or knife wound, or a severe blow, or laceration from a fall or severe muscular strain or injury from a sharp foreign body swallowed, or from a severe surgical operation; (i) vicarious menstruation; (j) hemophilia; (k) very rarely a patient suffering from epilepsy or hysteria or tubercular meningitis will have gastric hemorrhage.

**Hematemesis**, strictly considered, is a vomiting of blood, and while including all that is stated above, it does not necessitate an acutal hemorrhage from the stomach. An injury to the mouth, throat or esophagus may induce hemorrhage, and blood may be swallowed, as it often is, in nose bleed, and in hemoptysis, and from the extraction of a tooth. An infant may suck blood from a fissured or

ulcerated nipple. In these cases the simple vomiting of blood must be distinguished from hemorrhage into the stomach.

**Symptomatology:**—Hemorrhage into the stomach, may occur without **vomiting**, or hematemesis. There may be but a small quantity of blood, which may be digested, or a portion of the blood may be passed by stool from the intestines as a black, disintegrated, tarry mass, seldom in the form of clots, unless from hemorrhage of the lower bowel. In an occasional case hemorrhage into the stomach may be so profuse as to result in sudden death, before vomiting occurs. Usually preceding vomiting there is a sensation of warmth in the stomach, the patient is faint and there is vertigo, the face becomes pale, and occasionally there is a flash of heat over the surface of the body. Nausea only may be present, or there may be nausea for some time before vomiting occurs, or vomiting may occur abruptly. Where the hemorrhage persists for a period of two or three days, there may be constant nausea, with frequent vomiting of the contents of the stomach, the paleness increases to pallor, and acute anemia is induced. Blood vomited immediately is usually of a brighter red color, and not altered by the gastric secretion. That which is retained is dark, grumous and materially changed by the gastric fluids.

**Diagnosis:**—The difficulty in diagnosis is in determining, in the absence of vomiting, first, that there is hemorrhage; and, second, the source of the hemorrhage. The other symptoms of disease must be carefully weighed and the previous history of the case fully considered. A careful physical examination may be necessary. A common error is made in distinguishing between hemorrhage from the stomach and hemorrhage from the lungs. In the former case there is nausea and vomiting, usually of a large quantity of dark, clotted blood, mingled with food remnants. In the latter case there is much cough, a warm, salty taste in the mouth, a much smaller quantity of blood, which is bright red and frothy. That from the stomach is of acid

reaction, while that from the lungs is of alkaline reaction. With hemoptisis there is difficult respiration and rapid, feeble heart action.

**Prognosis:**—It is seldom that death occurs from the hemorrhage. The rupture of a blood vessel or of an aneurism may prove fatal. In other cases the seriousness depends upon the progress of the condition which causes the disease.

**Treatment:**—In the treatment of hemorrhage from the stomach, the cause must have full consideration. The treatment of the hemorrhage is fully considered in the treatment of gastric ulcer, to which the reader is referred. If the case is severe and the impression upon the system is a marked one, the entire course of treatment laid down for gastric ulcer should be closely carried out for a few days. If there is not actual disease of the stomach, the use of the **compound tincture of erigeron and cinnamon** may be persisted in with only good results. Twenty drops may be given every hour, for three or four doses, to be continued later at longer intervals. The subsequent treatment and care of the patient will be the same as in gastric ulcer.

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## CANCER OF THE STOMACH.

**Synonyms:**—Carcinoma of the stomach; gastric carcinoma; gastric cancer.

**Occurrence:**—Malignant disease of the stomach occurs more frequently than any other form of cancerous development. Walsh showed it to be the seat of cancerous growth in 21.4 per cent of all cases of malignant disease—more than one-fifth. It occurs here primarily in most cases; it is seldom secondary.

**Location:**—Walsh also found that in 1,200 cases of cancer of the stomach, the disease was located in the pyloric region in 791 cases; at the lesser curvature in 148 cases; at the

cardiac orifice in 104 cases; on the posterior wall in 68 cases; on the greater curvature in 34 cases; on the anterior wall in 30 cases, and on the fundus in 19 cases. It will be thus seen that nearly two-thirds of the cases involve the pylorus. Brinton explains this by the fact that the muscles in this location do a larger amount of work than those of any other part of the organ. It is probably also due to the fact that the contents of the stomach are brought more forcibly in contact with the walls of the stomach in this location, and that persistalsis tends toward this point. It is quite common for the duodenum to be involved also when the disease is located at the pylorus.

From the pylorus the disease spreads most rapidly and most widely in the sub-mucous tissue, is more rapid toward the cardiac orifice and in the lesser curvature.

**Variety:**—Most frequently the disease occurs as medullary carcinoma, second in order is the adenocarcinoma, and third, it occurs as scirrhus. The medullary form is of rapid growth, and necrosis of tissue occurs early while the disease is extending to other parts of the organ. In this, and also in the adenocarcinoma, there is a tendency to gelatiniform degeneration, with some hypertrophy in the shape of tumors, called colloid cancers. These are apt to cause adhesion between the stomach and other organs, and to extend their growth to other organs. Scirrhus cancer develops in the sub-mucous structures of a part or all of the stomach, in the form of a dense growth, causing the walls to become thick and hardened or leathery, sometimes designated as the india-rubber bottle stomach.

**Etiology:**—It has been argued that the disease follows chronic gastritis and ulceration, it being supposed that these diseases render the walls of the stomach favorable to the primary deposit of the cancer cells. Statistics, however, do not furnish much proof of this theory, as the percentage of cases is small in which these diseases were known to have previously existed. Indeed, it is true that very many patients who are found to have gastric cancer give a posi-

tive history of freedom from all symptoms of any previous stomach trouble, even of a mild character.

The disease occurs most frequently between the ages of forty and sixty years. Of these, thirty per cent occur between fifty and sixty. Lebert claims that the maximum liability is between the forty-first and sixtieth year. It seldom if ever occurs under twenty-one years of age, and is very rare under thirty. Heredity seems to exercise considerable influence in the causation of the disease. Fourteen per cent of about eighteen hundred cases furnished a family history of cancer. From hospital records it would appear that a very much larger portion of cases occurred in males than in females, but as a larger number of males are treated in hospitals than females, this may be erroneous. No race of people suffer from this disease in anything like the proportion in which the white race is attacked. While negroes suffer most from uterine cancer, the whites suffer far more from gastric cancer. The disease seldom occurs in the tropics.

**Symptomatology:**—The onset of this disease is often **insidious**. It is seldom if ever painful at this stage. In many cases there is no disturbance of the stomach, except perhaps a slight **loss of appetite**, which develops slowly. Conspicuous symptoms may not appear until the condition has been present a long time and has involved quite a considerable area of the stomach walls. Finally, the most common simple symptoms of stomach derangement occur, such as **eructations** of gas, and sometimes of food, a sensation of **oppression in breathing** after eating; eventually **nausea** appears, with occasional **vomiting**, which later occurs with increasing frequency, finally becoming persistent. If the vomiting does not occur until the food has had time to become digested, it may be inferred that the disease is located at the pyloric orifice. If there is some pain, with an inclination to vomit at the time the food is taken, the inference is that the disease is located at the cardiac orifice. In the latter stages of the disease the vomitus may contain

considerable blood, or it may be composed of imperfectly digested food and some coffee ground substance, due to disintegrated blood corpuscles.

In another class of cases, **pain is an early symptom**, and continues throughout the entire course of the disease. It may exist in the form of a constant gnawing sensation or as a burning pain, or it may increase or diminish with the presence of food, or become at times sharp and colicky in character. Occasionally it may be located in the back, or in the loins, or beneath the shoulder blades, or in the right hypochondrium. Cancer of the pylorus is probably the most painful form of the disease.

From the first there is a **loss of flesh** and strength, although in rare cases this is not apparent. The patient becomes pale, the features shrunken, and gradually a marked **anemia** is plainly seen. The characteristic **cachectic** appearance may be observed early, and is plainly marked as the disease progresses. As the anemia increases, there is a peculiar **pallor** of the countenance, which, with the emaciation, is in itself a strong diagnostic factor. An examination of the blood shows appearances similar to those of pernicious anemia, usually with some leucocytosis, which increases if there is septic infection, ulceration or hemorrhage; the white cells may increase without leucocytosis.

In perhaps fifty per cent of the cases of gastric carcinoma there is a **slight fever**, which continues from day to day during the progress of the disease, although there may be no apparent rise in the temperature during the early stages of the disorder. The temperature does not exceed 100° or 100.5° F, and there may be a complete intermission at some period during each day. In other cases the temperature is subnormal, while the heart's action is weak and inefficient. The capillary circulation is usually imperfect. **Constipation** is quite persistent in most of the cases, but in rare cases diarrhea may be the rule, while in yet other cases constipation and diarrhea may alternate. Where hemorrhage has occurred the feces will be mixed with blood, more or

less coagulated, or black and tarry from disintegration. Finally **mild dropsical symptoms** occur, such as swollen ankles or mild anasarca. If the disease extends to the liver, there is hypertrophy of this organ and **jaundice**. Occasionally these symptoms are so distinct as to cause a diagnosis of carcinoma of the liver to be made instead of the stomach. Extending to the peritoneum, the disease induces diffused peritonitis and ascites. Perforation of the stomach wall is a rare complication.

In an occasional case the nervous system becomes involved in the constitutional degeneration, and the patient becomes irritable, with occasional slight aberration. In other cases—and this condition is probably the most common—the patient becomes **dull**, indifferent, **listless** and is inclined to **drowsiness** as the fatal termination of the disease approaches. He sleeps a great deal, is difficult to arouse, and finally becomes comatose, with deep and labored breathing.

**Diagnosis:**—In making an examination over the stomach some hardness will be observed quite early; later the structural changes in the stomach are plainly apparent; whether of normal size or dilated, the outlines of the organ can be plainly seen. The hardened structure may be smooth and uniform, or it may be nodular and occasionally of movable masses. Sometimes these enlargements will be found to extend downward, a little to the right, and as far perhaps as even below the umbilicus. When the disease is in the lesser curvature of the stomach or at the cardiac orifice, it is with difficulty distinguished until it has become quite large. When the patient is lying on the back with the legs flexed, the pulsations of the aorta against the hardened mass may be plainly seen, and in rare cases peristalsis may be observed. The tumor moves usually with the respiration, a fact which is of importance in the diagnosis, as, if the induration is from gastric ulcer, it is likely to be immoveable, as adhesions are more common.

The characteristic cachectic appearance of the patient is

present in all cases, often being observed before other evidences have appeared. If there is pallor, emaciation and increasing debility without cachexia, this disease must be looked for, especially if the patient is above forty years of age. If Bright's disease and diabetes may be excluded as the cause of the anemia and pernicious anemia is not present, the presence of cancer may be inferred. The appearance of hypertrophy or tumor in the organ is reasonably positive evidence. This is confirmed if the characteristic burning, gnawing or twisting pain is present, accompanied with the vomiting of coffee-ground material. It must be remembered that in carcinoma of the stomach hydrochloric acid is almost persistently absent, and lactic acid is almost as persistently present. This may be determined by the use of various meal tests. The test for hydrochloric acid, as suggested by Gungburg, is as accessible as any. It is made of fifteen grains of phloroglucin, fifteen grains of vanillin and one ounce of absolute alcohol. The contents of the stomach, an hour after a test meal has been taken, are withdrawn and a portion of the fluid filtered. To a small quantity of the filtrate three drops of the reagent are added, and this is evaporated in a porcelain dish. A bright rose red tint will appear along the edges of the evaporated substance.

In an occasional case a microscopical examination will discover the cancer cells in fragments of disintegrated tissue, but the absence of cancer cells does not prove the absence of the disease.

**Prognosis:**—The prognosis is always unfavorable. If the case recovers from treatment, the diagnosis of cancer is questioned. An early diagnosis, followed by a surgical operation before the constitutional symptoms were too pronounced, has resulted in temporary relief from the disease and a prolongation of life. In a few cases, it is claimed, there has been no evidence of a return of the disease after the operation. The disease runs its course in from one to two years.

**Treatment:**—The medical treatment will be directed to the relief of the conspicuous symptoms, more than to the cure of the actual condition. I am positively in favor, however, of treating the early cases with our specific remedies. I believe we may thus antagonize the development and progress of the disease, may postpone anemia, emaciation, nervous irritation and organic complications, and thus materially prolong life. The use of **hydrastis**, **capsicum**, **xanthoxylum** and **geranium maculatum** will do much to preserve the integrity of the organ, and **echinacea** will antagonize the growth and development of the cancer cells. **Hydrochloric acid** should be given with every meal. The food should be selected with as much care as in cases of gastric ulcer. It should be predigested and its assimilation encouraged. When vomiting from obstruction of the pylorus is persistent, the food should be given per rectum. Nausea and vomiting should be treated in order to relieve, whenever possible. The hemorrhage must be persistently combated. Constipation should be overcome, and last, but not least, the pain should have constant attention. While various measures will relieve much of the pain, when mild, in the severe cases nothing but **morphin** will be found sufficient. **Conium maculatum**, **cannibis indica** and **hyoscyamus** should be used with other indicated remedies to relieve pain. Often the pain may be prevented by predigesting the food, or administering active digestives, with **hydrochloric acid**, during or immediately following the meal.

While **gastric lavage** is beneficial in a few cases, ordinarily it induces additional irritation and greatly increased pain, and often increases the danger of perforation.

When the disease can be determined as exclusively in the walls of the stomach, and not involving other structures, a surgical operation will usually prolong life. It is doubtful if a complete cure is ever effected by this means.

## GASTRIC NEUROSES.

There are several disorders referable to the stomach and its functions that do not present organic lesions. They are traced directly to disorder of the nervous system, to deficient, altered or perverted nerve supply. Some of these so closely resemble rare lesions that it is with difficulty that a differential diagnosis can be made. Careless diagnosticians are in danger of classing the real lesion, when obscure and difficult of confirmation, as a neurosis. On the other hand, it is not uncommon practice to treat the lesion as local, and entirely overlook the fact that the nervous system alone is at fault. There are times, when the actual condition cannot be assured, that it is far safer to treat both the local condition and the nervous system also.

We must consider inefficient action of the stomach as due to inefficient supply of nerve force. This is the case in neurasthenic patients. This may result also in perverted functional action, as described in several conditions hereafter considered.

In other cases there is actual disease in the central nervous system. In yet other cases the action of the nerves of the stomach may be perverted or irritated by development of tumors or other growths in adjacent tissues or structures. A common cause of pain which may recur at intervals, and which may be invariably referred to the stomach, may be due to organic disease elsewhere.

**NOTE:**—I have given the *treatment* of those neuroses, which, while local, have a more general influence with the article. The treatment of all of those in which the influence is local, is considered under the one head, on page 138.

## NERVOUS DYSPEPSIA.

**Synonyms:**—Gastric neurasthenia; *neurasthenia gastrica*.

**Definition.**—A functional disorder of the stomach, resulting from insufficient nerve force, characterized by either

regularly recurring attacks of pain and eructation of gas, or attacks, erratic in character, occurring when the patient is exhausted, or when there is irritability of the nervous system, or by the absence of such symptoms when the patient is quiet and restful. While there are no organic lesions at the onset, persistency of functional derangement, especially of hyperacidity, may ultimately induce them.

**Etiology:**—This condition results from general or local neurasthenia. It may be temporarily induced by persistent exhausting mental labor, by extreme anxiety, or great grief, or uncontrolled anger, social excesses, or sexual excesses and dissipation. While the condition is common in highly emotional or hysterical patients—those who do not exercise self-control—it is found quite commonly among those who are apparently in good health and well nourished, with an absence of constitutional or organic disease. At other times the condition results from causes reflex in character. It has been observed in patients suffering from nasal polypi, or from other chronic disease of the nose, throat or of the ears. It follows or accompanies ovarian or uterine irritation, or phymosis, piles or rectal fistulæ.

**Symptomatology.**—Usually the symptoms are similar to those of chronic gastric catarrh, the **hyperacidity**, local **tenderness**, **eructations of gas** and discomfort from food in any form being the most common. However, all symptoms vary with the cases. In some patients the food will digest within the proper time, and will be properly absorbed. There will be found no changes in the gastric fluids, and yet the patient will complain of great discomfort. In other cases, with no discomfort at first, there will be very imperfect digestion and ultimately eructations of gas, which may interfere with the action of the heart and induce palpitation. In yet other cases the symptoms may all be acute, and immediately follow the hearing of bad news, sudden grief, anger or intense anxiety.

**Sudden vomiting** may be induced, with some prostration and perhaps severe cramping pain in the abdomen, with

diarrhea. Occasionally the symptoms are only those of increased peristalsis, in which the patient may have an immediate bowel movement. In an occasional case gastric peristalsis may be plainly apparent upon physical examination.

The repeated occurrence of this condition results in impairment of the health, and after two or three attacks there is an inclination to a return of the condition at progressively shortening intervals. These patients have usually but little appetite and are inclined to eat at irregular times or with irregular intervals between the meals. They complain much of eructations of acid liquids, and occasionally there is simple regurgitation of the food.

**Diagnosis:**—The diagnosis depends upon the exclusion of organic disease and upon the presence of a more or less weakened condition of the nervous system, usually with a neurotic tendency, or it depends upon the presence of a reflex cause, for the disturbance.

**Prognosis:**—This depends upon the ability to remove the cause of the disease. Serious results seldom occur. Treatment of the gastric condition alone will postpone the development of the trouble, especially in those cases where the cause is reflex and obscure, but constitutional measures will be found necessary in nearly all cases.

**Treatment:**—No class of cases should have a more thorough examination to determine the exact cause of the condition than this. I am impressed that only in a very small percentage of the cases will it be found that the nervous system is not involved. Primary restoration will be found imperative. The patient must be removed from mental anxiety and overwork to congenial and pleasant surroundings—to a condition in every way desirable to the patient. He must have long hours of rest and sleep with abundance of **outdoor exercise**. There must be no excesses of any kind, and alcohol and tobacco must be excluded. As sexual neurasthenia is a common cause, this must be inquired into at the onset, and clear instructions must be given in over-

coming this condition. If the patient suffers from dependency, the physician must at once establish his confidence in an ultimate complete cure. With young men mental anxiety from spermatorrhea, especially if there has been previous masturbation, is a very common cause.

A generous, highly nutritious diet is essential, but at first some care must be exercised in the adjustment of the food; later it will be found, if the patient eats slowly and masticates the food thoroughly, that a reasonably extensive diet can be permitted. There are times when a single article of diet will seem to disturb the stomach, when later this article is craved and can be eaten with impunity. Usually it is best to give a light breakfast and an early dinner. This dinner may consist of well cooked meats, one vegetable, and a custard or ice-cream for dessert. The supper should be light and of some concentrated, easily digested food.

I am in the habit of beginning the treatment with **direct nerve tonics**. I administer the **phosphates** or the **hypophosphites**, or **phosphoric acid**, as the exact condition of the stomach seems to demand. At the same time small doses of **nux vomica** will usually exercise a beneficial influence which is in harmony with the nutritional effects of the above. **Hydrastis canadensis** is also a superb nerve tonic. It not only influences the nutrition of the central nervous system, but it restores the tone of the nerves distributed to the stomach, and soothes irritability of the terminal filaments of the sympathetic, which may cause reflex irritation. Later more **stimulating tonics** may be given, with **iron**. The condition of the intestinal canal, liver and kidneys must by no means be overlooked.

Spasm of the pylorus is a condition to be looked for in hysterical cases. This may be present, with or without spasm of the cardiac orifice. In either case from ten to fifteen drops of the **tincture of lobelia seed** should be added to four ounces of water, and a teaspoonful of this, given every twenty or thirty minutes. Small doses of **colocynth**

will act similarly to lobelia. In other cases twenty drops of **dioscorea** may be given in an ounce of hot water. This will overcome spasmodic conditions of the stomach and will counteract the tendency to extreme peristaltic action. Decomposition of food may be antagonized with **charcoal tablets**, or with five grains of the **sulphite** or the **hyposulphite of sodium**. To relieve nausea and vomiting in reflex cases I have obtained better results from **ingluvin** or from a mixture of equal parts of **ingluvin** and **subnitrate of bismuth**. Other measures will be indicated by the exact symptomatology of the individual case.

### GASTRALGIA.

**Synonyms:**—Gastric neuralgia ; neuralgia of the stomach ; *gastrodynia* ; *cardialgia*.

**Definition:**—A sudden paroxysm of extreme pain, resembling that of gall-stone or renal colic, located in the stomach, but accompanied with no gastric lesion.

**Etiology:**—This disorder is probably due to irritation of the terminal filaments of the gastric nerves. The cause may be local, or it may be remote and thus reflex, or it may be secondarily reflex ; that is, it may be caused by a condition which is itself the result of reflex irritation. Those attacked are usually of a neurotic type, highly emotional, hysterical, anemic or neurasthenic, possessed of an irritable nervous system. It is rarely brought on by incorrect diet or hyperacidity, but if so, this is the exciting cause only for the time being. At times it is relieved by the taking of food. It may be induced also by hypochondriasis, deep grief, anger, worry or intense anxiety, or any sudden or severe nervous shock.

It is more common in females than in males, and occurs during the child-bearing period, and at the menopause. Disorders of the menstrual function or uterine or ovarian irritation are common causes. At times it is distinctly periodic in appearance, and may be classed with malarial

or periodic neuralgias, especially as it is amenable, to a degree, to antiperiodic treatment. It may occur also in men who are addicted to alcoholics and tobacco.

**Symptomatology:**—The **pain**, extremely severe or agonizing in character, has almost no prodromata. It is usually unannounced. It occurs suddenly and may itself produce a **shock** to the nervous system. It is at once located in the stomach, and may extend through to the back and radiate outward over the lower part of the chest, or around the borders of the ribs and downward to the abdomen. The pain is sharp and cutting or lancinating in character, and may last from a few minutes to perhaps two hours, leaving the patient anxious and exhausted. It may terminate with **nausea** and **vomiting** or free **eructations of gas**. Brief attacks may leave the patient in his usual condition. The patient may be relieved by firm, steady pressure, and as it usually occurs when the stomach is empty, some carefully selected, non-irritating food may also relieve it. With the appearance of the pain in hysterical or highly irritable patients a considerable train of nervous symptoms may appear, which must be attributed to the actual underlying condition as the real cause.

**Diagnosis:**—Organic disease may be quite readily excluded. There have usually been similar previous attacks, the history of which the patient takes apparent pleasure in relating. These have left no local disorder. The sudden paroxysm and the character of the pain are diagnostic. It must be distinguished from bilious colic, from distention from gas, from the acute pain of gastric ulcer, and from the gastric crises of locomotor ataxia.

**Prognosis:**—The prognosis as to recovery from the attack is good. As to the prevention of future attacks, the prognosis depends upon the possibility of determining the character of the cause and its removal.

**Treatment:**—For immediate relief of the pain in mild cases ten drops of **chloroform**, or this amount of chloroform and five drops of the tincture of **aconite**, may be poured into

the palm of the hand and held over the pit of the stomach, with the hand pressed firmly against the skin until it induces an extreme burning sensation. The effect, if favorable, is immediate. At other times a large **hot mustard poultice** alone over the entire epigastric region, or one over the stomach and another across the middle of the back, will relieve the pain. When the pain is radiating in character and accompanied with some diffused soreness, from fifteen to thirty drops of specific **dioscorea** in hot water will relieve it. This may be repeated every fifteen minutes for a few doses. If it will prove beneficial at all, it will act almost immediately. Occasionally ten drops of **gelsemium** at the onset will stop the pain, or a single full dose of **lobelia**. If there is gaseous distention, **colocynth** and **peppermint**, or a few drops of **turpentine**, will relieve the pain. In cases where the onset is abrupt and the pain excruciating, there should be no hesitancy in administering one-fourth of a grain of **morphin** hypodermically. In some hysterical cases an idiosyncrasy against this remedy may exist, which must be inquired into, and if known, the remedy must be avoided. In strong men a half grain of morphin may be given at the first, or one-fourth of a grain may be repeated in half an hour. Prof. Whitford relieves this variety of neuralgia with full doses of **belladonna**, about five drops of a good fluid extract, and ten grains of **ammonium chlorid** at each dose. In extreme cases three doses may be given an hour apart.

In the absence of an attack the patient must be treated with reference to the permanent removal of all causal conditions whatsoever. The nervous system must be built up and enforced by the best known measures. This is the only correct foundation for a permanent cure. Every source of reflex irritation must be relieved, whether it be in the nervous system, in the liver, kidneys, ovaries, uterus, or in the intestinal tract or rectum. Menstrual derangements will be best treated by our direct uterine regulators, and by local measures. Dr. Woodward has cured his cases

during the menopause by frequently **washing** the **uterine cavity** with **hydrogen peroxid** and a mild antiseptic, according to his method. The course is simple and mild, but efficient. Surgical measures must not be neglected when indicated.

In hysterical patients with amenorrhœa, **pulsatilla** will be indicated. When there is muscular relaxation and muscular soreness, **cimicifuga** must be given. **Helonias** will relieve those who complain of dragging pains in the lower abdomen.

Where there is lithemia or a rheumatic tendency, **cimicifuga**, **bryonia**, **rhus toxicodendron** and **gelsemium** will be of benefit, according to their several indications. When periodicity suggests malaria as the cause, this must be carefully treated with **quinin**, **leptandrin**, **iris**, **gelsemium**, and other remedies which may be indicated. In one of my cases, where the pain was referred to the abdomen, I produced a cure by frequent small doses of **ammonium chlorid**, given with one-sixteenth of a grain of **morphin**. The use of the **galvanic current**, or the **faradic current**, if the cause is rheumatic in character, or **vibration**, will be found of signal service in an occasional case, often resulting in a complete cure. I first stated that at the onset the nervous system must receive first and careful attention and must be freely restored and relieved of all irritation; this must not be overlooked.

### HYPERCHLORHYDRIA.

**Definition:**—A condition in which there is an over-secretion of the free hydrochloric acid of the gastric juice.

**Etiology:**—It is a result of disorder of the nervous system, and is caused by the conditions named as the causes of nervous dyspepsia. It is common in the large cities, among the brain workers of the learned professions, those especially who confine themselves closely to their business, who are of sedentary habits, and who neglect physical and outdoor exercise. The exciting cause may be the habits

of using alcohol and tobacco, and the use of highly seasoned food or food difficult of digestion, eaten at irregular hours and in irregular quantities, or over eating.

**Symptomatology:**—The condition occurs at first within half an hour or an hour after the taking of food. It is accompanied with a sensation of **heat** or burning **in the stomach**, and with the **eructation** of sour gas or acid liquids. I have observed increased **tenderness** of the stomach in most cases. It causes a burning sensation in the throat, which may be continuous while the acid fluid is in the stomach. It causes local distress, and often **severe pain**, **dizziness**, **nausea**, **disturbed vision**, and extreme general discomfort, **malaise**, and frequently, **headache**, which is in some cases invariably preceded by the **vertigo** and disordered vision. This condition retards the digestion of starches and facilitates the digestion of albumenoids, which may be administered to diminish the pain. It does not prevent digestion, but delays it and produces unpleasant symptoms during digestion. It does not necessarily interfere with the general nutrition of the patient. After the chyle has escaped from the stomach there is no further disturbance until after the next meal. Early in the case, this may last for a few days and then disappear, to recur after a period of from six to fourteen days. After the condition has continued in this manner for a considerable period, it may become persistent, and there is no time that the condition is absent at the time of the digestion, and in some cases the stomach is not free from an excess of acid fluids after the digestion is complete. In those cases which Reichman describes as **gastro-succorhea**, there is a considerable quantity of acid fluid in the stomach at all times, resulting in anorexia, irregular severe vomiting, extreme headache and prostration. This condition in some form is a direct cause of, or is present at some time during the continuance of most of the digestive disorders and of the gastric neuroses, which have been previously described.

**Treatment:**—I have described elsewhere the usual in-

dications for the treatment of gastric acidity, but this variety suggests a course somewhat different from that usually prescribed.

The use of **sodium** and **potassium preparations** to neutralize the excessive acidity is common practice, and while it is usually at least temporarily successful, there is a question in most cases of its permanently beneficial influence. Foreign writers and eminent authorities in this country claim that an efficient method with which to prevent the hypersecretion of hydrochloric acid is the administration of reasonable doses of this acid as a medicine, well diluted, thirty minutes before each meal. Others suggest **nitric acid** in the same manner for this purpose. Medicines have been disappointing in many cases. I have been impressed that the use of **nerve sedatives** is often of much efficacy, as nerve irritation is an almost constant concomitant symptom. I have given **bromid of sodium** in ten grain doses, and have advised a similar dose of **bromid of strontium**.

Two of our physicians have advised me that they succeeded well in this condition with small doses of from five to ten minims, every three or four hours, of **passiflora**. Ten drops of **eupatorium perfoliatum**, or twenty drops of **enothera biennis** every two hours, or five drops of **berberis** every two hours, will be of service. These remedies are all calculated to relieve irritability of the peripheries of the gastric nerves. Small doses of **aconite** will sometimes be found serviceable, and the free use of **bismuth sub-nitrate** is suggested. Prof. Whitford's **formula** as given in chronic gastritis will be of material benefit in these cases.

There is a class of cases where the tongue is pointed and thin, with a red tip, that will be benefited by the use of **rhus** in one-fourth drop doses every three or four hours.

**Starchy** foods, especially **oatmeal**, should be restricted; prepared **breakfast** foods, malted food, lean meat, taken dry usually, with eggs and milk, will be more easily

digested. Some of the **non-acid fruits** will be very acceptable. **Oranges** usually are easily digested.

### CARDIOSPASM.

Spasm of the muscular fibers at the cardiac orifice of the stomach may occur, as it usually does, as a sudden, acute, violent cramp, accompanied with extreme pain. Or it may appear in a chronic form, although this is not common. This condition may be due to irritation from disease of the mucous membranes of the stomach or from excessive acidity, or it may result from distention of the stomach from the accumulation of gas, but there is always an underlying nervous irritability. The effect of the spasm may remain after the pain is relieved, in at least an apparent muscular rigidity or imperfect muscular action, from which the patient complains of difficulty in swallowing, believing that the food, at least in part, remains in the esophagus and does not pass into the stomach. In some cases this condition actually occurs, and when the food has accumulated to a considerable quantity, it is regurgitated.

There is a tendency to recurrence of the spasm, and the atresia which results becomes a serious affection. There is emaciation from inability to take food, and in some cases disease of the stomach results. While there is a neurosis in all of these cases, there is a form of cardiac spasm which is purely reflex or exclusively of nervous origin.

### PYLOROSPASM.

Spasm of the pylorus is similar in character to that of the cardia, but occurs probably with greater frequency. It is seldom that it occurs as a primary disorder. It is secondary to **local irritation** in the stomach, **irritation from undigested food**, **hyperacidity** or **hypersecretion**.

While nervous irritability usually underlies this difficulty, the condition is induced by anything which draws largely upon the system, as mental strain, anxiety, worry, sexual

excess, and menorrhagia or metrorrhagia, or prolonged lactation. It occurs also in anemia, and especially with chlorotic girls, and accompanies some forms of hysteria. I am convinced that it occurs also from the excessive use of tea and coffee, as well as in alcoholics and inveterate tobacco users.

### HYPERISTALSIS.

Kussmaul described a condition of constant peristaltic movement on the part of the muscles of the stomach which he designates as peristaltic unrest. This is actually a spasm of the muscular structure of the stomach walls. It occurs also when there is dilatation of this wall following stricture of the pylorus, as in cancer. Usually the condition is most active after meals, but it will continue when the food is digested and the stomach is empty, often plainly apparent during the night. It does not usually induce severe pain, at times even a great degree of distress is not present, but the sensation of constant movement is productive of much discomfort. The movement occurs from the left to the right, is wavelike in character and can be felt through the stomach walls. In an exceptional case this spasm will be so severe as to expel food immediately it is taken into the stomach.

Reflex irritation is the first cause of this condition. Pyloric stricture is the next most common exciting cause, and gastric hyperacidity will be found to be the next in order. Underlying the whole there is usually a neurosis more or less remote.

### NERVOUS VOMITING.

In any condition where vomiting is present the influence of the nervous system is estimated. It will be only necessary to group the various forms of nervous vomiting under this head, as most of the conditions will be found considered elsewhere.

Vomiting induced from reflex causes, with no lesion of the stomach as a primary cause, is the condition here considered. It usually occurs without previous nausea, and does not occur from presence of the food. Those common forms are hysterical vomiting, the vomiting of pregnancy and seasickness. While sick headache is a form of nervous vomiting, the nervous irritation is usually induced by gastric hyperacidity, or stomach or intestinal disturbance. Nervous vomiting may also occur from severe injury or pain in some other organ, or in a remote part of the body. It may also occur from shock, sudden grief or severe mental strain. Injury to the brain and convulsions from nerve irritation induce vomiting. Chronic brain disease or the development of tumor in the brain will cause frequent vomiting. The passage of a gall stone or a renal stone will induce vomiting, and it is sometimes present in Bright's disease. There is a condition of autointoxication which results in a form of vomiting known as cyclic vomiting, of a most severe and persistent type, sometimes with great difficulty controlled, if at all. An extreme acid condition of the fluids of the body, and diacetic acid and acetone are found present in the urine before the attack. This latter form is readily relieved by the administration of an active alkaline remedy, which neutralizes the acidity and thus confirms the diagnosis of acid intoxication.

In nervous vomiting there is usually less muscular effort, less violence, than in vomiting from strictly local gastric causes. The food is returned without nausea and with no great degree of discomfort. Occasionally certain articles of food only will be vomited; at other times the patient, having made up her mind that a certain article of diet will cause nausea, it will be found that vomiting will follow the taking of that article at all times.

### ERUCTATIONS.

Nervous eructations of gas or air, independent of marked fermentative changes in the stomach, occur irregularly,

often at the will of the patient, and are noisy and persistent. Often the air that is belched is swallowed by the patient, and is expelled by voluntary muscular contraction. There is usually no odor with this expulsion and often there is no discomfort. Occasionally, when the muscles of the cardia are not readily controllable, gastric distention, palpitation, discomfort or pain and anxiety may occur.

### **GASTRIC HYPERESTHESIA.**

This condition occurs both as the result of organic disease and as a neurosis not uncommon among hysterical patients and chlorotic girls. There is a constant sensation of soreness or tenderness in the stomach, or a sensation of gnawing or burning. This increases to acute pain upon the taking of any food, and sometimes upon the taking of fluids into the stomach. Where the condition is purely nervous in character, it may be relieved by taking food, and increased by fasting. During the process of digestion it is usually increased. The patients are usually neurasthenics, or they may be hysterical, or epileptics.

### **GASTRIC ANESTHESIA.**

This condition is usually classed as atony of the stomach. The condition of deficient or imperfect peristalsis is included in this, with relaxation of the pylorus, muscular insufficiency of the cardia, and a form of dyspepsia, in which the chyme remains in the stomach after a period of very slow digestion. This results in a sensation of oppression. The stomach is distended and there are eructations of gas. There is anorexia and constipation. In relaxation of the pylorus the contents of the stomach pass into the duodenum in a state of partial digestion, or the contents of the duodenum may be regurgitated into the stomach. The condition is a rare one, and depends upon general debility, or upon general nervous debility. It also occurs with some

forms of paralysis, and may be due to partial paralysis of the gastric nerve.

### REGURGITATION.

This condition is erroneously classed by most writers with vomiting. In simple regurgitation, the food returns by a simple reversal of peristaltic action, with no nausea and no violent muscular spasm. It should be divided into two classes: (a) That which is involuntary and uncontrollable, and (b) that which is voluntary—a condition which is known as merycism or rumination. In this form the food may be returned to the mouth and remasticated, as is the habit of ruminant animals. It is common to hysterical patients, those of feeble mentality, and epileptics. It is disgusting in the extreme, but does not in any way materially affect the patient's health.

The involuntary form is common to patients suffering from prolonged neurasthenia, especially those who have a tendency toward hysteria.

**Treatment of Gastric Neuroses:**—**Local measures** will serve a partial purpose only in the treatment of these conditions. They must be selected with much care, in accordance with the exact indications. **General treatment—constitutional measures**—are in every case essential, as it is only through such a course, carefully adjusted, that an ultimate cure is obtained.

The course suggested in neurasthenia will be the underlying course in most of these cases. The patient should be taken entirely away from his everyday surroundings, should have a **complete change** of air and environment, all causes of worry, anxiety, responsibility or grief should be removed, and everything done which will conduce to his happiness and comfort. Some course of **out-of-door exercise** must be planned for each day, so that the patient shall have **physical exercise** without being aware that it is imperative, because these patients are apt to be sedentary in their habits and are averse to physical exercise of any character. Walking,

some mountain climbing, horseback riding, surf bathing, croquet, tennis or golf playing are all means to the desired end. Where the patient is of very irritable disposition and inclined to insomnia, he should spend for a time one or two days of each week in bed, with congenial surroundings.

The use of **mechanical therapeutics**, as massage, vibration and osteopathic treatment, with electricity properly applied, are all capable of assisting in the promotion of a cure. The patient should have regular hours for sleep, and should also be encouraged to take a nap after dinner.

The food must be selected with great care, and must be carefully adjusted to each case. Concentrated nitrogenous foods are sometimes the very best that can be taken. These should be administered in small quantities at regular intervals, and usually an **artificial digestive** should accompany the food. However, I have observed many cases in which I have obtained the most desirable results by an exclusively vegetable diet, permitting only butter and a limited quantity of milk.

The **general medicinal treatment** will consist of the **syrups** of the **phosphates** in some concentrated form, or the syrups of the **hypophosphites** or **glycero phosphates**. When there is excessive acidity, these should be all **non-acid**. Where there is a deficiency of acids, the **acid phosphate**, or an **acid syrup** of the phosphates, or **phosphoric acid**, will act in a satisfactory manner. I have given a **phosphorized elixir** of **calisaya bark** and **pyrophosphate of iron** in a large number of my cases, with good results. Where there is much emaciation and debility, an emulsion of **cod-liver oil** with the **hypophosphites** should be given, and if there is a tendency to general organic atonicity, **strychnin** should be added for periods of two weeks, at least, in each month. Recourse may be had to any of the upbuilding **tonic remedies**, and I have observed that if they be given in conjunction with a nerve sedative—such as small doses of either **bromid of sodium** or **strontium**, or the **bromid of lithium**, if there is a tendency to excessive uric acid secretion, or

**gelsemium**, or the **valerianates**, as the **valerianate of zinc**, that good results will be obtained. In muscular spasm of any of the forms named, the use of small doses of **lobelia**, or five grain doses of a **bromid**, every two hours, or occasional full doses of **gelsemium**, will be proved satisfactory.

In nervous vomiting the **sedatives** should be given with **eupatorium**, or with the **hydrobromate of camphor**. **Hyperperistalsis** will be temporarily relieved with **cannabis indica** one-fourth of a grain, **morphin** one-twelfth of a grain, **sodium bromid** five grains, every half hour or hour, for a short period. Eructations of gas should be treated with mild stimulants, such as **peppermint**, **ginger** in hot infusion, **horsemint** or **gaultheria**, and occasionally a mild infusion of **capsicum**.

Gastric anesthesia or atony of the stomach should be treated with **nux vomica**, **ignatia**, **xanthoxylum**, **capsicum** or **hydrastis**. Occasionally it will be necessary to give full doses of **strychnin** in these cases, with the administration of the **galvanic current** to the central nervous system, and thence to the epigastric region. An electrode has been introduced within the stomach to great advantage.

Regurgitation of food should be treated with sedatives, and especially with ten drop doses of **boneset** in hot water every two hours, with occasional mild **counter-irritation** at the nape of the neck and over the upper spinal column.

Incidental conditions must receive direct symptomatic treatment. Hysterical manifestations should be controlled with **pulsatilla**, **cimicifuga**, **helonias** or **gelsemium**. Severe stomach or pelvic pain will be subdued with full doses of **cannabis indica** or **conium maculatum**.

It is often necessary to advise the regular administration of **colonic flushings**, or **gastric lavage**, or bathing at correctly adjusted temperatures to suit the individual case, and an occasional **salt rub**.

## Diseases of the Intestines.

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### DIARRHEA.

Diarrhea is not a disease per se; it is but a symptom of disease. Its etiology is varied. It may arise from organic diseases, especially those of the heart, lungs and kidneys; it may occur during the course of infectious diseases, such as tuberculosis, syphilis, typhoid and typhus fever and influenza; from infections peculiar to the bowels, such as cholera and dysentery, or from ptomaine poisoning; or it may be secondary to infections of the mouth and stomach. It occurs from mechanical causes, as from gall-stones and enteroliths, or from intestinal parasites, such as tenia and ascarides. It also occurs from neoplasms and from diabetes. This condition is a manifestation of hysteria, occurring from sudden anger or great grief, or other conditions which induce sudden shock. It occurs during intense nervous strain, as with students before examination, or with physicians confronted with severe aspects of disease, or soldiers just before battle. There is a class of cases in which constipation is a cause of diarrhea.

### SEROUS DIARRHEA.

**Definition:**—Serous diarrhea is a condition in which the intestinal mucosa is hyperemic, and the serum of the blood is poured into the bowel, causing frequent watery evacuations.

**Etiology:**—Indiscretions in diet are the most frequent causes of serous diarrhea. Exposure to cold or wet will

also cause it. Severe nervous strain in some persons invariably brings on an attack. Persons with chronic renal disease are seized from time to time with frequent watery evacuations, doubtless a vicarious function to relieve the insufficient kidneys.

**Symptomatology:**—The symptoms are almost entirely those of the large **watery discharges**. There is little or **no febrile** reaction, **flatus** or **pain**. If the condition persists, there is dizziness, **anorexia**, **indisposition** and **weakness**.

**Diagnosis:**—The diagnosis is made from the character of the discharges and the lack of evidences of an appreciable degree of enteritis.

**Treatment:**—There are certain conditions present in all diarrheas which will demand much the same treatment, whatever the cause. If **deprived of food** for a short time, varying from six to twenty-four hours, these patients will respond the more promptly to treatment. The **bowels** should be **washed out** with a large, hot **colonic flush**. In severe cases this should follow each bowel movement, until it has been repeated perhaps three times. The abdomen may be covered with a **hot wet compress** if any pain be present, and this should be kept hot. Occasionally the application of equal parts of **turpentine** and **lard** before the compress is applied will exercise a beneficial revulsive influence; in other cases a **spice poultice** is of service.

If undigested material is thought to be present in the bowels, especially in sthenic cases, with adults it is sometimes advisable to give a full dose of **castor oil**; in young infants the same result is obtained from the use of **sweet oil**, or in children the two oils may be combined. This will assist in the removal of the irritating substances, and the castor oil will exercise a mild, after-astringent influence which is beneficial.

The specific indications in nearly all of these cases point directly to the use of **arsenite of copper**. If the movements are large and watery, and are passed freely without tenesmus, or if, as is often the case in childhood, these free move-

ments contain greenish particles and are passed with little, sharp, colicky pains, this agent is demanded. It can be depended upon if it is properly administered. A tablet containing the one-hundredth or the one-fiftieth of a grain should be dissolved in half a teacupful of hot water, and of this the patient should take a teaspoonful every ten minutes for from three to five hours, excluding everything else from the stomach during that period, unless perhaps a little water, or small pieces of ice. Afterwards a teaspoonful may be given, every hour or two for twenty-four hours longer. Where, in the subsequent treatment, there is debility with some intestinal irritation, an entire tablet of the one-hundredth of a grain may be given three or four times a day.

If the appearance of the tongue and mucosa of the mouth point to extreme acidity of the stomach, it is a good plan to begin the treatment with a large dose—from two to four drams, of the **syrup of rhubarb and potassium compound**. The comprehensive influence of this old-time preparation is sometimes more satisfactory than that of any other method. This dose may be given either in cold or hot water and sweetened to suit the taste.

In mild cases, where there is gastric acidity, the following prescription will sometimes be all that is needed: ℞. Fluid **extract of geranium**, five drams; tincture of **capsicum**, half of a dram; **syrup of rhubarb and potassium compound**, sufficient to make four ounces. Of this a teaspoonful may be given every hour or two. If pain be present or abdominal tenderness, two or three drams of the deodorized tincture of **opium** may be added to the above mixture. This course, while of service in most of the simple cases, cannot be called specific treatment, and yet it need not be discarded because of that fact.

Patients suffering from diarrhea in any form will obtain great benefit by a careful course of dieting for two or three days following the acute development of the attack. Dry toast, a dry cereal and hot milk, if the acidity of the stomach

does not persist, will be the safest diet for this period. This can be carefully increased as the appetite returns.

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## DYSENTERY.

**Synonyms:**—Flux; bloody flux; rectocolitis.

**Definition:**—An infectious inflammation, with consequent ulceration of the large intestine, including the sigmoid flexure and the rectum, and occasionally extending to the small intestines above. It involves not only the mucous structures of the gut, but may include its walls and the peritoneum which envelops it. It is characterized by a sudden onset, with fever and intense irritation of the lower bowels, with an almost constant desire for movement, and the frequent passage of small mucous or bloody stools, accompanied with severe pain and a most aggravating tenesmus. As a result, prostration to exhaustion may soon follow, and there is rapid emaciation.

**Etiology:**—Two distinct types must be recognized: one caused by the bacillus of Shiga, and one by the ameba dysenteriae. A third class is sometimes named as due to the presence of the balantidium coli. This is a rare form of the disease; however, the infection in nearly every case is of a more or less mixed type.

The conditions which predispose to dysentery, are, of course, the environment of the patient, his habits of living, age, climate and the season of the year. The disorder is more frequent in the subtropics, the epidemic forms occurring in hot, damp weather. This disease is found, however, in every climate, but is seldom epidemic in temperate or cool climates. During the latter part of the summer or early in the fall, when the days are hot and the nights cool, the disease is most common. It occurs more frequently in males than in females, and is largely a disease of adult life.

It follows other infectious disorders, especially those

which involve the mucous membranes, or which include to a greater or less extent the structures of the intestines, such as the eruptive fevers and typhus and typhoid. The disease is undoubtedly conveyed during epidemics, by water and by food. Probably uncooked fruits in the partial stage of decomposition conduce to it, and those conditions which from irritation of the mucous lining of the large intestine predispose to catarrh of the mucous lining of the lower bowel. These conditions, combined, as above stated, with sudden changes in the temperature, or with exposure to wet and cold, will materially promote the development of the disease.

**Symptomatology:**—There are certain symptoms which are pathognomonic of dysentery. While these may occur during the course of what has seemed to be a simple attack of diarrhea, the symptoms are usually abrupt in their appearance. With the effort at bowel movement, tenesmus, or straining, is first observed, and this is quickly accompanied with severe colicky pain, shooting through the lower bowels and ending in a severe cramp. There may be a chill, although this may not be markedly severe. The temperature quickly rises, usually to about 102° F. in the amebic form, or 103° F. in the bacillary form. There will soon be an intermission in the pain, but the desire for bowel movement is not satisfied, and quickly the patient finds that he must frequently go to stool, that each effort is accompanied with severe and increasing tenesmus, and that only a small quantity of mucus, or mucus and bloody stools, are passed. In the severe forms the stools are composed of blood alone. There is but little fecal matter. Pain precedes and follows the movement, and there is a distressing sensation of heat, burning or smarting in the rectum. The preliminary diarrhea, which may last from six to forty-eight hours before the characteristic dysenteric symptoms appear, will quite thoroughly evacuate the intestinal canal; and yet there are occasional cases in which, during the course of the disease, a considerable quantity of small, hardened masses of fecal

matter resembling scybala will be passed, greatly increasing the irritation.

As the disease progresses the tormina and tenesmus increase to a marked extent, causing the patient to break out in a cold sweat, and inducing severe weakness and temporary exhaustion after every movement, which soon becomes permanent, involving both the heart and the nervous system. The irritation, general through the large bowel and rectum, soon involves the anus, producing spasm, and, through the spinal centers, may include also the cystic sphincter, resulting in difficult and painful urination. The impression of the pain upon the nervous system, causes a weak and rapid pulse, suspends the nutritive processes of the body, and emaciation is quickly apparent. There is much thirst, but an absence of desire for food. The tongue is coated usually with a brown coat, the membranes soon become dark, and in that form which has been sometimes described as **typhoid dysentery**, the symptomatic appearances of an ordinary case of typhoid fever will soon become plainly marked.

From its first appearance there is a rapid increase in the severity of all of the symptoms of this disorder, until about the third day the patient's suffering is intense; there is extreme exhaustion, emaciation is plainly apparent, the features are shrunken and the face has a pinched and anxious appearance, with an expression of general distress.

In epidemics of this disorder, the disease may show itself in one of two distinct forms; the commonest is that which has been described above, in which diarrhea for the first twenty-four hours, with rapidly increasing irritation of the bowels and prostration are the marked symptoms. With this the fever is apt to be of an asthenic type, and the tendency is more quickly toward typhoid development. In the other form the small intestines are often constipated, sometimes obstinately so; the fever, which appears quite abruptly, is of the sthenic type, and the prostration is not as rapid. The desire, however, for bowel movement soon

becomes almost constant and the pain is very severe. In all cases the bowel movements quickly become fetid and ultimately the odor is very offensive.

The course of this disease varies with the degree of infection and with the character of the environment. When the infection from the bacillus of Shiga is virulent, the course of the disease is rapid, and death may occur in from three to four days. In amebic dysentery there is sometimes a mild development of the disease, which may continue several days, without producing any serious impression upon the system, the patient not being seriously ill. There may be from three to six or seven stools in a day, but the pain not being intense, the impression upon the system is not marked. This form of the disease is quite amenable to treatment, and may be relieved before it is necessary for the patient to be confined to his bed. Between this type and the extreme type named above as induced by the Shiga bacillus in the virulent form, is perhaps the commonest of all forms—the intermediate form. This form, however, will ultimately become serious and assume all the characteristics of the type that is early fatal.

A form of dysentery common in the tropics, known as acute **tropical dysentery**, or **diphtheritic dysentery**, presents pathologic characteristics quite different from those just described. It is caused by the bacillus dysenteriae of Shiga, and quickly develops typhoid manifestations. There is found present, on post-mortem, a croupous exudate of a grayish yellow color, which is distinctly diphtheritic in all of its appearances. Necrosis of the epithelium occurs, and deep ulceration with severe hemorrhage and ultimate perforation may follow. This diphtheritic infiltration thus involves all the structures of the intestinal wall, and in extreme cases it extends the entire length of the large intestines. In this form the system of the patient is markedly impressed with the disease; from the first there is general depression, and soon profound adynamia. There is involvement usually of

the peritoneum; the abdomen becomes distended, sometimes greatly so, and exceedingly sensitive to pressure.

Dysentery is complicated by the development of peritonitis, or inflammation of the liver, with the formation of abscess, or as has been stated, by perforation of the bowel. The reflex irritation of the sphincter of the bladder is sometimes an additional cause of great distress. There may be also a slight involvement of the kidneys. In epidemic cases, pericarditis, endocarditis, septic pleuritis, or septic arthritis are not uncommon complications.

**Diagnosis:**—The pathognomonic phenomena of this disease are usually so plainly apparent that an incorrect diagnosis is next to impossible to a careful observer. The straining at stool is the first suspicious symptom, and this should be invariably regarded with suspicion if there is an epidemic of this disease. Following this is the unsatisfied desire, the frequent effort at bowel movement, with the passage of a very small quantity of mucus or mixed mucus and fecal matter, and later the diagnosis is confirmed by the presence of blood in the stools. The presence of extreme griping pains, fever, rapidly developing abdominal tenderness, with progressive prostration and emaciation, are all confirmatory. This group of symptoms is present in no other condition.

While a general diagnosis is not difficult, a specific diagnosis of the exact form of dysentery which is present is not so readily made. But as the disease is treated successfully from its symptomatic manifestations, whatever the form assumed, clinically this fact is usually of minor importance.

**Prognosis:**—In hot climates, with the unfavorable surroundings to which soldiers and laboring men are often exposed, the prognosis is often unfavorable. In endemic or sporadic cases, the prognosis can be considered good. When typhoid manifestations appear, in any form of the disease, the seriousness is materially increased; in diphtheritic cases the prognosis is bad.

**Treatment:**—It has been quite common practice to ad-

minister a cathartic at the onset of this disease. Unless there are strong evidences of fecal accumulation, this course should be avoided. It is an excellent plan, however, at the onset, to thoroughly flush the large bowel with sterilized water, to which **hydrogen peroxid** and half of a dram of the tincture of opium has been added. From the first the patient should have **aconite** and **ippecac** internally. These two remedies are the basis of early rational treatment. We have obtained excellent results by the use of small doses of ippecac frequently repeated, but the profession at large has advised as high as thirty grains of powdered ippecac three times a day. There is no doubt, however, that fully as desirable results are obtained from the remedy in smaller doses more frequently repeated. Whatever the other treatment, these two remedies should be continued for the first three or four days, unless the temperature falls to normal or below, when the aconite can well be exchanged for small doses of **belladonna**, especially if the skin and extremities are cool. As soon as the peritoneum is involved, **bryonia** must be given. It will exercise a beneficial effect, however, when there is general abdominal tenderness, with quick, sharp, cutting pains, whether the peritoneum is involved or not.

If the nervous irritation from the tenesmus is pronounced at the first, **gelsemium** is positively indicated. We have no remedy that will so satisfactorily control the straining at bowel movement and will relieve the irritation of the nerves, distributed to the large intestine and the bladder, as this remedy. By relieving this irritation it contributes, in many cases, most materially to the prevention of the development of the inflammation, and to its cure when developed. Another simple measure for the relief of the tenesmus is the injection of a pint of starch water which contains twenty drops of the tincture of opium, after a bowel movement. If the relief is not complete from a single injection, especially if the starch water has not been retained, it may be repeated at the next bowel movement. A suppository which

contains opium is sometimes used for this purpose, with perhaps a small quantity of belladonna and an antiseptic, such as **boric acid** or **iodoform**.

The use of the **sulphate of magnesium** in small doses has become quite popular with many physicians. This is usually given, however, either in conjunction or in alternation with an acid remedy. In nearly all cases there is an early appearance of those evidences, in the mucous lining of the mouth and tongue, which we believe to be urgent indications for the use of acids. The **aromatic sulphuric acid** may be administered, especially if the tongue is very red and inclined to be dry, or sulphurous acid dilute if it is red and sleek. The aromatic sulphuric acid not only supplies an acid, but is a powerful antiseptic and a most desirable astringent, and is quite palatable. It has been demonstrated that whatever the bacillus present as the cause of dysentery, it cannot exist in an acid medium. The prevalence of an alkaline condition—an absence of acids—renders the growth and development of the germs of this disease possible. Thus other acids, such as **nitric** or **hydrochloric acid**, are beneficial in the treatment of this disease, and may be selected in accordance with the judgment of the prescriber.

The older physicians of our school were quite enthusiastic over the action of a compound which was known as white liquid physic. This was made of sodium sulphate, dissolved in water, to which nitric and hydrochloric acids were added. They gave us no explanation for the beneficial effect of this compound, which is so objectionable to the taste that but few physicians now prescribe it. All the desirable results of this remedy can be obtained by the agents named above, prescribed strictly in accordance with the specific indications. Its place is fully supplied by Epsom or Rochelle salts in small doses, with the proper use of an acid remedy. Large, objectionable doses are not needed.

In cases where typhoid indications are plainly marked, with the proper acid remedy **echinacea** and **baptisia** can be given with advantage. The former should be given in ten-

drop doses every two or three hours. Occasionally it will be seen that the tongue, instead of being dry and dark, is moist and covered with a yellowish coat. At the same time there is some inclination to jaundice, with perhaps tenderness in the region of the liver. The older writers triturated **podophyllin** with sugar of milk in the proportion of one part of the former to one hundred parts of the latter, and administered this in doses of one or two grains every two hours. Where the tongue is moist and red and the tip is elongated, showing irritability of the stomach, it will be found that six or eight grains of the **subgallate of bismuth** every two hours will exercise a beneficial effect.

The thirst in these cases is a most distressing symptom. This should be met with cold water, to which hydrogen peroxide is added in the proportion of half of an ounce to a pint of water. This should be drunk to the exclusion of other beverages, except milk, or fruit juices diluted, to which hydrogen peroxide is added.

In the consideration of **the diet** of these patients, it is a good plan to permit no food to be taken for the first few hours, but to encourage the drinking of an abundance of water. Later milk may be diluted with water in the proportion of about one part of water to three or four of milk to which salt has been added. This can be drunk freely, unless curds are formed in the stomach, but as there is usually a deficiency of the acid constituents of the gastric juice, this is not as apt to occur as it is in other forms of diarrhea. If this condition threatens, a little lime water may be combined with the milk, or the patient may take an occasional dose of neutralizing cordial. These remedies, however, are seldom of benefit in this disease.

Solid foods must be avoided. Raw eggs may be beaten thoroughly and added to the milk, or soft boiled eggs may be taken occasionally. Meat juices are beneficial if the stomach will receive them kindly. There is always present in these cases an impaired digestion; at the same time, so rapid is the prostration that the demand for concentrated

nourishment is imperative. It is necessary, therefore, that all irritation of the stomach be avoided, and the best of judgment be exercised in selecting those foods which will be readily appropriated, or in supplying those assistants to digestion which will insure the proper appropriation of the food.

All discharges during the course of this disease should be passed into a vessel which contains a strong antiseptic, and in epidemic cases these should be buried. The strictest of antiseptic precautions and the utmost cleanliness in the care of the patient, and precautions for the cleanliness of the patient's immediate surroundings, must be adopted.

### CHRONIC DYSENTERY.

Dysentery sometimes assumes a chronic form. It seldom, if ever, so occurs independent of an acute attack, to which it is secondary.

**Symptomatology:**—It presents a group of symptoms quite different from those described in the acute disorder. The pathognomonic evidences are not plainly marked. The bowel movements are small and consist of mucus and membranous shreds, and some blood. There is colic and some abdominal tenderness. The strength of the patient is reduced, and the general condition is that of chronic invalidism. It is not uncommon for exacerbations to occur, in which symptoms resembling the simpler forms of the acute disease will be present for a day or two, when there will be an abatement of these phenomena, and the disease will assume the usual chronic manifestations. It is not infrequent that the bowels are distended with gas; later the digestion becomes impaired and a train of symptoms similar to those of chronic gastritis will appear in addition to the dysenteric symptoms.

**Treatment:**—It is a good plan to adopt a course of systematic intestinal irrigation in the chronic form of this disease. The use of acid remedies internally, with an anti-

septic added to the injection, will enhance their influence. Internally the use of an acid remedy with the sodium sulphite, or magnesium sulphate will be beneficial. It is a good plan to give ipecac in conjunction with the bisulphate of quinin and hydrastin. Quite a general influence is exercised by this combination. The ipecac relieves the irritability of the mucous membrane and restores its tone and normal functional activity. The quinin has a specific toxic influence upon the germs of the disease, as the sulphate has upon the *plasmodium malariae*. It also stimulates the nervous system and encourages its influence upon the functioning of the nutritive organs. The hydrastis is both a nerve restorative and a gastro-intestinal tonic. Its influence is very wide, both directly and indirectly. Nuxvomica may be given also in selected cases. Its influence is direct upon the stomach, materially enhancing the influence of hydrastin. Much care must be exercised in these cases in the selection of food, and the physician should retain his supervision of the diet for weeks after the conspicuous symptoms of the disease have abated.

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## CATARRHAL ENTERITIS.

**Definition:**—Catarrhal enteritis is a condition in which a portion of the intestinal canal is the seat of a catarrhal inflammation, and is characterized by diarrhea, colicky pains and rumbling in the bowels.

The classification of the inflammations of the tract, according to its anatomical divisions, as **jejunitis**, **ileitis**, **typhlitis**, **colitis**, and **proctitis**, is only occasionally correct, as in the majority of cases several of these portions are simultaneously involved, sometimes the large bowel and at other times the small bowel being the principal seat of the attack.

**Etiology:**—The etiology of catarrhal enteritis is varied.

Usually attacks are caused by indiscretions in diet, as over-eating and the ingestion of unripe fruit and tainted or decomposing articles of diet. Sudden changes in the weather will bring on attacks, especially in spring and autumn, when a fall in the temperature of  $20^{\circ}$  or  $30^{\circ}$  takes place in a few hours.

A marked diminution in the secretions of the liver and pancreas will predispose to catarrhal enteritis, giving rise to diarrhea. Inorganic irritants, as arsenic and mercury, will excite an intestinal catarrh.

The above applies more especially to the acute type of the disease. We may recognize a chronic type, which may be secondary to the acute type, or may arise independently, or be secondary to organic diseases, especially of those organs directly influencing the terminal branches of the portal circulation (heart, lungs, liver) to infectious diseases, cachectic states, and by extension from inflammatory foci in the abdomen.

**Symptomatology:**—The cardinal symptom of catarrhal enteritis is **diarrhea**. Occasionally it is possible to recognize clinical types according to the anatomical divisions of the intestinal tract. The usual type, however, is ileocolitis, which in addition to diarrhea presents colicky pains and rumbling in the abdomen, sometimes a **rise of temperature** to  $100^{\circ}$  to  $101^{\circ}$  F., occasionally nausea and vomiting. The urine is scanty, the tongue furred; there is thirst and loss of appetite.

If the duodenum be solely involved, there is constipation instead of diarrhea. There may be **jaundice** from extension of the catarrhal process to the common duct. There may be **local tenderness**, and there are usually gastric symptoms, as **nausea** and **vomiting**.

In catarrh limited to the small intestine the stools are flocculent and contain particles of undigested food. Diarrhea is not so marked, though present, but there are **colicky pain** and noises in the abdomen and unchanged bile is found in the discharges.

In colitis the **stools** are thin and **frequent** and contain considerable amounts of mucus. Pain and tenderness along the course of the colon are marked. **Proctitis** is characterized by tenesmus and the passage of mucus and pus. Eventually emaciation and anemia develop.

**Diagnosis:**—The symptoms and brief course of this disorder usually make diagnosis easy. It is distinguished from typhoid fever by the slight and non-characteristic fever, brief duration, non-development of the rash and normal size of the spleen.

Severe cases may be differentiated from peritonitis by the presence of the diarrhea and the absence of abdominal rigidity and extreme meteorism.

In catarrhal enteritis the character of the stools will differentiate it from dysentery, in that in the latter, the discharges are composed wholly of mucus and blood, and are accompanied by severe tenesmus.

**Prognosis:**—In the acute type the prognosis is good as to both life and early recovery. In the chronic variety complete recovery is not common, but the prognosis is good as to life.

**Treatment:**—These patients should be put to bed at once and **warm applications** should be applied over the abdomen. If there are acute colicky pains, a large **mustard poultice** will be of service; if there is diffused soreness, hot **antiphlogistine** will do much good. In order to allay undue peristalsis the patient should not be permitted to get up to go to stool, but should use the bed pan. After a large bowel movement a **colonic flush** should be given, and this may be repeated in severe cases two or three times in as many hours, preferably in the early part of the day, although if given in the evening it produces an amelioration of the symptoms which will conduce to quiet and rest. To this I often add an **antiseptic**, usually **hydrogen peroxid**.

To relieve intestinal irritation **aconite** and **ipsecac** should be given. They must be given in small, frequently repeated doses. If there are evidences of local congestion, **bella-**

**donna** may be added during the first twenty-four hours to good advantage. If there are sharp, cutting pains with diffused soreness, **bryonia** will be indicated for a short time.

At the onset of the treatment excessive acidity of the stomach, if present, must be neutralized. This must not be overlooked, as the condition materially interferes with the action of specific remedies. This may be accomplished with the **syrup of rhubarb and potassium compound**, or with **lime water**.

If vomiting or persistent nausea be present, equal parts of **bismuth sub-nitrate** and **ingluvin** should be given; five grains of the mixture in a little **cinnamon water** every two hours will usually be sufficient. If the mucous membranes are pallid and the tongue is broad and thick, with other evidences of atonicity, a teaspoonful every hour or two of a mixture of eight or ten drops of specific **nux vomica** in four ounces of water is specifically indicated, especially if there are little colicky pains in the region of the umbilicus. **Colocynth** is specific for these pains, and in infants **chamomile** is a good remedy. Five or ten drops of the tincture of either of these in a four ounce mixture may be given in half teaspoonful doses every twenty or thirty minutes. When with colic, as may occasionally be the case, there are large, watery movements with greenish particles in the feces, **arsenite of copper** may be given, as advised in serous diarrhea.

It will be seldom that astringents are needed if the specific indications have close attention. Where there is nervous irritation, especially if tenesmus be present, **gelsemium** should be given; where there is restlessness and insomnia, the **monobromate of camphor** is a good remedy.

There is an occasional case in which, with the diarrhea, the mucous membranes of the mouth and tongue are dark, and the tongue is inclined to be dry, with a brown coat. In these cases acids will be indicated, and among the best is the **aromatic sulphuric acid**, which exercises an astringent influence, in addition to its influence as an acid. If there

is an inclination to tympanites, **turpentine** should be given in two or three drop doses.

During the course of the disease the intense thirst should be allayed with small **particles of ice**, and the patient may be permitted a half teaspoonful of **ice-cream** occasionally. But a large quantity of water should not be drunk at once, as it is apt to increase the irritation.

The convalescence of these patients should be conducted with much care. They should be nourished with milk and dry toast at first, or may be allowed buttermilk, if they so desire. Later, predigested milk with thoroughly cooked rice can be given. As the irritation seems to abate, they may be allowed an increase in starchy foods and some little meat. Scraped beef at first is good; later a small piece of rare steak. Fruits, highly seasoned, and preserved foods, should be taken with great caution.

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## COLITIS.

**Definition:**—Acute colitis is an inflammatory condition of the colon, principally of the lower part, characterized by severe abdominal pain and frequent small movements of the bowels.

**Etiology:**—Exposure to cold determines the attack very commonly. The inflammatory process extends to the rectum, usually accounting for the tenesmus.

**Symptomatology:**—The symptoms are **diarrhea**, which, after the contents of the bowel are expelled, eventuates in the passage of but a little mucus with each movement. There is marked **abdominal pain** of a colicky nature and severe tenesmus as a **proctitis** is developed. There is **tenderness** over the sigmoid flexure.

**Diagnosis:**—The nature of the stools and the usual brief course of the disease will serve to differentiate it from other colonic affections.

**Prognosis:**—The prognosis is good, as the course is usually brief. Occasionally the attack may be so severe as to cause suppuration and follicular ulceration.

**Treatment:**—The treatment of these cases is almost entirely symptomatic. After the lower intestinal tract is irrigated, it is well to introduce a small quantity of an efficient antiseptic solution. Colic may be treated with **dioscorea** in hot infusion, **colocynth**, or small doses of **chloroform** in emulsion. Tenesmus, if present, will be relieved with **gelsemium**, or with the introduction of **starch water**, from two to four ounces, which contains from ten to fifteen drops of the **tincture of opium**. If a tenderness upon pressure is a conspicuous symptom and is inclined to persist, it should be met with **bryonia**, from one half to one drop every hour, for perhaps one day. Other indications which may occur from causes incident to the case in hand should be treated with the indicated remedy. These patients should be put to bed and should be kept very quiet for one or two days. The diet should be selected carefully, as the condition of the digestive apparatus seems to indicate.

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## MUCOUS COLITIS.

**Synonyms:**—Mucous colic; tubular diarrhea; membranous enteritis.

**Definition:**—Mucous colitis is an affection of the colon, characterized by the production of considerable amounts of tenacious mucus, sometimes in the form of casts of the bowel.

**Etiology:**—It is most commonly found in adults, though occasionally seen in children. Eighty per cent of the cases are found in women. It occurs in the overworked of both sexes. The majority of cases are in persons suffering from neurasthenia or hysteria. Indeed, it is a true secretion

neurosis. Another group of cases is due to local irritation and to uterine, tubal and ovarian diseases.

**Symptomatology:**—The disease is characterized by the passage of a **tenacious** mucus, which varies from a small, slimy mass to long strings, and **tubular casts of the bowel**. There are attacks of severe colicky **pain**. There are frequently areas of great **tenderness** over the colon, especially near the splenic flexure. The **cutaneous sensibility** is frequently increased.

The **diarrhea** is not so extreme as in other forms, and sometimes **constipation** is marked. At times undigested particles of food are passed, because the bowels are in a state of **hyperperistalsis**, though the digestive function itself may not be impaired. There is **no fever**, but there is a tendency to **hypochondriasis** and **melancholia**. Individual attacks last from one to ten or fourteen days.

**Diagnosis:**—The diagnosis is not difficult if the age and nervous condition of the patient are considered, together with the periodical nature of the attacks and the character of the passages.

**Prognosis:**—The prognosis as to life is good, but the disease is of a chronic nature and may last for years. The health of the patient may become very much impaired.

**Treatment:**—The treatment of this condition involves a consideration of the constitution of the patient, of the condition of the nervous system, as well also as of each condition separately which may seem to exercise a causative influence. **Complete rest** is demanded in nearly every case. Freedom from **care, anxiety** and from any sudden influence which will be likely to produce shock of any kind, is essential. In nearly every case **tonic treatment** will be necessary, and especially measures calculated to restore tone to the nervous system. Any causes of reflex irritation, such as ovarian or uterine disorders, must have careful attention. The digestive apparatus must be relieved for a time from as much of its usual work as possible, and every cause of irritability there must be removed. Mild **stomach tonics** should

be given and faults of the digestive fluids must be remedied. Attention must be paid to the quantity of hydrochloric acid secreted, and a deficiency or an excess must be corrected. The food should be selected with the utmost care, and it is advisable to assist the digestion for the time being with **artificial digestives**.

Starchy foods may be given if there is no fermentation—foods prepared from flour, rice, sago, tapioca, and later of macaroni, may be allowed. Oatmeal, graham and cornmeal foods are apt to be irritating in the early stages, but corn starch is capable of acceptable preparation in various ways. Meat diet should be avoided during the more active stage of the disease. Fatty foods and cured meats are to be entirely excluded, as well as the coarser vegetables, and usually uncooked fruits.

Systematic flushing of the colon, with properly medicated solutions, will do much toward promoting a cure. Antiseptic solutions, especially the **peroxid of hydrogen** or the **normal salt solution**, to which a few drops of **carbolic acid** is added, may be used. If there is an excessive quantity of mucus passed, with colicky pains, or especially if there be a steady, dull pain across the lower abdomen, the most directly indicated remedy is **turpentine**. This should be applied externally and should be administered in doses of from three to five drops with one or two drops of the oil of wintergreen, in an emulsion, every three or four hours. This agent must be studied with reference to its influence upon excessive mucus discharges. It is very reliable when indicated.

The administration of small doses of **ipccac**, either alone or in conjunction with one or two grains of the **chlorid of ammonium** in solution, will remove the local irritation where the condition has persisted for some time. I at one time succeeded in curing a case which had resisted other treatment by the use of chlorid of ammonium one grain with one-sixteenth of a grain of morphin, every two or three hours.

**Counter irritation** or **external applications** are of signal service in nearly all cases. **Mustard poultices** may be used, or **turpentine** may be applied, or **antiphlogistine**, the latter if there is persistent tenderness. It is seldom that astringents will be needed, but there are times when small doses of **epilobium** or **geranium maculatum**, combined with a little tincture of **capsicum**, will do a great deal of good.

I would repeat the statement previously made, in order to emphasize the fact, that **rest in bed** with **mental quietude** throughout the entire course of treatment are absolutely essential, and that each condition demanding tonic treatment should have such treatment most carefully adjusted in accordance with its indications.

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## ILEOCOLITIS OF CHILDHOOD.

**Synonyms:**—Enterocolitis; enteritis; inflammatory diarrhea; *enteritis follicularis*.

**Definition:**—Ileocolitis is a condition in children characterized by diarrhea, vomiting and abdominal distress. It is analogous to acute catarrhal enteritis in adults. It has a more definite pathology than acute gastroenteric intoxication, and is not so restricted in etiology as dysentery.

**Etiology:**—It usually occurs in infants, though the disease is common up to the fifth year. Errors in diet are the most frequent predisposing factors. Children artificially fed are most frequently attacked, especially when the milk supply is of poor quality or is contaminated, and where the modification of the milk does not properly adapt it to the child's digestive powers.

The disease occurs more frequently in hot weather. Sudden changes in temperature in the fall months seem to be connected with some outbreaks. Ileocolitis may be secondary to acute infectious diseases, particularly measles, diphtheria and broncho-pneumonia. Bacteriologically the

disease seems to be due to a mixed infection. The streptococcus is most frequently present. Forms of the colon bacillus are also present, which are perhaps pathogenic only when the resistance of the child is markedly reduced by other factors. The bacillus pyocyaneus is found in some cases.

**Symptomatology:**—The symptoms of acute ileocolitis in childhood vary greatly in their severity, depending on the pathology. This may be a **mild catarrhal inflammation**, a severe catarrhal inflammation, **ulceration** of the lymph nodules—i. e., a **follicular inflammation**—or it may exhibit a membranous form.

In mild catarrhal cases there is a slight **rise of temperature** of from  $1^{\circ}$  to  $2^{\circ}$ , with a moderate **diarrhea**, five or six movements a day, containing some mucus and particles of undigested food.

The onset may be sudden, with vomiting. In severer catarrhal cases the vomiting continues, there is severe **abdominal pain** and the passage of frequent yellowish or greenish-yellow stools, with considerable mucus and undigested food. Later the mucus may be streaked with blood. **Tenesmus** may be quite severe; the tongue is coated and there is marked **anorexia** and the fever may be high. The loss of flesh is rapid and prostration becomes pronounced.

There is usually some **tenderness** over the **colon**, and there is **abdominal distention**. In the **ulcerated form** the stools may be few each day, but they are foul-smelling and contain much mucus, but only occasional **streaks of blood**. The mouth and tongue are dry and covered with **sordes**. There may be only a moderate **febrile reaction**, but the **toxemia** is severe.

In the membranous **form** the stools contain much mucus and blood and particles of a false membrane. Toxemia in these cases is particularly marked. **Cerebral symptoms** may develop and obscure the intestinal manifestations of the disease.

**Diagnosis:**—The ileocolitis of childhood is to be differentiated especially from typhoid fever, which may be done by the relative rarity of typhoid in infants and the commonness of ileocolitis; by the absence of rose spots, the Widal reaction and the enlarged spleen of typhoid, and by the fact that constipation is frequent in the typhoid of children.

The character of the stools, the abdominal distress and the slower course of the disease will usually enable a differentiation to be made from cholera infantum.

**Prognosis:**—The prognosis depends upon a variety of factors. The disease is apt to be more severe before the fourth year. Children denied fresh air and wholesome surroundings have a diminished resistance to the disease. High fever, evident toxemia, many stools, continued vomiting and marked nervous symptoms make the prognosis grave. Much can be done by appropriate treatment for all types of cases, and in general the prognosis is more favorable than in cholera infantum.

**Treatment:**—The treatment of this condition depends upon the degree of involvement. Usually, however, the indications for **aconite** and **bryonia** with which to allay the inflammation are quite plain. If there is an excessive outpour of mucus, this will be in part controlled by small doses of **belladonna**, which will also antagonize the local hyperemia. The uncomplicated cases will present indications similar to the entire symptoms found in a mild case of cholera infantum, and the remedies there suggested will be indicated. The catarrhal diarrhea usually needs immediate attention. With the other indicated remedies it may be a good plan to give from three to five grains of **subnitrate of bismuth** every two hours while the diarrhea persists. The washing out of the lower bowel after severe bowel movements must not be neglected, and I have found where there was tenderness over the colon, especially if tenesmus was present, that the condition could be more quickly relieved if two or three ounces of **sweet oil** was thoroughly stirred into the water before its introduction.

If there be an excessive mucus discharge, it is a good plan to give small doses of turpentine. This agent will be of value also if typhoid symptoms appear, especially if there be tympanites. In either case one or two drops in a palatable emulsion may be given every two hours for perhaps twenty-four hours. It will work in harmony with the belladonna above advised.

Tenesmus is a common symptom in this disorder. If severe, **gelsemium** should be given after the flushing of the bowels. If this is not sufficient, two or three ounces of warm starch water, to which a few drops of **opium** are added, should be injected with a small syringe. If an intestinal astringent is desired, **geranium** may be used after active inflammatory symptoms have abated.

External applications are important in ileocolitis. **Anti-phlogistine**, applied very warm and kept warm for twenty-four hours, will assist in the mitigation of the symptoms. If the colicky pains are very severe, when the abdomen is quite tender, **mustard** may be applied with advantage. If an immediate effect is desired, it should be applied warm in full strength for from six to ten minutes, but should not be permitted to blister. If **counter irritation** only is desired, **powdered mustard** should be mixed with three or four times its weight of flour and of this a poultice should be prepared and kept on continuously. If there is tympanites, **turpentine stupes** will be available.

During convalescence the patient should be kept in a mild atmosphere, should have **out-of-door exercise** without exhaustion, and should have a carefully selected diet. **Tonic treatment** will usually be demanded. It will be found that those tonic remedies which improve the condition of the nervous system while they act directly upon the gastrointestinal tract will be the most serviceable. **Hydrastis**, **collinsonia**, **nux**, the **bisulphate of quinin**, and some simple form of **iron** will meet the indications in most of the cases.

## CHOLERA INFANTUM.

**Definition:**—Cholera infantum is an acute infectious disease of infancy, characterized by diarrhea, and in severe cases by vomiting, rapid emaciation and extreme prostration.

**Etiology:**—This disease is largely confined to the summer months in temperate zones, and has its acme of occurrence and mortality in the period of greatest heat. Cases may occur as early as April and May, but in June the disease may be said to begin, and the curve rises steadily during July, beginning to decline late in August, and lasting till October.

Children in the crowded portions of cities are more subject to cholera infantum than those in the suburbs and in the country.

The factors producing digestive disorders are directly causative. Artificially fed children are more frequently attacked than those breast fed. A contaminated milk supply is commonly responsible for the disease.

The eating of unripe or decomposing fruit, and of articles unsuited to infantile digestive powers, may precipitate an attack. As suggested above, a period of hot weather will positively influence its occurrence.

The bacterial agents causing the disorder are numerous. In many cases Shiga's bacillus—*bacillus dysenterææ*—is found. In other cases the streptococcus occurs, also the staphylococcus, the bacillus pyocyaneus, and a spirillum, though not the spirillum cholerae asiaticæ.

**Symptomatology:**—Cholera infantum is so named because of its clinical resemblance to Asiatic cholera. The diarrhea is at first **muco-purulent**, soon becoming **watery**, and amounts to **purging**. The stools are voided with force, and vary in number from ten to fifty in twenty-four hours, and are alkaline in reaction. **Vomiting** occurs, and may soon become nearly incessant.

The pulse is rapid and weak; the temperature taken in

the rectum may be found to be as high as 105° to 106° F., while the peripheral temperature may be low. The **tongue** becomes red and dry; there is intense thirst. The urine is scanty or it may be suppressed. The **skin** has a mottled appearance from poor capillary circulation; the extremities are usually cold. The child is **restless** at first, but later becomes **listless**; the **features** are drawn and shrunken and the face has often the appearance of extreme age. The **eyelids** are but partly closed, the **mouth** is open, and the **fontanel**s are depressed. Not only is **prostration** present from the beginning, but signs of profound **toxemia** are marked.

Toward the end of fatal cases the breathing is irregular and the head retracted; the **temperature** is sub-normal, or there may be **hyperpyrexia**. Death may occur in twenty-four hours. In cases that recover the disease may pass into an ileo-colitis, or gradual improvement may begin in a few days.

**Diagnosis:**—From the standpoint of etiology and pathology it is impossible to distinguish this disease from ileo-colitis. But its occurrence in the heated season, often in epidemic form, and the uncontrollable diarrhea and vomiting, the serous stools and the symptoms of collapse make cholera infantum a clinical entity easily distinguished and recognized.

**Prognosis:**—Convalescence, the passing of the disease into a less acute form of enteritis, or death, usually ensues in from one to four days. The prognosis is always grave. The factors that govern the outcome are the age and vitality of the child, the severity of the vomiting and purging and the response to treatment. Very young infants seldom recover unless the disease is early aborted.

**Treatment:**—In no class of cases that the physician is called upon to treat is there greater care demanded for the determination of the exact conditions present, and for the precise adaptation of the remedies, than in cholera infantum. An exceedingly close watch must be kept for abrupt changes in the indications, which are apt to occur at any

time. Also the sudden appearance of complicating conditions must be looked for. The sensitive nervous system of the child must be kept in mind, especially when the case is prolonged, and meningeal complications must be guarded against.

Nothing, however, demands more attention than the **diet**, as dietary faults, in conjunction with a high temperature, are most frequently to blame for the condition. The adjustment of a prepared or artificial food to the patient, or a preparation of milk foods, or the predigestion of milk, must all be conducted with reference to the demand of the individual patient, and even with as correct a knowledge of these demands as is possible to obtain, it is often necessary to try one food after another, until one is found which will be retained and readily appropriated. Some of these little patients must be taken from the breast, even when the mother has sufficient milk, and put upon an artificially prepared milk.

In a large per cent of these cases, however, the children are bottle fed. There should always be two bottles, if the child is too young to be taught to drink, or if it is not desirable to feed the child with a spoon, which is in every way preferable. These bottles should have a large, open mouth, and the nipple should fit the bottle directly; rubber tubes must always be avoided. The bottle and the nipple should be cleansed and boiled after every feeding, and should be kept immersed in soda water. The food should be given warm, and should be prepared at each feeding.

In severe cases I have for a time discontinued the use of milk and milk foods entirely, and have put the patient upon **beef juice** or **bovinine**, a few drops in water, every half hour or hour, for perhaps two or three days, giving the patient very frequently a little cold water to drink, or a little ice in the mouth, if the child is old enough. A small piece of **ice** wrapped in sterilized gauze may be sucked by even small infants, to allay the intense thirst, with much benefit, as these patients are very thirsty and constantly demand

water. When the vomiting is extreme, the drinking of water may cause the vomiting to persist. I have heard it argued that if sufficient cold water be given to reduce somewhat the temperature of the stomach, the vomiting will cease; the patient may at first vomit constantly from the drinking of the water until the stomach is thus temporarily cooled. While this course is advocated by good authorities, it has seemed to me to be too heroic a course for common adoption.

**Intestinal irrigation** must be practiced in these cases, and no irritating or decomposing substances must be allowed to remain in the intestinal tract.

The fever nearly always demands **aconite**. This remedy must never be given in large doses, and it must be persisted in for several days if the temperature remains high. It exercises a very wide influence; it does not depress the heart, and it allays directly the irritation of the gastrointestinal mucosa through its influence upon the terminal filaments of the nerves. Another specific remedy is **ippecac**. It has been my practice to drop five drops of the tincture of each of these remedies into separate glasses and to add three ounces of water to each. These should be given alternately in teaspoonful doses every half hour at the onset. If there is an inclination for the extremities to be cold, and especially if the pupils be dilated, five drops of the tincture of **bella-donna** may be combined with the **aconite**. If the patient is restless, irritable and sleepless, **hyoscyamus**, four or five drops, should be added to the ippecac mixture. If nervous excitability is marked and there are muscular twitchings, or if convulsions seem to threaten, the ippecac mixture may be omitted for a while and a mixture of three ounces of water with ten drops of **specific gelsemium** may be substituted for it.

This course of treatment will usually allay the vomiting with the other symptoms. However, it is often a good plan, demanded by pale mucous membranes and a white-coated tongue, to begin the treatment with the **syrup of rhubarb**

**and potassium compound.** This may be given at first in single full doses an hour or an hour and a half apart, repeated four or five times before the other treatment is begun; or I have frequently added from one to four drams of this preparation, commonly known among our physicians as the **neutralizing cordial**, to the three ounce mixture which contains the ipecac, and have administered the remedy in this manner during the first two or three days.

If the vomiting is persistent, I have found nothing better than the mixture of equal parts of **ingluvin and bismuth**, frequently referred to. I add from twenty to thirty grains of this mixture to half of a glass of cold water, and after stirring thoroughly, I administer a teaspoonful every ten, twenty or thirty minutes, without regard to the vomiting, until that condition abates. Occasional doses are then given as needed.

When the vomiting depends upon nervous irritability, especially if the mucous membranes of the mouth and tongue are dry and red, four or five drops of **rhus toxicodendron** should be added to four ounces of water, and a teaspoonful given every thirty or forty minutes for a few hours. This will exercise a tranquilizing influence not only upon the stomach, but upon the brain, thus relieving the central irritation.

During the active stage of this disorder irritation at the base of the brain is a common complication. This induces occipital headache or pain. There is an expression of distress upon the face and the head is crowded backward into the pillow and is slowly turned from side to side. Often the little one will keep the hand against the neck or the back of the head, and will moan or cry out with occasional irritable cries. To relieve this the head should be sponged during the course of the fever with **warm water**. It is a good plan to use hot water occasionally, permitting free evaporation, or using a fan to cool the skin. With these symptoms much care must be exercised in selecting the specific remedy. **Gelsemium** may be indicated, and **rhus**

**toxicodendron** will often be demanded, as just stated, and in certain advanced cases, where the patient has become weakened, the tincture of **calabar bean** will be needed with which to ward off meningeal complications. **Passiflora** exercises a very desirable influence where there is no cerebral congestion. It relieves irritation, conduces to tranquility, and promotes sleep, which is greatly to be desired. I have obtained excellent results, when the nervous irritation was excessive, from ten or fifteen drops of a mixture of **sodium bromid** and **chloral hydrate**, two drams of each in an ounce of water. A single dose of this may be given, especially if convulsions are threatened, and repeated if necessary.

The treatment of the indications as named usually relieves the diarrhea if the gastrointestinal irritation is overcome by irrigation at the start. I have controlled many cases during the first thirty-six or forty-eight hours with **aconite** and **ipecac alone**, washing out the lower bowel occasionally after a free bowel movement. Sometimes this flushing should be repeated after each movement for three or four movements, when the movements will occur at much longer intervals, or cease entirely for perhaps twenty-four or thirty-six hours.

It is but seldom that astringents are needed or are to be advised in cholera infantum. The indications for **arsenite of copper** will be present in most cases, and this agent will effectually control the bowel movement. Some authors declare that there is a positive necessity for stimulating the action of the liver in all of these cases, and advise calomel or podophyllin or other stimulants for this purpose. With us these agents seem to be contraindicated. If such stimulation is plainly needed, small doses of **sodium phosphate**, or often the external persistent application of heat alone will be in every way sufficient.

The convalescence of these patients must be conducted with great care. If the food be correctly adjusted, but little tonic treatment will be necessary, but the child must be kept warm in cool weather and cool in warm weather, an

equable temperature being maintained if possible. The use of **nux vomica** in small doses, or two or three drops of the tincture of the **chlorid of iron** in a little water, every two hours, or an inunction of **quinin** over the abdomen and chest every morning for a week or ten days, will usually be sufficient.

When the condition is extreme and the prostration is severe, **hypodermoclysis** with the **normal salt solution**, carefully administered, will supply the deficient fluids in the circulation, and will at once stimulate the action of the heart and the nervous system and favorably increase the functional action of all the organs of nutrition. This may be repeated each day for a few days. Carefully administered enemas of the normal salt solution will prevent extreme prostration, and will assist in correcting other serious conditions which have resulted from the sharpness of the attack. With the younger children this method is preferable to hypodermoclysis, except where a fatal issue is imminent.

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## CHOLERA MORBUS.

**Synonym:**—Cholera nostras.

**Definition:**—Cholera morbus is an acute, infectious disease, occurring especially in hot weather in temperate climates, and characterized by diarrhea and usually extreme cramp-like pains. Severe cases present symptoms identical with those of true cholera.

**Etiology:**—From the standpoint of etiology and pathology it is not possible to differentiate cholera morbus from acute catarrhal enteritis, but it is proper to regard it as a clinical entity. It especially occurs in extreme hot weather in temperate climates, is usually endemic, but is often epidemic, and is caused by the absorption of toxins elaborated by bacterial activity within the gastrointestinal tract. The ingestion of decomposing food, unripe fruit, raw vegetables

and large quantities of ice water and alcoholic beverages in seasons of great heat are predisposing factors.

**Symptomatology:**—The symptomatology of cholera morbus in average cases does not differ from that of acute catarrhal enteritis. In severe cases, in addition to the usual symptoms of the above named disorder, there are **profuse discharges** from the bowels becoming watery, **cramps** in the abdomen and calves of the legs, **headache** and **depression**. **Thirst** is marked and **anorexia** is complete. The **temperature** is elevated, from 102° to 104° F. The **skin** is often **cold** and **cyanotic**, and finally, in severe cases, the **prostration** becomes extreme, and the symptoms are alarming in their severity. The **pulse** becomes small, rapid and feeble, perhaps wiry or irregular. The **features** are contracted or pinched, the **eyes** sunken, the **extremities** are cold, the **nails** blue, and the **skin** is covered with clammy sweat. The **respiration** is rapid and often jerky and irregular. In fatal cases, with all evidences of **complete exhaustion**, the patient becomes **dull**, is with difficulty aroused, **mild delirium** may occur, or finally **coma** and death. This is rare, however, as the condition is quite readily controlled and a favorable termination will usually occur.

**Diagnosis:**—The diarrhea, cramps and pains, gastric distress and tendency to vital depression, together with the season or the presence of an epidemic, will aid in a correct diagnosis. In regions where Asiatic cholera is present, or in persons recently coming from such regions, only a bacterial investigation of the stools can determine the nature of the disease. While a vibrio has been found in cases of cholera morbus, together with other bacteria, it is not the cholera vibrio.

**Prognosis:**—If seen in the early stages of the disease the prognosis is good in all but infants, the aged and the intemperate. When the disease has progressed for some time before being treated, the prognosis must be guarded.

**Treatment:**—An immediate comprehension of the possible seriousness of these cases is essential, and prompt

treatment, calculated to allay the essential indications, is absolutely demanded. The **pain** is often so severe as to necessitate the immediate administration of one-fourth of a grain of **morphin** hypodermically. With this the patient should have a thorough **hot foot bath**, after which he may be put into a warm bed, and **hot water bottles** should be applied to preserve the external heat and antagonize the inclination to local congestion. The administration of morphin hypodermically may be necessitated also by the fact that the **vomiting** at first often prevents the administration of medicine by the stomach. In my earlier experience I was taught to give a fourth of a grain of **powdered capsicum** in five grains of **Dover's powder** every half hour or hour until three doses were taken, whether the vomiting persisted or not. I found this very excellent treatment, and it was seldom that the third dose was needed. Some stimulant is usually needed, as prostration develops most rapidly. Heat should be kept applied, whatever medicine is given.

The severe pain may also be relieved by a small teaspoonful of the **compound tincture of cajuput** in a little water. If the vomiting is of a bilious character and the **cramp-like pain** is located in the stomach, the pain may be immediately relieved in some cases by the administration of a dram of **specific dioscorea** in two ounces of hot water. If relief is obtained in part from one dose, a second dose may be administered within half an hour. If no relief is obtained from the first or second dose, the agent may be discontinued.

If after the relief of the intense pain the patient becomes warm and comfortable and the symptoms abate, but little other treatment will be needed. It is an excellent plan, however, to thoroughly flush the intestinal tract, and to introduce a quart of the **normal salt solution**, hot.

With the abatement of active symptoms the patient usually recovers very promptly, and is often able to follow his usual occupation in a few days. In an occasional case, however, the condition may cause the occurrence of some

other form of intestinal irritation or acute inflammation, which must be treated in accordance with its indications.

If treatment is not instituted in these cases until the disease is well advanced, every effort must be made to antagonize the extreme prostration, and in addition to the persistent application of heat it may be necessary to give **brandy, strychnin, atropin** or **nitroglycerin** hypodermically, and occasionally the **normal salt solution** should be administered by **hypodermoclysis**.

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## APPENDICITIS.

**Definition:**—Appendicitis is an inflammation of the vermiform appendix, characterized by pain in the abdomen, which becomes localized over the origin of the appendix; rigidity of the right rectus muscle; a moderate febrile movement, and nausea and vomiting in the majority of cases.

**Etiology:**—A discussion of the etiology of this most important of acute intestinal disorders must include a recognition of the probable status of the appendix vermiformis as an organ. It is doubtless a vestigial organ in process of involution, and is therefore a *locus minoris resistentiæ*.

Its anatomical form and relationships constitute a second reason for the frequency of appendiceal inflammation.

Its lumen is narrow and is narrowest at the neck, hence drainage is easily interfered with. By the swelling of the mucosa, micro-organisms are imprisoned within the cavity and conditions of increased warmth and moisture are established which promote bacterial growth and activity. Furthermore, the swollen condition of the tissues causes pressure upon the blood and lymph vessels, thus cutting off the resources of vital resistance. Swelling or other causes may distort the appendix, resulting in kinking or twisting of the nutrient vessels carried in the mesenterium, thus decreasing the vitality of the organ. The appen-

dix has a free end, which, if the organ is long, becomes attached to nearby structures, thus causing displacement and distortion. Finally, the appendix lies in close relation to and sometimes upon the ilio-psoas muscle, and is liable to irritation when this muscle is in active use.

A predisposing factor in the occurrence of appendicitis is sex, males being more frequently attacked than females in the proportion of six to one. This is doubtless due to the more active physical life and to the more frequent causes of intestinal irritation in men than in women. In women there is also an accessory blood supply to the appendix by an artery within the appendiculo-ovarian ligament. Age seems to be an important factor in the etiology, the majority of cases occurring between the fifteenth and thirtieth years. The disease is seen in infants and in persons over sixty years of age, but not commonly. Errors in diet are important in causing many attacks, especially over-eating and the eating of indigestible food. The lumen of the appendix may be wounded by foreign bodies, as fecal concretions, which are found in twenty per cent of the cases, and by seeds or tacks and other objects, although this is rare; intestinal worms have been found in the appendix in a few cases. Traumata from the outside, as blows and falls, are sometimes followed very closely by attacks.

The micro-organisms directly responsible for the infection in cases of appendicitis are the bacillus coli communis, the pyogenic staphylococcus, the streptococcus, bacillus typhosus, and sometimes actinomyces. The most frequent of these is the bacillus coli communis, native to the bowel tract, but pathogenic only in abnormal conditions, as when the organisms are imprisoned within a swollen appendix. This bacillus is found in eighty per cent of the cases.

**Symptomatology**:—A consideration of the symptoms of appendicitis is closely associated with the pathological processes of the disease. Pathologically appendicitis may be divided into five distinct types. These are **the catarrhal**,

**obliterative, ulcerative, gangrenous, and perforative types.**

In the **catarrhal type** there is **hyperemia**, with consequent swelling of the mucous membrane, with a free secretion of mucus. As the thickening occludes the lumen of the tube at the neck, the appendix becomes distended by the accumulating secretion. This induces **pain**, not only of the appendix, in its futile efforts to empty itself, but pain in the colon from reflex irritation.

After the acute process has passed, in a severe case of the catarrhal type, changes may have taken place which result in **thickening** of the appendix, and in **slight ulceration** of its mucous membranes, causing a permanent **narrowing** of its cavity and adhesion of its opposing surfaces in one or more places, or even throughout its entire length, thus resulting in **appendicitis obliterans**.

If mucus or pus be imprisoned behind the occluded area, **pain, tenderness**, attacks of appendicular **colic** and of true appendicitis occur.

In the **ulcerative type** the great danger is of **infection** of the neighboring organs by way of the uncovered blood and lymph vessels, and by perforation.

The **gangrenous type** of appendicitis is the type most fraught with danger to the patient, because the severest cases may show no history of previous attacks and the virulence of the infection is so great that the entire appendix sloughs away in a few hours and **profound toxemia** is present from the first. The strong man today, with no symptoms of appendicitis, may be a corpse tomorrow.

The **perforative type** arises out of any of the foregoing, though more frequently out of the obliterative, ulcerative and gangrenous types. Periappendicular **abscess**, pericecal abscess or general peritonitis may follow perforation.

From these considerations it is apparent that the symptoms of appendicitis vary with the type of the disease. However, there is a group of symptoms that is fairly common in occurrence and sequence and will guide in the

great majority of cases to an early recognition of the disorder.

The first of these is **pain**, felt at first diffusely in the abdomen, but becoming localized in the appendicular region. This pain may be intense and colicky, or dull and aching in character, most frequently the former. **Tenderness** over the region of the appendix, "McBurney's point,"—a point two inches inward, on a line drawn from the anterior superior spine of the ilium to the umbilicus—is a fairly constant sign. Pressure at this point will elicit the maximum degree of pain, and the right **rectus muscle** is **fixed**. This is a valuable sign.

It should be remembered that the sudden cessation of pain in an attack of appendicitis is not a good sign, as it usually means the rupture of the appendix, either from distention or gangrene.

The second important symptom is a **rise of temperature** promptly following the onset of pain. The febrile movement is from  $99^{\circ}$  to  $102^{\circ}$  F. in adults, and may rise to  $103^{\circ}$  in children. In gangrenous appendicitis and when an abscess forms and is circumscribed, the temperature may be normal or subnormal, but the other symptoms are decidedly out of keeping with the temperature. A **chill** at the onset is very uncommon. **Nausea** and **vomiting** follow the onset of fever in a majority of cases. These may be called the cardinal symptoms of appendicitis.

**Constipation** is commonly present, though **diarrhea** is occasionally seen. The **pulse** is quick and ranges from 90 to 110. If it goes above 110 in adults, gangrene or peritonitis are to be feared.

After the first twenty-four or forty-eight hours a **tumor** may be palpated, usually from one and one-half to two inches above Poupart's ligament, though its position is dependent upon the position of the appendix. In many cases no tumor can be made out because of the rigidity of the rectus muscle and because of the tenderness which interferes with palpation. The **urine** is **scanty** and usually

contains a trace of albumin and an excess of indican. The bladder is frequently irritable at the onset, suggesting a cystitis. **Leucocytosis** is frequently found, though dependence on this sign to determine operative treatment is an error. It is a sign of acute inflammation somewhere, and if other appendicular signs are present, leucocytosis is a collateral evidence.

**Diagnosis:**—The important syndrome is pain localizing at McBurney's point, rigidity of the right rectus muscle, fever, nausea and vomiting occurring in the order given. Early typhoid fever may simulate an attack of appendicitis because the lymph follicles of the appendiceal region are the seat of inflammation in typhoid, and the right iliac region may be painful. However, the pain in typhoid when it occurs in this region is not so great, the fever is characteristic, the spleen is swollen, there is the peculiar tympany, and the characteristic coated tongue, and always the absence of leucocytosis.

Hepatic colic is differentiated by the absence of jaundice in appendicitis; the region over the gall bladder is not tender; the pain is not referred to the back between the right scapula and the vertebral column; and by the presence of leucocytosis. Renal colic is distinguished by the reference of the pain to the pelvis, and to inner side of the thigh and testicle, the presence of blood in the urine, and there is no increase of pain on pressure over the origin of the appendix. There is no leucocytosis in renal colic. A pelvic examination will usually distinguish salpingitis and ovaritis.

Ileus is distinguished by the obstinate constipation and the development of fecal vomiting and the possible discovery of the tumor in a region separate from that of the appendix.

**Prognosis:**—The prognosis depends upon the severity of the infection and the consequent type of the disease. In the perforative and gangrenous types the prognosis is grave. In the catarrhal cases the outlook is good. Re-

currences are frequent. Medical treatment is able to save eighty-five per cent of all cases taken together, and prompt and skilled surgical treatment in the gangrenous and perforative types can materially raise this percentage.

**Treatment:**—In no condition, during the past fifteen years, has there been a greater discussion, and probably a greater division of opinion than concerning the treatment of appendicitis. Space does not permit us to enter into a discussion of all of the points considered in the contention. The main argument has been for or against surgical treatment, or for or against an early operation in all cases. Suffice it to say that the consensus of opinion now is, that careful medical treatment from the start will result in a cure of perhaps ninety-five per cent of the catarrhal cases, and at least eighty-five per cent of all cases, and that in all cases which develop somewhat mildly, during the first forty-eight hours surgical operation should be delayed.

There is a class of cases in which the infection is acute and extreme, and especially in those of the gangrenous type, in which distintegration and threatened perforation are imminent from the first. In these, surgical interference will be demanded much sooner, and often the demand is immediate. The conspicuous symptoms of these cases are a rapid, feeble pulse with general prostration, great anxiety, persistent vomiting, and extreme rigidity of the rectus muscle. The pain may not be a conspicuous symptom; in fact, after the processes of gangrene are inaugurated pain may be absent.

From the experience of the best of our physicians, I am convinced that medical treatment will result in as large a percentage of cures as in any other of the severe acute inflammations, provided the conditions are thoroughly understood and the treatment is inaugurated early in the attack. It is my practice to **put the patient to bed** at once, after having informed him of the exact character of the disease. I then undertake to establish a fixed confidence in the cura-

tive power of medicine in his case, provided he be hopeful and willing to carry out all advised measures.

The treatment should be begun by the application of hot **libradol** over the diseased area. A rubber water-bag containing a little **hot water** should be applied over this, if the weight can be borne. By some means at least this application should be kept hot, for twenty-four or thirty-six hours. If applied over the limited area of the inflammation, it is not likely to produce nausea or other of its physiological influences. While ice or cold applications have many advocates, I am convinced that **persistent heat** exercises a superior physiological influence in preventing the pathological processes.

It is a good plan to carefully introduce a colonic flush and thoroughly evacuate the bowels at the beginning. At no time in the history of the case are physics—active cathartics or intestinal irritants of any kind—permissible. I am convinced that subsequent constipation, even, will do less harm than the influence of this class of remedies. However, a mild **saline laxative** may be needed at the first.

The use of libradol will in nearly every case so subdue the pain as to do away with the necessity of a direct pain-relieving remedy. **Morphin** and **opium** in doses sufficient to completely control pain and sensitiveness will not only mask the symptoms and prevent the diagnostician from determining the process of the disease from time to time, but they will increase blood stasis and antagonize elimination and tissue metamorphosis.

With the appearance of the fever with the circumscribed tenderness on pressure over the appendix, we have two remedies which can be depended upon. These are **aconite** and **bryonia**. If acute, intense local engorgement is suspected, **belladonna** should be added. A mixture should be prepared which contains twenty drops of the tincture of aconite, fifteen or twenty drops of the specific bryonia, and twenty drops of the tincture of belladonna in four ounces of water. Of this a teaspoonful should be given every hour

from the start. The influence of bryonia alone will do much to relieve the pain, while its rational influence is directed toward the antagonizing of the pathological processes. In all its influences it is enforced by aconite. These agents promote tone and power in the capillary circulation, retard hypertrophy, exudation, suppuration, adhesion and induration, and hasten resolution, promoting rapid absorption of inflammatory products in a manner superior to that of any other known remedies.

In order to antagonize the formation of pus or the development of gangrene, as well as the toxic influence of the infections in this disease, twenty drops of **echinacea** every two or three hours should also be given from the first. With those who have used this remedy there is absolutely no question as to its efficacy. As the progress of infection leads to the necessity of surgical interference, this agent, in antagonizing the infective principles, their processes and the toxins which they form, will assist most materially in doing away with the necessity for an operation.

I have found the persistent use of **pure olive oil** of great advantage in this disease. It liquefies the feces without irritating the intestinal mucosa; it supplies a certain amount of nutrition; it acts as a lubricant to the mucous membranes and prevents irritation when irritants may be present. I advise from one to two ounces four or five times a day during the active stage of the disease.

While I have stated that opium must not be given to mask the symptoms, I have had cases which were severe from the start, with extreme local tenderness and acute, sharp, cutting pains, in which I have thought best to give from two to five drops of the **deodorized tincture of opium** every two hours for from perhaps eighteen to twenty-four hours. This reduces the sensitiveness, but does not prevent a close watch being kept upon the symptoms, nor does it increase local stasis or interfere to any extent with elimination. Occasionally the pain and soreness have so abated

after five or six doses that dependence can be placed entirely upon the bryonia, and the opium should be stopped.

There is a class of these cases in which nervous symptoms develop early, with nervous irritability or excitability and increased nervous and muscular tension. These cases will be materially benefited by the use of **gelsemium**. It should be given in full doses, of from three to five minims of the specific medicine, every hour or two, until a condition of quietude is obtained, which will probably not require more than three or four doses. This influence conduces materially to an abatement of the total symptoms.

A number of our physicians have used **lobelia**, by rectal enema, where there is extreme muscular tension and nervous irritability. They claim a wide satisfactory influence from the remedy.

In recurring appendicitis it is a good plan to give from fifteen to twenty grain doses of **magnesium sulphate**, with five drops of **dioscorea**, every two or three hours. The results of this treatment are not marked at first, but are plainly apparent later on.

Where, as the case progresses and tympanites develops or mild typhoid symptoms appear, an emulsion of **turpentine** should be prepared, each dram of which contains three or four drops of the remedy, with one drop of the oil of **wintergreen**. This is given every two hours, with excellent results.

As a result of the medical treatment there should be a gradual abatement of all the symptoms after the second day. I have depended largely upon the pain and local soreness to enable me to determine the progress of the disease or the influence of the curative measures.

It must be borne in mind that even in the most favorable cases there is likely to be a tendency to recurrence of the symptoms after the treatment is suspended. Because of this fact, convalescence must be closely guarded and remedies calculated to antagonize the inflammatory processes must be continued longer than is usually thought necessary

with other inflammations. This is especially true if there is any elevation of the temperature whatever. I look with suspicion upon even half of a degree of abnormal temperature.

**The diet** is an important factor in the treatment. It is excellent practice to exclude food of any kind for the first twenty-four hours, and, if possible, fluids also. **The thirst** may be quenched by a rectal injection of sterile water, or the **normal salt solution**, or in an urgent case, milk may be given in an enema. If the symptoms abate somewhat within twenty-four hours, liquid foods as advised in typhoid fever may be administered, but only in sufficient quantity to satisfy the urgent demand. After three or four days the diet may be gradually but very cautiously increased.

If the results of medicinal treatment are not satisfactory after the first two days, **a surgeon should be consulted**, and close watch should be kept for indications for operation. In recurrent cases, if the second or third attacks are at all severe, or are with difficulty controlled by the remedies indicated, it may be advisable to operate during the next interval. Statistics show that interval operations are productive of far better results than those performed during the active stage of the disease.

Inasmuch as the discomfort, local soreness and pain remain for a long time after a large proportion of the surgical operations, it may be wise when the recurring attacks are mild, and when there are no marked evidences of supuration, to continue to treat these cases medicinally, as experience has proven that there is less discomfort from the mild recurrences than there is from the constant presence of pain and soreness after an operation. I have obtained excellent results from the persistent use of echinacea and bryonia in small doses during a period of from six to nine weeks, in cases in which there was an occasional tendency to recurrence, with an ultimate complete cure.

For a restorative and tonic treatment, in convalescence, **hydrastis, bisulphate of quinin**, and one-fourth of a grain

of **powdered ipecac**, every two or three hours, will exercise a very excellent influence. The quinin and hydrastis act upon the central nervous system, while the hydrastis and ipecac act directly upon the diseased structures. Iron is often of signal service, and **strychnin** or **strychnin arsenate**, will be needed if there has been much prostration.

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## CONSTIPATION.

**Synonym:**—Costiveness.

**Definition:**—Constipation is a condition in which there is deficient peristaltic action of the intestinal muscular structure, and as a result there is fecal retention, or deficient evacuation of the bowels. It is not a disease in and of itself; it is but a symptom present in many diseases. Nevertheless it should be considered by itself, as in so many cases it is the chief symptom, the condition from which other manifestations of physical disorder result, and which disappear when the constipation is corrected. It may be considered in both an acute and chronic form.

**Acute Constipation:**—The causes only of acute constipation need to be mentioned here, as they are discussed under the heads of diseases in which this condition is a marked symptom. The most serious of these causes is intestinal obstruction. The condition is also present usually in some forms of appendicitis and in peritonitis, because of the paresis of the musculature of the intestines which results from that condition. It is found also in fevers, in which diarrhea is not a part of the disease underlying the fever, and because in febrile states all glandular action, and especially that of the intestinal tract, is inhibited.

**Chronic Constipation:**—The causes of chronic constipation are mainly as follows: (a) Heredity. Constipation is often a family habit, and is observed in brunettes more frequently than in blondes. (b) Faulty dietary habits;

habitual overeating, especially among those who lead an inactive life, and the habit of eating exclusively concentrated foods, such as milk, eggs and meat juices, which do not leave sufficient residue to provoke intestinal action. Also the overeating of food which leaves a great residue in the bowels, as the bulky vegetable foods, which are rich in cellulose and so distend the bowels as to produce a temporary, or in some cases persistent, paresis of the walls of the bowels; the drinking of liquids which contain tannin, such as tea and red wines, which exercise an astringent influence upon the glands of the intestinal tract and thus retard their action; the failure to drink plenty of water, a condition which becomes a habit with many patients and prevents proper liquefaction of the residues. Also the habitual taking of purgatives. (c) Atonic states, general and local, such as neurasthenia, hysteria, anemia and malnutrition, also induce it. It is caused by degeneration of the intestinal musculature; by chronic enteritis, especially ulcerative enteritis, which induces paresis; by glandular insufficiency and by diseases of the heart, liver and portal system. Faulty innervation of the intestines results in constipation, it being common in disease of the spinal cord and of the meninges.

A spastic condition of the bowels found in patients in whom nervous irritability is a pronounced symptom, and sometimes in the aged without known cause, gives rise to a very serious form of constipation. An atonic condition of the abdominal muscles from overstretching, as in frequent pregnancies; intra-abdominal tumors and obesity, also cause it. (d) Local painful conditions, as inflamed hemorrhoids, prostatitis, and a retroverted and inflamed uterus, may cause it. (e) Fecal accumulations, tumors, strictures and persistent neglect of the calls of nature are also to blame for its presence.

**Symptomatology:**—There are many patients who have two or three movements habitually each day, and who feel uncomfortable if they do not, while others evacuate the

bowels only once in two or even three days, for years, and do not feel any inconvenience from it. The majority, however have discomfort and unpleasant sensations if defecation does not take place freely once each day. **Debility, lassitude, low spirits,** lack of mental vigor, **headache,** loss of **appetite** and occasionally **vertigo** are among the most common symptoms of constipation. **The tongue** is usually furred, **the skin** lacks clearness or it may appear anemic, or it may have a peculiar cast which is described as "muddy." **Neuralgias** are common, especially those of the sacral nerve, and migraine is undoubtedly dependent upon constipation in many cases.

There is no doubt that in some cases it may be caused by **painful menstruation**, while in other cases in women it will induce painful menstruation. A sense of **pelvic pressure** or fulness, sometimes attributed to disease of the uterus and appendages is frequently relieved by correcting the constipation. It is not uncommon in severe cases for the persistent fecal accumulations to cause **hemorrhoids, ulcers** of the colon, **dilatation of the colon**, perforation or intestinal occlusion. The sacculi may be filled with feces in an occasional case, but there may be a way channelled between the hardened impacted feces and the intestinal wall through which liquefied feces may pass. Or there may be a **chronic diarrhea** with this impaction. In old persons **enteroliths** may be formed from calcification of these masses; sometimes doughy, tumor-like masses may be formed from them, or the mass may have a hardened or resistant feel, upon palpation. These are more apt to be found at the flexures of the colon or above the navel. Those patients who have constipation with occasional diarrhea frequently suffer from attacks of **nausea** and **vomiting**; or in the spastic type the feces are passed in ribbon or pencil-like portions, and in all cases the odor is exceedingly foul.

**Prognosis:**—The prognosis naturally depends upon the cause. The danger to life in the chronic cases is not great,

but the condition induces a serious impairment of the health.

**Treatment:**—The habit of giving laxatives or physics for the cure of constipation is pernicious, and results in most cases only in an increase of the condition. The influence of drugs upon the condition as a whole is by no means as great as is commonly supposed. The important measures in the treatment are the **adjustment of the environment** and **dietary conditions** to the demands of the patient, and the proper arrangement of the general **habits of living**. All of this will require time, and patience and persistence are essential. Measures must be adopted to arouse the tone of the muscular structures of the intestines. This is accomplished to a very satisfactory degree by **systematic massage**, by **kneading of the bowels**, or by the use of **vibration properly applied**. This latter in a few cases will be found particularly efficacious. The use of electricity is an important addition to the treatment, especially in elderly cases or in those cases where there is a lack of nervous tone—imperfect innervation. The current must be selected and applied with reference to the condition of each patient. In some cases the **galvanic current** will be found of the greatest utility; in other cases the **faradic current** will be found superior.

Concentrated foods must be avoided, and the patient must acquire the habit of drinking an abundance of water which is not heavily charged with any of the **calcium salts**. It is a good plan for these patients to have a large glass of **water** brought to the bedside when they are first awakened in the morning, and to drink this cold, and immediately compose themselves, lying upon the right side, to another short nap. This will permit a large proportion of the water drunk to pass directly into the intestines, and will materially assist in the liquefaction of the feces. Upon rising it is a good plan to eat a fresh apple, or to take an orange at the beginning of the breakfast meal. Figs, dates and prunes are all accredited with laxative properties, and

as long as they are taken will assist in overcoming the habits of constipation.

The patient should form the habit of going to stool regularly at the same time each day. The best time that can be selected for this is immediately after breakfast. In order to assist in the establishment of this habit an enema may be taken at the time the stool is desired, or a glycerin suppository may be introduced at this time, for a few days. Water should not be drunk at meal time, but should be drunk freely after the food is digested, and before another meal, in sufficient time to permit the larger portion of the fluid to pass from the stomach, into the bowels.

Among the remedies which may be used for chronic constipation by far the best in my experience is **cascara sagrada**, but to be efficacious it must be properly used. I believe that it may be laid down as a rule that the more time that is taken, within reasonable limits, to obtain an apparent beneficial influence from the remedy, the more perfect and satisfactory will be the result of its influence. I advise that the patient do not depend upon this remedy to move the bowels for the first week of its use, but that he use enemas, suppositories or other measures with which to procure a movement while waiting for the influence of the cascara. It should be begun in five drop doses of a good fluid extract, upon rising and retiring, twice daily, increasing the dose one drop each time, until the bowels move from the influence of the remedy. The dose given at that time may then be sustained for a day or two if the bowels move once each day. It may be found, if this dose is continued for several days, that it will produce two or more movements each day, which must not be permitted. The dosage should be reduced one drop at a time, but always giving enough to induce one movement only each day.

It will be found, after from fourteen to twenty days, that but very little if any of the remedy is needed; the bowels continue to move from the corrected habits of food and liv-

ing. In other cases it will be necessary to give three, four or five drops twice a day for from thirty to forty days. In a very few cases the dosage named will be too small, while in other cases it will be larger than necessary; the agent, therefore, must be carefully adjusted to each case. It must be borne in mind that if a cure is desired from this remedy, it positively must not be given in sufficient strength to induce active movements at the start. This will interfere with or entirely prevent its permanent influence.

The custom adopted by many patients of depending upon the use of popular mineral waters is bad. The influence may seem to be satisfactory at first, but ultimately the condition is not found to be improved. The use of sodium phosphate, in half of a pint of cold water, upon rising in the morning, will for a short time be of material benefit to those who suffer from slight congestion or sluggish action of the liver. But this remedy should not be continued too long.

In cases of chronic constipation induced by temporarily existing conditions, such as that present during pregnancy, or that following severe surgical operations, I have used the following with very satisfactory results: Prepare a **strong decoction of senna leaves** by boiling one ounce of the leaves in sufficient water to make a pint of the decoction when thoroughly boiled. This is strained, the leaves rejected and the liquid put back into the vessel in which it was boiled, and to it are added as many good French prunes as may be well stewed in that quantity of liquid. They may be prepared as if for the table, the whole poured into a clean fruit jar and sealed. If one of these be eaten before each meal, this will correct the constipation, sometimes for a period of three or four months. At other times one of them may be taken twice a day, in conjunction with two, three or four drops of cascara sagrada, with good results. It is seldom that four each day will be needed.

In severely stubborn cases it is a good plan to inaugurate any course of treatment by high irrigation of the colon.

This must be done very thoroughly, especially with patients of plethoric habit, who are somewhat inactive and who have a relaxed abdomen. These may need a repetition of the irrigation each week for three or four weeks.

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## INTESTINAL OBSTRUCTION.

**Synonyms:**—Ileus; occlusion of the bowel.

**Definition:**—Intestinal obstruction is a condition of the bowel in which normal peristalsis and evacuation are markedly hindered or entirely prevented.

**Etiology:**—There are three types of intestinal obstruction:

(a) That due to paralysis of peristalsis.

(b) That due to excessive peristalsis; i. e., spasm of the bowel.

(c) That due to mechanical obstruction, as twisting or volvulus, intussusception, kinking by bands of fibrous tissue, hernia, stricture, neoplasms, foreign bodies, pressure and congenital malformation.

This condition may occur either in an acute or in a chronic form. The acute cases are most commonly due to paralysis, spasm, volvulus, intussusception, adhesions and hernia, and the chronic cases to tumors, either within the bowel lumen or external to the bowel and pressing upon its walls from without; also to fecal impaction.

**Symptomatology:**—As will be readily seen, the symptoms will vary with the cause of the obstruction. In general, however, there is a well-marked train of symptoms clearly distinguishing the acute cases, which are in their order, **pain, nausea or vomiting, tympany and coprostasis.**

A discussion of the more common forms is necessary.

**Intussusception:**—Clinically three types may be recognized: the ultra-acute, death resulting within twenty-four hours; the acute, death resulting in the first week unless

the condition is relieved, and the sub-acute, lasting a month or more. The small intestine may be involved alone; the ileum and cecum may be invaginated within the colon; a portion of the colon may be invaginated within its own lumen; the rectum may be involved alone.

The first symptom is most commonly sudden and violent **pain**, which subsides and recurs. **Vomiting** soon occurs in the great majority of cases, and nausea is always present. Vomiting may not appear for hours in adults, and may even be absent. Bloody mucus is passed from the bowel after the contents below the invagination are **evacuated**, especially in children. **Tenesmus** is usually felt and is severe. Sometimes the tumor may be felt and peristaltic waves seen through the abdominal wall.

**Strangulation**:—**Bands of adhesions** may form, most commonly at the site of an operation on the abdominal viscera, and these may kink the bowel, or the latter may become looped beneath them. The symptoms are **sudden pain** of great intensity, which continues, though there are remissions in intensity. The pulse is rapid and becomes weak. The temperature is usually elevated from one to three degrees. **Vomiting** becomes established within thirty-six hours and is fecal in character. After the bowels are evacuated early in the attack, **constipation** is absolute.

At first it may be possible to palpate the kink of the bowel, but **tympany** develops, which soon obscures the palpatory findings. **Tenderness** may be marked over a portion of the abdomen, and this is often at a distance from the strangulation. **Sleep is impossible**. The patient has an anxious expression, bodily weakness develops, but the mind is alert. While intussusception is most common in children, strangulation is seen most commonly in adults.

**Volvulus**:—This condition is most frequently found after middle age, and in men more commonly than in women. The small intestine is involved and is usually twisted, with the mesentery as an axis. **Pain** is not so constant or severe a symptom as in other acute forms of intestinal obstruction,

but **abdominal distention** is marked. **Constipation** is absolute and there is considerable **vomiting**.

**Paralytic ileus** is a condition which usually occurs after operations upon the abdominal organs. There are seldom malformations or malpositions of the intestines. The muscular fibers are simply paralyzed. Vomiting, meteorism and constipation are the conspicuous symptoms.

**Obstruction from Foreign Bodies.**—Indigestible articles swallowed are an occasional cause of intestinal obstruction. Gall stones and enteroliths are more common causes. The symptoms are not so severe as in the foregoing forms. **Constipation** is the most marked. **Tenderness** is usually present, with occasional attacks of **colicky pain**. **Vomiting** is excited by the taking of food. The symptoms are in general those of a severe form of gastro-intestinal catarrh, with the exception that there is constipation instead of diarrhea. Gall stones and enteroliths are often passed, and should be looked for in the bowel movements obtained.

**Diagnosis:**—The diagnosis of intestinal obstruction may be difficult in the early stages and must be differentiated chiefly from appendicitis. In this the early localization of the appendiceal pain, the history of other attacks, the leucocyte count, and the rigidity of the right rectus muscle will help to decide in favor of appendicitis. The obstinate constipation, the developing abdominal distention, the rapid pulse, and the fecal character of the vomitus will point toward intestinal obstruction.

In gall stone colic a history may be obtained of previous attacks; there may be jaundice; there is tenderness over the gall bladder and the liver, and the pain is reflected to the region of the right shoulder blade.

In renal colic the pain is distinctly in the lumbar region, and if reflected is reflected to the pelvis and thigh. Blood is usually found in the urine.

**Prognosis:**—The prognosis depends upon the age of the patient and the type of the obstruction. It is not good in infants, while the causes producing intestinal obstruction

in adults are usually remediable if recognized early and appropriate operative measures can be employed. Of course, the prognosis in cases due to neoplasms is the prognosis of these diseases themselves.

**Treatment:**—So insidious is this condition in most cases that it is considered only a case of constipation and physics will have been administered in nearly every case before the physician is consulted. Physics should be avoided in all cases. It is a good plan, however, to thoroughly evacuate the bowel below the obstruction; this may be accomplished by the use of **enemata**. While the obstruction can only be overcome by **surgical means**, in most of the cases, medical treatment of the symptoms is of great importance. The pain should be controlled, usually with hypodermics of morphin; other remedies are either temporary or inefficient; for the vomiting it may be necessary to irrigate the stomach. No food or drink should be taken into the stomach, if possible, during the existence of the condition.

If the obstruction is due to impaction alone, high rectal injections persistently repeated will ultimately succeed in removing them; or an injection of **olive oil** may be used. It is a good plan to invert the patient and use a fountain syringe held sufficiently high to produce considerable hydrostatic pressure. This may be alternated with **massage** or **manipulation** of the abdominal walls, conducted systematically and carefully.

If the case be one of intussusception, **distention** of the bowels with water, or **inflation** with gas or air, should be practiced. There should be some remedy given which would produce complete muscular relaxation, if this has not been accomplished by the original hypodermic injection of morphin.

If these measures repeated and persisted in for from twelve to eighteen hours are not successful, a **surgical operation** must be performed without further delay. Early

operations are successful in a large majority of cases; the danger lies in procrastination.

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## DILATATION OF THE COLON.

**Definition:**—Dilatation of the colon is a condition in which this organ is enormously distended, and may be accompanied by either stretching and thinning, or hypertrophy of its walls.

**Etiology:**—Four classes of cases are recognized: (a) Dilatation due to accumulation of gas; this is an acute form, sometimes met with in acute infectious diseases, as typhoid fever and the pneumonia of alcoholics. (b) Dilatation from the accumulation of foreign bodies, as gall stones and enteroliths, a very rare condition in the human subject. (c) Dilatation due to obstruction of the lower part of the colon by stricture, neoplasms, especially carcinoma, or by volvulus and bands of adhesions. (d) The cases of so-called idiopathic dilatation, seen but rarely, and due to a congenital narrowing of the lower part of the bowel.

**Symptomatology:**—In acute gaseous dilatation there is **abdominal distention** with tympany. The diaphragm is pressed upward, interfering with the action of the heart and lungs. It is an evidence of functional inability on the part of the intestine, and thus of a condition of **lowered vitality**. In the other types there are constipation, **accumulation of fecal masses**, attacks of colic, and frequently **ulceration**.

The **abdomen** may be very tender to the touch, especially over the hepatic and splenic flexures of the colon. **Nausea** and **vomiting** may be so established that the taking of any kind of food or drink is attended with difficulty.

**Diagnosis:**—The diagnosis is made by the presence of bulging and tympany over the course of the colon in acute cases, and tenderness and fecal accumulations, together

with the passage of enteroliths, particles of blood and shreds of tissue in other cases, and by proctoscopic examination.

**Prognosis:**—The prognosis in acute cases is that of the disease underlying the condition, though the relief of the gaseous accumulation is distinctly favorable to the relief of the causative disease.

In chronic cases the prognosis depends upon the possibility of establishing an artificial anus above the constriction.

**Treatment:**—In that form due to the accumulation of gas it is necessary, first, to remove the gas, and secondly, to adopt measures which will retard its accumulation. Any constipation that may be present must first be overcome by proper measures. The introduction of an emulsion of **turpentine**, prepared in such a manner that the entire quantity used shall contain from twenty to forty minims of the oil, thoroughly mixed with a **gum-arabic mucilage**, or with the **milk of assafetida**, will be found serviceable. The bowel may be relaxed by the compound tincture of **lobelia** and **capsicum**. If there is tendency to muscular spasm, a **hot bath** sometimes materially assists in the removal of the gas. Experience has proven that puncture of the abdominal and intestinal walls with a needle, in order to permit the direct escape of the gas, is not a practicable measure. The conditions underlying the gaseous accumulation and intestinal inactivity should be treated with those remedies which appear to be directly indicated.

The other conditions of intestinal distention, such as the presence of foreign bodies, or congenital occlusion of the canal, are surgical in character, and will usually demand an **operation**.

## ENTEROPTOSIS.

**Synonyms:**—Glenard's disease; viceroptosis.

**Definition:**—Enteroptosis is a condition in which the abdominal contents are displaced to a lower level than they normally occupy because of stretching of their supporting ligaments and laxity of the abdominal wall. The condition may affect one or more of the abdominal viscera.

**Etiology:**—There are two groups of cases. First, those seen in women who have had repeated pregnancies and who are thin, or who have lost flesh markedly. Frequently the condition in these persons gives rise to no symptoms.

The second group of cases is seen in young persons who are thin, and especially those who are wasted from acute disease. Many more women are affected than men. Such patients constitute a neurotic group, being the subjects of neurasthenia or hysteria. The wearing of constricting bands and corsets furthers the process in such patients. Cases are seen among the insane when conditions of wasting, chronic constipation and inactivity coexist. Occasionally the aged are the subjects of this disorder.

**Symptomatology:**—The most constant train of symptoms are of a dyspeptic nature. The patient complains rarely of abdominal pain, but usually of abdominal discomfort. There is a more or less constant sense of the possession of abdominal organs. Frequently there is the sensation of motion in the abdomen; rumblings and noises are common. There may be a feeling of chronic weariness, with dull aching, especially in the back. Sometimes the appetite is diminished; at others the patient desires food with the feeling that the discomfort will be relieved. Palpitation and shortness of breath are not uncommon. Constipation is usual, but, often, after the taking of cathartics with apparent good results, there is no sign of relief. On examination the patient appears thin and wasted. The epigastrium appears empty, while there is unusual fulness just below in the bowels. Inflation of the stomach may reveal the lower curvature a

hand's breadth below the umbilicus, and possibly the whole organ will occupy a position in which the long axis is parallel with the long axis of the body. Peristaltic waves may be frequently seen in the stomach and intestines. Throbbing of the abdominal aorta is a usual visible accompaniment.

Upon palpation the transverse colon may appear as a cord-like structure, curved or bent downward. One or both kidneys may be prolapsed, more frequently the right one.

Percussion may reveal the liver and spleen displaced downward to a variable extent. In extreme cases these organs may occupy the lowermost zone of the abdomen.

**Diagnosis:**—The above named symptoms, with the findings, constitute the diagnosis of enteroptosis. Stress is particularly laid on the finding of the ptoses, as the other symptoms are those of an independent neurasthenia or dyspepsia.

**Treatment:**—Drugs alone in the treatment of this condition will produce no permanently satisfactory results. **Bandages** or other supports must be applied, which, after careful replacement, will retain the contents of the abdominal cavity in as near normal position as possible. These patients always observe that any support to the abdomen affords considerable relief. After the replacement, **massage**, **electricity** or **vibration** will exercise a local influence upon the muscular and nervous structure of the intestines which will go far toward the restoration of normal tone.

With the benefits derived from the above measures, the use of **hydrastis**, **xanthoxylum**, **capsicum** and **nux vomica**, singly or in proper combination, will do as much towards restoration of the function of the organs, as any remedies we could name. It is seldom necessary to give capsicum and xanthoxylum at the same time. The former has an effect upon the nervous and muscular structure of the intestinal tract alone, and upon the capillary circulation of these organs, while the latter with hydrastis influences the central

nervous system in conjunction with their influence upon the intestinal tract.

Constipation, in this condition, must be treated with much care, and active irritating cathartics must be persistently avoided, as they impair the tone of the intestines. In prescribing a diet for these patients, fruits, easily digested foods and non-fermenting articles of diet must be selected. Concentrated foods, such as cheese and butter, with the heavier articles of starchy foods, such as beans, peas and corn, should be avoided. The patient should take a small meal only at a time, even if it is necessary to take this four or five times each day. Furthermore, it is necessary to observe the digestive powers of the stomach, and assist in every way possible the digestion of the food. If an acid is indicated, give **hydrochloric acid**; if there be an excess of acids, give some **neutralizing** remedy that exercises a tonic influence. The **syrup of rhubarb and potassium compound**, to which **capsicum** and **hydrastis** are added, may be given with regularity as long as the acidity remains. Among the digestives the **essence of pepsin** may be used when acids are deficient, as it usually contains a mild acid. **Pancreatin** or **paw-paw** will be of much service in selected cases.

# Diseases of the Liver and Gall-Bladder.

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## HEPATIC HYPEREMIA.

Hepatic hyperemia—congestion of the liver—is a physiological process in the exercise of the normal functional operations of the organ at given times. It becomes pathological when, from excessive eating or from eating highly seasoned or indigestible food, or from other causes, there is interference with the normal action of the organ. It is common also among alcoholics. It occurs from hemorrhage in certain cases, and as a result of suppression of menstruation. It may be a vicarious condition.

## ACTIVE HYPEREMIA.

This is not a clearly defined condition. It is transient in its character, lasting sometimes only as long as the causes are present; at other times disappearing spontaneously after a short period.

**Symptomatology:**—There is a sensation of **weight and fulness** in the right hypochondrium, to which the attention may be attracted by little **sharp, shooting pains**, and there may be also some **tenderness**. The liver dulness will be found to be increased somewhat, and at times this will vary quite perceptibly on two consecutive days. When the condition persists the patient becomes irritable and indisposed to exertion. There is **headache, vertigo, nausea, a badly coated tongue**, with a bad taste in the mouth, **constipation** and perhaps a slight **jaundice**.

**Treatment:**—If these patients be permitted to fast, there will be a natural decrease in the quantity of blood in the liver, without treatment. The first indication, and often

the only one to which I resort in simple cases, is the application of **dry heat** over the liver, for a period of from two to six hours. In the severer cases moist heat will be preferable. I use **belladonna** and **bryonia** internally as the specific remedies. They have been the most efficient. Agents which are supposed to increase the functional activity of the liver are to be avoided at the onset. **Phosphate of sodium** will relieve the partial retention of bile and provide all the stimulation needed at this time. I have found **podophyllin**, even in small doses, to be harsh in its action, and seldom indicated during the active stage of this condition. I prefer **leptandrin** and **iris** in small doses. The patient should be kept upon **very plain food** for perhaps two weeks, and should **drink an abundance of water** between meals.

### PASSIVE HYPEREMIA.

**Etiology:**—This condition differs in many particulars from the active form of hyperemia. The causes are similar to those which induce other hyperemias. One of the first causes is chronic disease of the heart. Other conditions which interfere with the flow of the blood from the liver or retard the flow within the superior vena cava, or impede its escape into the heart, may act as a cause. Among these are bronchiectasis, pulmonary emphysema, a fibroid condition of the lungs, and obstructions within the heart. Farther influences which retard the free escape of the blood are pleuritic effusions, chronic pneumonia and tumors, within the chest, as well also as disease of the walls of the veins and thrombosis of the portal vein.

**Symptomatology:**—The symptoms of passive congestion are **early jaundice** with disorder of the digestion, and more or less **pain** in the region of the liver with considerable enlargement, the organ extending much below the margin of the ribs. The **fulness** and **heaviness** observed in passive congestion are more or less constant, but are often observed only when the patient is tired or during a possible exacer-

bation of the disorder. As the disorder of digestion increases, there is **headache, vertigo, nausea**, and occasionally **hematemesis**; there is **loss of appetite, constipation**, and usually scanty, **high-colored urine**, which becomes cloudy and deposits a heavy sediment upon standing. The **feces are clay colored** and light. From the obstruction to the portal circulation, dropsy occurs. Occasionally there is an expansile pulsation in the liver, synchronous with the cardiac systole, which is quite pronounced upon palpation.

When passive congestion is due to **thrombosis** within the portal vein, the symptoms are those above described, or are somewhat similar to those of cirrhosis. They usually develop more rapidly, however, and there is enlargement usually of the spleen. The thrombus may be caused by gall stones, or by an injury, or from infection, or it may be induced by the presence of a tumor. It may develop rapidly and cause an immediate closure of the vein, as would be the result from an embolus, or it may gradually develop. There may be no serious results from this to the liver, because of the free anastomosing circulation. But there is considerable disturbance in the circulation of the abdominal vessels. These are apt to become engorged to such an extent that hemorrhage may be a consequence.

When, from disintegration of the thrombus, with suppuration, or when the thrombus from other purulent inflammation becomes necrosed, and is infectious in character, the clot not only interferes with the circulation in the vein, but it causes septic infection of the walls of the vessels and of the contiguous hepatic tissues. From this, suppuration may take place; from these structures the infective material conveys the infection to the minute veins in the portal circulation, resulting in the development of smaller abscesses—**multiple abscess**—in the liver structure. This may result from appendicitis, abscess in the gastrointestinal tract, abscess of the spleen, or infection from the umbilical cord or from penetrating wounds. With the suppuration there are, of course, the

usual symptoms of septic invasion; there is **chilliness**, **irregular fever**, or **hectic fever**, and **profuse sweating**, or **night sweats**, and more or less **progressive debility**.

**Treatment:**—In the treatment of passive congestion of the liver and of the conditions which induce it, the condition of the general circulation must be kept constantly in mind. The nervous system must be strengthened, those influences which interfere with the action of the heart must be overcome, and the local portal circulation must be equalized through equalization of the general circulation. The use of physics to unload the blood vessels has long been adopted, but the specific use of **belladonna** and the application of **heat**, or the **mild faradic current**, will accomplish this result to a very much better advantage, without danger of gastrointestinal irritation and further hemorrhage.

The use of **leptandra**, **chionanthus**, or **iris** will tend to the desired result. The remedies should be carefully selected according to the indications. They may be given separately or in conjunction with **hydrastis**, **xanthoxylum** or **capsicum**. **Podophyllin**, one part to one hundred parts of sugar of milk, is occasionally beneficial, but I have obtained the best results from the persistent use of **bryonia** and **belladonna**. The indications for these remedies are usually very plain. There is **enlargement** of the organ, **tenderness**, **sharp, shooting pains** and occasional **chilliness**. Equal parts of these remedies are combined and twenty drops of the mixture are added to two ounces of water. Of this a teaspoonful should be given every hour during the waking hours for from seven to ten days, and dry heat should be applied during the night. It is certainly rational to treat the condition within the capillaries, rather than to stimulate the functional action of the liver.

As a laxative an occasional dose of **magnesium sulphate** may be given, especially if there is a tendency to dropsy; or the **sodium phosphate** is an excellent remedy. The use of well selected mineral waters is frequently of ad-

vantage also, and occasional **colonic flushings** may be administered, but active cathartics should be avoided.

When there are heart complications, **cactus**, **digitalis**, **lycopus**, or **iris** will be needed. If dropsy is present, **apocynum** will be the superior remedy; if there is greatly reduced arterial tonus, with irritation of the nervous system, or a tendency to spasmodic conditions, **gelsemium** in full doses, or the tincture of **lobelia seeds** in small doses, may exercise a desirable influence.

If the dropsical condition, whether induced by passive congestion direct, or by thrombosis, is not readily relieved by the **apocynum**, full doses of **magnesium sulphate** or other well selected remedies may be tried. Occasionally surgical intervention will be necessary.

When the obstruction to the portal circulation is septic in character, the treatment will not be satisfactory. The internal measures will be those calculated to antagonize the influence of septic infection and the formation of pus, such as **echinacea**, **calcium sulphid** or the **calcium iodid**. If a single large abscess can be diagnosed, this should be evacuated, but local measures should be advised with caution.

Dieting is important in all cases of passive congestion, although the influence of a **strict diet** is not so apparent as in active congestion. Plain, easily absorbed, highly nutritious foods are always required. I have found it a good plan to limit the number of articles of food taken at each meal to two or three, and to insist upon this rigid course for a period of weeks. **Out of door exercise**, judiciously indulged in, is an important accessory.

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## HEPATITIS.

An acute inflammation of the structure of the liver, in which the course of the disease is similar to that of inflammation of the other organs, with a possibility of a termination by resolution, is not described by other writers. Acute

inflammation with an immediate inclination to the formation of abscess is recognized as suppurative hepatitis, or hepatic abscess, and a chronic interstitial inflammation known as cirrhosis of the liver is recognized.

### ACUTE SUPPURATIVE HEPATITIS.

**Synonyms:**—Acute hepatitis; hepatic abscess; abscess of the liver.

**Definition:**—A condition in which the consecutive stages of acute hyperemia, inflammation and exudation proceed so rapidly to suppuration as to be often unrecognized. It is characterized usually by an erratic temperature, and always by the presence of an abscess in the hepatic parenchyma.

**Etiology:**—While the disease may result directly from cold and sudden suppression of the secretions, as other acute inflammations, this is rarer. It follows direct blows over the liver or upon the abdomen, falls and severe muscular strain, as well as other severe direct traumatisms, as a gunshot or knife wound. It will follow remote injuries also, as a blow upon the spinal column or upon the head.

Other causes are the introduction of infections into the portal circulation, or infectious disease of the hepatic blood vessels. These infections may result in an embolus or in a thrombus, or a pyemic embolus may be formed from contiguous or remote suppuration in other parts. In hot climates the condition follows dysentery directly, and assumes the form of a large single abscess of rapid formation, known as **tropical abscess**.

It also follows other severe disorders, as typhus, typhoid and malarial fevers, appendicitis, endocarditis and pulmonary gangrene or adhesions from gastric ulcer, as well as purulent cystitis and hemorrhoids. Tropical abscess following dysentery is, of course, directly due to the amebæ coli, but other microbes are discovered also, such as the balantidium coli. This condition may occur idiopathically. Parasites and occasionally foreign bodies will induce it.

Suppurative hepatitis occurs quite frequently in the warmer parts of the United States and in southern Europe. It is common among Americans and English who sojourn in tropical climates. It is more apt to occur among those who are high livers, or among alcoholics and those of other dissipated habits.

**Symptomatology:**—There is considerable difference in the onset of acute and chronic cases. In acute cases the **temperature** will rise rapidly to perhaps 103° F. during twenty-four hours. There may be a decided chill, but usually there are rigors. There is no regular course to the fever; it is erratic, and may be remittent or intermittent, with some resemblance to malarial fever, or it may be of a hectic character. It may be followed by **profuse perspiration**, and this by **rigors**, with an abrupt rise in the temperature again. Or it may continue high for a number of days with slight morning and evening remissions. It occasionally reaches 104° or 104.5° F. In rare cases there is no fever, or the temperature may be subnormal. **The pulse** is round and full, or rapid, corresponding with the temperature. **The tongue** is heavily coated with a yellowish or yellowish brown coat; there is **anorexia**, **impairment of the digestion** and **nausea**. If pyemia is pronounced, **the fever** assumes a pronouncedly typhoid type. **The tongue** becomes dry and harsh with a brown or black coat; **the mucous membranes** are dark colored and dry, and there are **sordes** upon the teeth. Usually **diarrhea** prevails, but constipation is not uncommon. At times **constipation** and diarrhea alternate. The patient loses strength rapidly and becomes **emaciated**. **The skin** is flabby and of a dingy color, or it may be slightly jaundiced.

**Pain** is usually a conspicuous symptom from the first. It is located under the ribs on the right side and radiates upward into the shoulder. It increases as the disease progresses and is affected by change of position, being more severe when the patient lies upon the left side. It is dull,

heavy and tensive or boring in character, and occasionally it is intermittent.

It will be observed upon inspection and palpation that the **liver** extends downward into the abdominal cavity and is uniformly **enlarged**. The area of dulness is uniformly increased, extending upward also, and to the right, and to a level with the angle of the scapula. If the abscess should occur upon the lower margin of the liver, this may alter the uniform projection downward. There may be some **bulging of the ribs** over the right lobe. The **spleen** becomes somewhat **enlarged**, and **ascites** may soon develop. There is edema of the skin when the pus is near the surface, and fluctuation may be apparent, and it is not uncommon that the pressure upon the lungs will produce a peculiar **cough**, with a brownish sputum. Later the patient becomes **anemic**, the **skin** is **dry** and **harsh** and the **jaundice**, which at first is but slight, may become intense.

As the disease progresses toward a fatal termination, there is increased **mental dulness**, **delirium**, varying in character in different patients, **subsultus tendinum**, and ultimately **coma**. After the disease has developed, the patient lies upon the right side with the right leg flexed upon the body to reduce the tension of the abdominal muscles.

**Diagnosis:**—The condition is easily confounded with empyema, gall stone or malarial fever. The fact that quinin makes no impression upon the disease will determine that it is not due to malaria. The symptoms must be taken together and all factors considered to confirm the diagnosis. The introduction of an aspirating needle in obscure cases will permit the withdrawal and examination of the fluid.

**Prognosis:**—The prognosis is unfavorable, the mortality ranging above sixty per cent. The disease in the acute form runs a rapid course. In large single abscesses an early operation will materially reduce the mortality. Where multiple abscesses are present the mortality is greater.

**Treatment:**—During the stage of development the best of results are obtained by treating the specific symptoms as they appear, with directness and positiveness. If an abscess formation can be anticipated, the treatment should be begun with small doses of **aconite**, frequently repeated, to regulate the temperature. Drop doses of **belladonna** every hour, to overcome the local congestion, and from twelve to fifteen minims of **echinacea** every two hours, to antagonize the formation of abscess, should be given. **External heat** will stimulate the capillary circulation and assist in the removal of morbid products, and will at first materially assist in antagonizing necrosis. Later **phytolacca**, **polymnia uvedalia**, and the use of full doses of the tincture of the **chlorid of iron** are indicated. Much attention should be paid to the condition of the stomach, and easily digested, nutritious foods should be administered. Occasionally a large **mustard poultice** over the region of the liver will be of service, both as a derivative agent and in relieving the pain.

When evidences point to the formation of pus, an **exploratory puncture** should be made. If pus is found, the expediency of an immediate operation must be considered, as early evacuation is desirable.

## CIRRHOISIS OF THE LIVER.

**Synonyms:**—Interstitial hepatitis; sclerosis of the liver; hob-nailed liver; gin-drinker's liver; nutmeg liver.

**Definition:**—A chronic disorder of the liver characterized by an overgrowth of connective tissue, but with a degeneration of the parenchyma of the organ and usually a consequent reduction in size. (**Atrophic cirrhosis.**) Occasionally the overgrowth increases the size of the organ. (**Hypertrophic cirrhosis.**)

**Etiology:**—Alcoholism is believed to be an almost universal cause of the atrophic variety of cirrhosis, and those who habitually drink the stronger liquors are most liable to

it. It occurs, of course, most frequently in males, and according to the acquirement of the habit of drinking. It occurs at variable periods, from thirty-five to fifty years of age, very rarely in women. There are exceptional cases in which this form follows infectious diseases, or it occurs as a result of tuberculosis, syphilis, malaria, gout, rickets, diabetes or cancer. It also has been traced to the persistent use of excessively seasoned foods, or persistent over-eating. The ingestion of inorganic poisons leads to this disorder, as well as the conditions which induce gall stones. In disorders of the gastrointestinal tract there are present an excess of lactic, butyric, acetic or valerianic acids. These substances have been used in experiments upon animals and cirrhosis has been thus induced.

Hypertrophic cirrhosis is of rare occurrence and of unknown origin. It occurs more frequently in males than in females in the proportion of about six to one. It occurs more frequently in hot climates.

**Symptomatology of Atrophic Cirrhosis:**—This disorder may progress until an advanced stage is reached before any distinguishing symptoms are apparent. Among the early appreciable symptoms is the sensation of **fulness** or weight in the **right hypochondrium**, with a sensation of **distention** in the **epigastric region**. There is **tenderness** on pressure under the edge of the ribs, with occasional little **quick, shooting pains**. Quickly following these there is **loss of appetite, nausea, occasional vomiting**, accumulations of **gas** in the gastrointestinal tract, with **frequent eructations**, and occasionally **palpitation**. There is **constipation** or **diarrhea**, or these may alternate.

With the serious impairment of the nutrition the patient becomes **emaciated**, loses strength and inclination to physical exercise, **the face** is pinched and discolored or sallow, there is a dusky hue, and it may ultimately become jaundiced; later **the eyes** are sunken, **the cheeks** hollow and the face pinched, with a dark discoloration of the tip of the nose. The yellowness of **the skin** is especially ap-

parent on the trunk of the body. **Hematemesis** is not an uncommon complication. This occurs after the mucous membranes of the gastrointestinal tract become congested. Other hemorrhages are apt to appear, and hemorrhoids and other varicosities form.

A compensatory circulation is early established in this disease and continues throughout its course. From this there is occasionally extreme enlargement of the superficial epigastric and mammary veins, and there is formed around the umbilicus the so-called **caput medusæ**. If the compensatory circulation should fail, **abdominal dropsy** will develop. This sometimes becomes extreme, and the **spleen** becomes greatly **enlarged**. From this there is a pronounced **difficulty in breathing** and interference with the action of the heart, which may later lead to **general dropsy**. In rare cases when other symptoms have not been pronounced, there will develop from the accumulation of toxins in the system a rather sudden train of **brain symptoms**, characterized at first by a **violent headache**, with extreme **nervous excitability** and a noisy but happy **delirium**. This becomes wild and violent later, and **convulsions** may follow, or the patient may subside into **dulness, stupor**, and ultimately into that form of coma which is described as **hepatic coma**. This condition may occur in other cases when the symptoms are pronounced and where there have been rapid evacuations of the bowels. These symptoms resemble those of uremic poisoning, and may be mistaken for that condition, unless pronounced jaundice is present, which is not the case in more than thirty per cent of the cases. The **urine** is rather **scanty**, and although there is an increased specific gravity, bile being present in considerable quantity, there is a deficiency of urea with an excess of urates, and the occasional presence of albumin and tube casts. There is but little dulness on percussion as compared with other conditions, and the lower margin of the liver is sometimes difficult to define.

**Symptomatology of Hypertrophic Cirrhosis:**—This form

is present in adults who are not addicted to alcohol, and is found in children and in early life. A classic symptom is **extreme enlargement of the liver**. This may be found so great that the organ extends around to the left side and below the navel. In thin patients its outlines can be plainly defined on the surface of the abdomen. The edges are well rounded and the surface smooth. It also extends upward and around as far as the sixth rib. It causes an upward displacement of the diaphragm and compresses the lung. There is **tenderness over the spleen** quite early, and this organ also becomes enlarged. With the development of the enlargement of the liver the derangement of the stomach and bowels is observed, and these symptoms, with **gastric catarrh**, sometimes become quite serious. A **mild icterus** is an early symptom, and this condition increases until it is pronounced. Bile is found in both the urine and feces. With **extreme jaundice**, **itching** of the skin becomes a troublesome symptom, and occasionally **fever** develops. **Pain** resembling that of **hepatic colic** may occur at irregular intervals; **dropsy** is rare, but **hemorrhages** into the skin and mucous membranes are not uncommon. These cases are of slow development and may continue two, three or four years before serious symptoms appear. In other cases the disease may run from seven to ten years before extreme cachexia, pronounced jaundice and other serious symptoms develop.

**Diagnosis**:—This depends upon the history of the case and the length of time and character of the development. If the patient is addicted to alcohol, and hemorrhages with jaundice and serious gastric disturbances are present, with pain in the liver, atrophic cirrhosis will be suspected. If there is rapid enlargement of the liver, with colicky pains, and finally jaundice with hemorrhages, this will point to the hypertrophic variety.

**Prognosis**:—If a collateral circulation is early established and maintained, the prognosis is good; if dropsy develops rapidly, or hemorrhages occur, or the jaundice be-

comes extreme, the case becomes serious. An early diagnosis is of importance, and specific treatment early administered will accomplish beneficial results and render the prognosis more favorable.

**Treatment:**—These patients should be placed under circumstances in every way favorable. If the alcohol habit is fixed, I believe it a good plan to submit the patient to specific treatment for the cure of this habit, provided the cirrhosis is not too far advanced. The patient should have that class of **tonic remedies** which are calculated to sustain the nervous force and to materially encourage and promote the digestion and assimilation of the most concentrated nutritious foods. These must be selected and administered with the utmost care, and should be given in sufficient quantity, preferably at short intervals. The use of **hydrastis canadensis**, **tincture of capsicum**, **nux vomica**, and **tincture of the red cinchona bark**, with **cola**, in some cases, will exercise an immediate beneficial influence upon the general condition. With this may be combined **chionanthus** if the jaundice is at all pronounced, although I prefer to give this remedy separately in hot water four or five times daily. If the tissues are flabby and the skin is dingy or sallow and dry, **chelidonium** and **iris** may be given. Occasionally **iris** and **leptandra** in small doses in port wine, for patients not addicted to alcohol, will prove very serviceable. The remedies may be given in infusion with the tincture of **xanthoxylum** to alcoholic patients. **Sodium phosphate**, begun early and continued in varying doses, sufficient to overcome constipation when it exists and short of producing irritation when diarrhea is present, will be found to be a very valuable remedy. The use of **haircap moss** and **apocynum** will be of much benefit in dropsical conditions. If there is heart weakness and irregularity before the dropsical symptoms appear, **apocynum** will prove of much service. If the condition is due to syphilis, **specific blood remedies** calculated to correct this condition must be given. In the hypertrophic form **persistent heat** in the

developing stages, or the occasional use of a mild **galvanic current**, will materially retard the progress of this serious disease.

### PERIHEPATITIS.

As a result of inflammation of contiguous serous membranes, such as pleuritis or peritonitis, or perhaps as the result of cirrhosis, a chronic form of inflammation may develop in the capsule of the liver, and thence be conveyed to the underlying tissues or structures of the organ. This is a true perihepatitis, sometimes designated as capsular-cirrhosis. It may be either acute or chronic.

The **acute form** may also result from an injury, or from a penetrating wound, or it may be the direct result of a cold, but extension of an acute inflammation from contiguous organs as above specified, or extension directly from the parenchyma of the liver, is the most common cause. In a large number of cases it has resulted from perforation by ulceration, either of the stomach, duodenum or colon, or from carcinoma. It tends rapidly to suppuration and results in subphrenic or other abscess.

**Symptomatology:**—There is **acute pain**, which may be at times almost agonizing, and when involving the diaphragm, it is greatly increased on each inspiration. In other cases the pain is less sharp and cutting but more constant. It may be distinctly circumscribed in location, and will be accompanied by extreme **tenderness on pressure** and by **faintness**, **nausea**, often **vomiting**, **prostration** and **heart weakness**, with **rapid** and **feeble pulse**. If the condition is protracted, there is irregular **chilliness** or **rigors**, and **erratic temperature**, with profuse **sweating**.

**Diagnosis:**—The disease is difficult of recognition. If associated with diaphragmatic pleurisy, it may be so diagnosed, or it may be confounded with empyema. The cough which is often induced, and the pleuritic pain are especially misleading, but the local circumscribed pain ought to assist in an exact diagnosis. There is bulging in the right

hypochondrium, and dulness extending upward to the fifth or even the fourth rib, which may change if the patient changes position. Aspiration will disclose the character of the fluid.

**Prognosis:**—Prognosis depends upon the cause and upon an early recognition of the conditions, and also upon an early ability to freely evacuate the pus. It should be good in cases not too seriously complicated. Cases have subsided and reasonably good health followed where the pus was walled off or reabsorbed.

**Treatment:**—The symptoms are so similar to suppurative pleuritis, or to peritonitis of a local character, that the disease should be so treated. A **hot mustard** poultice is applied over the entire organ for a few minutes, over the reddened surface **vaseline** or **sweet oil** is rubbed freely, and **hot applications** are then applied. An exploratory needle should be early introduced. Thorough **evacuation** is highly essential. Tincture of **aconite** and **specific bryonia**, the latter persisted in, will be of pronounced efficiency. Fifteen drops of each should be added to four ounces of water, and a teaspoonful should be given every hour for several days, unless the temperature remains normal, when aconite should be discontinued. If **opium** be given, it should be in doses of from two to five drops only, of the aqueous tincture, every two hours, until the pain is in a large part relieved. Subsequently **echinacea** is indicated to inhibit pus formation, and **tonics** should be given freely as needed during convalescence.

### CHRONIC PERIHEPATITIS.

This disease may develop insidiously. It has been observed in a number of cases where tight corsets have been worn, or from other persistent local pressure; also from the slow development of the causes above mentioned, or from syphilis. There is persistent pain and tenderness in the region of the liver, with but few other diagnostic evidences. It may not be distinguished during life. The

treatment is symptomatic and supportive. If syphilis or 'other blood disorder is present, these should be persistently treated. No specific rules can be laid down.

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## JAUNDICE.

**Synonym:**—Icterus.

**Definition:**—A symptom of retention of bile; an evidence of absorption of bile. A condition in which bile in the blood deposits its pigments in the tissues and secretions, imparting a yellowish hue.

**Etiology:**—The condition follows a catarrhal condition of the bile duct, or a gall stone or parasites in the ducts, or other obstruction of the duct, which may occur from stricture or from a small tumor, or external pressure, from various causes. The jaundice of newborn infants is supposed to be due to faults of blood pressure in the liver, permitting the resorption of the bile.

### CATARRHAL JAUNDICE.

**Synonyms:**—Catarrh of the common bile duct; hepatogenous jaundice; *Icterus catarrhalis*.

**Etiology:**—Catarrh of the common bile duct, is not dissimilar to catarrh of other mucous membranes. It is usually a secondary condition, occurring during the course of infectious fevers, or as the result of catarrh in the duodenum. It may follow disorders of the stomach or catarrh of that organ. There is no doubt that it occurs directly from cold and exposure, or other conditions that will produce congestion. This simple form of jaundice may also result from great emotional excitement or mental disturbances, and from the ingestion of poisons, especially of phosphorus. Jaundice from obstruction due to the presence of gall stones, is described under *cholelithiasis*. This form may also be induced by the excessive use of tea and coffee, and

is common among those who are addicted to the excessive use of alcohol.

Jaundice is quite common in childhood, occurring frequently before the age of ten years. It occurs at all times of life, more frequently in males than in females.

**Symptomatology:**—A number of cases, especially those among children, have begun with malaise, general impairment of health, listlessness, fretfulness, anorexia, disordered digestion, and inactive bowels; the feces being pale, or clay colored, or of a grayish hue, are usually light, and will float upon water. From the onset there has been some fever, although the temperature seldom rises above  $101.5^{\circ}$  F. In other forms of obstructive jaundice there is often no fever and occasionally there is a subnormal temperature, with slow, full pulse.

Very early, with the development of other symptoms, is the appearance of a slight discoloration, first observable in the conjunctivæ, later in the skin of the forehead, neck and chest, then in the face and over the body. As the disease progresses the color deepens until it becomes a deep yellow, brownish or bronzed tint. An early examination of the urine will occasionally show the presence of bile before there is any discoloration of the conjunctivæ or skin. It may be found also in the sweat, from which the clothes are readily discolored. The urine is scanty, and gradually assumes a dark yellow color, which increases until it becomes a clear reddish brown. In many cases there is no sediment in the urine; in others there may be an excess of the urates upon standing, or some blood may be present. While the feces, deprived of bile, are pale colored, as described, they are apt to have a characteristic unpleasant odor; in other cases there may be a quite severe diarrhea. There is considerable itching of the skin, with boils, urticaria, and other disorders. Occasionally there are yellowish spots quite distinct in character, or ecchymoses, or hemorrhage in the skin and mucous membranes.

Nervous irritation, restlessness, insomnia, and mental de-

pression are common symptoms, with some nausea, vertigo, headache, and distorted vision. Occasionally objects appear yellow for a time; at other times the patients are listless, dull, drowsy, and inclined to sleep. This condition may increase until stupor and coma, or convulsions and delirium may supervene. A careful examination of the liver shows that the area of dulness is increased and there is considerable enlargement. The gall bladder may extend below the margin of the liver.

**Diagnosis:**—The discoloration of the conjunctivæ and skin, with the pale color of the feces, are diagnostic. Other characteristic evidences are sufficient for a differentiation between this condition and others for which it might be mistaken.

**Prognosis:**—The prognosis in catarrhal jaundice may be said to be always favorable. Fatal cases of jaundice are usually the result of serious complicating disease.

**Treatment:**—In the treatment of those cases characterized by the symptoms which I first named, I have administered **aconite**, to modify the temperature, and have given from ten to thirty grains of the **sodium phosphate** every two hours at the onset of the disease. This has usually been sufficient in children. With adults I have found it necessary occasionally to administer **bryonia**, or **belladonna**, if there is much hepatic enlargement, and to give from one to five drops of specific **chionanthus** every two hours.

In those cases where there is but little evidence of disease, except the discoloration of the skin, I have given ten drops of **chionanthus** every two hours in **hot water**. If there is soreness over the region of the liver, with considerable enlargement, I apply **heat** persistently for several hours each day. An excellent combination in jaundice with stomach complications, is thirty minims of **iris**, a dram and a half of **chionanthus**, in four ounces of an elixir of **hydrastis**; or the first two remedies may be combined with five drams of colorless **hydrastis**, half of a dram of the tincture of **capsicum**, in sufficient port wine to make four ounces,

of which a teaspoonful is given every two or three hours.

In those cases where there is sluggishness of the circulation with fulness of the veins and of the tissues, and an atonic condition of the muscular structures, the tongue will usually be found to be thick, pale and heavily coated, and occasionally there will be extreme vertigo. For these I have advised full doses of **podophyllin**, followed by a full **laxative** dose of **magnesium sulphate**. A trituration of **podophyllin** one part, with **sugar of milk** thirty parts, may be given in grain doses every two hours, where there is a uniform yellow moist coat on the tongue. **Chelidonium** will be found a valuable remedy in certain cases of catarrhal jaundice. **Myrica** may be given when the cause is malarial in character, and when it is accompanied with severe morning headaches, slow pulse and muscular aching. In jaundice due to faulty conditions of the heart, **iberis amara** is a specific remedy.

In occasional cases, there will be strong indications for an acid remedy, when **nitric acid**, or **dilute hydrochloric acid** may be administered for a short time, with benefit. These patients should drink an abundance of **water**, preferably of hot water, and should eat very **plain** but **nutritious food**. They should avoid condiments of all kinds, and pastry, and nuts. I believe the administration of **sweet oil** regularly, is as beneficial in promoting a complete cure of these cases as it is in the relief of gall stones. A mild **faradic current** is occasionally of much service. It should be used three or four times each week, from eight to fifteen minutes at each time.

### ICTERUS NEONATORUM.

**Synonym**:—Infantile jaundice.

Some writers make a distinction between the icterus with which an infant is born, and that which occurs a few days after birth, from some obstruction of the bile duct, from

some inherited dyscrasia ; or icterus due to infection, which may be quite severe from the first and result in death.

**Etiology** :—This condition is not uncommon in new born babes. In some localities more than half of the infants develop a yellowish discoloration of the skin and conjunctivæ during the first week of life.

It occurs more frequently in boys than in girls, and in those infants whose mothers have been in previous poor health or who suffer from some dyscrasia. Some writers have thought it occurred more frequently when chloroform was used in parturition. The condition is caused probably by faults in the portal circulation, the influence of the tension upon the portal vessels permitting portal blood which contains bile to enter the general circulation. Another theory is that there are deficient red corpuscles in the blood, with an excess of bile pigment.

**Symptomatology** :—The **discoloration** may be present at birth or it may appear on the second or third day quite conspicuously and increase rapidly. **The temperature** is apt to be abnormal ; the child is **drowsy**, difficult to arouse, **the urine** highly colored and staining the linen, and **the feces** are gray or grayish white—clay colored. In the milder cases no constitutional symptoms may appear and the icterus will disappear after two or three days. In the severer cases there may be **hemorrhage** from the cord, impairment of nutrition, and **gradual failure** of the vital powers of the child, with a persistent whining or feeble cry, and no inclination to nurse. In these cases there is often **enlargement of the liver** and occasionally of the spleen.

**Treatment** :—These patients should have the utmost care, and attention should be paid to the character of the milk of the mother, to be sure that it is sufficiently nutritious from the first. But little, if any, medicine will be needed in ordinary cases. If there is elevated temperature the patient should have very small doses of **aconite**, or of aconite and **bryonia**. Later a very small portion of **chionanthus** may be added, although I have succeeded best with **sodium**

**phosphate.** All remedies should be administered at frequent intervals and in very small doses. It is an excellent plan to pour a quantity of warmed **sweet oil** over the entire abdomen and especially over the hepatic area, and rub the liver with gentle massage for a period of from five to ten minutes at a time, three or four times each day. Other conditions may be met with indicated treatment.

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### ACUTE YELLOW ATROPHY OF THE LIVER.

**Synonyms:**—Malignant jaundice; *icterus gravis*.

**Definition:**—A serious acute disorder characterized by degeneration of the parenchyma of the liver, marked jaundice and violent headache, and occasionally, by delirium, and other cerebral manifestations, and perhaps hemorrhage.

**Etiology:**—This disorder is not common in our own country. It occurs more frequently in females than in males, and depends upon causes which are not as yet positively determined. There are good reasons for believing that it depends upon pronounced general infection from some virulent toxin. It may be due to impressions upon the central nervous system, and occurs occasionally during pregnancy. The condition may occur primarily, or it may be secondary to other predisposing causes. It is more common in early adult life.

**Symptomatology:**—It develops in much the same manner as that of an ordinary case of catarrhal jaundice. There is usually **weight** and heaviness in the region of the liver, with perhaps **tenderness** and some **pain**. **Nausea** and **vomiting** are early symptoms, and with these **severe headaches** appear. From the first there is rapid increase in the **discoloration of the skin**, until it quickly assumes a very deep yellow color; the **vomiting** increases and is difficult of control; **hematemesis** is common. As the **headache** increases, the patient becomes at first mildly **delirious**, and appears to be threatened with **convulsions**. Occasionally muscular trem-

ors and convulsions appear; the patient becomes **drowsy** and **stupid**; the **secretions** are **suppressed**; the **mouth** is dry, the mucous membranes are dark colored; the **tongue** is coated with a dry brown coat and sordes appear. Usually there is some **fever**, although in many cases there is no change in the temperature. The **pulse** is slow, round and full at first, later it becomes small and rapid. The **urine** is scanty and has a high specific gravity, is highly colored from the presence of bile, and albumin, leucin and tirosin are frequently found present.

From absence of bile, the **feces** are pasty and of a grayish or slate color, will float on water and are scanty in quantity.

**Diagnosis:**—The rapid development of jaundice, with pronounced constitutional impressions, should be regarded with suspicion. If cerebral symptoms follow quickly, and upon examination it is determined that the size of the liver is very perceptibly reduced, a diagnosis of this disease is assured.

**Prognosis:**—But few cases of yellow atrophy recover.

**Treatment:**—The use of **external heat**, and the **faradic current** over the liver should not be omitted at the onset of the treatment. The use of active **intestinal antiseptics** with **echinacea** in half dram doses every two hours, to antagonize the toxins in the blood, and fifteen minims of **chionanthus** every two hours, to facilitate the normal action of the liver, should be tried. But few of us have experience in the treatment of this disorder and are able to suggest measures from personal observation.

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## AMYLOID DEGENERATION OF THE LIVER.

**Synonyms:**—Lardaceous liver; waxy liver; amyloid disease; albuminoid infiltration.

**Definition:**—A condition in which there is a deposit in

the connective tissues of the liver, of a substance which is thought to be a form of coagulated albumin.

**Etiology:**—The condition follows suppuration of other of the body structures, particularly of the bones. It also occurs as the result of syphilis, tuberculosis, or any septic infection, or it may follow chronic malaria, rachitis, and malignant disease wherever located. Experiments upon animals in which micro-organisms have been introduced, have shown as the result of this artificial infection that amyloid change has taken place not only in the liver, but in the spleen. Chronic ulceration, either of the stomach or of the intestinal canal, or of the trachea or larynx, is apt to be followed by this condition. It occurs in adult life, and usually after the age of thirty years. It is more common in men than in women.

**Symptomatology:**—The most conspicuous phenomenon is that of failing health, with a cachectic or waxy appearance of the countenance, which is pallid, and anemic. There is but little jaundice or pain, but dropsical effusions are apt to appear early. There is a tendency to constipation and jaundice is usually absent, and the feces are clay colored, from deficient secretion of bile. The liver is enlarged, sometimes to twice its usual size. The surface of the gland is smooth and there is generally no great degree of tenderness; the spleen is also enlarged. There are gastrointestinal symptoms, quite marked, and the urine contains albumin and waxy casts, is scanty and high colored with high specific gravity, and deposits urates upon standing.

**Diagnosis:**—The dependence must be placed upon the symptoms named and upon the history of the case, with the possible presence of infectious disease as a complication.

**Prognosis:**—The prognosis is unfavorable in all cases. The complications are so serious that recovery is usually impossible. The disease extends over a period of from eight months to two years.

**Treatment:**—If there are pus sacs to be found anywhere

these must be located, evacuated, and if possible irrigated. The treatment must then be directed to the improvement of the blood, and to the rapid elimination of all septic material. The anemia which forms a conspicuous part of this disease must be treated with **iron**, and other direct restoratives in order to facilitate the carrying of oxygen into the blood. The use of one or more of our excellent **vegetable alteratives** will produce favorable results. **Echinacea** stands at the head and with this there is **phytolacca**, **polymnia**, **stillingia**, **baptisia**, **corydalis**, **yellow dock**, **burdock**, and **dandelion**, with the specific liver remedies. These may be persisted in for weeks at a time with only good results. For their general tonic effect the **glycerophosphates**, **hydrastis** and **strychnin** will be selected.

Tea, coffee and alcohol in every form must be avoided, as must also the fat-forming foods. Oatmeal, stale bread, toast, zwieback, lean meats, fruits and vegetables in season, may be taken freely. These patients should be treated with **massage**, and the **galvanic current**, and should have an abundance of **exercise** in the open air. If their power to resist the cold is not greatly impaired they should sleep in the open air in mild weather.

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## FATTY LIVER.

**Definition:**—This condition may exhibit itself in either one of two distinct pathological forms, as in fatty heart. There may be a simple infiltration of fat cells into the tissues of the liver, or there may be actual degeneration of the liver cells by the conversion of their protoplasm, or their albuminates, into fat.

In **infiltration** the liver becomes enlarged, sometimes greatly so, weighing thirteen to fourteen pounds. It is of a grayish yellow color and portions of it will float, as fat will, upon water. In **fatty degeneration** there is an atrophy of the organ. It is smooth, soft, friable, and of a grayish yel-

low color with spots or areas throughout its substance which are distinctly pigmented.

**Etiology:**—There may be a fat liver which is not pathological, with a free deposit of fat, which is uniform throughout other portions of the body, and which increases or decreases somewhat with the ingestion of fatty foods and does not interfere with the function of the organ. This occurs in fatty persons in the enjoyment of good health. Actual degeneration is found in those who are excessive beer or wine drinkers, or who have other intemperate habits of eating and drinking—who are high livers—and yet who take but little, if any, physical exercise. It may follow the acute infectious diseases, pyemia or septicemia—any purulent inflammation—or waxy degeneration; or chlorosis or pernicious anemia, and cachexias, or any disorder in which there is a diminution of the oxygen supply to the tissues or in which there is a destruction of the red corpuscles, thereby diminishing the oxygen carrying power of the blood.

This condition follows the toxic action of several mineral substances which may be taken as poisons, or administered for a long time as medicines. These are arsenic, antimony and mercury, which were entirely excluded as medicines by the old school of eclectics, and copper, albumin, phosphorus, the mineral acids, carbolic acid and iodoform. It is also caused by autotoxemia, and by certain toxins ingested with decomposing food, as ptomaine poisoning.

**Symptomatology:**—Except in extreme cases the function of the liver is not greatly disturbed and no **jaundice** appears, and there is seldom pain or **dropsy**. In protracted cases there are quite serious digestive disturbances, **eructations of gas, nausea, constipation with clay colored stools**, or occasional **diarrhea**. There are frequent **headaches** and **vertigo**. There are no evidences from percussion or palpitation in the severe cases, as there is a reduction of the size of the liver, and but little soreness or pain.

**Diagnosis:**—In fatty degeneration, the condition is marked by a progressive reduction in the size of the organ, and there are the other results of alcoholic excesses, or poisoning. There may be present other serious disorder, or heart disease, which may act as the cause.

The diagnosis of fatty infiltration is much more simple than that of degeneration. The organ is increased in size, and there is an increase also in the size of the spleen, and usually there is general adiposity.

**Prognosis:**—The course of the disease is protracted and the prognosis of degeneration is serious.

**Treatment:**—These patients should be deprived of all alcoholics, and of tea and coffee. They should engage little by little, as they become able, in more active physical exercise in the open air, overcoming their previous habits of physical inaction. They should eat but little of fats, starches, or sugar, but should subsist on stale bread, and dry lean meats and should limit the quantity of fluids drunk at meals.

An increase of oxygen in the system is important. I believe the inhalation of oxygen, or the taking of oxygen carrying remedies, as the **oxids** and **manganates** or **permanganates** should be efficacious. The **ferric chlorid** or **oxid** will restore the oxygen carrying power of the blood and this restoration is important. The entire course advised for the anemias may be selected from. There should be a positive avoidance of all those mineral agents which could induce the disorder, and all conditions which act as inducing causes must be corrected.

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## CARCINOMA OF THE LIVER.

**Definition:**—A development of malignant tissue in the structure of the liver, characterized by cachexia, emaciation and usually pain.

**Etiology:**—This is a disease of middle or advanced life.

It seldom occurs as a primary disorder, but follows as a secondary infection the development of cancer elsewhere within the body. It occurs more frequently in females, following cancer of the breast, or of the uterus or ovaries. The primary form is more common in men as the result of alcoholism or dissipation, chronic malaria or septic infection. The secondary form may result directly from cancer of the gall bladder, or from the transference of this infection from the pylorus, duodenum or from other portion of the gastro-intestinal tract.

Cancer develops in the liver as multiple growths which vary considerably in size, appear later as protuberances on the surface of the body of the organ, and have a nodular feel through the walls of the abdomen. In other cases the cancer may develop as a single round tumor, hard and resistant, involving the structure of the liver, which may increase in size until it becomes very large, weighing from fifteen to twenty pounds. In other cases there is an infiltration of cancer cells of rather slow development, throughout the structure of the liver, resulting in a thickening of the capsule and various adhesions, with uniform hypertrophy of the organ.

**Symptomatology**:—When the condition is primary, the first evidence which is at all pronounced is the **cachexia**, although there may be a sensation of **uneasiness** with **fullness** and **some pain** in the region of the liver. This soon occurs in the natural progress of the disease anyhow and becomes conspicuous. The **nodular feeling** or a smooth, hard **enlargement** are discoverable early and should arouse suspicions as to the real character of the disease. There may be no pronounced **emaciation** at first, and but little loss of strength, unless the severe pain appears early. The **pain** is an almost constant symptom. It is steady boring, or burning in character and is located in the entire right side, and under the shoulder blade or in the scapula. There are paroxysms of shooting or darting pain, which may be

very severe, and may cause vertigo, nausea, and perhaps the **vomiting of blood**, with **prostration**.

**Jaundice** is usually present but is not often intense. There may be a simple conjunctival discoloration with a dusky sallowness of the skin; intense jaundice is present in not more than five per cent of the cases. The growth usually develops at a point of the liver, remote from the gall bladder and the ducts, and does not interfere with the escape of the bile until late in the course of the disease. **Dropsy** from compression of the portal vessels is a common accompaniment of cancer of the liver. The ascitic distention of the abdomen may increase slowly over quite a period of time until it becomes extreme.

In the early stages of this development there is no fever. As the disease progresses, and the vital forces are impaired, the **temperature** is apt to be subnormal and the **pulse** round, full and slow, but later when septic infection becomes general the temperature may rise as high as 104.5° or 105° F. for short periods, and finally the pulse becomes rapid, feeble and thready. The extreme **abdominal enlargement**, either from the growth or from ascites, presents a characteristic contrast to the emaciation of the body and especially to that of the extremities. These, with the cachexia, and the constant expression of pain on the countenance, give these patients a most pitiable appearance.

**Diagnosis:**—The diagnosis depends upon the conditions named. The cachexia is a confirmation of the character of the hardened tumor, which is progressing in size. The persistent local pain is also characteristic.

**Prognosis:**—The prognosis is always unfavorable.

**Treatment:**—Treatment should be directed to the specific indications with utter disregard to the fact that cancer is incurable. The patient may be kept in a reasonable condition of comfort, and life may be greatly prolonged by a persistent, careful attention to all conditions. Early in the case the **carbonate of iron** and **hydrastis canadensis** should be given. This may be combined with **conium maculatum**

when the pain is not too severe. **Hydrastis** and conium act well together. I have obtained excellent results if hematemesis is present, indicating hemorrhage, from the addition of **corn ergot**. It controls pain in cancer and prevents engorgement, as well as retarding the hemorrhage. The tincture of **belladonna** may be given in drop doses every two hours for several days at a time. This antagonizes the engorgement of the capillary circulation and is to a marked degree soothing to the pain. With these from twenty to thirty drops of **specific echinacea** should be given every three hours for weeks at a time, with but little intermission. This antagonizes the toxic influence of the disorder, preserves to a marked degree the integrity of the blood, and prevents pus formation. It is often necessary to introduce antisyphilitic treatment also and echinacea, associated with other of our reliable alteratives, will antagonize this condition. The stomach and digestive apparatus must have careful attention, and digestion and assimilation must be sustained. I advise plain concentrated foods and I administer an **artificial digestive** after each meal, with a mild stimulant, as the one-fourth of a grain of **capsicum**, to promote the absorption of the food. Milk, buttermilk, whey, kumyss, and fresh meat with eggs, will be the diet upon which dependence can be placed. With this, selection should also be made from fruits and vegetables in season, as the stomach seems able to appropriate them.

Great pains should be taken in the early stage of carcinoma to control the pain without the use of opium or morphin, as the habit becomes quickly fixed upon a patient, and if life is prolonged this habit will make life a burden. In the final stages of the disease it may be a mercy to resort to these remedies, and if they have been used freely at the start, their influence will not be as satisfactory later on.

**Sarcoma of the Liver** will not have separate consideration. The conditions resemble those of carcinoma, except

that it is apt to develop earlier in life, and the prognosis in all cases is bad.

In the treatment I would advise a symptomatic plan, as well as an observance of the conditions laid down for carcinoma. The adaptation of the measures to the conditions must be made in accordance with the very best judgment of the prescriber.

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## CHOLELITHIASIS.

**Synonyms:**—Gall stone; biliary calculi.

**Definition:**—A condition in which concretions are formed in the gall-bladder, which may become lodged in the biliary passages, or which, in passing through the duct, induce pain and inflammation.

**Etiology:**—Conditions which predispose to catarrh, not only of the lining of the gall-bladder, but of the duodenum and stomach as well, lead to the formation of these concretions. They are apt to appear in corpulent persons and in those who are addicted to high living, with the use of sweet wines or beer, or who live an inactive, a somewhat sedentary life. It occurs more frequently in women than in men, in the proportion of three to one, and more commonly in women who have borne children. It rarely occurs in childhood. It is supposed to be induced by dietary faults, irregular eating, tight lacing, constipation, or the presence of foreign bodies in the abdomen; all of which induce catarrh or obstruct the flow of the bile. It is more common after middle life, between forty-five and sixty years of age.

Because gall stones are frequently associated with fevers of an infectious origin and because various micro-organisms are found at times in the gall bladder, the theory has now become firmly established that these micro-organisms form with the epithelial cells a nidus around which the biliary substances deposit by agglutination. The most common of these are the typhoid bacillus, the pneumococ-

cus, the colon bacillus, the staphylococcus, and the streptococcus. Experiments performed by Gilbert, Fournier and others who have observed the formation of gall stones in animals, after micro-organisms were injected into the gall bladder, have confirmed this opinion. It is necessary that the mucous membrane of the gall bladder be in an unhealthy condition to permit the development of these concretions, else there would be no secretion of the constituents of which the gall stone is formed. These constituents are cholesterin, mucus, and a pigment lime, which is called bilirubin calcium.

When gall stones are soft they are composed of cholesterin and mucus, they are white or yellowish white in color, and may cut like hard cheese or a piece of wax. When the bile pigment is present in their constituency and earthy salts are deposited, they may be hard or brittle and gritty. These are much darker in color, having a light brown, or dark brown, or brownish green tinge. It is seldom that a single stone is found in the gall bladder, with no other concretions. If this occurs the stone is likely to become very large and may weigh an ounce or more. In other cases the calculi may be very small, perhaps not larger than a grain of sand. One observer claims to have found nearly eight thousand of these small particles. The commonest appearance is that of a number of dark concretions, varying from the size of a small pea to that of a chestnut, and sometimes resembling a chestnut in appearance. From the rubbing together of their surfaces they produce polished facets of different size, depending upon the size and shape of the concretion against which they have rubbed. The appearance of a transverse section of a stone which has been cut may show the light cholesterin formation on the inside, with the dark pigmented or earthy formation on the outside. It will show concentric layers which represent the gradual deposit of the various substances of which the stone is formed. When a number of stones are present it will be found that the smaller ones may have

slipped into the ducts while the larger ones occupy the gall bladder.

The presence of these stones induce changes more or less chronic in character. Inflammation is the most common result. The mucous membranes are all thickened and the ducts may be sacculated, dilated or stretched. Occasionally ulceration of the bladder walls takes place and the stone may escape into the peritoneal cavity, or fistulous tracts may be established between the gall bladder and other organs, through which small calculi may pass. From infection, suppuration will follow naturally, and pyemia, or empyemia may result. These changes may induce atrophy of the gall bladder in rare cases, or the walls of the bladder may become coated with calcareous matter, or its tissues may be filled with calcareous deposits, inducing a condition of calcification.

**Symptomatology:**—While hepatic colic, characterized by acute agonizing pain, is supposed to be a constant attendant of the passage of gall stone, it must be borne in mind that these stones may be present in the gall bladder for a long period without setting up any irritation or inflammation. It sometimes happens that there is sufficient dilatation of the ducts to permit of the passage of small stones and at times of stones of considerable size without pain, or with but little discomfort. Many observers have found concretions of all sizes in the feces, which had undoubtedly formed in the gall bladder and were passed without pain. Anders claims to have found one as large as an English walnut. On the other hand inflammation alone of the gall bladder, when no stone is present, may induce pain as severe as that of the passage of gall stones.

When the irritation produces an inflammation there may be fever, with circumscribed soreness, and sensation of weight and fulness, without pain. This may precede an attack of pain because of the fact that during the inflammatory process a calculus has slipped into the duct and is forcing its passage into the duodenum.

There are many cases of gall stone in which there are no symptoms whatever, until a sudden sharp intensely severe pain occurs about two and a half or three inches to the right of the median line of the abdomen, under the edge of the ribs. This radiates backward to the shoulderblade, or into the epigastrium, and is occasionally described as spreading over the entire abdomen. In other cases it has been so positively and persistently referred to the region of the stomach alone as to completely mislead in the diagnosis. While these facts are true in many cases, occasionally the pain is mild at the beginning, and is attributed to simple indigestion, but increases in spite of simple measures for its relief, until it becomes very severe.

The pain produces a shock to the nervous system. There is vomiting, dizziness, sometimes there is syncope and profuse perspiration, intense anxiety and pallor. The patient groans or screams with pain, flexes the thighs upon the abdomen, throws himself across a chair to compress the abdomen, or rolls upon the floor to obtain relief from the terrible paroxysms. This pain may last from two or three hours to two days, the pulse at first becomes slow and feeble and easily compressible; there are chills and the temperature will rise to perhaps  $103^{\circ}$  or  $104^{\circ}$  F. If the pain continues uninterruptedly and depression follows, the pulse will become small, feeble, rapid, and later irregular.

The pain is not always continuous in its extreme severity, but will remit at times, giving the patient considerable rest. The pain may be at its height for some time, when suddenly the patient will express relief, will fall back thoroughly exhausted and the pain has gone, the stone having escaped into the intestine. There may be every evidence of severe nervous shock in extreme cases, with threatened collapse, but more commonly after a short period of rest the patient recuperates rapidly and regains his usual health. In yet other cases the period of complete relief may last from half an hour to two hours, when the pain will recur with the severity of the former attack, from an-

other calculus having entered the duct. This will induce conditions similar to those induced by the first one, or the conditions may be more or less severe than those of the first. There have been instances where one stone would follow another, with extreme pain with each one, for a number of days.

When the pain has continued from six to eight hours jaundice may appear, although it is not a constant symptom. In some cases it is delayed for twenty-four or thirty-six hours. The jaundice will occur directly if the calculus is in the hepatic duct. If the stone is in the cystic duct the inflammation may convey itself to the hepatic duct and induce thickening of the mucous membranes of the duct and temporary occlusion and consequent jaundice. Pressure also upon the hepatic duct will result in jaundice. This condition therefore, if present, is of much importance in diagnosis, but its absence does not prove the absence of gall stones. The occlusion of the duct by the stone results in a temporary enlargement of the liver. It will be distinctly outlined at some distance below the border of the ribs and will be found to be tender, sometimes exquisitely so. The spleen may be also enlarged. Bile will be found in the urine, which soon becomes albuminous. It is not uncommon that hematuria will occur. In cases where the pain is not distinctly located, it may be mistaken for a case of renal colic. As a result of this serious condition, there may be infection sufficient to induce suppurative cholecystitis, or dropsy, or if the common duct is obstructed, there may be persistent jaundice, with a cessation of pain which may not recur, or dropsy of the gall duct may follow.

If perforation occurs there will probably be a fatal peritonitis. A simpler form of localized peritonitis has resulted from the inflammation extending through the contiguous structures and involving the peritoneum; or the stone with bile and pus may escape into the pleural sac, inducing fatal

purulent pleuritis; or the lung structure may become infected.

**Diagnosis:**—The diagnosis of the passage of gall stones would seem to be simple when the severe pain is so characteristic, but it must be borne in mind that severe pain occurs from gastric ulcer, from intestinal disorder, renal colic, diaphragmatic pleurisy, or from appendicitis, and from the gastric crises, of ataxia, which are most difficult to distinguish from the hepatic pain. That which occurs from gastric ulcer follows the ingestion of food and there is apt to be hematemesis. With renal colic suppression of urine may result. In pleurisy a local examination, with auscultation will reveal the condition; in appendicitis the local symptoms are very pronounced, and in ataxia the nervous symptoms are sufficiently distinct.

Hyperchlorhydria is depended upon often to distinguish between gall stone and stomach disorder, because that condition is present in gastric ulcer and in pyloric obstruction, and is apt to be absent during the passage of the gall stone. It is found present, however, in a number of cases after the stone has passed. A positive confirmation of the diagnosis is the finding of the concretions in the feces.

**Prognosis:**—No anxiety need be expressed as to the relief of pain and ultimate favorable outcome of these cases if there are no complications and if there have been but few previous attacks. Where a condition favorable to the formation of the stones has existed for a long time and structural change has taken place in the gall bladder, and where constitutional impairment from repeated attacks is more or less marked, the prognosis is less favorable. The severe pain may induce cerebral hemorrhage, or nervous shock, followed by serious sequelæ, or there may be infection with empyema, or perforation, or other serious complications may make it necessary to give a guarded prognosis.

**Treatment:**—The immediate demand in the treatment is the relief from the agonizing pain. This must be accomplished at once, and is usually done by the administration

of one-fourth of a grain of **morphin**, which may be repeated in half an hour in the severer cases. If relief does not follow the first administration, this may be accompanied with **atropin** or **nitroglycerin**. In other cases it may be wise to administer **chloroform** at the first, and thus by producing extreme relaxation not only control the pain but permit the rapid passage of the stone before congestion and thickening of the mucous membrane occurs. It is only in very mild cases that **hot baths** or **hot applications** or **local measures** will give much relief, and the relief so obtained is usually transient. A dram of specific **dioscorea villosa** in a teacupful of hot water may be administered every fifteen or twenty minutes. If three doses do not give relief the remedy may be abandoned, as relief from this agent is prompt and efficient if it exercises any influence at all. The use of **lobelia** as a relaxing agent and the application of **libradol** in simple cases may be sufficient without the use of the more active measures.

It is in extreme pain of this character, where chloroform may be demanded, and where general relaxation is desirable, that the recently advised compound of hyoscin, morphin, and cactin, hypodermically, will probably prove of service.

When the pain is relieved, **hot compresses** may be applied over the liver to prevent the further development of local inflammation, and to favor an abatement of the symptoms and promote resolution. The patient should be mildly stimulated, the stomach soothed, and a small quantity of nutriment administered. The condition of the patient must then be studied carefully and remedies advised to change the conditions in the liver, in the gall bladder, or in the system at large, so that other stones will not form. When the presence of other stones in the gall bladder is determined it has been authorized practice for many years to administer large quantities of **sweet oil** and simple **alkaline laxatives** to promote the removal of such of these calculi as may readily pass through the ducts. I believe that

much benefit has been obtained from the administration of from four to six ounces of pure **olive oil** two or three times a day. With the persistent use of **sodium phosphate** or small doses of the **magnesium sulphate**, there may be a better liquefaction of the bile. Two other excellent remedies to overcome local congestion, to relieve catarrhal inflammation and restore a normal condition of the mucous membranes, are **hydrastis canadensis** and **ammonium chlorid**. The former may be given in ten grain doses three times daily, combined with from five to eight grains of the latter. Where the catarrhal condition results in jaundice, with more or less chronic congestion of the liver, a course of treatment should be laid out, which should consist of either **chionanthus**, **leptandrin**, **iris** or **chelidonium**. The most of our writers speak highly of **podophyllum** in these cases, but I have failed to obtain satisfactory results from its action.

These patients should have a carefully selected diet; fat producing foods and pastries should be excluded, and skimmed milk may be drunk freely. Buttermilk is also excellent, and a small quantity of eggs, lean meat, always fresh, as cured meats should be excluded entirely, and vegetables and fruits in season may be allowed. Active physical exercise out of doors is advised by all clinicians. This may consist of walking, bicycle riding, golf playing or horseback riding.

If a tendency to constipation persists, the remedies above named, with **Rochelle salts** and an occasional dose of **cas-cara**, or cascara systematically prescribed, with **saline laxatives**, or with mildly laxative mineral waters, may be advised.

After an attack, if it is evident that stones which are too large to pass through the duct are yet present in the gall bladder, an **operation** must be performed. If an immediate attack of pain is not anticipated the patient should be restored as nearly as possible to a normal condition before the operation. If jaundice persists and there are recurring

attacks of pain, with no tendency to full recovery, the best possible hour should be selected, and the operation should be no longer delayed, as repeated severe attacks of colic, with persistent jaundice, may follow, from the local influence of the calculi, which may result in perforation, or in conditions in which an operation would be contraindicated. As a justification for surgical interference, it may be stated that the mortality after operation has not exceeded three per cent in uncomplicated cases or five per cent in complicated cases.

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## CHOLECYSTITIS.

**Definition:**—An inflammation of the structure of the gall bladder, including its mucous membranes. It must be distinguished from an inflammation of the lining membrane of the biliary passages, which is designated as cholangitis.

Cholecystitis may be a simple catarrhal inflammation, it may be pseudo-membranous, or suppurative, and in extreme cases, gangrenous, involving a part only or all of the coats of the gall bladder. When the peritoneum covering the gall bladder alone is involved it is designated as **pericholecystitis**.

**Cholangitis** is an inflammation of the mucous membranes only, which become greatly thickened and secrete a thick, tenacious mucus, which occludes the ducts, and results in an accumulation of bile and consequent jaundice. This latter inflammation may terminate in suppuration, which may produce infection of the entire structure of the organ, and a suppurative form of cholecystitis, with more or less constitutional infection, accompanied with chill, hectic fever, night sweats, emaciation, debility and anemia.

**Etiology:**—Cholecystitis results from the persistency of stone in the gall bladder, from the presence of those micro-organisms which are designated as the cause of cholelithiasis, or it may be induced by direct infection from

those infectious fevers which may terminate in ulceration or pyemia. The commonest of the micro-organisms which produce this condition is probably the typhoid bacillus, although the tubercular bacillus and the various cocci are common causative factors.

**Symptomatology:**—Among the first symptoms are chill and fever. Usually the fever does not exceed  $101.5^{\circ}$  or  $102^{\circ}$  F., except in the suppurative forms, when it becomes remittent in character, and in the exacerbations may reach  $104^{\circ}$  or  $104.5^{\circ}$  F. If the onset is abrupt, there will be nausea, with violent pain in the right hypochondrium, which may be mistaken for that of gall stones. This pain is apt, however, to be paroxysmal, to vary greatly in severity and to be frequently located in the epigastrium. Shortly after the abrupt appearance of the pain, soreness develops, which may become exquisite and may involve the peritoneum (**pericholecystitis**), or ultimately become diffused over the abdomen (**general peritonitis**). With this there is usually prostration and threatened collapse. The pulse, at first full, soon becomes small, rapid and feeble, the walls of the abdomen become hard and rigid and are greatly distended.

**Diagnosis:**—The symptoms of cholecystitis are similar to those of acute appendicitis; it also resembles intestinal obstruction. In that disorder, however, paralysis of the walls of the intestine is apt to be present. It must be distinguished from gastric ulcer, from diaphragmatic pleurisy and from gall stones. Jaundice occurs in about one-third of the cases.

**Prognosis:**—This disease is classed among the fatal disorders. It runs a rapid course and is apt to terminate in death, either directly or from its complications, within a few days.

**Treatment:**—The most active measures must be instituted at the onset. A very large mustard poultice may be applied over the entire side. This should be allowed to remain for eight or ten minutes, but no blistering must be

induced. When removed the skin should be dried and covered with vaseline, and over this libradol should be applied for a period of from eight to twelve hours. A rubber water bag containing a small quantity of hot water should be kept over the libradol. The administration of from two to five drops of the aqueous extract of opium, with one drop of the tincture of aconite and one drop of specific bryonia, should be administered every hour until there is some relief of pain and a slight abatement of the soreness. The opium should then be discontinued and the other two remedies persisted in. When the libradol is removed, hot applications should be continued over the liver. The bowels should be thoroughly flushed, but it is only in those cases where there has been obstinate constipation that physics should be permitted. Very early in the treatment intestinal antiseptics must be introduced, and echinacea will serve an important purpose in anticipating suppuration and purulent infection.

## Diseases of the Pancreas.

So important is the function of the pancreas in its influence upon digestion, and upon the processes of nutrition, that those diseases to which it is liable, materially influence the nutritional processes of the body. Because of the remote position of the organ, these diseases are difficult of diagnosis, and are occasionally attributed to other causes or are supposed to be located in other organs. On the other hand, conditions that are supposed to be located in this organ may be due to disease of contiguous organs.

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### PANCREATITIS.

**Definition:**—An inflammation of the pancreas involving the entire structure of the organ. The condition may present itself in an acute, sub-acute or chronic form, but it is doubtless true that one of the forms may be mistaken for another or that they may overlap each other. A positive differential diagnosis is at times well nigh impossible.

**Etiology:**—The condition occurs much more frequently in men than in women, and is a disease of late middle life. It is found in those addicted to the excessive use of alcohol, and is often present with diabetes mellitus or glycosuria. It follows an injury, or hemorrhage, or it may result from septic infection as a secondary condition to suppurative inflammation in other organs, or as the result of infectious fevers. The influence of gall stone in inducing pancreatitis by forcing bile into the pancreatic duct is emphasized by some writers. It may also be due to gastric or intestinal ulcer, or to sub-phrenic abscess, or to infection from a nearby malignant growth.

**Symptomatology:**—If, in acute or sub-acute pancreatitis, the common symptoms of chill, fever and local pain were as invariable as they are in acute inflammation of most other organs, the determination of this inflammation would be simplified. Occasionally the temperature in this form of the disease will slowly rise until it reaches 104° F., and this may or may not have been preceded by a chill. In other cases the temperature is normal or even sub-normal, the pulse varies according to the arterial tension and to the seriousness of the attack. If the temperature is sub-normal, the pulse will be feeble, soft and compressible. Among the first symptoms is a deep-seated, sharp, cutting pain, accompanied with severe retching and vomiting, with difficult breathing, rapid prostration, restlessness and anxiety. The pain is located between the ensiform cartilage and the umbilicus, rather low in the epigastric region. The pain may be paroxysmal, and pressure elicits great tenderness. Soon bulging or swelling of the region of circumscribed tenderness will be apparent, and there is slowly increasing distention, which ultimately includes the entire abdomen. At first, with the retching and vomiting there is considerable mucus, which later contains some blood. Finally the vomitus will become very dark or of the coffee-ground type, or it may clearly contain a large quantity of black blood.

The disease runs a rapid course, prostration or collapse is soon threatened, there is tympanites, a most distressing hiccough, a rapid and feeble pulse, and scanty urine, which contains albumin. There may be cyanosis both of the face and of the abdominal walls. These results occur more rapidly if the inflammation quickly involves the peritoneum, especially if the peritonitis becomes diffused.

When the symptoms develop more slowly with but little impression upon the vital forces at the first, and continue over a long period of time, it is usually diagnosed as **sub-acute pancreatitis**. If the condition runs a mild course for some time, to ultimately produce prostration, with chilli-

ness, irregular fever and other evidences of septic infection, abscess will be diagnosed, and the condition will become more or less chronic in character. The abscess may not be walled off as in other conditions, but the pus may burrow into the deeper structures, or the condition may assume the form of a sub-phrenic, renal, perirenal or psoas abscess, or it may penetrate the abdominal walls or the wall of the stomach. When abscess is present, there is a recurrence of severe pain for a time, with chilliness, a marked septic temperature and a rapid development of tympanites, with occasionally an involvement of the spleen.

Persistent constipation is an accompaniment of pancreatitis. This has caused many physicians to diagnose intestinal obstruction as the cause of all the manifestations.

**Diagnosis:**—The diagnosis depends upon the location of the disease, its sudden onset, rapid progress and extreme asthenia. By carefully estimating each symptom no great difficulty will be experienced in distinguishing between this and peritonitis or other active local inflammatory condition. Fitz states that if a patient in previous good health, except, perhaps, occasional attacks of dyspepsia, is seized suddenly with extreme pain, low in the epigastrium, which is accompanied by vomiting and extreme prostration or collapse, and if in twenty-four hours later there is a circumscribed, tympanitic, epigastric swelling, this disease is to be strongly suspected.

**Treatment:**—In the acute or sub-acute forms, the severe pain should be immediately relieved, usually by the injection of a hypodermic of **morphin**. **Cups** should be applied upon either side of the spinal column, immediately behind the organ, and hot applications should be persisted in over the epigastrium for several hours. **Belladonna** and **bryonia** should be administered to anticipate or antagonize the congestive and inflammatory processes in the parenchyma of the organ or in its serous covering. The prostration should be anticipated by supportive measures, by the internal use of **nux vomica**, **xanthoxylum** or **capsicum**, or

later by hypodermic injections of **strychnin**. This substance must be immediately used if collapse is threatened. It may be associated with **digitalis** or **nitroglycerin**.

So rapid is the development of the acute form of this disease that it is seldom that the physician has an opportunity to do other than to alleviate the distressing symptoms and to antagonize the threatened collapse. In the sub-acute form there is more time to obtain the action of remedies which exercise a beneficial physiological influence. Authorities are united upon the fact that surgical measures offer the best results. A free incision which will disclose the conditions which have caused the disease, and which will permit a possible removal of the cause, will also permit the evacuation of pus, and will do much toward abating the symptoms. Many surgeons believe the best results to be obtained by immediate operation, whatever the conditions present, some even arguing against waiting for a reaction from the collapse.

### CHRONIC PANCREATITIS.

**Etiology:**—This disease is of insidious development and is probably always secondary. It follows mild attacks of acute or sub-acute pancreatitis, or it may result from chronic catarrhal thickening of the pancreatic duct, which in its turn is due to irritation transferred from the gall bladder, from disease of the ducts, or from hepatic calculi, or from gastroduodenal catarrh. It is supposed to follow suppurative pancreatitis, but this is problematical. It may proceed from chronic inflammation of contiguous structures also. Obstruction of the pancreatic duct by calculi, or disease of the vessels of the organ, will induce it. It follows chronic infectious disease, and is common among alcoholics.

There are probably two types of chronic pancreatitis: In the first form there is an increase of the connective tissue between the lobules, constituting an **intralobular pancrea-**

**titis.** In this the islands of Langerhans are not involved, at least not until late in the progress of the disease; consequently no glycosuria is present. The other form is characterized by the formation of new connective tissue within the lobules, constituting **interacinar pancreatitis**. In this form the islands of Langerhans are involved early, and glycosuria is an almost constant result.

**Symptomatology:**—In the milder form of the disease, that which is of slower development, pain is not a characteristic symptom. There is **distress** in the epigastric region, which resembles that of chronic dyspepsia, with frequent **nausea** and occasional **vomiting**. Or the symptoms may closely resemble those of chronic **gastric catarrh**. There is **anorexia** and **epigastric fulness**, with **tenderness** on pressure, and eructations of gas or of a very sour fluid. With these symptoms there may be **diarrhea**, and in an occasional case there is **jaundice**.

There is a distinct class of cases in which the **pain**, severe and intractable, is an early symptom. With this there is **chilliness** and perhaps some elevation of the temperature; the pain is deep seated in character, perhaps a little to the left, but low in the epigastric region; it is usually tensive and boring. There is an expression of anxiety upon the countenance; the patient is pale, has a **cachectic appearance**, and there is progressive **emaciation**. There may be **headache**, **dizziness** or **syncope**. Liver complications are apt to be present, or there may be enlargement of the spleen.

**Diagnosis:**—A positive diagnosis is usually difficult. The symptoms named may be present, but the pathognomonic evidences of other diseases for which this may be mistaken may be absent. There is a distinctly circumscribed **hardness**, with marked resistance in the pancreatic area. Usually the **stools** are **clay colored**, although there may be found in them an abundance of bile, due to the absence of the pancreatic fluid.

**Prognosis:**—It is questionable if this disease is ever

cured. It may extend over a period of years, or it may be associated with glycosuria and the real condition be overlooked.

**Treatment:**—Inasmuch as an absolutely positive diagnosis is probably not made, the treatment will be similar to that of the sub-acute form of the disease, and yet a plan must be advised which shall cover a considerable period of time. It will be wise to put the stomach and digestive apparatus in the very best possible condition. If free fat is found in the feces, this will be a positive indication for the use of **pancreatin** as other assistant to the digestion. Fats, sugars and starches should be administered sparingly. Constipation must be overcome, and the condition of the kidneys must receive attention. But little will avail from the use of medicinal agents. The soreness and sharp cutting pains indicate **bryonia**, and there will be found cases which will receive benefit from the persistent use of this agent. On general principles, this should be combined with **phytolacca** and **collinsonia**. The influence upon the general structure of the gland will thus be promoted. If there is marked circumscribed hardness, with pain, the use of **hydrastis** and **conium**, or **hydrastis** and **cannabis indica**, will give satisfactory relief. When the liver is plainly involved, **iris**, or **leptrandin**, or **chionanthus** will be of benefit, and **polymnia** should be given if there is splenic enlargement. **Arsenic** has been prescribed in some cases with apparent benefit, especially where glycosuria is present. The use of a saline laxative or the **carbonated mineral waters**, with considerable regularity, is frequently indicated.

# Diseases of the Peritoneum.

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## ACUTE PERITONITIS.

**Definition:**—An inflammation of the serous membrane which lines the walls of the abdomen, and is reflected over the viscera. It may involve the entire membrane—**general peritonitis**—or it may be strictly local in character—**local or circumscribed peritonitis**.

**Etiology:**—At one time it was supposed that this disease occurred as the direct result of cold or from external or traumatic causes, and was thus idiopathic in character. The belief is now universal that it is due to infection in every case, although the vitality of the membrane and its susceptibility to infection may be greatly increased, and the disease probably brought on by the above or other similar causes. The common gateway of introduction of the infection is either through the gastrointestinal tract or from the female reproductive organs.

A study of the micro-organisms and their modes of entrance is interesting and important, but cannot be given here in full. The most common of these are the bacillus coli communis, the streptococcus, staphylococcus, pneumococcus, and occasionally the gonococcus, with in rare cases the bacillus typhosus as well as the bacillus pyocyaneus.

It was at one time thought that any exposure of the peritoneum would result in immediate inflammation and probably, in death. Our present knowledge of sepsis, our access to reliable antiseptic measures and perfect cleanliness have robbed surgical operations which involve the peritoneum of danger. At the same time we have learned that

the peritoneum possesses in itself an inherent power to resist infection and to destroy micro-organisms and other infective elements which are brought in contact with it. In robust health this resistance is extreme, but any impairment of this vital resisting power, either by injury, by cold or by other local or constitutional derangement, will permit the development of the septic processes which the micro-organisms induce.

It will be seen that infectious disease of any organ contiguous to the peritoneum may impair the vitality of but a small portion of this serous membrane, but that through this small impaired portion the micro-organisms may be introduced, and either a local or general peritonitis result. The disease then is usually secondary. It follows acute stomach disorder, gastric ulcer or malignant disease. It results from enteric fever of any form, notably from catarrhal enteritis, colitis, and very frequently from appendicitis. Intestinal irritation in children from improper food, or, as in one of the author's cases, from eating a large quantity of grapes and swallowing the seeds, or the presence of worms, will induce it.

It results from purulent inflammation of the gall bladder, of the kidneys, or of the urinary bladder. It is common as the result of inflammation of the womb, fallopian tubes or ovaries, from direct septic invasion. This form of the disease, occurring subsequent to confinement, is designated as **puerperal peritonitis**. It is especially liable to follow severe or protracted labors, or those badly conducted, or those in which strict asepsis has not been observed. It also frequently follows abortion.

The disease occurs as the result of acute diarrhea, and may complicate the convalescence of measles or scarlet fever, although this is rare. Direct septic invasion may occur from gunshot, knife and other penetrating wounds, from surgical operations, and from burns which involve the abdominal walls. While it is frequently asserted that the

disease follows gonorrhœa directly, clinical observation does not confirm this theory.

Peritonitis occasionally occurs during the progress of severe fever, and especially if from any cause the fever follows confinement, when it may be plainly brought on by a severe nervous shock, or by extreme mental depression, grief, or a high degree of nervous excitability. This is often classed with the so-called hysterical peritonitis, which occurs at other times with women, and closely resembles the genuine form. In the hysterical form, however, the tenderness and pain complained of are not accompanied by the constitutional results which should accompany such severe pain. In most puerperal cases there are all the evidences of severe involvement, with adhesions or prostration and death. This may be explained by the sudden development of toxins from the presence of an elevated temperature, which, on its part, is brought on by the mental condition.

Peritonitis resulting from circumscribed or general tuberculosis is more apt to develop in a sub-acute or chronic form than to exhibit acute characteristic symptoms.

**Symptomatology**:—Acute, sharp **pain** in the abdomen is usually the first symptom of peritonitis. Accompanying this at once is **chill**, more or less severe. The patient becomes anxious and nervous, and **fever** rises rapidly. As the fever rises **tenderness** develops, in the local form over a circumscribed area, in the general form over the entire abdomen; or it may be localized at first, to become diffused later, until the entire peritoneum is involved. **The temperature** reaches the point of 104.5° or 105° F., sometimes within three or four hours. **The pulse** is hard, usually small, sometimes wiry and always rapid, beating from the first from 120 to 135 beats, and when the disease is at its height from 130 to 160 beats per minute. There is a pronounced **shock** to the nervous system, and by this **the heart** is immediately impressed. It becomes enfeebled, arterial tension decreases, and there is a marked change in the character of the pulse. In the serious stages **the**

**pulse** is irregular and sometimes almost imperceptible. On the approach of a fatal termination it becomes thready and very rapid. **The temperature** taken in the mouth is observed to fall, but taken in the rectum or vagina it is found to continue high or increase a little. A cold perspiration covers the surface of the body; **the respiration** is rapid and shallow, as deep inspiration increases the pain; there is a shrunken condition of **the face**, with an anxious expression; the features have a pinched appearance; **the nostrils** are thin and drawn, the face becomes pale, or in some cases darkened or livid; **the mucous membranes** of the mouth are dry, **the tongue** is dry and parched, covered with a brown coat, and all secretions are scanty. **The urine** is clear, of dark color, and often temporarily retained, urination being impossible. In others there is frequent urination with local irritation.

**The appetite** is quickly lost, and nausea and vomiting occur, causing intense pain. There is **hiccough**, **diarrhea** and **tympanites**. This latter condition results from paralysis which may involve the intestinal tract, inducing obstinate constipation. The patient quickly assumes a supine position in the bed. So extreme is the **abdominal tenderness** that she cannot bear the weight of the bed clothes, and for the double purpose of removing this weight and reducing the tension of the abdominal muscles the thighs are flexed upon the abdomen. Every jar of the bed or movement of the clothes increases the pain.

These patients often become restless, excitable and develop an intense **mental acuteness**. There is agitation and anxiety and the reasoning powers are exaggerated. This may continue to but a short time before death. In other cases there is a very excitable **delirium** with extreme nervous irritation, while in still other cases no delirium may appear until a short time before death. The patient may then exhibit mild symptoms of delirium and gradually sink into a **stupor**, to be soon followed by **coma**.

Occasionally this disease results from the sudden **intro-**

duction into the peritoneum, of pus from the rupture of an abscess, or from the introduction of the contents of the stomach or intestinal canal, from perforation, or from the rupture of a cyst which contains purulent material. When this occurs the onset of the disease is sudden, and **shock** with threatened **collapse** are among the first symptoms. There are cases distinctly septic in origin, which are characterized by an absence of pain, and which exhibit a distinctly high temperature at the onset.

Physical examination of the abdomen is almost impossible because of the **exquisite tenderness**. The abdominal walls are greatly distended and are firm or rigid. **The tympanites** obliterates the hepatic and splenic dulness, but dulness will be found in the dependent portion because of the gravitation of fluids.

**Diagnosis:**—The abdominal pain, rapidly developing tenderness, and sharp fever, are the pathognomonic phenomena of peritonitis. In the circumscribed form of the disease the pain remains local and the tenderness is distinctly circumscribed. There is seldom any difficulty in the diagnosis, and other diseases can be readily excluded by the absence of their characteristic phenomena.

**Prognosis:**—While this disease is a most serious one, it presents important specific phenomena, to which we have learned to apply reliable remedies, and thus our treatment has become certain and to a great degree satisfactory, enabling us to modify the serious or fatal prognosis given by the writers of the past. Where the cause is the evacuation of septic material into the peritoneum the results are much more serious, and a fatal termination can be anticipated. Where there is shock to the nervous system, tympanites and abdominal distention from paralysis, with a pronounced impression upon the heart and circulatory apparatus, the outlook is very grave.

**Treatment:**—The immediate demand in the treatment of acute peritonitis is the relief of pain. Most authorities advise the use of opium or the hypodermic injection of

morphin for this purpose. I am convinced that this course should be avoided as often as possible, in all but the extreme cases, when opium may be given, as is advised farther on. At the onset the patient should have a hot mustard foot bath, which should be continued for from twenty to thirty minutes, and should drink hot infusions calculated to induce perspiration. Or she may take from ten to twenty drops of the fluid extract of jaborandi, one dose only. If the pain has already become so severe as to be increased by every movement of the patient, a large **mustard poultice**, made strong, should be applied warm over the location of the pain at least, if it does not seem practicable to apply it over the entire abdomen. At the termination of the foot bath, the patient should be put into bed and **libradol** should be applied over the entire abdominal surface. This application should be watched, as unlike other plastic dressings, it is highly medicated, and if too greatly prolonged will induce nausea and some depression. It will be tolerated by most patients for from four to six hours; in extreme cases, eight hours. **Heat** should be applied external to it, as when so applied its influence is exercised in a shorter time. When removed, **antiphlogistine** should be applied hot and in a careful manner, where its weight is not greatly objected to, and this should be kept hot continuously for from twenty-four to forty-eight hours.

These preliminary measures will usually cause a temporary abatement of the pain and will permit the use of **bryonia**, allowing the necessary time to obtain its characteristic influence upon the developing inflammation. This agent allays the pain in a manner much more satisfactory than that accomplished by opium or morphin. It is specific to inflammation in the serous membranes. It can be persisted in however high the temperature or however severe the constitutional impressions. It promotes resolution, contributes to a return of the normal conditions of the capillary circulation in the membrane, antagonizes an

outpour of the usual exudates, and especially inhibits the breaking down of tissue and the formation of pus. It must be used with confidence to be appreciated, as it seems to include in its influence all of the pathological processes involved in the inflammation, positively restoring the inherent vital resistance of the membrane to micro-organisms.

**Bryonia** is a direct sedative to the fever processes, and often controls the temperature without the assistance of other remedies. But I have usually found marked indications for the use of **aconite**, and have prescribed the two remedies together. These are a tendency to dry skin, dry mucous membranes and a sharp, hard, quick pulse. There is a marvelous harmony in the action of the two remedies, and while operating upon different conditions, each seems to enforce the action of the other.

At the onset of this disease, during the period of chill, **belladonna** in small doses frequently repeated will antagonize the processes of inflammation and exercise a powerful influence in equalizing the circulation. But this remedy will not be indicated when the disease is fully developed.

**Asclepias**, in its influence upon the serous membrane, is closely allied to **bryonia**. The two remedies are given together in pleuritis with striking results, and in peritonitis much the same results may be accomplished. I believe in administering it in rather full doses, from five to eight or ten drops of the specific medicine every hour.

If the pain is held in abeyance long enough to obtain a full influence from **bryonia**, or from **bryonia** in conjunction with the remedies just named, it may not return at all. I have observed this result from **bryonia** in many cases, and am confident of this influence of the remedy. Consequently, we have no use for special pain-relieving remedies, which obscure or mask the manifestations of the disease and are thus apt to mislead the prescriber, while they exercise but little curative influence. There is an occasional case in which the measures above suggested will produce

no influence upon the pain from the first. The influence of the pain is clearly detrimental. I believe its impression upon the nervous centers is such as to retard the full physiological influence of bryonia and the other specific remedies. I, therefore, have been in the habit of using **opium** in frequently repeated small doses. I advise two drops of the deodorized tincture every hour in the less severe cases, and in the extreme cases five drops every hour, until I am able to observe a reasonable abatement in the pain, when the dose is reduced one, two or three drops. This course is preferable to repeating the full dose, which some advise, at greater intervals, intervals of two, three or four hours. I prefer the gradual reduction in the size of the dose, until the soreness as well as the pain has somewhat abated, when I endeavor to drop the opium entirely and depend upon the bryonia.

If at the onset there is a great degree of nervous excitement, I would, instead of the aconite, prescribe **gelsemium** with the bryonia, until the nervous symptoms have abated. At that time the indications for both the aconite and gelsemium may have been overcome and dependence can then be placed upon the bryonia alone again.

At times as the disease progresses the temperature remains high, the pulse becomes hard, or small and wiry, there is restlessness and persistent loss of sleep, with a sharp pointed tongue and dark colored mucous membranes. These indications demand **rhus toxicodendron**. Its influence will be prompt and satisfactory.

I have seldom found indications for **veratrum** in this disease which cannot be better met by the remedies above named. However, in markedly asthenic cases, at the onset, there is a time when the large, full, strong, but rapid pulse will indicate this remedy, and if given in pronounced doses for a few hours, while its influence is very closely watched for nausea or other sign of depression, it may exercise a very positive influence in preventing or retarding the development of the disease.

Gastric complications, with dark mucous membranes and dry tongue with a tendency toward sordes, may be met promptly with doses of from five to ten drops of dilute **hydrochloric acid** every three hours, in an ounce or two of water. When the mucous membranes are pale and the tongue is thick and broad, and covered with a dirty coat, the **sodium sulphite** is indicated; if the tongue is moist and coated with a dense white coat, **calcined magnesia** or **sodium bicarbonate** should be given for a short time.

The condition of the bowels must receive attention, but irritating cathartics must be avoided. A mild **saline laxative** of **magnesium sulphate** or **calcined magnesia** will be of service to unload the primæ viæ at the onset. This effect can be sustained by the action of small doses, about fifteen grains, of the **sulphate of magnesium** and **nitrate of potassium**, combined, or by the use of from sixty to eighty grains of the effervescing **sodium phosphate** once or twice a day. However, I have noticed no bad results after thoroughly **cleansing** the intestinal tract at the onset and after each movement, in permitting the bowels to go two or three days at a time without movement. But this is theoretically objectionable, to the patients and to a consulting physician as well; consequently a **colonic flush** each day is preferable. Other cases will do well in this disease, as they do in appendicitis, upon the free use of **sweet oil** during the entire course of the disease. As the strength of the patient fails, an **enema** once or twice each day of the normal **salt solution** should be used. Extreme tympanites may be temporarily reduced by the use of an injection of half a dram of the **oil of turpentine** in from two to three quarts of warm water. When with tympanites there are evidences of impairment of the blood, such as dark, dry mucous membranes with a dark brown or black coat on the tongue and sordes upon the teeth, **turpentine** should be given internally in from two to five minim doses in an emulsion every two or three hours. This may be continued for several days. Where tympanites is present, with more or less of an

atonic condition of the gastrointestinal tract, specific **xanthoxylum** will be of much service in doses of two or three drops given every two hours. It was at one time common practice to apply **turpentine stupes** over the abdomen whenever tympanites was present, and the results would certainly justify that procedure at any time if **antiphlogistine** or other poultices of that kind were not sufficient. I think there are times when turpentine is the superior application, especially if the weight of a poultice is objectionable. With the above indications **echinacea** will be of service also in preventing the important changes which are taking place in the blood.

When peritonitis is distinctly local or circumscribed, the application of **libradol** over the inflamed areas may be continued for perhaps twenty-four hours. It should then be removed, but may be subsequently replaced for an equal length of time, without inducing nausea; or the acute pain may be relieved by the application of a strong mustard paste. The local inflamed area may be covered with a **hot application**, which should be persisted in until the tenderness and pain have abated. Other conditions which may appear which are similar to those occurring in general peritonitis should be treated precisely as advised for that form of the disease.

For the persistent nausea I have much confidence in the use of equal parts of **bismuth** and **ingluvin** in **mint water** or in **cinnamon water**. Thirty grains of each in three ounces of water may be shaken well and administered in teaspoonful doses, every twenty or thirty minutes, for two or three hours, when the vomiting will cease for perhaps twenty-four hours.

**The feeding** of the patient is an important consideration in the treatment. If possible, they should have **milk** alone, administered in small quantity at regular intervals, or **an egg** may be beaten with the milk and a teaspoonful or two of this may be given every half hour or hour. Where there are indications for the use of acids, **buttermilk** or **whey**

will be most kindly received, and will be found very nutritious. **Kumyss** is excellent during convalescence. In other cases it may be necessary to peptonize the milk, or where the stomach refuses to receive food, it may be given a complete rest, and all nourishment may be given for a short time per rectum.

**Thirst** is a most troublesome symptom in peritonitis, whether nausea exists or not. This may be relieved by the taking of small pieces of **ice**, or by an occasional half teaspoonful of **ice-cream**, which also exercises its characteristic nutritional influence.

Convalescence will demand the utmost care and personal supervision. Every indication reappearing must be met at once, and restoratives must be selected with discretion, as suggested by the existing conditions.

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## CHRONIC PERITONITIS.

Chronic inflammation of the peritoneum may exhibit itself in several distinctive forms. The most common of these is that known as **adhesive peritonitis**, which is usually circumscribed in character, and is found in a portion of the peritoneum which is contiguous to some organ in which previous inflammation has existed; or the condition may follow as the sequel of an acute attack of peritonitis. In this form the contiguous layers of the peritoneum adhere to each other, or the peritoneum becomes attached to folds of the intestine. This form of peritonitis is common in gynecology, following inflammation of the tubes or ovaries. Another form is that which is known as the **diffused form**. This is similar to that which develops from tuberculous inflammation. It results in agglutination of the peritoneal walls or of the coils of the intestines, and causes considerable thickening of the parietal layer of the peritoneum, which as it is folded over the other organs causes constriction.

Another form is the **proliferative form**. In this there is thickening of the peritoneum, with the secretion of a large quantity of fluid into the abdominal cavity. The omentum is thickened, and assumes the form of a hard mass or band across the upper portion of the abdomen. There is but little if any adhesion in this form, as this is prevented by the presence of the fluid. However, local adhesions are not impossible, by which portions of the fluid may be walled off from other portions, forming pockets. There may be present with this cirrhosis of the liver or kidneys, and occasionally of the stomach. This is especially true when the disease occurs in those who are addicted to the use of alcohol. The external evidences closely resemble those of **tubercular peritonitis**, which is a distinct form of the disease, but presents no phenomena very different from those just described. The tubercular nodules which may form, are diagnosed by microscopical examination, or by a history of tubercular development elsewhere in the system.

Virchow and Friederich describe a condition designated as chronic **hemorrhagic peritonitis**, in which from traumatic causes, or from the persistent use of the trochar, or other repeated injury of the membrane, the peritoneum is covered with an adventitious membrane, through which there is an extravasation of blood.

**Etiology**:—This disease follows acute attacks, or results from the persistent presence in the abdominal cavity of a foreign growth. It follows chronic rheumatism, and is present often where there is a cancerous or tubercular diatheses.

**Symptomatology**:—Persistent **local soreness**, hardly noticed at first, but gradually increasing, is an early symptom of chronic peritonitis. Accompanying this is impairment of the digestion, **loss of appetite, emaciation and constipation**, except perhaps in tubercular cases. These patients are often in a fairly well nourished condition. There is an **irregular fever**, but some elevation of the temperature is

nearly always present. **The pulse** is rapid, small, and easily compressible. The patient cannot bear physical exertion, gets easily "out of breath," and finally becomes irritable, despondent, and **the face** has a look of anxiety. The nervous symptoms are not necessarily pronounced. Where there are menstrual or uterine complications, hysterical symptoms may develop. As the disease progresses and there is a pronounced disturbance of the nutrition, the patient becomes **emaciated** and the abdomen becomes prominent. Occasionally jaundice will develop, and if the liver or renal complications are severe, there will be distinctly pronounced **ascites**.

**Diagnosis:**—The history of persistent tenderness, with hardness of the abdominal walls, continuing after an acute attack of peritonitis, is suspicious of the insidious development of the chronic form of the disease. In one of the author's cases, in a young woman, the evidences were conspicuously those of tubercular peritonitis. No tubercular development could be diagnosed, and the condition had a favorable termination in reasonable health without an operation.

**Treatment:**—I am positively in favor of persistently antagonizing the fever processes in this disease by the use of specific remedies. My experience has confirmed the benefits of so doing. I have given **aconite** and **bryonia** in very small doses for from four to eight weeks at a time, and have observed results which I believe I am justified in attributing to the action of the remedies, as they were in direct line with hoped for and anticipated results. These remedies retard exudation, suppuration, adhesion, induration and hypertrophy. They promote tone and power in the arterial capillaries and are opposed to blood stasis. This characteristic influence through their influence upon the capillary circulation antagonizes the chronic inflammatory processes, promotes absorption of the inflammatory products and hastens resolution.

Other remedies of importance are **echinacea**, which an-

tagonizes the growth and development of the toxins and their influence upon the blood; **phytolacca**, which promotes the action of the lymphatic glands and assists in the removal of morbid products; the **iodids**, which have a general alterative influence and stimulate resorption of fluids. Remedies directed to the gastrointestinal tract will be of much service in relieving pain and promoting normal functional activity. **Hydrastis** and **collinsonia** are first in the list for this influence. Specifically **colocynth** is indicated where there are constant, quick, shooting pains in the intestinal tract; **dioscorea** where there are cramp-like pains in the stomach or bowels. Where persistent diarrhea is present, with constant nagging, irritating, colicky pains, I have obtained superb results from the persistent use of two grain doses of **ammonium chlorid** in solution with one-thirty-second of a grain of **morphin**, to mildly quiet increased peristalsis. One severe case obtained immediate benefit and ultimate cure from this simple combination.

The diet of these patients should be **highly nutritious, concentrated**, and should cover a limited number of articles. Highly seasoned foods, pastry and acid foods with cured meats should be excluded. **Out of door exercise** and freedom from care and worry should be insisted upon.

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## ASCITES.

**Synonyms:**—Abdominal dropsy; dropsy of the peritoneum; *hydrops peritonei*.

**Definition:**—A condition in which serum accumulates in the peritoneal sac.

**Etiology:**—This condition is supposed to depend upon a stasis from obstruction of the portal vein. It is an accompaniment of cirrhosis of the liver, various diseases of the heart and tubercular peritonitis. It may also accompany chronic lung disease, and especially chronic bronchitis. It occurs with Bright's disease during the progress of severe

malarial disorder, and also with chlorosis and anemia. The presence of foreign bodies in the abdominal cavity which will compress the trunks of the large veins, retarding the passage of blood, results in ascites. Direct obstruction of the thoracic duct, which may result from external pressure, from constriction from wounds, from thrombosis, or from malignant or tubercular invasion or parasites, will cause this condition.

The fluid is ordinarily of a light straw color; it contains a large quantity of albumin, but does not coagulate. There are rare cases in which the serum is lactescent or milk-like in color, the cause of which has not been explained, except where fat cells are found freely distributed through it. The quantity of fluid varies from a few pints to several gallons. There is also considerable variation in its specific gravity. It may be quite thin at times and watery, or at other times viscid and dense. It may be tinged with blood or it may contain pus.

**Symptomatology:**—There may be considerable fluid in the peritoneal sac without marked evidences of its presence. When the quantity exceeds one and a half or two pints, however, its presence produces discomfort, **fulness**, **weight**, and in rare cases some **pain**. These symptoms increase as the quantity of fluid increases; soon the sensation of weight becomes a dragging pain; there is **difficulty of breathing**, due to some compression of the lungs, which will be found to increase upon exertion or if the patient lies down. **The heart** becomes irregular and rapid in its movement and palpitation is not uncommon. Men are especially liable to experience difficulty in breathing. There is **dizziness** and **faintness** often amounting to **syncope**; usually there is nausea and other gastro-intestinal disturbance with constipation. Pressure upon the bladder produces **frequent urination**, and because of material change in the blood pressure in the kidneys, **the urine** is occasionally highly albuminous. Percussion over the abdominal wall will elicit dulness, which is generally uniform, but

when there is but small quantity of fluid in the abdomen the dulness will change as the position of the patient is changed, always occupying the dependent portions of the sac. Above the dulness there may be considerable resonance or tympany.

A symptom, pathognomonic of abdominal dropsy, is **fluctuation of the fluid** in the cavity. This may be felt by placing one hand on the side of the abdomen and gently striking the other side with the free hand. As the condition continues, emaciation is apt to follow with a progressive loss of strength. If serious disease of the liver, kidneys or heart be present, the evidences of grave constitutional disorder develop rapidly; the patient is unable to lie down, but little food can be taken, and a general sense of discomfort is most pronounced.

**Diagnosis:**—It would seem that ascites could be easily diagnosed. It may readily be mistaken in a female for ovarian cyst, or vice versa. With the ovarian cyst, although it may produce as much enlargement as an extreme case of ascites, the enlargement is somewhat irregular, especially in its early development, and there is disturbance of the menstrual function. These patients are not as likely to have kidney or heart complications. When there is but little enlargement, if the patient may be placed in a knee-chest position, the fluid will gravitate to the region of the umbilicus where it may be distinctly detected. The fact that dulness on percussion changes on changes of position, and the fluctuation, are pathognomonic evidences of fluid in the peritoneal sac.

**Prognosis:**—In early cases, not seriously complicated, where the cause is at all amenable to treatment, the prognosis is good. In protracted cases which depend upon serious organic lesion or other intractable cause, the prognosis as to permanent recovery is not good. Where valvular disease or Bright's disease are present, the prognosis is bad.

**Treatment:**—In our vegetable materia medica we have

recourse to a reliable class of remedies for the removal of dropsical conditions, and for the relief of the direct causes which induce them, that are certainly not found elsewhere. In the selection of remedies for this purpose attention must be paid to other conditions and to the general strength of the patient. Irritation of the intestinal tract by powerful hydragog cathartics will soon result in derangement of digestion, which greatly curtails the absorption of nutrition. When the kidneys are diseased, irritating diuretics must be avoided. On the other hand, when the dropsy depends upon disease of the heart, we have remedies which may be specifically adapted with reference either to their direct influence upon the heart or to their diuretic action, or to both of these influences. When the liver is at fault, the remedies should be selected which will influence the function of this organ.

If the dropsical accumulation is extreme in a patient of good strength, it is often not unwise to administer to the patient an active **stimulant** and then give two or three full doses of **magnesium sulphate**, in order to obtain free hydragog action. From this there may be an almost immediate relief of the symptoms of extreme distention which result from the accumulation. However, I at one time administered a teaspoonful of the fluid extract of **haircap moss** in a goblet of water, and repeated the dose in six hours, with a very satisfactory temporary removal of the accumulation.

Our most efficient remedy for dropsy is **apocynum**. The remedy must be understood, and the prescriber must have some experience with it, or he will occasionally obtain no results. Occasionally small doses of the remedy will act very nicely. I am in favor of always giving it short of its cathartic action. When the dose produces intestinal irritation it should be reduced. I prefer the use of the distilled extract of apocynum to the ordinary fluid forms, because it is less irritating to the stomach and bowels. This may be given in ten drop doses every hour, or half of a dram may

be given every three hours. Occasionally the specific apocynum will act better if dropped in hot water at the time of its administration. At other times results can be obtained only from a decoction of the root, which should be given in small, frequent doses.

Among our other excellent remedies are **aralia**, which is indicated when there is but little urine passed, or when there is sediment in the urine, or urinary irritation, or **eryngium**, when the difficulty is accompanied with jaundice. At such a time we would use also **chionanthus**, **iris** and **helonias**, in combination with the diuretic. **Chimaphila umbellata** has been used in dropsy where an active alterative was demanded. **Elaterium** is of value also. It should be given in small doses frequently repeated; the large cathartic doses are contraindicated, especially in the asthenic cases. Among other remedies are **beech leaves** and **sour wood**. **Fraxineus** is indicated with **polymnia**, where there is chronic enlargement of the spleen and a tendency to obesity. **Lycopus** is indicated when the heart is at fault, especially when the heart acts tumultuously with irregularity, and dyspnea. It improves the strength of the heart muscle as well as the character and force of the pulse, increases arterial tonus, thus directly antagonizing those influences which permit an outflow of serum. It exercises a conspicuous and beneficial influence also upon the kidneys, without producing irritation.

There are extreme cases in which **paracentesis abdominis** is demanded. These are characterized by marked obstruction of breathing and interference with the heart's action. Those, however, which are tapped early and frequently, are not thought to be as amenable to specific treatment.

# Diseases of the Kidneys.

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## RENAL HYPEREMIA.

So intricate is the minute anatomical construction of the kidneys, and so abundant is its capillary and nerve distribution, that any influence to which the nervous and circulatory systems are susceptible is apt to immediately disturb the circulation within the kidneys and produce changes in the functional operations of these organs—in the elimination which is so essential in ridding the system of the effete matter—and these changes are manifest in most cases in the quantity, quality and the character of the urine.

## ACTIVE HYPEREMIA.

**Synonyms:**—Acute renal congestion; acute renal hyperemia.

**Definition:**—An engorgement of the capillary circulation within the kidneys, resulting in immediate alteration of function.

**Etiology:**—The condition is due to the action of sudden cold, or to the conditions which influence transpiration through the skin and other emunctories; to the influence of stimulating diuretics and other irritating medicines, which must be eliminated through the kidneys, but which exercise an irritating or injurious influence upon the minute structure of the malpighian tufts or upon the renal epithelium. It follows also the ingestion of toxins and the effort of the system to rid itself of toxins due to direct infection. Scarlet fever, diphtheria, septicemia and typhoid fever occasionally induce active renal hyperemia.

The condition is also induced by traumatism, either direct or remote, by surgical operations, especially laparotomies and those upon the bladder and urethra. It occurs as a result of anesthesia.

**Symptomatology:**—There may be for some days an **aching** sensation in the loins, which steadily increases to **dull pain** of a heavy, dragging character, which is often very distressing. This may be accompanied with **chilliness**, malaise, indisposition to physical exercise, and a slight elevation of the temperature. At first there is an abundant **secretion of urine** of reduced specific gravity, but this stage is so transient that it is often overlooked; a condition of **scanty urine** of dark color and high specific gravity, occasionally precipitating urates when cooled, is first observed. When the irritating cause is direct in its action, there may be sharp pain in the kidneys, with some **blood** in the urine, and perhaps tube casts. In extreme **toxemia**, the congestion may be so immediate and profound as to cause complete **suppression**, but usually a small quantity of very **albuminous urine**, which may contain blood coloring matter or blood debris, with abundant corpuscles and tube casts, is secreted. There is anorexia, general muscular aching, some vertigo, nausea and increasing debility.

**Diagnosis:**—The extreme **backache**, which often seems to radiate toward the stomach, producing faintness and nausea, with a sudden change in **the urine** from a previously normal condition to that which is scanty, high colored and albuminous, will determine the condition.

**Prognosis:**—In ordinary cases the prognosis is favorable. Where irritating poisons have been taken, or where septicemia is the cause, the prognosis must be guarded.

**Treatment:**—The most accessible, rational, physiological and successful treatment is the application of **persistent heat**. However, I have often applied **dry cups**, six or eight in number, over the lumbar region for from eight to ten minutes before applying the heat. A towel should be folded and wrung out of hot water containing a little salt.

This should be applied and a **hot water bag** applied over it. At the same time the patient should have a thorough irrigation of the colon with hot water, and the hot **normal salt** solution should be then injected. The patient should be kept warm in bed and a mild perspiration should be sustained. Great care must be taken that no irritating diuretics are administered. **Belladonna** in sufficient doses is the rational remedy at the onset. **Gelsemium** exercises a most important influence, and **hydrangia** is of much value. These may be given in a hot infusion of **epigea repens** or of **marsh-mallow** with good advantage.

If the pulse is sharp, hard and quick, **aconite** will control the temperature and will be of benefit in inducing free action from the skin.

Active hyperemia seldom occurs independent of other symptoms. In addition to the treatment suggested it will be necessary to meet the indications of the other conditions in the most prompt and direct manner.

### PASSIVE HYPEREMIA.

**Definition:**—Chronic or passive congestion of the kidneys designates a chronic condition of engorgement of comparatively slow development, depending usually upon faults of the circulation which result from deficient or imperfect heart action.

**Etiology:**—Not only are chronic heart disorders to blame for chronic renal engorgement, but the condition may result also from chronic diseases of the lungs, pleura, liver, or from chronic disease of the kidneys themselves. It may occur also during the course of an aortic aneurism, or from thrombosis of the ascending vena cava, or thrombosis of the renal vein, or from the presence of tumors or other abnormal growths, or from ascites. It is not uncommon during pregnancy, from the pressure of the gravid uterus.

**Symptomatology:**—The constitutional evidences are those of general **failure and anemia**. There are dropsical symptoms, which may be at first local, but are subsequently

general. There is a sensation of **weight** and dragging in the loins, with perhaps some pain, which may extend down into the thighs. There is a **scanty** secretion of **urine** with a high specific gravity, usually containing an appreciable quantity of blood with **blood casts**, as well as hyaline and tube casts. Albumin is present, usually in small quantities. Blood is often present in large quantity, precipitating as a dark, heavy, or brown sediment. There will be found present in nearly all cases **chronic disease of the heart**, with valvular lesion. There may also be hepatic disorder, quite apparent, or chronic **gastric disorder**, as well as chronic disease of the kidneys, which this condition usually accompanies.

**Diagnosis:**—Passive hyperemia must be distinguished from chronic Bright's disease by the exclusion of the classic symptoms of that disorder. The fact that there is usually but little albumin present in chronic hyperemia will assist in excluding a diagnosis of parenchymatous nephritis. In interstitial nephritis there is but little albumin, but there is a large quantity of water and the urine is of low specific gravity, while in this condition there is but little water with a specific gravity of from 1,024 to 1,032. If this condition persists, it may ultimately develop a typical case of chronic nephritis.

**Prognosis:**—As the prognosis depends upon the cause, and the cause is usually a somewhat serious intractable disorder, the prognosis must be guarded. If chronic organic disease is not discoverable, the prognosis is favorable.

**Treatment:**—The treatment will be general rather than symptomatic; the stomach and nervous system must be put into the best possible condition by the use of carefully selected **tonics**; heart remedies should be selected with reference to the exact condition of the heart; if any dropsical effusion is apparent, **apocynum** will be available. If the condition of the heart seems to be associated with serious gastric disorder, I should combine **cactus** and **hydrastis**, as I have observed excellent results from these remedies. To

these may be added **avena sativa**, as a stimulating tonic to the nervous system. The liver must be regulated with **iris**, **leptandra**, **chionanthus** or the **sodium phosphate**. **Podophyllum** will seldom be needed.

Where constipation is persistent, fifteen grains of the **magnesium sulphate** may be given, either alone or with fifteen grains of the **potassium tartrate**, four or five times a day. In cases where there is increasing dropsical effusion, a full dose of the **sulphate of magnesium** should be given each morning, or each alternate morning. Where debility and anemia are pronounced, Professor Whitford gives from five to ten grains of the **carbonate of iron** in conjunction with this salt, and believes that further debility from the cathartic action of this remedy is prevented.

Much attention should be paid to the diet. **Strongly nutritious** but **easily digestible** foods should be selected. I have given these patients from one to six raw **eggs** each day and had them **drink** freely of **skimmed milk**. **Fruit** in season may be permitted, and **baked potatoes** and **juicy lean beef** are acceptable.

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## ACUTE NEPHRITIS.

**Synonyms:**—Acute parenchymatous nephritis; acute diffused nephritis; exudative nephritis; tubal nephritis; acute catarrhal nephritis; acute Bright's disease.

**Definition:**—An acute inflammation of the kidneys involving all the structures of the organ.

**Etiology:**—Acute nephritis seldom occurs after middle life. As it results from exposure or injury, or from violent physical exertion, young males are more subject to it than other individuals. It occurs quite commonly in childhood, but in these cases it usually results from some other disease, notably those of infectious origin, such as typhoid, typhus or relapsing fever, scarlet fever, diphtheria, smallpox, la grippe, measles, erysipelas or septic infection. The kid-

neys may be directly infected, and thus induce a primary infectious nephritis.

Direct exposure to cold, and consequent acute renal congestion, is a common cause of the development of this disease. Alcoholics are especially liable and those whose habits are irregular and dissipated in character. Those toxic agents which have been mentioned as the possible causes of renal congestion are also the causes of acute inflammation of the renal organs. Another common cause is serious scalds or burns upon the surface of the body, or skin disease which involves a large area, thus throwing an unusual amount of labor upon the kidneys and at the same time inducing the excretion of toxins which result from the skin lesion.

The gravid uterus displacing the abdominal contents and compressing the arterial circulation induces acute renal congestion, which quite frequently develops into nephritis. There are blood changes that take place during pregnancy also that facilitate the occurrence of this disease.

**Symptomatology:**—In its primary form, when occurring from exposure to cold or from direct traumatism at the onset, the symptoms may so closely resemble those of **acute hyperemia** that a distinction between the two conditions is made with difficulty, if at all. These symptoms differ from those which appear when the condition follows other diseases or occurs as a result of septic infection. This constitutes **two groups of symptoms**, which must be considered separately. The symptoms differ somewhat also in adults and in children.

The descriptions of the symptoms which I here present are taken from the histories of typical cases which have occurred in my own practice.

The patient, with but little premonition, except perhaps that he has suddenly contracted a severe cold, usually from some known exposure, with the usual symptoms and **severe aching** of the muscles of the back, is taken with a **sharp chill**, accompanied with **nausea, vomiting**, which may be quite persistent, and **severe pain** across the loins. Or, if

the primary congestion attacks only one kidney, the pain will be located in the affected side. Concurrently with these symptoms is the rapid rise of **temperature** to from 102.5° to 104.5°, with great **restlessness** and perhaps mild **delirium**. **The skin** is hot and dry, **the face** is flushed, **the pupils** contracted and sensitive to light, and there may be epistaxis. **The pulse** is sharp, hard and from 105 to 120 beats per minute, medium full at first, but subsequently small, hard and often wiry.

The attention is attracted to the **urinary irritation**. There is frequent urination, with small, sharp cutting pains in the urethra, and the passage of a small quantity of urine only at each time, with tenesmus and almost constant desire. **The urine** is loaded with urates or is of a dark, smoky or wine color from the presence of blood, has a specific gravity of from 1,026 to 1,034, and contains much albumin and casts. These symptoms confirm the diagnosis and suggest the immediate course of treatment.

With these symptoms an immediate full comprehension of the case in all its seriousness and positive, direct treatment may ward off any dropsical symptoms. If, however, these appear, they may be delayed until the morning of the third day. The patient's face will by this time have lost its flushed appearance and there is a **puffiness** under the eyes, or the hands, feet and ankles may be swollen. This may increase with some rapidity to general dropsy, but in favorable cases the edema will not advance beyond dropsy of the legs and feet. There may be no **convulsions** with these symptoms, or the **uremic symptoms** may appear with the edema.

When acute diffuse nephritis appears as the sequel of scarlet fever, diphtheria or other acute infectious disease, it will be observed that the patient, during what was thought to be convalescence from that disease, has increased in pallor, as **anemia** may develop rapidly, and with the pallor the face becomes suddenly edematous, and very soon there is general **anasarca**. I have observed **abdominal**

dropsy to occur in one night to extreme distention, with no puffiness of the face, but rather a shrunken appearance and a dusky pallor of the countenance. The urine is suddenly almost completely suppressed and very albuminous, but in these cases it may contain no blood, the color being somewhat lighter than usual. There is apt to be **vomiting**, and but a slight fever, probably not above  $101.5^{\circ}$ , with a small, hard but feeble pulse. The patient is **listless, dull, indifferent** and inclined to **stupor**, with perhaps increasing delirium. Suddenly **convulsions** appear with an increase of all symptoms. There may be no pain in the back complained of and no urinary irritation.

In nephritis from acute toxemia, and in those cases which I have observed to follow rapid septic absorption after a miscarriage or after confinement, there may be absolutely no symptoms before it is observed that there is complete suppression of urine. After from twelve to eighteen hours convulsions and rapid evidences of **uremic intoxication** appear, unless the most active measures are adopted at the onset.

In puerperal eclampsia the convulsions may be the first evidence of wrong, and these may persist in spite of the most urgent measures, until death. Usually, however, the nephritis of pregnancy is somewhat insidious and gradual at its onset and continues to increase until the confinement has passed. Convulsions constantly menace the patient as long as albuminuria exists. There may be no backache, but severe headache and nausea. I recently had a case in which a primipara developed all the symptoms, in a classic form before the end of the third month, with extreme **backache**, almost persistent **headache**, puffiness of the face, **vomiting** and scanty, albuminous urine. These all abated under direct treatment, and there were no evidences whatever of the nephritis at the seventh month. The confinement at full term lasted but three hours and was uneventful. I attributed this case to cold, more than to the usual pressure causes.

There is a class of these cases where the cause is obscure, when the disease approaches insidiously, with absence of pain or discomfort, but rapidly increasing pallor. **The skin is dry, the mouth is dry**; although there is but slight fever, **the bowels are constipated**. There is edema of the eyelids and **general edema** increases rapidly, with **dyspnea** and general distress. In those cases where the dropsy is the pronounced symptom it will become general rapidly, often assuming the form of hydrothorax and hydropericardium, with great oppression of breathing as well as with extreme ascites. Occasionally it involves the soft palate, larynx or glottis.

The urine in acute nephritis varies in the different forms, but is usually scanty, from six to twelve ounces in the twenty-four hours, with at first increased and subsequently diminished specific gravity. The urea is notably diminished. The microscope shows crystalline solids and debris, red cells, disintegrated cells, epithelial cells from the tubules, blood hyaline and epithelial tube casts in abundance. The reaction is usually acid, especially early in the disease. The albuminous precipitate is white, if no blood be present. If there is blood, the sediment is brown, dark brown or black. It may vary in weight from one-half to two per cent of the total urine.

There is much variation in the symptoms in the cases above described, and there may be cases where the symptoms are very confusing, while in other cases, as stated, there may be almost an absence of symptoms until extreme dropsy without uremia, or **uremia without dropsy**, appears, or **convulsions** without dropsy and with few other evidences of uremia occur.

With modern methods of investigation no physician is excusable for not keeping the closest watch upon susceptible cases for the least evidence of the appearance of this disease.

**Diagnosis:**—In the first class described, the local pain, scanty urine and urinary irritation are the symptoms that

point most strongly to the actual seat of the disease until revealed by urinary analysis.

In other cases edema of the face and eyelids, scanty or deficient urine, extreme headache with some mental confusion, pallor of the face, muscular twitchings, with perhaps dyspnea, will suggest the cause, which is confirmed by an analysis.

During pregnancy there may be a transitory, cyclic or irregular appearance of a small quantity of albumin in the urine, with no casts nor blood corpuscles. This is not nephritis. It is a temporary congestion, which, however, must not by any means be passed by.

The casts with albumin are proof positive. These are hyaline, granular, epithelial or blood casts. The urine in pregnancy may be deceptive, as it is apt to be of nearly full quantity, pale and of low specific gravity and the quantity of albumin not large.

**Prognosis:**—Nephritis occurring primarily is more amenable to treatment than the induced form of the disease. The prognosis in the nephritis of pregnancy is good, the serious cases are those that are insidious in their onset, the post-scarlatinal or post-diphtheritic cases, and those which result from sepsis. Those in which the dropsical effusion is sudden and rapid, and especially if accompanied with dyspnea, should have a guarded prognosis.

Sudden and more or less complete suppression of the urine is always very serious, and must have no temporizing in the treatment. This disease will run its course in from six to nine days, and if properly treated should result in a perfect cure. Many cases of the chronic form of the disease follow an acute attack.

**Treatment:**—In the treatment of this disease, which is always serious, its cause, if possible, and the manner of its development must be determined, and these conditions will determine the character of the treatment. The seriousness of the disease must be fully appreciated at once, and **there must be no temporizing.** The most active measures must

be immediately resorted to. The patient should have a **thorough hot foot bath**, and free transpiration from the skin should be induced. He should be then wrapped in blankets and put into a warm bed, and hot applications must be persistently applied to the kidneys to overcome the preliminary congestion.

The tendency to chilliness, with high temperature, will suggest **aconite**. Not only will nervous irritability, a flushed face and contracted pupils suggest **gelsemium**, but in the absence of these symptoms it must be given if the cerebral condition does not positively contraindicate it, for its direct specific influence upon the capillary circulation of the kidneys through the nervous structures of those organs. One who has never used this remedy cannot appreciate the benefit derived from it. It reduces nerve irritation, thus permitting dilatation of the capillaries, which results in a rapid relief of the local engorgement; this influence is contributed to by the effect of the external heat. The remedy may be given in conjunction with aconite, as above specified, and if there is much muscular aching, a most valuable co-operative agent is **cimicifuga**.

These remedies, if continued, will materially abate the main symptoms; however, if dropsy appears, it will be necessary to administer **apocynum**, in small doses. I much prefer the distilled extract of this remedy, as it exercises its specific influence with a minimum of gastro-intestinal irritation. If with the administration of aconite the skin is yet persistently harsh and dry, and the mucous membrane of the mouth is dry, five drops of **jaborandi** should be given every two hours. Or, if the patient is sthenic, and the symptoms at the onset are those of extreme suppression of all secretions, with an engorged condition of the capillary circulation, with a flushed or purplish face, with dry, hot skin, full, strong pulse and high temperature, it is good treatment to administer, with the very first measures, a hypodermic of from one-eighth to one-fourth of a grain of **pilocarpin**,

and continue the jaborandi subsequently if the indications should persist.

Occasionally in somewhat sluggish or plethoric cases, small doses of **podophyllum** with **phytolacca** will be needed. If there is much cerebral excitement, with active delirium, **hyoscyamus** in full doses must be given. If there is a tendency to fulness of the cerebral circulation, four or five hourly doses of five drops of **ergot** should be administered.

Where dropsy is the first indication, the patient should have a preliminary full dose of **magnesium sulphate**, to be followed by small doses frequently repeated of apocynum, or a mixture of five drops of specific **elaterium**, in four ounces of water, a teaspoonful every hour. Notwithstanding much argument to the contrary, I am confident that these cases, when accompanied with anemia, are benefited by the administration of some absorbable salt of **iron**. I prefer the carbonate, but where there is an indication for acids, the tincture of the chlorid of iron may be given. If the temperature should be high, without general capillary engorgement, ferrum phos should be given.

I am averse to the use of stimulating diuretics. I have had such satisfactory results without these diuretics that I am in favor of such a course. Those remedies that soothe the kidneys facilitate the removal of the pathological conditions and the restoration of the normal functional action.

In those cases where convulsions appear early, that condition must have immediate treatment, but the kidneys must not be neglected. **Heat** should be at once applied over the kidneys and persisted in, and the patient should have a large, hot, normal salt enema. The use of **veratrum** for the convulsions exercises an influence upon the kidneys similar to that of gelsemium. I prefer this course to the administration of chloroform or ether, because the anesthetics are in part eliminated through these organs, and induce irritation. I materially object to the use of **morphin**, because it increases the local congestion. **Chloral** per rectum is a safe relaxant, especially if the normal salt solution be given.

The compound tincture of **lobelia and capsicum**, now nearly obsolete, will often control these convulsions without renal irritation.

Where sudden suppression of urine is the first conspicuous symptom, the measures just advised must be used most diligently, the hot bath and hot applications being especially essential. No stimulating diuretics must be given, but the patient may take freely of hot water. Active transpiration from the skin must be sustained, until the kidneys are acting with sufficient freedom, if this should require two or three days. Under these circumstances uremia must be anticipated. The patient should have fifteen minim doses of specific **echinacea** every two hours, until all danger is passed, whatever the other treatment. As the patient improves and the renal function is in part restored, mild diuretics, such as **triticum**, **epigea**, **althea** or **verbascum**, may then be given. If during apparent favorable progress of the disease puffiness of the face or dropsical effusions elsewhere appear, **haircap moss** or **apis** may be given. Renal irritation will be allayed with these remedies, and with **hydrangea** or **cornsilk**.

The use of **belladonna** in drop doses, every two hours, alternated every hour with one grain of **santonin**, as suggested under renal congestion, will prove very satisfactory, where the suppression occurs after diphtheria or scarlet fever. If dropsy be present under these circumstances, the addition of an infusion of **digitalis**, one dram of the leaves to a pint of water, given in teaspoonful doses every hour or two, will be found to be good treatment.

The **diet** of these patients is very important. At first they should have only **hot milk**; later this may be taken with toast, or the patient may have hot beef tea. As recovery progresses, the use of **buttermilk** and **whey** is beneficial, and **raw eggs** beaten, either given alone or with milk, will be of value, but any beverages that contain alcohol must be rigidly proscribed. Meat broths and gruels may be allowed, and later, thick soups or pureès, but milk should be de-

pended upon. Still later, prepared foods, cereals, a small piece of juicy beefsteak, or meat juices, may be permitted.

Active measures should be taken to restore the general tone of the patient, and the function of every organ of the body must receive attention. The tendency to chronicity in this disease is very great and can be prevented by perfect action of the nervous system, stomach, intestinal canal and liver.

To prevent subsequent renal congestion, to which these patients are very susceptible, I advise that a **flannel band** be worn around the body except in hot weather. This should be fastened tightly around the hip bones and should extend as high as the epigastric region. **Hydrastis, nux vomica** and **iron**, in small doses, should be continued until the patient is entirely restored. If the disease occurs in cold weather, and the results of the treatment are otherwise satisfactory, it is sometimes advisable to remove the patient as soon as possible to a **warm climate**, until winter has passed.

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## CHRONIC NEPHRITIS.

Under the term "Bright's disease" have been included at various times nearly all forms of chronic kidney lesion. Recent observers have made a general classification which is now accepted by most writers as practical and as nearly correct as our knowledge of the underlying pathology will permit. The first of these in frequency of occurrence is known as **chronic parenchymatous nephritis**; the second as **chronic interstitial nephritis**. The first is exudative, and in its development induces a condition of the kidney which is known as the **large, white kidney**. The second is devoid of exudation and is known as the **small, red kidney**. Furthermore, the first of these develops in the parenchyma of the organ, and the latter in the connective or interstitial tissue.

**CHRONIC PARENCHYMATOUS NEPHRITIS.**

**Synonyms:**—Chronic desquamative nephritis; chronic diffused nephritis (exudative); large, white kidney; chronic tubular nephritis; chronic glomerulo-nephritis.

**Definition:**—A chronic inflammation of the structure of the kidney, diffuse in character, attended with exudation from the blood vessels, degeneration of the epithelium, and important structural changes in the glomeruli.

**Etiology:**—The condition may follow acute nephritis, or it may develop insidiously without a discoverable cause. It occurs with those who indulge in alcohol and tobacco and those who are irregular and dissipated in their habits. It occurs also among painters and those who are brought constantly into contact with lead or other mineral poisons. Syphilis, chronic gonorrhoea, gout, rheumatism and other diatheses will lead to it. It results also from chronic indigestion and abuse of the stomach by overfeeding, bolting of food or irregularity of eating. It occurs from conditions which impair the integrity of the heart or of the circulation of the blood, or of the respiratory organs. It may develop slowly and insidiously, following an attack of measles, scarlet fever or diphtheria, without the characteristic phenomena of acute nephritis.

The condition also depends upon chronic infection or malarial poisoning which results in chronic disease of the liver or spleen. It occurs during the course of the pregnant term. Many cases of nephritis of pregnancy are not completely cured at the first attack, but lie dormant until a subsequent pregnancy, when they recur in a much more active form. They may then result fatally, or they may be in part controlled and continue as a chronic disorder after the confinement. I am convinced that various forms of auto-intoxication also lead to this disease.

It is most common in young males, occurring from twenty-five to forty-five years of age, especially with those who indulge in beer drinking.

**Symptomatology:**—In a large number of cases, the discovery, either accidentally or otherwise, of **albumin in the urine** is the first suggestion of this disease. One of my patients had a marked **urinary irritation**, almost as soon as albumin appeared, which persisted throughout the entire two and a half years of the course of the disease. When albuminuria with tube casts is pronounced and progressive, there is a gradual **failure of strength** and health, the patient becomes **irritable**, and, if aware of the presence of the disease, becomes **morose** and **despondent**. The **appetite fails**, there are some **nausea** and irregular attacks of **indigestion**, or the stomach disorder may assume a chronic form and be more or less intractable to treatment. There is some **headache** and progressive **anemia**. Usually the patient will persist in his customary employment as long as his failing strength will permit. When the disease occurs in younger people, or in children, it is a condition of rather slow development from previous acute disease, most often following scarlet fever or diphtheria. Following scarlet fever, the patient continues for some time in poor health, emaciated, weak, disinclined to physical or mental effort. **The appetite** is very poor, **bowels constipated**, **skin dry** and harsh. For quite a period there may be little if any albumin in the urine. **The urine** slowly decreases in quantity, the specific gravity increases, but there is deficient urea, and mild dropsical symptoms occur.

Later, as the disease progresses, there is a **dragging sensation** in the loins, **the skin** is pallid or of a dusky hue, and mild eruptions may occur. Occasionally the patient will improve under treatment and become more hopeful, to subsequently, from some indiscretion or from undiscoverable causes, relapse into the original condition, or grow rapidly worse, with the manifestation of new symptoms. The latter stages of the disease are marked by conspicuous, persistent **dropsy**, **great debility**, extreme **anemia**, and general **uremic symptoms**, such as muscular twitchings, mental aberration, faults of vision, albuminuric retinitis, mental

dulness, or insomnia, with the persistent but irregular occurrence of more or less severe distressing headache. It is seldom that convulsions occur in this form of the disease. It is quite common for **the heart** to become involved and **circulatory changes** to become conspicuous. On the other hand, heart disease may be the cause of this form of nephritis.

The condition of the urine is in many particulars quite diametrically the opposite of that found in the chronic interstitial forms of Bright's disease, although there is considerable variation. **The urine** is at first deficient in quantity, and continues to grow more and more scanty; the specific gravity is high—from 1,020 to 1,035—and the color is usually dark. As in chronic congestion, there may be a heavy deposit of the **urates** or brickdust sediment upon cooling, or there may be some **blood** present. In most cases, however, especially those of men in early middle life, I have not found blood, but I have found a small quantity of clear, acid urine, of high specific gravity, which deposits upon the use of the heat and nitric acid test a very large quantity of flaky white albumin, amounting to one-fourth or one-third of the bulk of the urine.

Other distinctive points which will be considered in the diagnosis are that this form of the disease occurs before the age of forty-five, runs its full course in about two and half years, and is marked by the appearance of dropsy in the later stages. With children the course is much more rapid, and dropsy is usually present during its entire course. There are usually no convulsions.

**The tube casts** found in this form of the disease are fatty, granular, hyaline and epithelial casts, with blood casts if there is hemorrhage. **The dropsy** extends to all the subcutaneous tissues, especially those of the pendent portions of the body. It shows itself in the early stage, in the feet at night, and disappearing there during sleep, appears in the morning in the face and eyelids. **The exudation** may fill the pleural sac or the pericardium, inducing

great difficulty of breathing, or it may involve the larynx and the epiglottis, inducing sudden or immediate suffocation. There may be **difficult breathing** from failure of the heart's action without the dropsy, apparent upon lying down, and depending upon the influence of the uremia upon the central nervous system.

As the end approaches, the sufferings of the patient becomes extreme. There is the loss of hope of recovery, the general dropsy, the severe muscular pains, the difficulty of breathing, and the almost **constant headaches**. The fact that sleep is almost impossible, because of the inability to lie down, renders the patient very greatly exhausted. There is no desire for food, often a repulsion, and diarrhea is common at this period, with severe, colicky pains. The urine now decreases yet more in quantity, and the specific gravity falls to from 1,008 to 1,004.

**Diagnosis:**—The diagnosis of parenchymatous nephritis depends upon the presence of a large quantity of albumin with tube casts, and a small quantity of urine, dark colored and of high specific gravity, in a patient young or usually less than forty years old. The course of the disease is not above two and a half years in adults, but may be somewhat longer in children, having been of slower development. The tendency to dropsy is a diagnostic feature.

**Prognosis:**—The prognosis is usually unfavorable when the disease is fully established. Carefully selected treatment, with the perfect co-operation of the patient, may retard the development of the disease and prolong life for a number of years. Following the infectious or exudative diseases of childhood it is more amenable to treatment, and a favorable termination may be anticipated. However, the sudden occurrence of uremia or dropsy, or the presence of serious organic complications, may cause a fatal termination within a short time.

**Treatment:**—Medicinal treatment is not as satisfactory in this form of the disease as in the acute form. The general condition of the patient's health, the improvement of

nutrition, favorable surroundings and restored tone of the nervous system are all essential in the absence of severe complicating disease. The general measures will be similar to those adopted in the cure of acute cases. The patient should have frequent **salt water baths**, with **massage**, and occasional rubbing of the skin, to produce considerable friction; he should **wear flannels** the year around, in order to keep the skin warm and to promote a steady, free excretion through the skin. The patient must avoid exposure to draughts or sudden cold or chilling of the skin. Sudden changes of the temperature are very undesirable. Our own locality, in the region of the lakes, is especially unfavorable. I invariably advise these patients to spend their winters in a milder climate and to place themselves in a condition in which there is at no time any occasion to resist cold.

The use of alcoholics and tobacco is invariably proscribed. I refuse to treat patients who will persist in their use. Tea and coffee should also be greatly restricted if not entirely excluded. The drinking of large quantities of **skimmed milk**, either hot (not boiled) or cold, which contains a trace of salt; or **whey**, **buttermilk** or **malted milk** is desirable with children, and in cases where the digestion is imperfectly performed **predigested milk** is given to advantage. The patient may have **stale bread**, **toasted bread**, **zwieback** and **crackers**. He may also partake occasionally of a piece of rare, juicy broiled **beefsteak**. **Beef juice** or **scraped beef** will be found serviceable also, but cured meats and meats fried in fat must be avoided. At other times **prepared foods**, **cereal foods** or **light cereals**, as **rice**, **sago** and **tapioca**, may be eaten with fruits in season. The patient may drink abundantly of **water**, and should adopt a regular habit of flushing the intestinal canal at least once each week. The introduction of a quart of the **normal salt solution** as hot as could be borne, the last thing before retiring, after having thoroughly flushed the bowels, will be of much benefit. It will strengthen the patient, will exer-

cise a restorative influence, and conduce to profound natural sleep.

When there is a large quantity of free white albumin, or when albumin is present in abundance with blood cells, or when the tendency to hemorrhage is marked, I have obtained excellent results from the administration of ten grains of **gallic acid** every two hours. Where anemia is present, I alternate this remedy with the tincture of the **chlorid of iron** every two hours, giving about four doses of each daily. Where the nervous system is at fault, I am in favor of giving large doses of **nux vomica**. I believe there is a class of cases, especially those who have indulged in alcohol in excess, who may take as high as one grain of the extract four or five times a day for two or three weeks with only beneficial results. This is the maximum dose, and if I had not prescribed it with good results I should not now advise it. From one-sixth to one-third of a grain every three hours will suit the condition of most of the patients.

Where it is desirable to continue a treatment similar to the above for a long time, it is a good plan to break in once in a while upon the regular course for six or eight days, and give the patient **hydrastis**, **quinin** and **capsicum**, or other tonic or restorative treatment. Instead of the tincture of the **chlorid of iron** I have used the **ethereal tincture of the perchlorid of iron**, official in the German Pharmacopeia, and have found it to be a superior remedy. It is given in from five to ten minim doses. Another excellent tonic is a **phosphorized elixir of calisaya bark** and **pyrophosphate of iron**. This may be given where the nervous system is involved, especially where nervous debility is present.

The **chlorid of gold** and **sodium** has been given, in the early stage of chronic Bright's disease, with good results. It may be given in one-eighth grain doses three or four times each day. It should be given in conjunction with or alternately with iron. Before the occurrence of dropsy the use of **arsenic** or the **arsenite of copper** will materially benefit some cases. Five drops of **Fowler's solution** may be

given three times a day, or one-fiftieth of a grain of the arsenite of copper may be given every three hours. For the dropsy I have obtained good results from the use of **haircap moss**. An infusion of **beech leaves** has been advised by a number of my friends, who claim it to be very reliable. Our main dependence has been upon **apocynum**, and I should give it as I have advised in the acute form of the disease. Any active eliminant that induces rapid excretion of water is apt to produce weakness of the heart, which must be met with some sufficient remedy. The **citrate of caffeine** may be used regularly to prevent such weakness or to sustain the influence of the organ. Professor Whitford's method of administering full doses of **iron** with the **sulphate of magnesium** will be found of much service in emergency cases. When danger from extreme dropsical accumulation seems imminent, relief may be obtained within a few hours, often rendering tapping unnecessary.

I believe that a better understanding of the agents which act upon dropsical accumulations should be had in order to obtain the best results from our remedies. **Cathartics** are administered to reduce the quantity of fluids within the tissues, carrying them off through the intestinal tract. I believe that **apocynum**, **elaterium**, **haircap moss**, **magnesium sulphate** and some other remedies of this class will so influence the process of absorption that the diffused serum will be resorbed through the capillaries, and dropsy will disappear without hydragog, or diuretic action. Whether these remedies act directly upon the heart, or upon the secretory or excretory glands of the intestinal tract, as elaterium is supposed to act, or upon both of these processes, as apocynum acts, there is no doubt that they exercise an influence upon the blood pressure, upon arterial tension, and perhaps also upon the specific gravity of the blood, which influences the osmotic processes, thus promoting the reabsorption of the diffused serum with no loss of the fluids of the body from increased eliminative action. This is certainly of much importance in the ultimate restoration of

the patient. For the accomplishment of this result the patient should have small doses of the remedies, frequently repeated.

There is a class of these cases in which there is extreme arterial tension. These are influenced favorably with **nitro-glycerin** in 1/100 grain doses three times each day. This controls heart action to a degree and reduces the loss of albumin through the kidneys.

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## CHRONIC INTERSTITIAL NEPHRITIS.

**Synonyms:**—Contracted kidney; small, red kidney; granular kidney; renal sclerosis; sclerotic kidney; cirrhosis of the kidney; chronic Bright's disease; chronic non-exudative nephritis.

**Definition:**—A chronic inflammation of the kidneys, diffuse in character, involving degeneration of the parenchyma, a growth of new connective tissue and atrophy.

**Etiology:**—This disease occurs after middle life, is of long duration, and occurs most commonly in males, probably owing to their more careless habits of living, dissipation, the contraction of specific disease, and more violent physical exercise. It is of unknown origin in many cases, both as to cause and to time, as it may undoubtedly exist in the incipient or developing stage for a number of years before it is positively diagnosed. The following of occupations in which there is a continued absorption of substances into the system which in being eliminated must keep up a continued although perhaps mild irritation of the kidneys, is thought to be the cause of the disease, such as chronic lead poisoning, chronic phosphorus poisoning, and as specified, the persistent use of alcohol. Another cause is probably the lifelong habit of excessive eating and drinking, in which undue activity of tissue metabolism and elimination is necessary in ridding the system of the persistent excess of food and drink. The same conditions from imperfect metabolism may be the cause of continued autointoxication.

The persistent eating of large quantities of meat and excessive coffee drinking will establish a uric acid diathesis, which, when accompanied with a habit of drinking but little water, will cause a permanent irritability of the renal structure, which will frequently result in sclerosis or granular atrophy.

It is thought that heredity exercises considerable influence in the causation of this disease, as it has occurred in the males of three or four generations. But it is more than likely that similar careless, injurious or dissolute habits of living were transmitted and in each case may have been the inducing cause. Conditions which induce degeneration of the arteries lead also to interstitial nephritis.

A close relationship has been known to exist between gout and rheumatism and this form of kidney disease. Those patients who are inured to mental labor, who worry at their responsibilities and are inclined to anger or excessive grief will be apt to exhibit the characteristic symptoms late in life.

**Symptomatology**:—When a man above fifty years of age, who has been a high liver, and has persistently labored under undue nervous excitement, or with extreme nervous tension, during his entire business career, without being obliged to yield from disability, finds himself easily **fatigued** or overwrought, **devoid of his** usual **energy** and vivacity, with a disinclination to engage in anything that demands activity or mental concentration, it is well to examine the urine for the early symptoms of this disease.

For a period of several years following this there may be but few evidences of renal disorder. The patient will observe that he is drinking a large quantity of water and passing water freely, but **the urine** may not be distinctively pathologic. However, the specific gravity is usually less than 1,010; the urine is pale, but there is no great diminution in the amount of solids excreted. During the earlier stages the quantity of **albumin** found, if any, will be very small, and it will be with difficulty and persistence that an

occasional tube cast is found. Often no albumin is looked for, but the condition is diagnosed as a mild form of diabetes insipidus, resulting from brain tire, which, it is thought, will disappear as soon as relaxation and rest will permit. The patient will rise two or three times in the night to urinate, but will continue to claim that he never felt better in his life. A peculiarity of this excess of urine is that it is distinctly acid in its reaction, although perhaps a gallon is being passed within twenty-four hours, and there is some frequency and difficulty in urinating, and some local discomfort or lack of propulsive force, which will be found to be due to irritation of the **prostate**, which may be somewhat **enlarged**. When there is atrophy of the glomerules there may be no albumin present in the urine; later there will be less difficulty in discovering casts, and perhaps some leucocytes will be found.

If the digestive apparatus and the nervous tone remain intact, the patient may continue in this condition until old age approaches, but with increasing inability to plan or execute either mental or physical labor. There is no dropsy usually, until a short time before a fatal termination. Then it will be observed that there is a decreasing quantity of urine and an increased quantity of albumin and casts, although there is no great increase in the specific gravity. **Nervous symptoms** will appear, the prostatic difficulty increases, and there may be a slight cystitis, when, quite suddenly, dropsy develops, uremic symptoms appear quite rapidly, and there are other evidences of rapid failure.

I have observed this abrupt change in symptoms to be brought on by some sudden **disability** of the **gastrointestinal** tract, as an acute attack of dyspepsia, with a consequent failure to appropriate sufficient nutrition. If symptoms of **gastritis** are present, with loss of appetite, the symptoms of nephritis are much more conspicuous. I am confident that the stomach should have immediate attention when these conditions occur, until they are entirely relieved. Severe vomiting or sharp attacks of diarrhea may occur, which are

evidences of the accumulation of toxins or of a uremic condition. These may abate later, to recur when excretion is imperfect.

In the later stages of this disease there is always more or less uremic intoxication, though if the elimination be free, this may not be apparent, but when free elimination is interfered with there will be **headache, nausea, vomiting** or **diarrhea**, as I have just stated, with **faults of vision, mental dulness** and increased **frequency of urination**. Prompt attention to the elimination will result in recovery from these symptoms, with perhaps no evidences recurring for months, when another attack will appear which will be more severe than the previous one. Uremic dyspnea is a distressing symptom, which is sometimes quite intractable, and may precede an attack of **convulsions**. It can be distinguished from cardiac dyspnea, except in those cases in which there is **valvular disease** or **cardiac hypertrophy**. In these cases the apex beat will be found below the normal point and to the left; the beat will be heaving in character and of increased force. A mitral systolic murmur is occasionally observed; the pulse is usually slower than normal, is hard and resisting to the touch, large, round and full; in the final stage of collapse it becomes irregular or feeble, small, soft and compressible. **The dyspnea** in the earliest stages usually occurs at night; in the final stage, whether it is uremic or cardiac, it is constant, and as mental dulness or stupor increases the breathing may assume the Cheyne-Stokes type.

These patients suffer much from **insomnia**. **Headache**, as has been stated, is a common symptom, and is not amenable to the usual remedies. It may be intermittent or simply remittent, the exacerbations being at some times extreme, the headache assuming a bursting character, with some mild delirium. If any structural change in the arterial coats is present, apoplexy may occur at such a time. In parturient cases the headache is the precursor of the convulsions, and sometimes the only premonitory symptom.

The apoplectic attack may be mild, inducing temporary coma, with some local peripheral paralysis, or it may induce a hemiplegia and be sufficiently severe to result in death. If recovered from, a recurrence may be anticipated of increased severity.

The occurrence of **shooting pains** in the deep muscles is a common symptom in all forms of albuminuria. I have known it to be the persistent symptom, which has induced the patient to consult the physician for rheumatism, in the diagnosis of which the real condition was discovered. These pains may be accompanied with cramps, especially in the calves of the legs. **The skin** is dry and harsh, and when it is peculiarly pale or chalky in appearance it will be found that more or less **edema** is present from cardiac dilatation or other **heart faults**, as **renal sclerosis** does not result in edema until the final stage. **Pruritis** is a common symptom, with **acne** or minute **pustules**, and occasionally **eczema** will be found present.

The appearance of the retina is a strong diagnostic factor in this disease. It has been found that twenty-two per cent of patients suffering from albuminuria exhibit lesions of the retina. Albuminuric retinitis, exhibited in four or five different forms, is recognized by ophthalmologists. Retinal hemorrhage, which may be small and circumscribed or profuse and extensive, is common. **Uremic amaurosis** may occur, which may be at first only temporary, but finally becomes permanent. When the diffused blood is absorbed, the underlying area becomes whitish in color. **Tinnitus aurium**, with more or less permanent deafness, and vertigo, may be present in these cases.

**Diagnosis:**—As has been stated, a positive diagnosis may be almost impossible in the early stage of this disease, and even in cases where there is but little doubt that the disease is of three or four years' duration it is difficult to determine whether the symptoms which are attributable to this disease may not be due to other existing conditions, which on their part may in reality be due to the presence of this condition.

The age of the patient, his previous habits and health must be considered, and parenchymatous nephritis excluded.

The pathognomonic phenomena of a well developed case are in some particulars the opposite of those of the parenchymatous form. There is a large quantity of colorless or pale urine, which is often described as lactescent or milk-like. It has a low specific gravity, is of slightly acid reaction, is passed very frequently, both day and night, without pain, and contains no blood or pus and but a very small quantity of albumin. The presence of tube casts is confirmatory, but these are difficult to find in so large a quantity of water. The erratic headaches, the retinal faults, the occasional attacks of dyspnea, with pruritis and frequent nose bleed, are all suspicious indications. If with these there is persistent mental dulness, delirium or coma, which usually follow the sudden appearance of free dropsical effusion, the diagnosis is confirmed. The heart symptoms are of but little benefit in diagnosis, as they are in every way similar to those that appear in other diseases of the organ.

**Prognosis:**—While no known method of cure for this disease has as yet been discovered, life may be prolonged for a number of years, some patients living to a ripe old age. Others are attacked with acute disorder, from which they may die, or an accident may terminate the life. I have made it a habit to base a prognosis upon the integrity of the stomach and digestive apparatus. This I do in part for its moral effect upon the patient. I lay it down as an inviolable rule that the patient must not forget at any meal the importance of eating slowly and thoroughly masticating the food, never overloading the stomach, and eating only those articles of diet which are permitted. A sudden termination of the disease may be precipitated by apoplexy and consequent paralysis, or by convulsions, or by heart failure from overstrain. Exposure to causes which suddenly arrest the secretions, causing immediate increase in uremia and increased blood pressure, contribute to this.

**Treatment:**—The treatment of these cases is largely **hygienic**. If the patient can be made to appreciate the situation and the importance of watching his own condition and guarding against excesses, he will do much more than the physician toward prolonging his life. Having its origin, as it does, at that time of life when a man's mental faculties are in the best possible condition, a reasonable man may be persuaded to fully appreciate the situation and lay out for himself a plan of life which will prolong his days to ripe old age.

The nervous system must be restored to its normal condition, and all nerve strain, undue excitement, responsibility, anger or worry must be avoided. Regular times must be set aside for recreation, and the mind must be freed at those times from everything that demands concentration or mental absorption. A well selected **nerve tonic** will contribute to a restoration of these organs. That which is of almost equal importance I have twice referred to because to me it has so important a bearing on the outcome of the case, and that is the retaining of the integrity of the stomach and digestive apparatus. Whenever a slight digestive disturbance appears, it should have immediate attention, and the patient should be acquainted with the different action of the different artificial digestives, so that he may be enabled at times to select one for the particular purpose to which it is especially adapted at that time. A **generous** diet, with sufficient nitrogenous elements, is required. The patient may eat a reasonable quantity of **fresh meat**, rare. Cured meats are objectionable. Eggs, cream and milk are permissible, and for short periods it will be found to be well to keep the patient upon an exclusive **milk diet**, but if this be too long continued, the patient will lose in strength and vital force. **Fruits** and **cereals** may be eaten freely; **sweet potatoes** and **baked potatoes** are permissible, but coarse vegetables should be avoided. Coffee and cocoa, with all alcoholic drinks, should be interdicted.

During the progress of any gastric disorder the food must

be selected with care, must be eaten slowly and thoroughly masticated, and the digestion must be assisted either by prepeptonizing agents or by artificial digestives. The observations of the patient concerning the various foods and their reception by the stomach must be utilized by the physician in selecting the articles of diet.

**Physical exercise** is important, but it should not be overdone and should be taken in the open air. For this reason it is desirable that the patient should make his permanent residence in a warm, dry climate, with dry soil and with an abundance of sunshine, as the changeability and dampness of the cooler climates tend to increase this disorder.

But very little can be accomplished with medicines depended upon to exercise a direct influence upon the pathological elements of this disease. In the earlier stages each condition must be treated according to its own indications, and when a fairly normal condition of health is obtained, medicines should be avoided. Emergency treatment is often demanded in the latter stages. The uremia should always be antagonized; for this purpose free elimination from the bowels and skin must be maintained, constipation must be prevented, and rational measures adopted to procure daily normal bowel movements. Free normal transpiration from the skin should be encouraged, but the sweat glands should not be persistently overstimulated, as a reaction is apt to occur, with permanent functional inactivity and dry skin. The normal action of the heart should be maintained, and everything avoided that increases arterial tension. Normal tension is important. Insufficient arterial tension may result in dropsy.

I have much confidence in the prolonged use of **echinacea** in antagonizing the development of uremia, with proper measures to retain the number and integrity of the red blood corpuscles. This agent will antagonize the presence and development of toxins. **Gelsemium** preserves a freedom from nervous irritation, both in the nerve centers and in the renal organs, and consequently is valuable in its in-

fluence upon the heart, relieving the tension and promoting cardiac tranquillity. Minute doses of **nitroglycerine** should be advised for short periods, only when the tension is too high, and **strychnin**, **cactus**, **digitalis** or **avena** should be given when it is too low. Uremic manifestations must be overcome by a temporary stimulation of all the eliminative organs, with the object of throwing off as large an amount as possible of the toxic principles. While **echinacea** is a valuable alterative, there are certain conditions of the blood in this disease which are best met with **iodin** in the form of the **sodium**, **strontium** or **potassium iodid**. This is especially true when there is a syphilitic taint in the blood or other dyscrasia. The first two act favorably upon the stomach also, while the potassium iodid, although a gastric irritant, reduces muscular irritability, and will thus be of benefit in decreasing undue arterial tonus. **Apocynum** will increase the power of the heart, and when dropsy results from imperfect heart action this will be found to be the most available remedy. Cerebral complications must be met in accordance with their indications. The **bromids** and **ergot** will abridge the hemorrhage or prevent it when threatened. **Strychnin** in properly selected doses will antagonize paralysis. Convulsions should be treated as suggested in acute nephritis. For this purpose **veratrum** will be found the most satisfactory remedy. I am confident that single doses of as much as one dram may be given in sthenic cases hypodermically with only good results. Three or four doses of twenty minims each, repeated every half hour or hour, will usually be as efficient and devoid of danger. Morphin must be avoided, as it complicates the kidney trouble, and by locking up the secretions materially increases the uremia. It is directly contraindicated.

During the progress of this disease, and especially during its later stages, complicating disorders are apt to arise, which must be treated, each according to its specific indications and with more care and positiveness than if occurring alone.

## PYELITIS AND PYELONEPHRITIS.

**Synonyms:**—Pyelonephritis is sometimes designated as pyelonephrosis, pyonephritis, or pyonephrosis.

**Definition:**—Pathologically there is a plain difference between pyelitis and pyelonephritis, although they are usually considered together by most writers. **Pyelitis** is distinctly a condition of suppuration of the mucous lining of the pelvis of the kidney, a purulent inflammation of this membrane. It may be primary, resulting from cold or injury, but it is more apt to occur from the presence of calculi or renal sand in the pelvis. It usually proceeds from some inflammation of the bladder, which extends upward through the ureters. One writer claims that in fifty-four per cent of his cases of gonorrhoea there was pyelitis. This does not argue well for his treatment of the primary disease.

On the other hand **pyelonephritis** is a conjoined involvement of the structure of the kidney with the inflammation of the mucous lining of the pelvis. It is seldom if ever primary, resulting from other inflammatory conditions of the kidneys. It extends downward and involves the pelvic membranes in purulent inflammation. An abscess within the structure of the kidney may involve in the contiguous inflammation a considerable portion of that organ, and pouring its discharges into the pelvis may cause direct purulent infection there.

The presence of this condition may be inferred when upon urinary analysis it will be observed that there are marked changes in the secretory and excretory function of the kidney, determined by the presence or absence, or by deficiency or excess of the normal urinary constituents. With pyelitis there should be but little interference with the normal functional operations of the kidneys.

It is not impossible that pyelonephritis may be caused by an involvement of the contiguous renal structure from previous purulent inflammation of the pelvic membrane extending upward. A symptomatic distinction of these two

conditions is by no means plain, and for that reason they are usually described together. The term **pyonephrosis**, strictly speaking, should apply only to a condition when from a blocking of the ureters pus accumulates in the kidney pelvis, producing distention or rupture.

**Etiology:**—With the causes named, such as the presence of irritating renal calculi or the extension of infectious inflammatory disease, this condition of purulent inflammation may also be caused by the decomposition of retained urine in the pelvis of the kidney, from obstruction of the ureters, or from retention of urine in the bladder. There may be occlusion of the ureters, or there may be external compression from foreign growths; parasites may induce the condition, or it may be caused by the ingestion of irritating diuretics or irritating remedies which must necessarily be eliminated by the kidneys. It results also from the previous existence of the infectious fevers. It may follow chronic disease of the bladder or enlarged prostate, or urethral stricture. I am convinced that the condition sometimes occurs late in life from the existence of paraplegia, or from any cause which will induce general relaxation with paralysis of the vesicle sphincter. A distinct diphtheritic inflammation of the pelvis of the kidney has been diagnosed with the formation of a characteristic diphtheritic membrane, inducing serious, usually fatal, infection.

**Symptomatology:**—The presence of **pus in the urine** by no means presupposes the existence of this disease. Purulent disease of the urethra, bladder, prostate gland and ureters must be excluded. In the absence of symptoms of disease of these parts, pus in the urine in whatever quantity, with soreness in the region of the kidneys and other evidence of local disorder, will suggest the condition. With **soreness** there is often continuous **renal pain**, which may be increased by sneezing or coughing or by a sudden jar of the body. **The pain** may be localized or it may extend around the body, producing a sickening sensation, with slight nausea, or it may extend downward into the thigh,

or into the testicle of the affected side. As stated, with pyelitis alone, there will be but little change in the condition of the urine. It will contain some pus cells, and with pus albumin is always present in the pus serum, and consequently is present in the urine. When the condition is acute in character, there is but little pus or albumin. In chronic cases the pus may become enormous in quantity and may be mixed with blood corpuscles or with considerable blood.

In **pyelonephritis** there is considerable renal debris in the urine, and usually a marked alteration in the character of the fluid. The quantity of urine is often increased, due perhaps to increased compensatory activity of the glomeruli, or to some compensatory dilatation of the healthy portion of the organ. It is also true that when one kidney only is affected, as is usually the case, there is increased functional activity of the unaffected organ. There is but little mucus or epithelium present, except it comes from the bladder. Occasionally a pus coagulum or other plug will temporarily obstruct the ureter on the diseased side, when the urine will flow clear and normal for a short time from the healthy organ. At this time there is apt to be increased pain on the diseased side, although the pain is usually by no means as severe as in renal calculi. This is followed by the escape of a greatly increased quantity of pus. This combination of symptoms is *prima facie* evidence of the involvement of but one organ.

There is usually **erratic fever**, frequently of hectic type; more rarely there are distinct intermissions; occasionally there are regularly recurring remissions, so closely resembling malarial manifestations as to be classed with that condition. It may resemble the fever of tuberculosis in all of its characteristics. This septic fever results ultimately in emaciation, prostration and anemia; or the fever may assume a typhoid type, sometimes running as high as 104° F., to be followed by profuse perspiration and **increased weakness**. Sometimes marked heart weakness, mental dulness,

delirium or stupor occur. There is absence, however, of tympanites, diarrhea and rose spots.

When in chronic cases obstruction of the urethra becomes more or less permanent, a distinct pyonephrosis exists, which results in a bulging and fluctuating tumor in the region of the kidney, which is with difficulty distinguished from perinephric abscess, except by a sudden outpour of a large quantity of pus and a disappearance of the pain and tumor upon the escape of the plug.

**Diagnosis:**—A diagnosis of this disease when pus is present is not difficult if purulent disease of the bladder and urethra may be excluded. The local pain and tenderness, with the presence of pus, are strong diagnostic factors. In differentiating between pyelitis and cystitis it must be remembered that in the latter disease the urine is ammoniacal and there is an abundance of epithelial scales, while in the former condition the urine is acid and the pain may be localized in one or both kidneys. When catheterization of the ureters is practicable, the diagnosis is positive. A cystoscopic examination of the bladder will determine the presence or absence of disease of that organ. The sudden occurrence of extreme pain in the ureter or in the kidney is diagnostic of obstruction and is usually attributed to a calculus. When the obstruction has escaped, as is announced by the disappearance of the pain and a quantity of pus is found in the urine, the condition is apparent. It is with difficulty that a distinction is made between pyelonephrosis and perinephric abscess, the bulging tumor above described being present in both cases. In perinephric abscess the tumor may be present without the extreme pain of obstruction of the ureter, and the urine may contain no pus. In the former case when pus appears in the urine the tumor is not found. The existence of pyelocystitis—the simultaneous occurrence of pyelitis and cystitis—is sometimes difficult to determine. The local pain may be depended upon to assist in the diagnosis.

**Prognosis:**—Uncomplicated pyelitis is quite amenable to

treatment, and a favorable prognosis may be usually made. When pyelonephritis is present, or when from the accumulation of pus there is distention of the pelvic sac, with obstruction of the tubules, as in pyelonephrosis, the condition is serious, a fatal result often occurring. Pyelitis resulting from other diseases is apt to be temporary, often abating rapidly during convalescence and only occasionally becoming chronic. Cases which occur as the result of calculi are usually chronic and more or less intractable. Pus forming during the progress of tubercular nephritis need not necessarily be pronounced an incurable condition, as tuberculosis of the kidney will abate under favorable circumstances with good treatment, the pus becoming encysted and coagulated, or caseated.

**Treatment:**—I am positive that good results obtain from the persistent treatment of the fever, although it is plain that the temperature results from infection. I would prescribe **aconite** in small doses persistently, and although no malaria is apt to be present, I should give **quinin** in broken doses during the intermissions and occasionally during marked remissions, unless it seemed to induce or increase irritation of the bladder. No depression from the aconite need be anticipated. On the other hand, I believe that in small doses frequently repeated it sustains the heart action. To assure this result it may be combined with **cactus** to excellent advantage. If there is a large quantity of pus escaping with the urine, **irrigation of the bladder** is of service, whether there be cystitis or not. If cystitis is diagnosed, it must invariably receive the most positive and thorough treatment, as there will be no permanent results from the treatment of the pyelitis unless this condition be overcome. The same statement may be made concerning old standing gonorrhea or prostatitis. If it were possible to irrigate the pelvis of the kidney with **warm water** or with a **warm permanganate** solution, more speedy results could be obtained. This must be accomplished, if at all, by insisting upon the patient **drinking large quantities of water**, either hot or

cold, or taking freely of mild infusions of the soothing diuretics, as **epigea**, **marshmallow**, **stigmata maidis** or **tritium**. Good results are also obtained from gelsemium and hydrangea. When there is no prostration, these may be given in full doses for an extended period. When the disease is caused by calculi, the treatment should be conducted after the plan suggested in nephrolithiasis. At no time, however, should irritating diuretics be administered or harsh or severe measure be adopted. The use of **dry cups** over the kidneys will yield better results, than hot applications alone. I have obtained excellent results from the use of the **tincture of iron** alternated every two hours with **gallic acid**, in the early stages of the acute form of this disease. I have given it indiscriminately under all circumstances with no cause for regret. I would impress upon the prescriber the importance of antagonizing the formation of pus by constitutional measures, and would suggest the administration of **echinacea** or **calcium sulphid** or **calcium** or **potassium iodid** during the entire course of the disease, watching, however, for any local irritation from the potassium salt.

The diet should be nutritious, easily digestible and of plain, non-irritating articles. The coarse vegetables, especially asparagus, which is irritating to the kidneys, should be excluded. The patient should take but little salt or other condiments, especially those which are stimulating in character. **Milk** alone may be administered during the active period of the disease, and if the urine is alkaline **whey** and **buttermilk** may be given. Alcoholic stimulants must be sedulously avoided.

Other remedies which control pus formation in the urinary tract are **chimaphila**, **thuja**, **pichi** and **urotropin**. These may in certain cases be selected and administered according to the indications, with directly beneficial results.

## AMYLOID KIDNEY.

**Synonyms:**—Waxy kidney; amyloid degeneration.

**Definition:**—A condition of degeneration of the structure of the kidneys characterized by a deposit of a substance designated as lardacein in the walls of the blood vessels, in the glomeruli, and also in the connective tissue surrounding the tubules.

**Etiology:**—Amyloid degeneration occurs under circumstances similar to, favorable to, and in connection with development of amyloid degeneration of other organs. This is described as a waxy or lardaceous degeneration, in which lardacein is deposited within the structure of the walls of the capillaries and in the connective tissue of the glomeruli and tubules. It depends upon the prolonged presence of tissue disintegration—necrosis—especially of bony tissue, and suppuration in other organs or tissues at a time when conditions are favorable, both to pus formation and to infection, from the absorption of toxins. Syphilis and tuberculosis, especially of the osseous structures and of the glands, are favorable to its development, and pyemia or empyemia are active causes. The condition occurs in connection with chronic malaria, leukemia, or gout, cancer and chronic heart disorder. It also occurs in conjunction with parenchymatous nephritis, but is seldom found with the small, red or granular kidney of interstitial nephritis.

**Symptomatology:**—The symptoms are not characteristic, and as the condition usually follows a chronic disorder there is apt to be a mistaken diagnosis, or the actual condition is only revealed post mortem. There is usually chronic **derangement of the stomach** or of the intestinal tract, with slow **emaciation** and permanent **debility**. There is **anemia** and a waxy **pallor** of the skin, with a shrunken appearance of the countenance—a distinctly cachectic hue. There may be **diarrhea**, with chronic enlargement of the liver and spleen. **Dropsy** appears late, if at all, and is usually local and mild in character, involving the feet, ankles and legs

below the knee. If heart disorder complicates, the dropsy may be more conspicuous.

**The urine** presents no pathognomonic phenomena. It may be normal in quantity, or it may vary from the normal only a little in both quantity, color and specific gravity. In advanced cases it is apt to be increased in quantity, with a notable reduction in the specific gravity, resembling that of interstitial nephritis. The urine is passed freely without irritation or pain. The quantity of albumin varies; in rare cases it is absent, but usually there is a trace of albumin. In distinct cases the albumin may be present in considerable quantity. There is a high proportion of globulin present in comparison with the serum-albumin, and this is classed by Salkowski as a diagnostic symptom. There are a few tube casts present; these are of the fatty variety, with some hyaline and granular casts.

**Diagnosis:**—The diagnosis is often conjectural. It depends upon the relationship of associated conditions as just described. Chronic suppurating diseases, especially necrosis of bone, may be present, with a distinct cachexia, and there may be also chronic enlargement of the liver or spleen, the outlines of which are plainly apparent on palpation. If, during the course of chronic diseases of this character, there should be a rather sudden increase in the quantity of urine, with a corresponding reduction of the specific gravity to 1,007 or 1,005, with a plainly apparent quantity of albumin, usually much more than is found in interstitial nephritis, a diagnosis of this condition is confirmed.

**Prognosis:**—If an early diagnosis could be made, and the degenerative diseases which occur as causes of this could be influenced by treatment, the prognosis would be favorable. It is too often true that the disease is not discovered until the structural changes are too far advanced to be influenced by the treatment. Under these circumstances the prognosis is always unfavorable.

**Treatment:**—Measures calculated to prevent destructive tissue change within the body, to promote normal metab-

olism and improve the oxygen carrying power of the blood, through the restoration of the normal proportion of the red blood corpuscles, is the object to be obtained. This result may be obtained by measures suggested under other wasting diseases. Some readily appropriable **salt of iron** should be given in conjunction with **echinacea** or the **calcium sulphid**, to free the blood from deleterious products. The ethereal tincture of the **perchlorid of iron** will be available. This, with **cod liver oil** or the **hypophosphites**, will be of benefit. The syrup of the **iodid of iron** will serve an excellent purpose where there is glandular tuberculosis. Under these circumstances **phytolacca** should be given on general principles with the echinacea. The hygienic and dietary measures suggested in chronic **nephritis** will be correctly adjustable to this condition and need not be reiterated.

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## HYDRONEPHROSIS.

**Definition:**—An accumulation of urine in the pelvis of the kidney from obstruction usually in the ureter, but which may be at the cystic sphincter or in the urethra, causing distention and ultimate suspension of the functional action of the organ.

**Etiology:**—The conditions named in nephrolithiasis are common causes, but there are many others. These may be disease of the walls of the ureter, flexion or torsion of the ureter, external pressure upon the ureter, with perhaps ultimate adhesion, various uterine conditions, such as misplacements, the development of fibroid tumors, tubercular or malignant growths, and obstruction during confinement. Ulceration and cicatricial formations may also cause it, or it may result from chronic cystitis or other disease of the urethra. There may be a partial obstruction only, or the obstruction may be complete, resulting in the formation of a tumor sufficiently large to fill the abdomen and

justify a diagnosis of ascites. The condition may be congenital.

**Symptomatology:**—When the condition involves both kidneys or is congenital, uremic symptoms quickly appear and death results. There are no regular symptoms that may be named, the diagnosis being often uncertain. There may be but slow increase in the size of the tumor, and if small it may be present a long time before it is discovered. When there is plainly a tumor present, which has at times some fluctuation, with at other times considerable resistance, the presence of this condition may be suspected. There is a sensation of **dragging** and **heaviness** in the **loins**, with a considerable decrease in the urine in those cases where the development is slow, but seldom is there severe pain. Where the obstruction is immediate, as from calculus, or sudden closure of the ureter, **the pain** will be at first severe and agonizing, as described in nephrolithiasis.

**Diagnosis:**—In the diagnosis the possible presence of ascites, ovarian cyst, renal cyst, distention of the gall bladder or tumors must be excluded. In acute cases the partial suppression of urine, the extreme pain, which may have disappeared spontaneously, and the rather sudden appearance of the tumor will suggest the cause. Where the occlusion and resulting distention are gradual, the diagnosis is exceedingly difficult and sometimes impossible. When the distention of the abdomen suggests aspiration, the character of the liquid will usually prove its origin. If it is serous in character, hydronephrosis would be excluded; if it has the characteristics of urine, and especially the odor, that fact would be confirmatory. The presence of pus is sometimes confusing in an examination of the aspirated fluid. The condition can readily be distinguished from pyonephrosis by the absence of symptoms of infection.

**Prognosis:**—In congenital cases the prognosis is invariably fatal. In induced cases the prognosis depends upon the cause.

**Treatment:**—In the female immediate relief may some-

times be obtained by catheterization of the ureter. This is no longer a difficult procedure, and its results will be twofold; they will evacuate the fluid, and may remove the occluding cause. If stricture is present, it will dilate the stricture and sometimes result in permanent relief. **Aspiration** is resorted to in extreme cases or in cases where the fluctuation is superficial. Medicinal treatment is of no service except in the relief of pain or in supporting the strength of the patient. Where the condition is recurrent or intermittent, medicinal measures will be available, if specifically administered, in relieving the existing conditions which act as causative factors.

Surgical measures, such as the evacuation of the sac or the removal of the kidney, have not produced results which are encouraging. But where there is no other recourse, **extirpation** may be resorted to.

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## NEPHROLITHIASIS.

**Synonyms:**—Stone in the kidney; gravel; renal calculus; renal colic.

**Definition:**—A condition in which crystalline or other solid or earthy particles are precipitated from the urine and are deposited in the tissues, calyces or pelvis of the kidney.

The precipitation of the inorganic constituents of the urine is of quite common occurrence. When the substance is in fine crystals or finely formed earthy matter, it is called renal sand; when the crystals are large or are coherent, and thus form coarse grains or small concretions, this is designated as gravel. When these concretions increase in size and become too large to pass through the ureter, they form renal calculi, or renal stone.

The most common of the renal concretions are those which consist of uric acid. These occur in size from minute crystals to large stones, are of dark color, very hard, with smooth, uneven surfaces. The next most frequent of

occurrence are those of calcium oxalate. These are known as mulberry calculi, and may form around a uric acid nucleus.

Phosphatic calculi are quite common. They are more apt to precipitate in the bladder than in the kidney. They may form in the bladder around a uric acid or oxalic acid nucleus which has escaped from the kidney. The presence of these calculi is a common cause of cystitis. They are by no means as hard as those previously named, are of a yellowish gray or grayish white appearance, and of irregular fracture.

Among other substances which may form renal stone are calcium carbonate, cystin, xanthin and certain saponaceous or fatty substances, classed as urostealith, with fibrin, and in very rare cases, indican. The formation of renal stone depends, first, upon conditions which permit the precipitation of the solids of the urine, and there may be insufficient water, increased solids, or other important changed conditions; and, secondly, upon the presence of some substance which will assist in retaining these particles together, or which will cause them to adhere. At times a calculus may have for its nucleus micro-organisms or an organic substance, or fibrin.

**Etiology:**—During middle life concretions are less apt to form than in youth and in advanced age. They form more commonly in males than in females, and in certain localities they are much more prevalent than in others. In India, China, in northern Europe, and in some parts of England they are much more prevalent. Those who subsist largely upon a meat diet are more subject to stone, although concretions form readily in the urine of herbivorous animals. That of the former is usually of uric acid; that of the latter is calcic carbonate.

Individuals who live an active life physically in the outdoor air are seldom subject to calculi. The condition appears more commonly among those who are sedentary in

their habits and who are large eaters, and those who drink freely of coffee or wines or beer.

**Symptomatology:**—The conditions which lead us to suspect the presence of gravel are in every way similar to those described in lithuria. The patient is sedentary in his habits, passes a small quantity of dark urine of high specific gravity, and complains of more or less urinary irritation. At the same time there are constant **backaches**, more or less severe, with occasional **shooting pain** in the region of the kidney. At other times these conditions are not so marked, and yet a calculus of some size may form in the kidney and remain more or less fixed at some pendent point in the pelvis, when from some severe jar or fall or a severe muscular strain it may be dislodged, and may either lacerate the mucous membrane of the pelvis or occlude the ureter; or it may dislodge small calculi, which, passing into the ureter, will cause immediate occlusion, the pain of which is the first evidence of the presence of a calculus. This may also result in infection of the pelvic membrane and an inflammation which results in pyelitis or in pyelonephritis.

A transient, sharp, cutting pain in the kidney or in the course of the ureter may occur from the passage of grains of sand through the ureter which are not sufficiently large to produce occlusion. These attacks may last for a few moments, or for perhaps half an hour, without the extreme pain of a large calculus. The abrupt and complete relief from the pain proves that the obstruction has passed into the bladder. These attacks may occur at intervals for quite a period of time before a calculus sufficiently large to distend the ureter or to completely obstruct the passage is deposited. With elderly patients this condition may last for a number of years, both the patient and the physician being conscious that he has gravel, and that he is liable to have an attack of renal colic. He is of feeble health usually or disabled for active labor, has backache or constant pain and hematuria or pyuria. At times, if a small calculus is

smooth and does not cause a great degree of irritation, there may be only an obstruction to the flow of the urine and but little pain as an evidence of its presence.

The larger stones produce **agonizing pain**, which usually, occurs abruptly, is located in the kidney, and passes down the course of the ureter on the affected side to the inner side of the thigh, and into the testicle in the male, which, because of **reflex irritation** in the cremaster muscle, will retract and become very tender and sensitive. This pain is almost continuous during the passage of the stone. It is often tearing or lacerating in character, and will produce intense agony, causing **vomiting**, extreme **perspiration** and **nervous shock**. It may radiate up into the chest and produce some dyspnea, or may seem to extend into the muscles of the back. This pain may last from half an hour to several hours. Usually there will be an occasional remission in the extreme agony, or there may be a temporary suspension of the sharp pain, but this period of relief is of short duration until the stone has escaped into the bladder.

Usually this pain is accompanied with a constant desire to urinate, with much irritation and tenesmus. The urine is of high specific gravity and contains much blood. However, it is often the case that the normal kidney excretes more freely and the urine and blood are not will mixed.

Occasionally the extreme pain and nervous irritation induce convulsions. While the skin is cool or cold, the temperature often rises from one to four degrees above normal. The pulse is small, hard and sharp, and in the older patients may be irregular. For days after recovery from the attack the patient is prostrated, has but little appetite, and there is much soreness in the kidney, ureter or in the testicle.

If a calculus is lodged in the ureter and is too large to pass through, permanent occlusion results. The pain will be described as most excruciating for some hours, and as the spasm of the muscular coat of the ureter abates the pain may cease, to an extent at first, and ultimately dis-

appear. The urine accumulates in the pelvis of the kidney and soon blocks up the flow of urine through the tubes, and suspends renal action because the pressure of the urine in the pelvis exceeds that in the renal arteries. As the pelvis becomes distended, the condition known as hydronephrosis is produced, with the symptoms described under that title. Compensatory activity of the normal kidney may be sufficient, and no uremic symptoms may appear. It is seldom, however, that there is not a deficiency of urine, with more or less uremia. In rare cases both ureters may be occluded, when permanent suppression of urine, uremic intoxication and death may occur.

The continued presence of an irritating calculus or calculi in the pelvis of the kidney develops irritative inflammation and pyelitis, with the phenomena described under that head. This may result in the absorption of septic material; the patient may have hectic fever, with night sweats, or there may be urinary suppression from sepsis. In cases where this condition persists, chronic disease of the liver and spleen is apt to occur.

**Diagnosis:**—The disorder must be distinguished from hepatic colic, from neuralgia, and from the pain of appendicitis; in the female, from ovarian neuralgia and the pain of dysmenorrhea. This is usually accomplished without difficulty by the character of the urine and the urination. In extreme cases, in the male, the pain in the testicle and in the inside of the thigh is an important diagnostic factor. The sudden occurrence and sudden disappearance of the pain are characteristic phenomena. Usually the diagnosis can be confirmed without doubt by the discovery of gravel in the urine. The Roentgen ray may assist in confirming the presence of renal calculi, but this is often misleading and has led to confusion.

**Prognosis:**—The prognosis is favorable in all cases except where the ureter is permanently occluded. The constitutional condition which permits the formation of calculi is amenable to treatment if perfect co-operation of the pa-

tient is secured. If pyelitis or hydronephrosis occur, the prognosis is unfavorable.

**Treatment:**—No physician should permit a case of simple gravel to continue from year to year, until occlusion of the ureter occurs, without making every effort to change all the conditions which conduce to the formation of gravel, to encourage the excretion of renal sand, and to relieve irritability of the renal pelvis. This is accomplished by a **change in the habits of life** of the patient. He should be forced to subsist exclusively upon a **vegetable diet** for a period of time, the character of which is decided by the physician from the results of the treatment. He should eat sparingly of all foods, should arbitrarily exclude wine, beer and other alcoholics, and tobacco and coffee, and should drink freely of **pure, fresh water**, or a carefully selected **mineral water** which contains calcium carbonate. It is the theory of certain foreign writers that the calcium in the system is readily freed from its union with the carbonyl radical, and in a nascent state unites with the acid phosphate, reducing the deuterophosphates, when the uric acid is readily dissolved by the protophosphates, which remain.

Medicinal agents which promote this result are small doses of **acetate of potassium**, with **triticum** or **epigea**, in the form of infusion. It is well to give the patient from four to eight ounces of an infusion of one of these last named substances regularly, at stated intervals, to which may be added a grain or two of the **potassium acetate** and two or three minims of **gelsemium**.

This may be alternated with an infusion of **marshmallows** when the backache increases, or with **eryngium**, to which a few drops of **macrotys** are added. I believe the **salts of lithia** are mildly effective in promoting this result. I prefer the benzoate usually, although the carbonate will be found of much efficacy in some cases. For twelve or fourteen years I have been in the habit of prescribing **piperazin** to overcome the uric acid tendency, and have found it a

valuable remedy. I have given it in from four to eight grain doses every four hours, in a glass of cold water.

An attack of renal colic must have prompt and immediate treatment. Temporizing measures should be avoided. **Hot baths** and **hot applications**, with a full, large dose of from five to ten drops of **gelsemium** to relieve spasm of the ureter, will be found of service, but usually it will be necessary to administer a **hypodermic of morphin**. Occasionally it will be necessary, the condition of the heart permitting, to **anesthetize** the patient with chloroform or ether. When relief from the pain is obtained, a course should be laid out for the patient similar to that just above described, to overcome the tendency to the formation of calculi, to prevent their future formation, and to rid the system of accumulated sand. I have observed where such a course was instituted abruptly that the washing out of the renal pelvis has resulted in the occurrence at short intervals of quite a number of attacks of renal colic, more or less severe in character, until the earthy sediment was no longer found in the urine, when complete relief was obtained.

Where the severe pain has produced shock or other constitutional symptoms, these must be overcome by the prompt use of **stimulants** or **tonic** remedies. An experienced physician, after having watched a patient, will soon be enabled to determine the presence of a stone in the kidney too large to pass the urethra, when no time should be lost, the conditions being favorable, in resorting to a **surgical operation** for its removal.

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## PERINEPHRITIC ABSCESS.

**Synonym:**—Perinephric abscess.

**Definition:**—Suppuration within the connective tissue which envelops the kidney.

**Etiology:**—The formation of a pus sac around the kidney may be due to consecutive inflammation of these tissues from nephritis, from pyelonephritis, or from suppurative

inflammation of the appendix or other intestinal inflammation; from spinal caries, from hepatic or splenic abscess, from pelvic cellulitis, and in women from abscess of the tubes or ovaries. It may occur from contiguous, malignant or tubercular disease, or as a result of septic infection, or from severe protracted infectious fevers. Only occasionally does it occur as a result of local injury, from falls, severe muscular strain, blows or contusions. In some cases a definite cause is not discoverable.

**Symptomatology:**—A dull, throbbing pain, increased by motion or jarring, will be located over the diseased area. There may be some bulging and fluctuation, or occasionally the symptoms may resemble those of psoas abscess. At other times the pain may be extreme, of a darting or shooting character, and may extend down the inside of the thigh, or the skin may become numb and somewhat anesthetic. Pressure between the crest of the ilium and the ribs will induce tenderness and increased pain, and at times the skin over the diseased part may be tender, swollen and red. The legs are flexed with the patient lying upon the back to reduce muscular tension. The presence of fever depends upon the degree of absorption. Usually there are rigors, with irregular temperature. In pronounced cases the pus becomes icorous or exceedingly fetid, resulting in hectic fever. Accidental rupture will induce septic inflammation of the parts into which the pus escapes.

**Diagnosis:**—Local tenderness and swelling or bulging, with the inflammation of the skin, occurring without the extreme pain of obstruction of the ureters, the urine being free from pus, will suggest the local character of the difficulty, especially if constitutional symptoms of pus infection are present. If the fluctuation is comparatively superficial, an exploring needle may be introduced.

**Prognosis:**—This depends upon the depth of the abscess and upon the constitution of the patient. If superficial, it may be readily evacuated and irrigated. If deep, severe constitutional symptoms may result before a perfect diag-

nosis is made, or it may burrow or rupture and escape into other parts and produce septic inflammation, under which circumstances the prognosis is unfavorable.

**Treatment:**—The constitutional symptoms must be promptly met as indicated. These must not be neglected for the surgical measures. As early as possible the abscess should be opened and the cavity evacuated and irrigated and free drainage instituted. Those agents recommended elsewhere to antagonize the development of pus and to antidote within the blood the influence of septic absorption must be administered freely and persistently. Iron tonics and other stimulating restoratives must be freely given.

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## RENAL CYST.

This condition may be congenital, or it may occur as the result of dissipation, or from causes obscure or unknown. Pathologically considered, cystic kidney of congenital origin is most picturesque. The condition is one in which cysts form in the structure of the kidney or on its surface. They may be single or multiple, and may vary greatly in size. The condition induces enlargement of the renal organs and usually interferes materially with their functional operation, although a few cases have been found post mortem where normal activity was present. During the course of chronic nephritis small cysts sometimes occur, which are of no cynical importance.

**Symptomatology:**—There are no characteristic symptoms until the cyst has developed and distends the abdominal cavity, unless in the growth of the cyst, renal disease with symptoms similar to those of chronic nephritis appears. In rare cases the function of the organ is suddenly suspended, resulting in an acute attack of uremia.

**Prognosis:**—Where complications exist, the prognosis is unfavorable. In rare cases no marked evidence of renal disease has been observed for years.

**Treatment:**—There are but few suggestions to be made in the **medical treatment** of the condition, and these are made with reference to the relief of pain and attending conditions. **Surgical measures** are usually advised for the removal of the diseased organ, if unilateral, as soon as the diagnosis is affirmed. If the renal secretion is comparatively normal and there is no marked impairment of health due to the condition, or no uremic symptoms, the operation should be postponed until urgency of symptoms makes it imperative.

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## MOVABLE KIDNEY.

**Synonyms:**—Dislocated kidney; floating kidney; wandering kidney.

**Definition:**—A condition in which the kidney is separated from its supports and is movable in the abdominal cavity by changes in the position of the patient or from exterior causes. A distinction is made by most writers between a movable kidney and a **floating kidney**. In the former case the kidney retains its main position behind the peritoneum, showing but slight lateral movement, the movement being upward or downward, the organ being sometimes distinctly outlined when crowded upward. When the organ falls so far forward as to draw with it the peritoneum, which envelops it, but permits the kidney to move freely laterally on its pedicle, which consists of the ureters and vessels as well as of the peritoneum, it is then described as floating kidney. The condition is almost invariably unilateral.

**Etiology:**—The condition occurs more frequently in females than in males, the proportion being at least seven to one. About the same proportion also exists in favor of the right kidney. It occurs more commonly in tall, slender women, those who have practiced tight lacing or who have been subject to undue muscular effort or to sudden falls.

Persistent high reaching or lifting has caused it also. In other cases no known cause may be attributed to its occurrence, as the symptoms have been present for a long time with but little inconvenience, and the condition is only accidentally diagnosed. It often appears after the first pregnancy, but sometimes does not appear until after multiple pregnancies. It may result from wasting disease, with extreme reduction of fat, or it may depend upon the development of abdominal tumors, which displace the organ. There seems to be in these patients inherent weakness of the supports or a laxness of muscular fiber. It is not uncommon among hysterical patients or neurasthenics, and the probable outcome may be a source of constant anxiety so great as to result in monomania.

**Symptomatology:**—The symptoms are largely subjective. The patient is **conscious** of some **moving object** in the side, there is a sensation of pressure and heaviness in the loins, with a dragging pain after physical exercise or prolonged walking, which is easily distinguished from that which occurs from uterine displacement. Occasionally there are sudden attacks of sharp, **colicky pain**, but this is rare. There may be only an aching sensation in the kidney. A common result is disorder of the gastrointestinal tract. It induces the various forms of **indigestion**, with slight nausea, and occasionally there is some **jaundice**, with **hepatic colic**. Usually there is **constipation**. There is often palpitation, **irregular heart action**, with feebleness, and in rare cases some edema of the ankles. The condition interferes very materially with the menstrual function. In rare cases there may be some torsion of the ureter, which results in renal **hemorrhage or pyuria**; or there may be an extreme quantity of the urates in the urine.

While the symptoms when present are very distressing, I have several patients yet under observation, in whom I diagnosed movable kidney many years ago, who have suffered but little inconvenience from the condition, and care but little about it. With these there was prescribed

a careful mode of life, and dietary measures were suggested.

**Diagnosis:**—Careful palpation where but little fat is present will determine the presence of the dislocated kidney below the ribs. Pressure will show that it is movable. It may be found elsewhere in the abdominal cavity, and may be easily moved. Changing the position of the patient causes the individual to plainly feel a change in the position of the kidney. Pressure upon the organ causes a sensation of nausea and discomfort very objectionable to the patient. If a thin patient lies prone upon the back, with the limbs flexed, with pressure made from above with the right hand downward, while the left hand is pressed upward in the lumbar region, the organ may be distinctly outlined. Steady pressure should be made with the right hand until the muscular rigidity is entirely overcome. Then if the patient, after a deep inspiration, exhales freely, the fingers passed down with the exhalation will overcome all resistance and may almost grasp the organ.

**Treatment:**—In mild cases no treatment is needed. The patient's mind must be freed from anxiety concerning the outcome of the condition by the positive assurance of its probable harmlessness. She should be careful to avoid muscular strain and overexertion, and if the symptoms are at any time aggravated the patient should spend some days quietly in bed. I have applied a compress or pad over the upper end of the kidney and over this a firm bandage, to be worn for stated periods or when the patient is obliged to exercise physically to any undue extent, with good results. These cases should avoid overeating as well as the accumulation of gas in the stomach or bowels, and constipation.

An operation for the relief of the condition has been satisfactory in a few cases. But usually the unpleasant features are not sufficient to make it necessary for the patient to submit to an operation.

## ANOMALIES OF SECRETION.

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### ANURIA.

**Definition:**—Absence of urine, from suppression or from complete failure on the part of the kidneys to secrete.

**Etiology:**—The condition arises from an occlusion of the renal vessels by a thrombus or an embolus, as the result of intense acute congestion, from cold, from local irritation or from the taking of irritating medicines, or poisons; from shock; from the administration of anesthetics, from severe surgical operations, from reflex irritation, as from nephrolithiasis or catheterization; from sepsis, especially from septic absorption after miscarriage or labor. It also occurs from the nephritis of scarlet fever, in the stage of collapse following yellow fever and cholera, and as a result of hysteria. A form of absence of urine in the bladder, which is occasionally classed as anuria, improperly, is due to the presence of a calculus in the ureter. This is one form of retention, the urine being retained in the kidney pelvis.

**Symptomatology:**—At first there are no symptoms. Occasionally twelve or eighteen hours will pass before the patient will notice that no urine has been voided. At that time there may be some backache, with mild nausea, and perhaps vertigo upon an attempt to rise or walk. Any fact that would arouse a suspicion that there was imperfect secretion of urine should cause the physician to introduce a catheter, when the absence of urine in the bladder would be confirmatory. In septic cases the nervous system becomes irritated very early, and as a result convulsions may appear abruptly before the symptoms have been regarded with suspicion. This may be followed by stupor, and ultimately profound coma; the temperature is usually subnormal, the pulse, at first rapid and hard, is later soft, rapid and feeble, and often irregular.

I have observed five cases of anuria, occurring from three

to fourteen days after confinement, or after miscarriage, which I have attributed to septic absorption. In no one of the cases was there evidence of nephritis prior to the expulsion of the contents of the womb. These exhibited a train of symptoms not different from those just described.

**Diagnosis:**—The condition may be suspected from the symptoms, but a positive confirmation is made only by the introduction of the catheter. Retention of the urine in the pelvis of the kidney, from sudden occlusion of the ureter, is accompanied with agonizing pain, and may be thus readily excluded.

**Prognosis:**—Whatever the cause, the condition is a most serious one, a very large percentage in general practice proving fatal. A full, immediate appreciation of the seriousness of the condition and the adoption of a most thorough and persistent course of treatment is essential to the saving of the life of the patient.

**Treatment:**—Conservative measures, a mild course of treatment while waiting for the kidneys to act, will prove fatal. The patient should be at once put into a **hot bath**, then dried, wrapped in warm blankets and put to bed; a compress wrung from **hot water** should be applied across the loins, and over this a rubber water bag which contains a pint of water as hot as can be borne, all air being excluded from the bag. This may be kept in place by a wide, firm towel as a bandage around the body. When the temperature of the compress approaches that of the body, it must be removed, and again applied as hot as can be borne. To the patient should be administered, from the first, three drops of specific **gelsemium** and one drop of specific **macrotys**, in water, every hour. If the macrotys headache appears, this remedy may be suspended for a few doses, and a mixture then prepared which contains, in four ounces of water, a dram of gelsemium, twenty drops of macrotys and three drams of **hydrangea**. This should be given every hour. This course has been satisfactory with me with most cases. In an occasional case I have persisted with the **hot applica-**

**tions** over the kidneys for from three to five days. I believe that more is accomplished by this course than is possible by any medicinal treatment alone. No medicine must be given internally which will in any way irritate the kidneys. The use of the potassium salts or the spirit of nitrous ether must be avoided.

Occasionally secretion from the skin should be sustained, if the heart will stand the depressing influence of the remedy, by the action of **jaborandi** or **pilocarpin**. Where the patient is **sthenic** and has been previously vigorous, one-fourth of a grain of **pilocarpin** may be given at the onset; but I have succeeded in my cases without this depressing remedy.

As soon as the kidneys begin to act, and even a little urine is excreted, as may be determined by catheterization, an infusion of **smartweed** or of **epigea** or **triticum** may be administered, but I do not at first advise the taking of large quantities of fluids. A dose of the sulphate of magnesium once or twice daily will keep the bowels free and will prevent the occurrence of dropsy.

### ALBUMINURIA.

**Definition:**—A condition in which serum albumin is found in the urine.

When the application of heat and nitric acid will reveal the presence of albumin in the urine, the condition is a pathological one. Albumin which may be supposed to be present, and is discoverable only by the careful use of delicate chemical tests, need have no attention.

**Etiology:**—The causes may be of two kinds: First, those conditions which produce some change in the minute structure of the kidney, by which the proper excretion is not performed and the albumin and serum globulin are permitted to escape; second, those conditions elsewhere within the system which act upon the heart or upon the circulation of the blood, either directly or through the central nervous system, and induce changes in blood pressure.

There may be, then, renal congestion, acute or chronic, active or passive; there may be acute or chronic nephritis; there may be conditions of toxemia, resulting from the influence of the specific poisons or from diphtheria, scarlet fever and other infectious diseases; blood changes which result from the influence of poisoning, and constitutional diseases, such as syphilis, scrofula, scurvy and leukemia. The presence of albumin during the progress of protracted fevers and during epilepsy or apoplexy is due largely to the changed conditions of blood pressure during the influence of the disease upon the circulatory apparatus. The presence of albumin after violent muscular exercise is due to the same condition, under entirely different circumstances. Pregnancy obstructs the circulation and influences the blood pressure within the kidneys.

The occurrence of albumin, associated with blood or pus, in the urine is by no means true albuminuria, as this albumin is precipitated directly from the serum of the blood or pus, and has not been separated in the functional operation of the renal epithelium. It is not impossible, however, that albumin may be so excreted and blood or pus be thrown into the urine in addition. It is difficult or well nigh impossible to determine the existence of both conditions at the same time.

A condition known as cyclic albuminuria, sometimes called paroxysmal albuminuria, is that in which the albumin appears at a regular time; it may be once or twice each day, or it may be on every second or third day. The albumin may appear regularly after each meal, or it may occur only after one meal, the same meal each day. It may be present while the patient is up and around during the day, and may be absent when in a recumbent position. The patient may be indulging in regular severe physical or mental exercise, which induces the presence of albumin at a given time each day. Under these circumstances there is usually at first no other change in the condition of the urine, and there is but a small quantity of albumin. At other times albumin may

appear in the urine after the taking of certain kinds of food, notably eggs, cheese, and highly seasoned food.

It has been my observation, where there is a sensitiveness to the conditions which induce the presence of albumin in the urine, that there is likely to be later in life some slowly developing change in the kidney structure, tending toward some form of chronic nephritis, which may ultimately be fully established.

Usually the quantity of albumin present depends upon the severity of the underlying condition or the intensity of the exciting cause. A notable exception, however, to this is in the case of chronic interstitial nephritis—the small red kidney or the contracting kidney, which is found late in life, usually after fifty-five years of age.

Disease of the heart, either acute or chronic, or circulatory conditions extreme in character, induced by the action of heart or circulatory stimulants, will cause the appearance of considerable quantity of albumin in the urine at certain times.

**Symptomatology:**—There are no symptoms independent of those of the underlying disease which will suggest the presence of albumin in the urine. Familiarity with the causes of this condition will suggest to the physician the necessity for an examination of the urine.

**Diagnosis:**—The determination of the presence of albumin in the urine is by no means difficult. There are certain simple infallible tests, to which we may readily resort. The presence of a sediment in the urine has no significance in determining the presence of albumin unless it be plainly that of blood or pus. A uric acid or phosphatic sediment or a sediment of the urates does not indicate the presence of albumin. The substance is more frequently present in clear, normally colored urine, with a specific gravity at or above the normal point. The albumin found in interstitial nephritis at that stage of the disease when there is an excretion of a very large amount of the watery

constituents of the urine, is present in very small quantity in colorless urine of low specific gravity.

When albumin is present from parenchymatous nephritis during early middle life, the urine is usually of high specific gravity, of clear, deep amber color, and the albumin is present in large quantity. It will precipitate upon the addition of the proper tests in a clear, white mass.

In preparing urine for the test, a specimen should be selected which is taken from the total quantity of urine voided in twenty-four hours, which has been collected in a perfectly clean vessel and kept in a cool place. The urine should be filtered, to separate it from all morphologic constituents and render it perfectly clear. The specific gravity and color and reaction should be noted. A test tube should be filled one-half full of urine, and heat should be applied at the top by a slight inclination of the tube. When boiled, there will be white, cloudy discoloration of the boiled portion of the urine, more or less dense in proportion to the amount of the precipitated substance. This cloud is composed either of phosphates, carbonates or of albumin. The addition of a few drops only of full-strength nitric acid will cause this cloud to become deeper and to break up into fragmentary particles or flakes, if it is albumin; if the cloud is composed of phosphates, it will immediately disappear *without effervescence*, and the urine become clear and usually darker in tint; if of the carbonates, it will clear up *with effervescence*. If it clears up, but with only slight effervescence, it is composed both of the carbonates and phosphates. The boiling of the top portion of the urine in the tube permits of a comparison to be made between the boiled urine and the natural urine.

This test for urine I have come to rely upon as the most practical of all of the tests for constant bedside use.

Heller's test, sometimes known also as the German test, requires considerable care and close observation. Into a clean test tube pour half of a dram of pure nitric acid. Allow one, two or three drops of the suspected urine to run down

the side of the inclined tube. It will not mix with the acid, but will float on the top. The action of the acid upon the coloring matter of the urine and upon its crystalline constituents will cause a stratum of a deep clear color to form on the top of the acid from the urine. This will vary in different cases, and if urea be present in excess, crystals may form. If albumin be present, a clear white zone is formed at the point of contact between the urine and the acid. This will disappear upon the addition of heat, as all albumin will dissolve in full strength nitric acid if heated.

The picric acid test of Johnson consists of adding a few drops of the saturated solution of picric acid to the urine, when a white albuminous cloud will be formed at the junction of the two fluids. There are several other tests which can be found in all works upon this subject, which may be studied with reference to confirming the presence of albumin suggested by these tests, or of determining the approximate quantity of albumin present. These need not be given here.

**Prognosis:**—The presence of albumin in the urine is always regarded as serious. Until recently it has long been the custom of careless physicians to put a short limit upon the life of the patient if albumin was discovered. It is now known that in those conditions where albumin is present without structural change of the kidneys the condition may be relieved by proper treatment and the albumin may permanently disappear from the urine. Where organic disease is present, the condition is always serious. The acute cases taken in hand promptly and treated according to modern methods are amenable to treatment. When the condition is due to disease of other organs, the prognosis depends upon the amenability of that disease to treatment.

**Treatment:**—In all cases the blood pressure should be regulated. If there is an undue strain upon the heart, this must be relieved; if there is a high degree of nervous tension, **sedatives** must be administered. The **bromids**, **gelsemium** and **cimicifuga** answer the purpose with me in more

cases than any other single remedies. I have found it a good plan, when the specific gravity of the urine is constantly high, with a precipitation of the urates or phosphates, or with an excess of urea in the urine (and I have found albumin present under these circumstances very many times) to reduce the specific gravity of the urine and to regulate the quantity of these substances by a regulation of the diet and by proper constitutional treatment. Usually I exclude all alcoholics and tobacco, as well as tea and coffee, and insist upon the patient drinking freely of water between meals to the extent of from two to four quarts during each day. Milk only is drunk at meal time. I then put the patient on a strict non-nitrogenous diet and give him a grain of **potassium acetate** every two hours with a minim each of specific **macrotys** and **gelsemium**. Often the albumin disappears with the reduction of the specific gravity of the urine. I have observed albumin present with a greasy appearance of the urine in fleshy patients of plethoric habit, where there was fault of digestion, especially where I had reason to suspect an imperfect digestion of fats. The albumin disappears when the conditions are corrected.

Attention to the diet in all cases is important. The course advised above is usually applicable for a short period. The patient may then be allowed to eat sparingly of meat, and later to eat eggs freely and drink an abundance of skimmed milk. In some cases of chronic kidney disease I have persisted in the use of eggs as the principle article of diet with good results, care being taken that the albumin of the eggs was properly digested. Tea, coffee and tobacco should be allowed only in the judgment of the physician. The patient must form a habit of **drinking** more freely of **water**, and in the largest quantities, after the food is digested, and in time to permit it to pass from the stomach before the next meal. It is of advantage to these patients to drink a full quantity of water, either hot or cold as they may choose,

before they arise in the morning, lying quietly on the right side from half of an hour to an hour after its ingestion.

### HEMATURIA.

**Synonym:**—Bloody urine.

**Definition:**—A condition in which the urine when passed contains blood.

**Etiology:**—The condition follows extreme congestion and acute inflammation. It occurs during the course of nephritis and pyelitis and from the presence of an embolus or a calculus. Tubercular degeneration or malignant disease of the kidneys is a common cause. It occurs from the presence of parasites, from the taking of large doses of irritating remedies which must be excreted through the kidneys, and from severe injuries, as a blow over the kidneys or an injury from falling, or severe protracted muscular exercise, or from violent muscular strain, or from a gunshot or other penetrating wound of the kidney.

It may occur also from injuries to the bladder, from the presence of stones, tumor, ulceration, or the rupture of varicose veins; also from disease of the bladder, notably from acute and chronic cystitis. The condition occurs more frequently in males than in females, and is most common between the ages of twenty-five and forty years.

The disease results also from acute infectious disorders, and seems to be more common in hot climates than in temperate localities. It occurs in chronic gout, in leukemia and scurvy. It appears at times in the form of malarial hematuria, or with purpura, or in hemolithiasis.

**Symptomatology:**—In acute cases, with the appearance of the hemorrhage, there is a flash of heat over the body; there is a sensation of heaviness or weight in the loins, some faintness, and perhaps slight nausea, with an almost constant desire to urinate. The urine will contain blood from the first; it may be uniformly diffused or it may be in the form of clots, the urine itself being but slightly dis-

colored, or both conditions may be present. When caused by a fall or by other local injury, the patient will become very weak and there will be severe pain down the course of the ureters and in the genital organs.

In cases that are more chronic in character the urine is uniformly discolored, and in cases where but little blood is lost, the urine may be of a smoky hue and have but little if any sediment.

**Diagnosis:**—Occasionally the presence of blood will be determined only by the proper reagent; in other cases there may be so large a quantity as to nearly fill the bladder with a single clot.

It becomes necessary at times to catheterize the ureters to determine whether one or both kidneys are affected. When hemorrhage is undoubtedly from these organs, the urine is uniformly discolored and the clots assume the form of casts of the ureters. When from the bladder, the first of the urine which passes may be quite clear, to be followed by clots which temporarily block the urethra, and are expelled by urine which is more thoroughly mixed with blood.

**Treatment:**—If possible, the cause of the hemorrhage must be at once determined, but no time should be lost if the condition of the patient is at all serious. The patient should lie quietly in bed, and should have hot applications applied to the feet. If the stomach will receive it well, he should have thirty drops of the compound tincture of the oils of **erigeron** and **cinnamon**, made by dissolving one dram each of these oils in fourteen drams of alcohol. This should be administered in a tablespoonful of water and repeated in a half an hour if necessary. An hour later the patient should have ten grains of **gallic acid** in **cinnamon water**, and this should be repeated every two hours as long as a hemostatic is needed. Other agents which are available under different circumstances, and should be selected with reference to the conditions present, are **ergot**, **thuja**, **hydrastis canadensis**; as an auxiliary, **collinsonia**, **hamamelis**, in full doses, and in extreme cases the **acetate of lead**, which may be used for

a short time only. The underlying condition must be treated with reference to its complete cure. This will be found extremely difficult in some of the obscure cases, or where tuberculosis is present. Other remedies of much service are **aromatic sulphuric acid**, **capsella** and **geranium maculatum**. At other times, when the pulse is full, bounding and strong, **veratrum viride** in two or three minim doses may be given every hour for a few hours.

### HEMOGLOBINURIA.

**Definition:**—This disorder is one in which from previous disease, or from the taking of poisons or from other cause, there is a dissolution of the red corpuscles of the blood, the pigments of which, especially the hemoglobin, being eliminated through the kidneys in the urine. There are no blood cells in the urine, as in hematuria, but disseminated blood coloring matter only.

**Etiology:**—The condition most commonly results from the direct influence of poisons, such as carbonic acid gas, naphtha and other petroleum vapors, or from phosphorus, arseniuretted hydrogen, potassium chlorate, pyrogallic acid and turpentine, and from poisonous mushrooms. I have frequently called the attention of my students to the influence of the coal tar synthetic remedies, when used persistently, in inducing corpuscular changes in the blood which result in the formation of methemoglobin. The anemia which follows the protracted use of these remedies is attributed to the disease, and observation is not always made to determine the number of red blood corpuscles or the presence of the pigments in the urine. Hemoglobinuria also follows the infectious fevers, very commonly malarial fever and other cachectic conditions, and severe burns. It is induced by the toxins of decomposing food, and those found in canned meats and canned fruits, cheese, old milk and ice-cream.

The condition occurs also in a form known as paroxysmal hemoglobinuria, when without apparent cause persons in

previous good health will pass quantities of hemoglobin and other blood pigments in the urine for a short period. This is variously attributed to the results of exposure to cold or violent physical exertion, or to the presence of syphilis, or as a warning of the approach of Renaud's disease. Hare relates a case of one of his patients who brought on repeated attacks of hemoglobinuria from the inhalation of the vapor of gasoline from his automobile.

**Symptomatology:**—The symptoms are those of the condition which induces it. Those symptoms which are common to most cases are **malaise** or **slight chill** and **mild fever**, aching or **pain in the loins**, slight **nausea** or **vomiting** with **anorexia**, and perhaps **diarrhea**.

The urine may be slightly increased in quantity, is passed at more frequent intervals, and may induce pain in the passing. In mild cases the color is dark reddish-brown, and clear, with but little if any sediment on standing, until decomposition of the urine occurs. In others there is turbidity with the same deep reddish-brown or smoky color, inclining to black, and there is an immediate deposit of some amount of sediment, which later becomes heavy and is quite black in color, unless mixed with pus, when present with pyuria.

**Diagnosis:**—The appearance of the urine is suggestive, but not positive. The urine is acid in reaction, and but few if any corpuscles appear under the microscope. Small brownish flakes of disintegrated hemoglobin are found. In the blood examination there is a reduction of the red corpuscles and the serum is slightly discolored.

**Treatment:**—The conditions which act as the cause of hemoglobinuria must all be carefully and persistently treated according to the indications. All causes should be removed and any poisons yet within the system should be antidoted. The patient should be put to bed and **external warmth** applied. If fever is present, it must not be overlooked. Free action of the skin should be induced and the kidneys may be slightly stimulated.

The use of the **astringents** named under hematuria is in-

licated, but similar marked results will not be apparent. In the final restoration of the patients those **tonics** should be given, with carefully selected food, which **are calculated** to restore the original integrity of the blood.

### **PYURIA.**

**Definition:**—A condition in which the urine, when passed, contains pus.

**Etiology:**—Inflammatory disease of the structures of the urinary tract, especially that of a chronic character, may result in the formation of pus, which may be excreted through the urine. Abscesses forming in the adjacent structures may discharge pus into the urinary tract.

**Symptomatology:**—A chronic catarrhal condition of the lining of the kidneys is known as pyelitis. If the structure of the kidney itself be involved, which is indicated by the presence of casts in the urine, this induces a condition known as pyelonephritis. In either case there may be a complication from the presence of a calculus or from tuberculosis, which causes the disease to become chronic and which materially interferes with a permanent cure. Occasionally an abscess may form in some part of the kidney structure which opens into the pelvis, and through this there may be a more or less continuous discharge of pus. While this does not necessarily induce disease in the mucous lining of the pelvis, it is very apt to do so. This condition usually involves only one kidney, although it is not impossible that both kidneys may be similarly affected.

Pyuria sometimes occurs as the result of inflammation of the bladder, which extends upward through the ureter to one or both of the kidneys. This is especially likely to be the case when cystic inflammation results from gonorrhoeal infection. The urine is alkaline in reaction in this disease, usually has a low specific gravity, is free in quantity, but contains a heavy, white, gelatinous sediment. Occasionally, when there is some ulceration present, blood will be found

mixed with the pus. When the inflammation is located in the bladder walls alone, the same conditions obtain, as far as the appearance of the urine is concerned, as in the above named case, but there is apt to be more of a separation between the pus and the urine, and a quite distinctive feature is the presence of mucus in the urine, sometimes in large quantity, or muco-pus, stringy and tenacious in character and quite offensive. The urine is alkaline and often very irritating to the urethra when passed.

Catheterization of the ureters will determine that the urine flows clear from the kidneys. When the pus is formed in the urethra alone, there will be tenderness on pressure, pain in the passage of urine, and some obstruction to the flow of the urine at the start, when it will be found that a quantity of pus has passed in advance of the urine. This condition seldom occurs except as a result of gonorrhœa.

When pyuria occurs from the rupture of a contiguous abscess into the urinary passages, there will have been no previous history of the presence of pus in the urine, in the acute cases, and the pus will appear abruptly. After being present for a few hours, or perhaps from one to two days, it may disappear as abruptly as it came. In other cases it may decrease gradually for two or three days before its entire disappearance. There will be a history of other inflammatory disease or there will be found an area of tenderness in conjunction with some of the contiguous organs which will lead to the suspicion of an inflammation and a tendency toward pus formation.

**Diagnosis:**—The presence of a clear, white sediment in urine which has been previously cloudy will point to pus. The examination of a small quantity under a low-power glass will show the large, somewhat rough, irregularly shaped cells. Both phosphaturia and oxaluria will present a white sediment, but these can be distinguished by microscopical or proper chemical examination. A quick test of urine for pus can be made by means of a solution of potassium hydrate; the ordinary liquor potassæ will be suffi-

cient. If a quantity of this be added to the sediment from which the clear urine has been decanted, a gelatinous mass will result. As pus serum contains albumin, urine containing pus will therefore always contain albumin, which is with difficulty distinguished from albumin of albuminuria.

**Treatment:**—I have obtained excellent results in the treatment of this condition by the use of the **tincture of the chlorid of iron**. There are many indications that point to its use. One of my patients, a very severe case, received no benefit from any treatment until he stopped the use of tobacco, when the pus ceased rather abruptly. After two years it returned immediately he began to smoke, and stopped again when the tobacco was finally discontinued permanently. The use of **echinacea** with **hydrastis canadensis**, or the two remedies with **hamamelis**, continued for a long period, will correct the condition. Good results will follow the use of **triticum**, **epigea repens**, **marshmallows** or **hamamelis**. If the pus is mixed with blood, I should give the indicated remedy in conjunction with **gallic acid** or **thuja**.

In cases of purulent cystitis, an occasional irrigation of the bladder, conducted with extreme care as to asepsis, will be necessary at the onset. Later, irrigation should be avoided, except when imperative. A solution of **boric acid**, or a few drops of extract of **pinus canadensis**, or **hydrastis**, or a distilled extract of **witch hazel** may be used. I have obtained the best of results in those cases where the urine has a fetid, acrid smell and an alkaline reaction, from the use of **benzoic acid** four grains, **sodium borate** six grains, in half an ounce of **cinnamon water**, given every two hours. The results from this are immediate relief from pain and tenesmus, an increase in the flow of the watery portion of the urine, a marked decrease in the quantity of pus and mucus and a satisfactory abatement of the symptoms. If one dram of **thuja** be added to three drams of **chimaphila**, this mixture may be given in doses of fifteen drops every two hours in a tablespoonful of cinnamon water, with fine

results. **Elaterium** in small doses is suggested when there is teasing, irritating tenesmus. Ten drops of the specific medicine are added to four ounces of water and given in teaspoonful doses every two hours. Specific **cocklebur** and specific **red onion** are indicated by irritation from the presence of sand or gravel in the sediment, with a constant or frequent desire to urinate. Much attention should be paid to diet with these patients. It should be bland, non-irritating and readily digestible.

### GLYCOSURIA.

It is so seldom in general practice that sugar is found in the urine, other than in diabetes mellitus, that reference to its probable occurrence only will be made here. The subject is fully treated under the above title. Sugar is normally present in small quantity in the blood, and the assertion has been made that it is present in normal urine. This has been discussed pro and con. There is much doubt as to whether it is so found except as the result of disease. Independent of diabetes it is found in those forms of chronic nervous disease which involve the medulla oblongata and the floor of the fourth ventricle. It occurs from intense mental activity, violent grief and anxiety, and during apoplexy, epilepsy, and as the result of cerebro-spinal meningitis; also from direct injury to the spinal cord or brain. It may occur in an intermittent or paroxysmal form in cholera, yellow fever, severe malarial fevers, typhus and typhoid; in the eruptive fevers and diphtheria, whooping cough, chronic bronchitis and cirrhosis of the liver.

Certain medicinal agents induce it, also, such as alcohol, hydrocyanic acid, turpentine, mercury, arsenic, salicylic acid; the most of the coal tar derivatives, morphin, chloral hydrate, atropin and others.

**Diagnosis:**—The diagnosis is made in the same manner as described under diabetes mellitus. When albumin is found present in the urine, it should be precipitated before the tests are made.

**Prognosis:**—The prognosis is good in transient cases, the condition disappearing with the removal of the cause.

**Treatment:**—In the treatment, each condition which acts as a cause must have careful attention in the lines elsewhere prescribed. The patient should have **out of door exercise** when the strength permits, and should be happily environed. His diet should be largely of animal food, with the exception of those which contain sugar. The medicinal treatment will be largely symptomatic. Of medicinal agents **hydrastis, conium maculatum** and **opium** have been in common use; iron will always be of some service. I have obtained better results from **syzygium jambolanum** than from any other one remedy. I have given from five to fifteen grains of the powdered seeds every two hours for long periods. **Bromid of arsenic** will be found a good remedy also. Goss recommended **rhus aromatic**. I have not had success with it, but it deserves further trial in a condition like this, in which our medicinal resources are limited.

### CHYLURIA.

**Definition:**—A condition of milky urine, due to the presence of chyle or fat in the urine.

**Etiology:**—The condition is more common in tropical climates, and is due usually to parasitic origin. However, it is often caused by other conditions. That which obstructs the larger branches of the thoracic duct or injures the lymphatics, or results in a rupture of the renal lymph vessels, may act as the cause. It may occur during pregnancy. It is caused by the presence of the **filaria sanguinis hominis**.

**Symptomatology:**—The appearance of the urine is the first symptom. The urine is turbid and of a milky hue. Upon standing, a layer of fat particles rises to the surface, while a sediment usually forms which contains fibrin. This usually coagulates.

**Diagnosis:**—An analysis of the urine will show the pres-

ence of a small quantity of albumin, and in parasitic cases there may be some blood. If the urine be thoroughly shaken with a small quantity of ether, the fat particles dissolve and the urine becomes clear. Microscopically examined, the appearance is that of milk, and there are innumerable granules and fat cells. Careful examination must be made of the blood for the filariæ, which may be also found in the urine when hematuria co-exists.

**Prognosis:**—If the patient can be put into a normal condition of health, the chyle may disappear from the urine, but usually while the condition does not threaten the life of the patient, a prognosis as to a permanent cure is unfavorable.

**Treatment:**—The condition of the gastrointestinal tract must receive first attention. The stomach must digest and readily appropriate the food, which should be taken at first in rather limited quantity. **Hydrastis, nux vomica, iron and quinin** are among the available measures. Derangements of the liver must be met with small doses of **iris** or **leptandra**. Any evidence of a depraved condition of the blood must be met with the most direct alteratives, such as **echinacea, berberis, stillingia**, and occasionally with the **potassium iodid**.

### OXALURIA.

**Definition:**—The persistent appearance in the urine of crystals of calcium oxalate in excess.

**Etiology:**—It is not uncommon to find oxalic acid represented by the calcium salt in the urine of patients in comparatively good health, but an excess may be due to faults of the central nervous system, or of digestion, especially where there is a tendency to achlorhydria. It occurs also in catarrhal jaundice, where there is mental depression, with neurasthenia, or gout, rheumatism, cancer or tuberculosis, and occasionally during diabetes. In the imperfect digestion of certain foods or incorrect metabolism it will appear, and as the result of the eating of certain fruits

and vegetables, especially pears, apples, cabbage, rhubarb, asparagus, tomatoes, cauliflower, spinach, beets and carrots.

**Symptomatology:**—The patient is in a condition of ill health with lowered vitality. There is an indisposition to physical exercise, a tendency to despondency, and an inclination to view his condition with seriousness; there is nervous irritability, forgetfulness, with constant worry. Neurasthenia with all its concomitant symptoms and hypochondria are not uncommon.

The appetite fails, the strength abates, there are digestive disturbances which ultimately become chronic, and there is stubborn chronic constipation. The skin is dry, harsh, irritable or sensitive. There is muscular soreness, weight, aching and pain in the back, with frequency of urination with burning or scalding sensation and sharp shooting pains in the urethra.

**Diagnosis:**—This depends less upon the symptoms of disease than upon the presence of the characteristic crystals. The substance is kept in solution normally by the sodium phosphate, and in the absence of that phosphate may become precipitated when not in excess.

**Prognosis:**—The prognosis in all cases is favorable. The underlying conditions are usually tractable and the condition itself is amenable to treatment.

**Treatment:**—The stomach and digestion must have first attention, and the nervous system must be restored. The patient should be separated from all causes of irritability and worry, and should spend much time in the open air. He should avoid those substances which assist in the production of the oxalates, and should **drink** an **abundance of water**, as free elimination is important. Alcoholics and tea and coffee must be rigidly excluded.

The use of **hydrastis**, **nux vomica** and **strychnin**, **quinin** and **iron** will be serviceable. An artificial digestive should be selected according to the food taken, and should be taken with every meal. The use of **nitric acid** or **nitro-hydrochloric acid** in from from five to ten minim doses, **taken in**

a glass of water half an hour before meals and at bedtime, will serve an excellent purpose in nearly all cases, in preventing the formation of the salt, as well as in promoting its removal.

### PHOSPHATURIA.

**Definition:**—This condition, incorrectly termed phosphatic diabetes, when much of the watery portion of the urine is passed, depends upon the persistent presence of an excess of the phosphates in the urine.

**Etiology:**—In an observation of twenty-five years I have looked for this condition when there was persistent nervous strain which tended to produce nervous prostration, either local or general. I have observed it in those conditions of neurotic type where there was constant nervous irritation and an undue degree of nervous excitability or irritability. It is also present where with insufficient nerve force there must be persistent physical exercise or an overwrought muscular system from constant, unremitting toil. It is present also in certain faults of the digestion, in acute atrophy of the liver, and in the presence of anemia, tuberculosis, cancer, or any severe wasting disease of a chronic character.

Estimating the total quantity of phosphates passed in twenty-four hours with some cases suffering from polyuria or from diabetes mellitus, it will be found that they are passing an inordinate quantity of these salts. It is this form of the disease that is termed phosphatic diabetes, and occasionally it will be found that glycosuria follows this condition.

The condition also follows those conditions which induce alkalinity of the urine, as is found present in chronic cystitis, where there are vesical calculi of the triple phosphates; where the urine has been retained and decomposed in the bladder, and in some cases of paralysis.

**Symptomatology:**—There are no symptoms of disease referable directly to this condition. The symptoms are

those of the constitutional or local conditions which give rise to this.

**Diagnosis:**—The diagnosis depends upon the presence of the phosphates in the urine; these will occasionally precipitate in crystals almost perceptible to the naked eye, when they cause a great deal of backache and much urinary irritation.

There may be also at the same time small renal or vesical calculi, composed of the phosphates, which in their turn may produce sufficient irritation to cause cystic inflammation, and sometimes pyuria. Under these circumstances the urine is alkaline. When the urine is strongly acid, the phosphates remain in solution, unless they be present in excessive quantity. When in solution the urine is usually clear, of normal amber color, and with varying specific gravity. Upon boiling a specimen of this urine, the phosphates readily precipitate, even when the acid reaction is quite pronounced. To obtain a total precipitation, however, it is necessary to add some alkaline reagent, as ammonium, potassium, or calcium hydrate. Under a low-power microscope, the crystals will be readily distinguished with their characteristic peculiarities.

**Treatment:**—These patients must have **rest**, either physical or mental, or both. This is one of the first essentials. The condition of the stomach and appropriative organs must be made as nearly perfect as possible, in order that the patient may become nourished and physically restored. **Nerve tonics** should be then given which will restore the nervous system and will supply the draught of phosphates which has been made upon it. I have had excellent results from the administration of **free phosphorus** and the compound syrup of the **phosphates**. The **glycerophosphates** have also served an excellent purpose in some cases. When anemia is present, **iron** should be given in some easily assimilable form. Treatment calculated to prevent the phosphates from being excreted by the kidneys is based on an erroneous theory. The phosphates must be supplied to the system

until the nervous tone is sufficient to control or inhibit the excessive output. I have controlled the backache with acetate of potassium, cimicifuga and gelsemium, as named, in lithemia. Benzoic acid, lithium or ammonium benzoate are efficient remedies, given in from five to fifteen grain doses four times daily. Where there is a tendency to extreme alkalinity of the urine, this must be corrected by benzoic acid and sodium borate, and occasionally irrigation of the bladder will be demanded. Five drops of dilute nitric acid four times daily will also increase the acidity of the urine and thus facilitate the retaining of the phosphates in solution until they are passed, which is greatly to be desired.

# Diseases of the Bladder.

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## ACUTE CYSTITIS.

**Synonym:**—Acute inflammation of the bladder.

**Definition:**—An acute inflammation of the mucous membrane lining the walls of the urinary bladder.

**Etiology:**—As common as any of the usual causes are cold and atmospheric changes in inducing this condition. Sudden exposure to severe cold when the excretory glands, especially those of the skin, are in an active condition, prolonged exposure to cold, inducing a loss of body temperature and chilled condition of the body; holding of the urine when there is a strong desire but no opportunity to pass it at such a time, and cold often increases the desire to a marked degree; also distention of the bladder from neglect to evacuate it at any time, thus stretching the walls, when decomposition of the urine is taking place, causes it. This is especially true when there is an inclination to prostatic irritation in elderly men, or when that irritation is increased from some immediate local cause, as horseback riding when not accustomed to it, or prolonged walking, or prolonged muscular strain.

A fall, striking upon the perineum, has induced cystitis, or a blow over the abdomen, or over the pubic bone, or other direct injury. It is caused by introduction of the sound, and frequently by carelessness in introduction of the catheter, either from direct injury or from septic infection, or by operations on the urethra, as the dilatation or cutting of a stricture. It follows labor from pressure or injury from the passage of the fetal head, and from subse-

quent septic infection of the bladder. This results from the lack of cleanliness or from the nurse's carelessness in using the catheter.

Septic infection is a very common cause, decomposing urine, the causes just named from the use of septic instruments in urethral disease or in disease of the prostate, and, in one of my patients, from carelessness in removing a small urethral caruncle, in an elderly woman.

The most common, severe and intractable of all septic causes is that of gonorrhœal infection, especially in men, and specific or non-specific leucorrhœa in women. The disease also results from infection during the course of infectious diseases, especially the eruptive fevers, diphtheria and tuberculosis. Local inflammations, as orchitis, ovaritis, salpingitis, peritonitis, pelvic cellulitis, enteritis or proctitis, may extend to and involve the bladder, and, as has been stated, it may readily extend directly from the various forms of kidney disease and from ureteritis and from specific or non-specific urethritis. Local abscesses or tumors are possible causes also. The use of irritating drugs as medicines, and working among irritating chemicals, may induce the disease.

**Symptomatology:**—The symptoms are usually unmistakable. There is a **chill**, usually quite pronounced, followed by **fever**, with a temperature of about 102.5° F.; the **pulse** is **hard, sharp** and **quick**. There is seldom any vomiting. Immediately with the chill there is a frequent **desire to urinate**, which is accompanied with **tenesmus** and irritation, with **sharp, cutting** and **burning pain**. There is soreness also from the bladder, which is localized first above the pubes, and also in the perineum. The pain extends to the testicles and to the head of the penis in the male, and in all patients to the back—the loins and sacrum—and into the thighs. It is increased by pressure above the pubes, and when the urine is retained for even a few moments. The urine is passed with increasing irritation, and as the dis-

ease progresses the tenesmus extends to the rectum and strangury occasionally results.

Usually the **urine is decreased in quantity**, is even quite scanty, and of high **specific gravity** and of **acid reaction**, but this is not invariable. In septic cases I have observed an immediate increase of pale ammoniacal urine, very acrid and irritating. There may be more or less **blood** in the urine, and often a considerable quantity of **mucus**. Occasionally the sediment is heavy, dark and fetid, especially on standing. It is composed of mucus, blood, pus and mucous shreds, with urates and perhaps the triple phosphates. Later in the progress of a severe case, there may be **septic infection** from direct absorption of these products when exfoliation of the mucous lining of the bladder has taken place, and nephritis with urinary suppression and marked uremic symptoms may appear. This absorption may induce constitutional symptoms resembling those of typhoid fever.

The course of the disease is from ten to fourteen days. It may terminate favorably, it may assume a chronic form, or it may extend to contiguous parts and result in abscess. The acute form of this disease may occasionally appear as an exacerbation during the progress of the chronic form of the disorder.

**Diagnosis:**—There will be no difficulty in diagnosis. The occurrence in an acute form of symptoms referable directly to the bladder, especially the pain and urinary irritation with frequency of urination, and tenesmus, are pathognomonic. The condition is confirmed by the rather abrupt appearance of marked urinary changes, especially if the urine contains mucus in large quantity and some blood. There is but little albumin in the urine, unless from the blood and pus which may be present. In acute nephritis there is scanty urine, which is highly albuminous, even when there is no sediment. While there may be no extreme pain in the back and loins in nephritis with urinary irritation, the extreme local pain and tenesmus of cystitis cannot be mistaken.

**Prognosis:**—Well-managed cases, without serious complications, will usually terminate favorably in from four to eight days. Severe cases will last from ten days to two or even three weeks. Death seldom results from the disease. Kidney complications are serious.

**Treatment:**—Because of the liability to extension of the disease to the kidneys, especially when caused by gonorrhœal or other septic infection, and because of the liability to other serious complications and to the possibility of its assuming a sub-acute or chronic form, the treatment must not be conservative. There must be no waiting nor temporizing. **Positive, direct and efficient measures** must be immediately adopted, and the physician must know that his orders will be executed in detail.

At the onset the patient should have a **hot sitz bath**, which should be prolonged as long as no discomfort arises from it. This immediately gives relief to the pain and urinary teasing, as well as encouraging elimination from the skin and serving as a prompt revulsive or derivative. If the bowels are constipated, they should be thoroughly flushed with a **hot flush**, and later a mild **saline laxative** may be given. The patient should be put to bed and kept in a mild perspiration. **Hot applications** should be applied over the pubes and kept hot for six or eight hours. The application of **libradol** to the lower abdomen and to the perineum will be of much service, applied at the onset, but this may well follow the hot applications.

For the fever, **aconite** should be given, but this should be combined with full doses of **gelsemium**, for its influence on the nerve distribution in the mucous membrane of the bladder, and consequently upon the irritation and local congestion, both of which it promptly relieves. One of my favorite prescriptions is the following:

℞ Tr. Aconite .....	m x
Specific Gelsemium .....	ʒ iss
Specific Hydrangea .....	ʒ v
Cinnamon Water .....	q. s. ad ʒ iv

Mix. A teaspoonful every hour.

When the physiologic ptosis or tightness of breathing occurs from the action of the gelsemium, it may be suspended for one or two doses, or half doses may be given for a few hours, when it can be slowly increased again to the full dose. As the symptoms abate, less of this agent may be given. When the fever declines, the aconite should be replaced by half of a dram of **macrotys** in the four ounce mixture with the other constituents. If the urine is concentrated and of acid reaction, mild, soothing diuretic remedies containing a large quantity of water, as infusions of **althea**, **marshmallows** or **epigea**, should be given to reduce the specific gravity of the urine and to retain irritating substances in solution. An occasional dose of twenty grains of the **sodium bicarbonate** may be administered, or the **effervescing carbonate** or **citrate of lithium** may be given for neutralization of the acids.

Such a course is usually very prompt in allaying all the symptoms, unless the urine is alkaline and contains a large quantity of mucus. To correct this at the first (and there is but little benefit from other specific treatment until this is corrected) I use the following prescription:

℞ Benzoic Acid ..... ʒ iv  
 Sodium Borate ..... ʒ vi  
 Cinnamon Water ..... q. s. ad ʒ viii

Mix. From a dessertspoonful to a tablespoonful every two hours until the acute symptoms of painful urination and tenesmus abate. This is an evidence of the disappearance of the alkalinity and of an abatement in the quantity of the mucus. I know of no combination more prompt and satisfactory in its influence upon this group of symptoms than this.

Our specific remedies will meet many indications promptly, but the conditions of concentrated, irritating urine or of extreme acidity and alkalinity, or of excess of mucus, must be considered and may have to be overcome with special measures as suggested. Among the specific remedies are the following:

**Hydrangea:** Quick, sharp, cutting urethral pain.

**Agrimony:** Deep-seated, sharp pain, with foul-smelling urine and excessive outpour of mucus.

**Cantharides:** In minute doses for sharp pain and tenesmus.

**Apis:** Burning, scalding pain, with tenesmus, especially if there is any local edema.

**Pichi:** Excess of mucus and pus, with tendency for the disease to assume a chronic form.

**Chimaphila** and **thuja** will control the pain and distress in urinating in the sub-acute forms of the disease often more satisfactorily than other remedies.

**Eryngium aquaticum** will also relieve tenesmus and pain and exercise a soothing influence over the mucous membranes.

Irrigation of the bladder is usually avoided in the acute cases, unless there be a very large quantity of decomposed residuary urine with heavy sediment and much pus in the later stages. Then two or three washings will usually suffice, but they may be repeated, if the sediment persists.

All complications must have immediate treatment; extension of the disease to the kidneys must be anticipated and met with the indicated remedies. Uremic symptoms or septic infection must be treated with **echinacea** or **calcium sulphid** and with proper eliminatives.

Morphin should be avoided, as it is apt to increase local conditions. **Opium** or **belladonna** in a suppository may be introduced into the rectum for pain, but I have almost invariably succeeded in controlling pain by the specific measures suggested.

## CHRONIC CYSTITIS.

**Synonym:**—Chronic inflammation of the bladder.

**Definition:**—A condition of chronic inflammation of the mucous membrane of the walls of the bladder, involving also in extreme cases, to a greater or less extent, the submucosa and the muscular structures, often making serious inroads on the vitality of the patient.

**Etiology:**—The disease seldom occurs as a primary disorder. In cases of gravel where there is renal sand in the bladder for a long period, there is constantly increasing irritation, from which this disease slowly develops. This occurs in lithemia also, as well as where there are phosphates or oxalates in the urine, or a single stone may slowly form in the bladder. A common cause in male patients is stricture or other occlusion of the urethra, the prolonged influence of a protracted gonorrhoea, prostatic irritation, and ultimate enlargement, especially in aged males. These and other causes prevent complete evacuation of the bladder, and the retained urine—residual urine—becomes decomposed and increasingly irritating and infectious.

The disease results from pressure from external growths or tumors, from the influences of a chronically displaced uterus, from the influence of chronic inflammation in contiguous parts or organs, from neoplasms, or tubercular growths; also, I think, from persistency of an extreme acidity or alkalinity of the urine without necessarily any precipitates. It may follow soon after an acute attack, or there may be marked improvement, at first, in the acute symptoms, with almost entire relief, to be followed later by the gradual development of the symptoms of the chronic disorder. It may develop slowly after acute infectious diseases without an acute attack having occurred.

**Symptomatology:**—In cases which follow sooner or later after an acute attack, the symptoms are a continuation, in part at least, of those which have been previously observed. They need not be reiterated. In other cases the first symp-

toms are at first **slight urinary irritation**, which slowly increases, with failure of the expulsive power of the bladder and urethra. These slowly increase until frequency of urination and **tenesmus** become very annoying.

At first there are no marked changes in the urine from that which existed for some time subsequently, except a slowly increasing quantity of mucus. Later there is a heavy **sediment** of blood, pus, mucus and tissue debris. The difficulty and pain of urination slowly increase until the patient, in extreme cases, or where ulceration occurs, is in agony at each urination and is weakened and prostrated by the effort. This causes the patient to resort to **catheterization**, and if he learns to introduce the catheter himself he soon refuses to endeavor to evacuate the bladder normally, and later evacuation without the catheter becomes impossible. In other cases obstruction from local tumor or greatly enlarged prostate or stricture, make urination impossible and makes the catheter an immediate necessity. From the presence of pus and blood in the urine, and occasionally from the influence of the prolonged disease upon the kidneys, there is usually a much larger quantity of albumin in the urine in chronic than in acute cases.

The impression of this disease upon the constitution is very marked. There is **failure** of the **appetite** and of digestion; **constipation**, and other defective excretion; **the skin** becomes dry and harsh, and often there are eruptions from imperfect general elimination. There is increasing disinclination to muscular exercise; the patient becomes **morose** and **irritable**, and his countenance has a constant appearance of distress. **Emaciation** and loss of strength are finally pronounced.

**Diagnosis:**—The urine always contains a heavy sediment, which is increased in turbidity upon boiling or upon the addition of nitric acid. Pus and blood are present, as shown by the tests heretofore described. The persistency and gradual increase of the symptoms of irritation, frequent urination and tenesmus are confirmatory. The urine may

be persistently acid. Where decomposition occurs, there is alkalinity, with bacteria in large quantities, which may only persist until the bladder is thoroughly evacuated and irrigated, or alkaline urine may be constantly secreted.

**Prognosis:**—The prognosis as to complete cure must be guarded. When the cause is persistent, as in foreign growths and in chronic prostatitis, or when the disease follows pyelitis or pyelonephritis, a cure is well nigh impossible, and death is usually the final result. Taken early, many cases are amenable to treatment. Those in which the cause can be permanently removed can usually be cured.

**Treatment:**—The course advised in the treatment of acute cystitis can be adjusted in part to many cases at the onset of this disease, and especially to the mild cases; but the prolonged, deep-seated cases must have an entirely different treatment. A thorough **irrigation** of the bladder is essential, but this must not be depended upon to the exclusion of specific measures. All causes of the disease must be removed. Gravel must be overcome and any calculi in the bladder must be removed. Any external acidity or alkalinity of the urine must be neutralized. The bladder should be thoroughly irrigated sufficiently often to keep it free from any quantity of pus, mucus and blood. In severe cases, at the onset, this may be required once in twelve or eighteen hours, although once in twenty-four hours is usually sufficient; as improvement advances or in milder cases, once in two or three days will be as often as needed. It must be conducted by the physician himself, and every measure adopted to prevent septic infection, as the frequent occurrence of this is one of the serious objections to the use of irrigations. Infection will sometimes occur, even with the utmost care, and will induce acute symptoms difficult of control. A return tube catheter may be used in irrigation, or a silver catheter. A rubber catheter into which a glass tube is tightly inserted is preferable. Over the free end of this glass tube the tip of the rubber tube of a fountain syringe can be readily slipped, while the catheter is in the

bladder. The irrigating fluid is passed into the bladder at a temperature slightly above that of the body. When the bladder is filled, the tip of the connecting tube is removed at its attachment to the catheter, allowing the escape of the fluid. The tube is then reattached, and the bladder again filled to be emptied in the same manner, until the fluid returns clear. I positively object to using the tube and fountain or funnel as a syphon, as advised by some writers. The offensive urine flows through the long tube, on lowering the fountain, into the fountain and it is practically impossible to ever perfectly sterilize the apparatus afterward.

The irrigating fluid should be sterile water, or the normal salt solution, or an effective antiseptic solution. I prefer boric acid, potassium permanganate, or hydrogen peroxid. After the irrigating fluid is withdrawn, a medicated fluid may be introduced. Where the bladder wall is very sensitive the mild applications may be first used, but later, as it becomes accustomed to foreign fluids, stronger ones will be retained without pain. **Warm fresh milk** one part, to water four parts, is very soothing. As soon as permissible, I would introduce a diluted solution of the **hydrochlorate of hydrastis**, five grains, sulphate of zinc, one grain, in rose water, one ounce; two drams of this in a pint of warm, sterilized water. If there is distress from its use the rose water may be increased to four times the quantity named, or if there is extreme sensitiveness, a grain of **cocain** or four grains of **morphin** may be added to the original formula.

**Hydrastis** may be introduced in its various forms, and in different strengths. Colorless hydrastis two drams, distilled extract of **hamamelis** two drams, **sulphate of zinc** two grains, in four ounces of warm water, may be introduced after the irrigation and retained as long as possible. I have had excellent results, in the extreme cases, especially where there is ulceration, from the introduction of a few drops of **thuja**, or from half a dram to two drams of **echinacea**, in

four ounces of a mild **boric acid solution**. I believe **thuja** exercises a specific beneficial influence. Internal remedies which seem to be indicated will not give prompt results, unless the general conditions of the urine be attended to, and excessive urinary reaction be corrected, as I have stated above. If there is a persistency of the presence of pus, I give **gelsemium**, one or two drops and **echinacea** ten drops every two hours from two to three days. I should then add ten drops of **pichi**, and continue this for a week longer. I have obtained excellent results from a prescription which contains five drops of **thuja**, and ten or twelve drops of **chimaphila**, every two or three hours, especially in greatly prolonged cases. I think this prescription will benefit a large proportion of the purulent and ulcerative cases. The milder cases will do well on repeated small doses of **uro-tropin**, which should be given every two hours at first, and later four times daily. In cases where there is persistent renal sand which acts as an irritant, **xanthium spinosum** and **red onion** are advised in from three to ten minim doses. I have obtained good results from an infusion of **triticum** in causing an abundant flow of bland urine. This assists materially in washing out the sedimentary irritants. I would emphasize the use of **benzoic acid** and **sodium borate**, in the proportions named in acute cystitis, when the urine is strongly alkaline and much mucus is present. I would suspend other remedies until the desired influence of this combination is obtained. Usually not more than five or six days are required to obtain satisfactory results.

Other agents that will be indicated at times, and may be used in full doses, are **agrimony**, **sodium bicarbonate**, in extreme acidity, **kava kava** when there is much relaxation, **elaterium** when there is a relief from other symptoms but there are little nagging pains on urinating; **cantharides** in minute doses when there is much straining, and **apis** when with persistent local irritation, there are mild dropsical effusions, especially edema of the face and eyelids.

I have not obtained good results from counter irritation,

and have but little confidence in surgical procedures. I have had many cases brought to me, where septic infection or reinfection had been brought about from operation upon the prostate gland, or upon a urethral stricture, or upon the removal of some foreign growth, as a urethral caruncle, where the subsequent condition was very much worse than the original difficulty for which the operation was performed. While good results have been claimed from permanent drainage, suprapubic or perineal incision, I believe recourse should be had to this measure only in otherwise incurable cases, as it is certainly of doubtful utility.

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## VESICAL HEMORRHAGE.

**Etiology:**—Hemorrhage from the bladder may be caused by direct injury, or by laceration in chronic cases, or by a varicose or hemorrhoidal condition of the veins; also from the presence of foreign growths, tumors or neoplasms, benign or malignant, and from a large calculus in the bladder. It also occurs from vicarious menstruation, and occasionally during the latter stages of pregnancy or during confinement.

**Symptomatology:**—The symptoms are those of heat, a sensation of weight in the bladder, perhaps some acute pain, a sudden desire to urinate, and the passage of blood with the urine. When hemorrhage from the bladder wall occurs, the urine is usually passed unmixed with the blood. Occasionally the blood is passed before coagulation; at other times, clots will obstruct the urethra, to be followed by clear urine. In renal hemorrhage the blood is usually disintegrated; the urine is smoky in color, and the urine and blood are well mingled. An examination with a cystoscope will usually confirm the diagnosis, especially if enlarged veins are present in the bladder wall.

**Treatment:**—Aside from any inflammatory condition that may exist conjointly with the hemorrhage, the treatment

should be conducted on the same principle as that for hemorrhage elsewhere; mild but efficient astringents, such as **geranium**, **gallic acid**, **thuja**, **hamamelis** and **ergot**, may be selected and will prove satisfactory. I have obtained good results from **capsella**, **rhus aromatic** and **ergot**. If there is a hemorrhoidal condition of the veins of the bladder, I would advise a local application of one part of distilled extract of **hamamelis**, in four or five parts of water, and the persistent use internally of ten minims each of strong fluid extracts of **collinsonia** and **hamamelis**, every two or three hours.

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## IRRITABILITY OF THE BLADDER.

**Definition:**—An irritability of the walls of the bladder, or of the sphincter, of nervous origin, independent of local conditions.

**Pathology:**—This condition occurs independently of any of the diseases which have been previously described. The only pathological evidences present are extreme redness or greatly increased vascularity observed through the cystoscope; a localized hyperemia, from hyperesthesia, either of the nerve centers, or of the terminal filaments of the nerves distributed to the mucous membrane of the bladder. The condition must be distinguished from that caused by strongly acid or alkaline urine.

**Etiology:**—It is more common in nervous and hysterical women, or in neurotic males. The patient is poorly nourished, has but little appetite, is usually persistently constipated, suffers from mental depression or melancholia, is peevish and fretful, and is apt to complain of being in constant pain, or suffers from imaginary attacks of neuralgia or rheumatism, which are located in various portions of the body. The condition may occur after long mental exertion during an overwrought condition of the nervous system, or when there is both physical and mental exhaustion from

overwork. It results also from menstrual irregularities, and from digestive faults, and other nutritional difficulties, and is present often with alcoholics.

**Symptomatology:**—Usually there is general **nervous irritability**, with occasional headaches, or **chronic gastric disorder**. The immediate symptoms are **frequent urination**, with **pain**. The pain varies in character from simple burning or scalding, to severe, sharp, cutting pain. Occasionally there is **urethral spasm**, more or less severe, with straining and an unsatisfied desire after urinating. In other cases, there is a lack of control of the sphincters. The desire occurs abruptly, and the urine passes very quickly afterward, and is not controlled by the patient. In some cases there is **diffused soreness** over the entire walls of the bladder, or in the peritoneum, which occasionally amounts to pain, although it is not usually severe.

**Treatment:**—The cure of these cases depends upon the recognition of the cause, and its removal. Often it will be sufficient for the patient to take a **rest**, to **eat plain, unseasoned, food**, and **drink** freely of **water**. In a number of cases, attention must be paid to the urine, and all irritating elements must be overcome. **Nerve sedatives** will then usually relieve the local irritation. **Cimicifuga**, **gelsemium** and **hydrangea** have been those upon which I have placed the most reliance. Five drops of **rhus aromatic** in four ounces of a mild infusion of **triticum** or **marshmallow**, taken before meals and at bed time, will effect a cure in many cases. Five grains of the **citrate of lithium** with one drop of specific **apis**, every two or three hours, will relieve those cases where there is a sensation of heat and burning. **Eryngium** and **chimaphila** will cure those cases where there is a tendency to local inflammation from the reflex irritability.

It is necessary that these patients should have constitutional treatment. The stomach must be restored to a normal condition and the nervous system must be built up. **Hydrastis**, **phosphorus**, and some well selected preparation

of iron, will usually accomplish these results, in proper time, if the patient is relieved from exhausting labor and care, and will take an abundance of outdoor exercise.

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## ENURESIS.

**Synonym:**—Incontinence of urine; nocturnal incontinence; bed-wetting.

**Definition:**—Lack of control, either voluntary or involuntary, of the urethral sphincter, as a result of which the urine escapes from the bladder when any quantity has accumulated.

**Etiology:**—The condition is ascribed to causes of nervous origin almost exclusively, whether it occur in the young or in the aged. It is exhibited in several forms. There is the habitual nocturnal incontinence of childhood, or the incontinence of youth, or a neurotic or feeble habit of those who are powerless to control either the vesicle or rectal sphincter at times, after excitement or active exercise. There is the condition of incomplete control of adults, and that form of imperfect control which is common to women at middle life, or during the menopause, when any straining or sneezing or coughing will cause the urine to escape from the bladder. Finally there is that most inconvenient and distressing form of constant dribbling, common to those who are paralyzed, to epileptics, and to the feeble-minded, and the aged.

Only in rare cases is the condition due to irritating urine, or to the presence of a foreign body, or foreign growths in the bladder. The irritation is either due to hyperesthesia and undue sensitiveness, or anesthesia of the nerve filaments and muscular atonicity of the bladder walls. Paralysis, local or general, affecting the nerves of this structure, will result in enuresis. This condition occurs from diphtheria, from scarlet fever, and as the result of prolonged direct pressure of the head of the fetus in puerperal cases. Reflex

irritation is an occasional cause, it is common to young boys who suffer from phymosis, and with all youths who practice masturbation. In advanced life the difficulty is probably due to centric faults. Occasionally it is of cerebral origin, and quite commonly it is due to some lesion of the spinal cord.

The condition may also be induced by worms, by gastric irritation or indigestion, and by the previous occurrence of urinary retention, which may have resulted in overdilatation of the bladder. It may also occur congenitally, from a misplacement of the ureter, or from some other deformity, as in hypospadias.

**Symptomatology:**—The only symptoms of this condition are the **escape of urine** with the inconvenience, discomfort or disgust that it occasions. There is seldom any local irritation, yet in a few cases the condition finally causes local irritation and ulceration. Nocturnal incontinence in children, exhibits no symptoms, but these patients usually are nervous, poorly nourished, and of slower growth from some obscure cause.

**Treatment:**—The patient should be restored to as perfect health as is consistent with the existing conditions of life. This alone will sometimes cure the difficulty. I have corrected many cases by the persistent use of small doses of strychnin, which corrects the impairment of the nerve filaments. I have given children the one-five-hundredth of a grain, several times a day with good results. In other cases, local irritation from hyperemia and consequent incontinence is satisfactorily cured by the use of **belladonna**. This agent strengthens the capillary circulation and equalizes the flow of the blood in the parts. In occasional cases it will be advantageous to give these two or three remedies alternately every two or three hours. In other cases, minute doses, both of **belladonna** and **nux vomica** may be given in conjunction. The use of **belladonna** and **rhus aromatic** will cure a certain class of cases. **Rhus aromatic** and **thuja** may be satisfactorily combined in a few cases of the inconti-

nence of childhood. The latter remedy will assist also in the control of the difficulty in middle life and in old age. It has many strong advocates, but I have not succeeded with it as well as with some other remedies. It may be given in conjunction with strychnin, the latter in quite considerable doses in paralytic cases; occasionally the use of electricity in mild form will accomplish a cure. In irritable cases it is sometimes necessary to give a **nerve sedative**, and to relieve local engorgement by means of agents which will produce capillary contraction. For this purpose **sodium bromide** and **ergot** will be found beneficial.

In all cases the local irritation must be removed, and irritating conditions of the urine must be removed. Excess of acidity or alkalinity must be neutralized, and the urine must be rendered bland and non-irritating. Further careful examination must be made to discover any cause of reflex irritability, and this must be removed. Often surgical measures are necessary to accomplish this latter result.

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## RETENTION OF URINE.

This condition must be distinguished from suppression of urine. In the former the urine is retained in the bladder, because of inability to evacuate. Suppression consists of an entire failure upon the part of the kidneys to secrete urine, hence there is no urine to be evacuated.

Retention is due to traumatism, to cold, to severe compression as in childbirth—a very common condition—and to nervous and mental causes, and also to urethral stricture, and from foreign growths. Congenital retention may be due to malformation or to a urethral plug, or to a fault of the urethral sphincter.

**Symptomatology:**—The symptoms are the **desire to urinate** without an ability to do so, **restlessness**, increasing **discomfort** and soreness, and a distressing sensation of **fulness**, which finally amounts to **pain**. The symptoms finally become aggravated until the distress is almost unendur-

able. Hysterical patients can bring on the condition almost at will. It occurs with them with any violent hysterical manifestation.

**Treatment:**—In newborn infants where no urine is passed for several hours, **hot applications** to the lower portion of the abdomen or across the loins and over the organs between the thighs, will usually be sufficient, unless there is a malformation, which is very rare. Occasionally a small catheter will have to be introduced in male infants. In other cases, a **retraction of the prepuce**, fully uncovering the meatus urinarius, will be sufficient. In adult cases the treatment consists of the immediate introduction of the **catheter**, and evacuation of the bladder.

In cases of spasmodic stricture, **anesthesia** will sometimes permit an escape of the urine, but I have succeeded in nearly all cases by the repeated use of large doses of **gelsemium**, from five to ten minims of the specific, until its physiological effect was plainly marked. This has succeeded in cases where it was impossible to introduce a catheter, and it will be found beneficial in other cases. Relief must be given as soon as possible, because distention of the bladder walls, and the influence of the decomposing urine, produce cystitis, paralysis, or other serious disorder. Neuritic patients can succeed in relieving the bladder occasionally by listening to the sound of running water. Other cases, besides those of newly born infants, can be relieved by hot applications, or by the taking of a hot sitz bath.

In puerperal cases, the condition is usually spontaneously relieved after the catheter has been introduced two or three times. If the condition is prolonged the difficulty may be overcome by the use of **hot applications**, and by the use of **hydrangea** and **cimicifuga**. Occasionally **gelsemium** may be added after the second or third day, but given early it causes paralysis of the uterine muscular fibers and permits post partem hemorrhage. Cases which result from paralysis may be overcome by repeated small doses of **strychnin** or **nuxvomica**.

# Diseases of the Blood and Ductless Glands.

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## LITHEMIA.

**Synonyms:**—Lithuria; uricemia.

There is at the present time much disagreement and misunderstanding concerning the presence of uric acid in the blood, and its excretion in the urine. At one time the influence of this substance was thought to be settled, while its origin was yet in doubt. At the present time more is known of its origin while its entire influence is conjectural. It is now attributed more to faults with the kidneys themselves than previously.

**Etiology:**—Uric acid is present where there has been faulty metabolism, although whether it is due to the conditions which prevent proper change and elimination in the various organs in the body is questioned. All physicians have observed as I have, that sedentary patients,—those subjected to a monotonous round of duties continuously, without break or interruption, those burdened with care and responsibility, with insufficient income to supply the necessaries of life, especially those who are of nervous or bilious temperament, with dark hair, dark eyes and skin, are especially liable to pass a small quantity of urine, which is heavily loaded with uric acid. This urine has a high specific gravity, is of dark amber color, is passed frequently and causes considerable irritation. It is strongly acid in reaction.

Uric acid is derived from the nucleoproteids which much of the nitrogenous food contains. The nucleins which contain xanthin, hypoxanthin, adenin and caffein, are forma-

tive of uric acid. These substances are combined with albumen in the nucleins, but they are uncombined in the meat juices and in the extractives of animal tissue. The substances are not present to any great extent in milk, caffeine, or in eggs, and not present to so great an extent in the muscular structure of beefsteak, as in its juices. Coffee, tea and cocoa are very active in producing uric acid. This substance has been increased more than 125 per cent by drinking coffee alone. A diet of bread and butter, potatoes, milk and eggs, will yield a normal quantity of uric acid, which will be increased one and one-half times by the addition of fresh meat. I have observed frequently that dried beef can be eaten with impunity by some uric acid patients with apparently no very great increase of uric acid, but with a marked increase of strength.

**General Symptomatology:**—These persons become **despondent**, **morose**, or irritable, and tend to **melancholia**. They suffer from **constipation**, have but little appetite, and that usually is perverted; they desire to eat freely of acid substances, which are often indigestible and injurious, their food must all be highly seasoned, and they drink to excess of tea or coffee. Sometimes whisky drinkers are also affected. Beer drinkers but seldom.

With a large quantity of uric acid in the urine there may also be an excessive quantity of the urates, and if there is nervous irritation or nervous exhaustion, the phosphates will be abundant. Whether the excess of uric acid present under these circumstances will act as the exciting cause, of rheumatism, gout, or chronic disease of the respiratory passages, as has been suggested, as well as of various other difficulties, which may exercise a reflex action, also, upon the functional operations of the various organs of the body, is still problematical. The presence of an excess of uric acid for an extended period of time will sometimes, from irritation or other cause, result in albuminuria.

**Local Symptomatology:**—There is usually a broad, thick tongue, which is heavily coated; **ulceration** of the mucous

membranes of the **mouth** is not uncommon; the breath is more or less offensive, and there is occasional **vomiting**. There is a sensation of **tenderness** in the **epigastric region** with persistent **flatulency**, which is a frequent cause of palpitation. These patients suffer from **nervous irritation**, and I am inclined to think that the condition is one of the contributing causes to neurasthenia. It is certainly very often present with neurasthenic patients. **Insomnia** is persistent and mental depression and melancholia are frequently observed. **Headache** is a persistent complication, if present. It assumes various forms and is intractable to direct treatment. It is removed by removing the cause, or by general treatment for the improvement of the constitutional conditions.

The **skin** is dry and irritable, and eventually pimples, boils, acne, eczema, herpes, with pruritus or other skin disorder, especially upon the face and neck, are apt to appear.

**Treatment:**—In the treatment of this condition there must be a change in the habits of the patient. I have often persuaded them to change their occupation entirely, to engage in that which would call into play all their physical functions, and would cause them to have something to think of except themselves and their daily burdens. I have then advised exactly the same course of diet that I suggested in the treatment of albuminuria, when the specific gravity of the urine was persistently high, and have suggested the same course in the taking of fluids. But little medicine is needed if such a course is carried out, as **free elimination** is the great desideratum. Any medicines advised will be suggested by the indications present in the individual case. With the drinking of large quantities of **water**, the patient should take small doses of **macrotys**, perhaps one minim four or five times a day with one grain of the **acetate of potassium**. To these may be added **gelsemium**, if there is much nervous irritability. For many years I have prescribed **piperazin** and have obtained a satisfactory influence. I have given from five to eight grain doses in a glass of water, four

times daily, with excellent results. An infusion of **polygonum**, or **epigea repens**, or **triticum**, may be prepared, and to this may be added **peroxid of hydrogen** in the proportion of three or four drams to the pint. This quantity may be drunk each day for a considerable period. I am a firm believer in oxidation by the ingestion of **oxygen** carrying remedies, and imperfect oxidation is one of the causes of this condition.

When the liver and spleen are plainly at fault, such remedies as **iris**, **leptandra**, **chionanthus**, **ceanothus**, **polymnia**, or **carduus marianus**, may be selected according to the specific indications. **Grindelia squarrosa** is recommended where there is despondency, or melancholia, with chronic gastric or gastrointestinal disorder.

The salts of **lithium** are important remedies in lithemia. The benzoate, carbonate, acetate, or bromid of lithium should be selected, in accordance with the existing conditions.

Local treatment of skin disorders is only palliative if the constitutional conditions are not relieved. With the other remedies advised, I have found grain doses of the **carbonate of iron**, with or without **hydrastis canadensis**, as the condition of the stomach may demand, to be most serviceable in persistent facial eruptions.

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## DIABETES MELLITUS.

**Synonyms:**—Glycosuria; saccharine diabetes.

**Definition:**—A constitutional disease characterized by an excessive flow of urine which contains grape sugar or glucose, and is accompanied with thirst, excessive appetite, and seriously impaired nutrition, which results in progressive debility, and usually in loss of weight.

**History:**—From time immemorial cases have been observed where there was great thirst, voracious appetite and the passage of large quantities of urine. In 1674 Willis of

England observed that the urine of certain of these patients appeared to be sweet, and his conclusions were that it was due to the presence of sugar. In 1774 Dobson, after determining that the sweet principle of this urine was sugar, extended his observations, and determined beyond a doubt that sugar in excess was present in the blood also. In 1815 the celebrated French chemist Chevreul determined the difference between this animal sugar and ordinary cane sugar. In 1825 it was determined further that starch was converted into sugar in the processes of digestion. In 1848 Claude Bernard declared that nearly all the sugar that was found in the body was either formed by the liver or stored by that organ. In 1849 it was discovered that the sugar in the liver was greatly increased if there was irritation of the floor of the fourth ventricle of the brain. In 1853 Hurley found that stimulants to the liver would increase the quantity of sugar and in 1856 both Hurley and Chevreul observed that the normal sugar of the blood disappeared in the capillary circulation. Thus have been evolved, one at a time, the underlying facts of our present knowledge concerning this obscure disease.

**Pathology** :—No chronic disease has been the subject of greater research, or the object of more conflicting opinions as to its real character and cause than this disease. The facts concerning the pathologic conditions which underly the disorder may be concisely stated about as follows: Simple glycosuria occurs when, from some defect in the processes of metabolism, some disturbance of the function of the organs of appropriation, there is an inability to appropriate, for the purposes of nutrition, all of the carbo-hydrates which are taken as food, and that portion which is not appropriated escapes in the urine as grape sugar. But this failure of appropriation may become sufficiently great to permit the loss of nutrition to be perceptible in loss of weight and of vitality. Or there may be conjoined with this an increased defect or an impairment of or a perversion of the metabolic processes which should properly change and appropriate

the fats and proteids of the food so essential to the health and strength of the patient and these are converted into sugar and escape as such from the body with the urine. With this perverted conversion there are formed, also, certain toxins such as diacetic acid, acetone and oxybutyric acid, which exercise at the same time a deleterious influence upon the patient, resulting in marked emaciation, loss of weight, loss of strength and rapidly failing vitality. This constitutes diabetes mellitus.

**Etiology:**—The actual cause or causes of this disease are unknown, the conditions which contribute to its occurrence are very many.

It is found in all corners of the globe, is more common among civilized people, but seldom occurs in the negro race. It is found to be conspicuous in England, in some parts of Europe, especially France, Sweden, Germany and Italy, and in the United States. It is an astonishing fact that the Hebrew race of whatever country are especially liable to this disease. While the disease is one of adult life, it occasionally occurs in childhood, and in infancy. Occurring before the age of puberty it presents a conspicuous train of symptoms almost from the onset, and runs a rapid course, terminating in death in from six to eighteen months. It is more common in adults after the age of forty or forty-five years, occurring in women usually after the menopause. It occurs much more frequently in males than in females, the proportion being about three to one. It occurs frequently among those who have a large proportion of fat, "fleshly," portly men, and among those who are engaged in work which taxes the brain, or results in serious draft upon the nervous system.

Those who are temperate in their habits, who avoid dissipation, and who are engaged in constant physical exercise in the open air, are least liable to an attack. It occurs also from anything that induces nervous shock, as extreme anxiety, great grief, or prolonged worry or responsibility. There are some evidences to prove that the disease is hereditarily

transmitted, as it is not uncommon to find children of diabetic parents afflicted with the disease, in adult life. There are reasons also, although these are not convincing for the belief, that the disease might be conveyed from a husband to his wife, or vice versa, as Senator collected nine cases where both husband and wife were affected, and Schram reports one and eight-tenths per cent of five thousand cases, where both were afflicted with the disease. Hare has collected some statistics from the United States census reports which would seem to prove that in our own country the disease had very materially increased within the last sixty years. In the decade from 1840 to 1850 he reports 72 deaths from diabetes out of 100,000 deaths from all causes. In the decade from 1890 to 1900 there were four hundred and seventy deaths, more than six and a half times as many.

Among the immediate causes of the disease we have first to consider those that seem to be due to disease of the pancreas. In more than fifty per cent of the adult cases these organs are found to be diseased. The islands of Langerhans are usually affected. With this there may be chronic interstitial pancreatitis, or there may be occlusion of the pancreatic ducts, or other degeneration of the structure of the organ. Cancer of the pancreas is a common cause.

Next in order of occurrence of disease of the central organs, as causative factors, is disease of the liver. There is hepatic hypertrophy, and often fatty degeneration. French writers claim that there is a characteristic cirrhosis of the liver, with changes in the liver cells. From the deposit of coloring matter from disintegrating blood corpuscles the organ becomes much darker in color, and there is a disturbance of the glycogenic function of the organ. The disorder also occurs from disease of the nervous system, or causes acting upon the brain.

The administration of certain drugs will cause glycosuria. Among these are certain of the bromids, the inhalation of chloroform, and the administration of phlorozin,

the active principle of the bark of the root of apple, cherry, plum and pear trees. With this substance a temporary, artificial diabetes may be produced.

Digestive disturbances and faults of eating and drinking which impair the nutrition of the system, undoubtedly exercise a causative influence on diabetes. The excessive drinking of beer and of certain sweet wines, undoubtedly act as a cause by exercising an injurious influence upon the liver, pancreas and kidneys. While it is not claimed that the eating of inordinate quantities of cane sugar will cause the disease, the ingestion of any quantity of this substance during the progress of the disease will aggravate the disorder and retard a cure.

As the condition is constitutional in character, its influence, as we have seen, causes serious disorder of most of the vital organs, and among them the kidneys do not escape. Renal changes in diabetes were found by Seeger and others, to occur in 77 out of 121 cases, and Elliott claimed that albuminuria was present in more than forty-three per cent of all the cases. These changes are the results of the disease, not its cause. They occur from the greatly increased overwork of these organs, in the elimination of the excessive amount of water and sugar.

While the nervous system is involved also, the actual changes which occur are not conspicuous. There may be a simple peripheral neuritis, and occasionally degeneration in the columns of the spinal cord.

The blood is loaded with sugar and contains an increased quantity of fat cells which sometimes causes an apparent change in the color of the blood, although there is a question as to whether this change is due solely to the presence of the excess of fat. Arteriosclerosis occurs with this disease, also exhibiting its characteristic phenomena. Diseases of the eye are not uncommon; albuminuric retinitis, which is in every way similar to that present in interstitial nephritis, occurs in some advanced cases of diabetes. Other forms of retinitis, and hemorrhage from capillary rupture

occur. There may be also iritis, atrophy and cataract, or there may be ptosis, strabismus, occasionally amaurosis, and in rare cases total blindness.

**Symptomatology:**—Often no evidence of disease in the patient has been observed until the **passage of a large quantity of water** is remarked upon. A prominent London physician observed that flies were attracted to his own urine. His curiosity led him to examine the urine, when he detected a large quantity of sugar. He subsequently died of diabetic gangrene of the foot. One of my own patients remarked, in response to my observation of his apparent good health, that he was very well; he ate well and drank well. I asked him if he passed much urine. He replied, "Certainly, because I drink so much water." I asked, "Do you pass the water because you drink it, or do you drink excessively because you pass it?" An examination of the urine revealed an enormous quantity of sugar.

The quantity of urine passed in these cases varies from two quarts to as many gallons, and in extreme cases, four or five gallons may be passed in twenty-four hours. The specific gravity varies from 1024 to 1036 or 1038 in the ordinary cases. In extreme cases the specific gravity will run from 1036 to 1050. Occasionally sugar will be found in the urine when the specific gravity is as low as 1020, but this is rare unless there is interstitial nephritis. The quantity of sugar varies from one-half of one per cent to three per cent in the mild cases, and from three to ten per cent in the severe cases, eliminating a total quantity of from five to twenty ounces in twenty-four hours.

With the increase in the quantity of urine, the patient observes a **persistent thirst**, often an increase of appetite, but a failure of strength—a slowly progressive weakness. This is observed before there is any perceptible loss of flesh. While emaciation is given as a conspicuous symptom of the disease, it does not occur uniformly in all patients. It is common in the younger patients, being most rapid in childhood. Many patients who are "fleshy," men who weigh

from two hundred to two hundred and forty pounds, and who are above middle life when the disease appears, may lose but little if any weight, during the earlier years of the progress of the disease. Among these, the loss of flesh is very rapid in the latter stages. The patient passes urine frequently, especially during the night, when he must arise several times to pass a large quantity of water each time. There is a **decline** also in **sexual desire** and **sexual strength**. These symptoms are in proportion to the amount of urine passed.

With the loss of strength there is a disinclination to physical effort, the patient is easily chilled, the pulse is feeble and compressible, and the temperature is apt to be subnormal.

If arterio-sclerosis is present **the pulse** will be hard, with increased tension, but slow. **The heart** is usually weak; **the skin** is dry and harsh, and is subject to serious changes, because of the changes of elimination; there may be pruritis, which is especially severe around the genital organs; eczema of the genitals occurs in some cases and I have observed serious excoriations of the prepuce with cracks and bleeding fissures and finally contracting cicatrices. In others there were vegetations on the head of the penis. Acne and boils are common and in the latter stages of the disease, when the capillary circulation is impaired, large single **boils**, or crops of boils, are very frequent. This I have considered as a premonition of the possible occurrence of **carbuncle**, which seriously complicates these cases and often terminates the life of the patient. **Gangrene** of the extremities may also be present. **The hair** becomes harsh, dry and brittle, and occasionally falls out readily; sometimes **the nails**, either of the feet or the hands, or both, may be lost.

The patient seldom suffers from any pain, but there may be insomnia from discomfort or general distress during the night, or from the necessity of frequent urination. Usually the digestion is normal; it is rare that gastritis complicates. **The appetite** is often voracious, from the necessity of a sup-

ply of the nutritive material wasted by the disease, but the digestion usually continues good. If there is fermentation of food, or other impairment of this function, the symptoms of the disease are more conspicuous. **The tongue** is broad, thick, often filling the mouth, and presents a red, cracked or fissured surface. Occasionally it is glazed and smooth, and the gums are swollen and irritable. **Constipation** is not uncommon and sometimes becomes a troublesome symptom.

**Diabetic coma** is a serious result in the advanced stages of the disease. This may occur also among younger patients, quite suddenly; in other cases there are premonitory symptoms, as pain in the stomach or abdomen, muscular weakness, nausea, dulness and drowsiness, with sighing respiration and increasingly slow and deep breathing, followed by stupor and coma. Occasionally the patient is restless preceding an attack. A large majority of these cases terminate fatally. **Apoplexy** occurs in certain cases quite abruptly and is usually fatal.

**Diagnosis**:—The diagnosis depends upon the passing of a large quantity of urine of high specific gravity, and usually of a deep amber color, which contains sugar. This is accompanied with loss of strength. This is differentiated from interstitial nephritis, even when albumin is present, by the fact that in the latter disease there is a large quantity of urine, which is pale or lactescent in color, and which has very low specific gravity. It is distinguished from simple glycosuria by the serious constitutional condition and progressive weakness. It is confirmed by the intense thirst, inordinate appetite, and sexual impotence.

The urinary tests for sugar are readily made. When the quantity of sugar is large, two parts of the suspected urine to one of liquor potassæ may be thoroughly mixed in a test tube. Upon boiling the top of this, by inclining the tube over a small flame, the boiled portion will assume a darker color, become reddish brown, dark brown or black, according to the quantity of sugar present, and may be readily contrasted with the cool urine in the bottom of the tube.

Fehling's solution is that most commonly employed. This is made by dissolving cupric sulphate, thirty-four and one-half grams in 500 cubic centimeters of water. Another solution is made in which 173 grams of Rochelle salts and 100 cubic centimeters of a solution of sodium hydrate, with a specific gravity of 1.330, is added to sufficient water to make 5,000 cubic centimeters. A small quantity of these two fluids is mixed when desired for use. Half of a dram of this is put into a clean test tube and boiled; to this the urine is added, drop by drop, and the boiling is continued. The facility with which a reaction takes place is an estimate of the quantity of sugar. The sugar changes the deep blue color of the solution to yellow or yellowish-brown, or red, and a precipitate is formed, which renders the urine opaque.

Trommer's test is made by adding to two drams of water in a test tube, twenty drops of liquor potassæ; to this is added drop by drop a solution of sulphate of copper, until the white cloud which appears in the solution and at first dissolves will no longer dissolve. To this may be then added a few drops of the urine and the top of the mixture boiled. If sugar be present, the blue color which forms when the cupric sulphate is added, will change to yellow and then to red. If no sugar is present a turbid, dirty green, or grayish green mixture is produced. With either of these two last tests a great excess of the urates, or of uric or hippuric acids may cause a reduction of the cupric oxid, similar to that which results from sugar.

Boettger's test is sometimes available. This is made by adding one part of a strong solution of sodium carbonate to three parts of urine. To this a few grains of the subnitrate of bismuth are added. The mixture is then boiled; if no sugar is present the bismuth is unchanged. The powder turns gray, brown or black, if sugar be present, according to the amount.

The presence of acetone in the urine is an evidence of approaching nervous disturbance. It occurs in advance of diabetic coma. It may be discovered by distilling a quantity

of the urine, and adding to a small quantity of the distillate a few drops of potassium hydrate solution. The further addition of a few drops of Lugol's solution will cause the prepared liquid to become turbid, and will precipitate iodoform, with its characteristic odor, if acetone is present. The odor is more perceptible if the liquor is heated.

In the presence of a large quantity of acetone the addition of the tincture of the chlorid of iron will cause the liquid to assume a deep red appearance. This is Gerhardt's test.

The ability of the blood of diabetic patients to change a warm alkaline solution of methylene blue to a yellowish gray color is of importance in determining the presence of sugar in the blood. This is Williamson's test.

**Prognosis:**—The prognosis as to cure is always unfavorable. As to prolongation of life, the prognosis depends upon the cause of the disease, and the age, condition, and habits of the patient. With children the disease has not as yet been satisfactorily treated. It is exceedingly intractable, running a rapid course and terminating early in death. Cures, if any, are accomplished in patients of middle life, where the onset of the disease is discovered at perhaps forty years of age. While at this time the disease runs a more rapid course than in later life, it has proven more amenable to treatment. In elderly patients, it may make but few inroads on the general health and with care on the part of the patient, and good judgment in the habits of working and those of daily life, they may live to full age, or even to old age, many dying of acute disease which seems to attack them independently of the presence of the glycosuria.

Complicating diseases, such as pulmonary tuberculosis, pneumonitis, nephritis, cardiac disease and gangrene or auto-toxemia or septicemia, may speedily terminate the life of the patient.

**Treatment:**—As yet no specifics have been discovered, either for this disease as a whole, or for any of its attendant conditions. Various measures have been devised but these have usually been ultimately abandoned. While dietary

**measures** are by far the most important, I will first consider those remedies which have exercised an inhibitory or curative influence upon the disease.

The use of **opium**, **codein**, or **morphin**, will restrain the loss of sugar, occasionally causing it to entirely disappear for a short period, but the protracted use of these agents will induce the opium habit, which is more serious than the original disorder. At the same time the system is much more tolerant of these agents than in health. **Ergotin** in from one-fourth to one grain doses will also for a time control the loss of sugar and will, to a corresponding degree, restrict the quantity of water passed, without injury to the patient. Probably better results have been obtained from the **bromid** of **arsenic** in inhibiting the loss of sugar, than from most other remedies. A solution of this substance is given in five minim doses, which is increased to full toleration. **Potassium** or **sodium bromid** in full doses will exercise a controlling influence in a few cases. In 1884 I began the use of **syzygium jambolanum**, or jambul. I have used the powdered seeds of this remedy in a great many cases, and I have occasionally succeeded in completely removing the sugar and controlling the polyuria for a time with this agent, in conjunction with a careful diet. But in no case has the patient been cured. I have given it in from five to fifteen grain doses, four times daily. I have, in a few cases, controlled the loss of sugar for some time with the remedy, and when the sugar began to increase I have put the patient upon the bromid of arsenic or some one of the other remedies, and retained the good results I have obtained for weeks or even months. Later I would be obliged to use some other remedy for a period, and finally I would come back to jambul again and obtain a repetition of its first beneficial influence. Small doses of **strychnin** in some patients may be continued for quite a long time with benefit, where the nervous system is debilitated.

Dr. Hauss of Indiana has used **chionanthus** for many years with good results, because of its direct influence upon

the liver. He is positive that he has cured a great many cases. Dr. Kennedy of Sullivan, Indiana, in the *Chicago Medical Times* for May, 1906, advises the use of **boric acid** in large doses, with the proper attention to diet, and claims to have satisfactorily checked the progress of the disease. He uses honey as a sweetening agent instead of saccharine. Others of our physicians have used **helonias**, **iris**, or **lycopus**, and have claimed good results. Dr. Goss in his lifetime was enthusiastic concerning the action of **rhus aromatic** in diabetes, but subsequent results have not confirmed his conclusions.

The **dietary treatment** of diabetes consists of the exclusion of as large a proportion as possible of those articles which contain sugar and starch. Inasmuch as sugar is almost a staple article of diet for sweetening purposes, the exclusion of this substances becomes a great hardship to many patients. Various substitutes have been tried with varying success. Glycerin is now seldom depended upon. It was at one time used quite freely. Saccharin has proven an efficient substitute with some patients, while with others it has ultimately induced serious derangement of the stomach. Although it is now occasionally denounced as an injurious remedy, I have known patients to use it for a period of from five to seven years with no apparent harm. I am convinced that it acts differently on different patients. Honey may be used as a sweetening agent with benefit in some cases, but it does not permit of so rapid a reduction in the sugar as saccharin. Patients suffering from diabetes who do not care for sweetening are fortunate indeed.

In advising the patient concerning the diet, it is best to name first the articles that are permitted, as the list of foods which should be avoided is a long one and includes many articles which are considered by the patient as essential. Of the foods which are permitted, gluten bread may be first named. Bread made from peanut flour, or almond biscuits, or almond rusks, are permitted. Some patients seem to do very well for a while on buckwheat flour, made into cakes

or bread, and others may eat thoroughly toasted stale bread, or zwieback. They may eat freely of eggs, oysters and fish, gelatin, beef, mutton, poultry and game. They may also be allowed lettuce, string beans, cabbage, tomatoes, celery, spinach and other greens. They may eat freely of oranges and lemons, currants, gooseberries and mild acid fruits. They may take butter in full quantities, whey and buttermilk, but sweet milk and cream sparingly. However, there is excellent authority for the exclusive use of sweet milk for a considerable period of time. The claims are that the nutrition is sustained and the sugar is diminished, and sometimes disappears entirely. They may take coffee, tea and chocolate in limited quantities without seasoning.

These patients should avoid bread made from wheat flour, corn or oatmeal; also rice, macaroni, sago, tapioca, potatoes, peas and beans; also carrots, turnips, beets, figs, grapes, raisins, prunes, apples, pears, bananas, sweet jams and jellies, sweet pickles and the livers of veal, beef, mutton or pork.

When, after adherence to this course of diet for some time, with perhaps medication that has been of some benefit in inhibiting the quantity of sugar, the sugar disappears from the urine in large part or completely, the rigid diet should be continued for perhaps six, eight or ten weeks, when it may be slowly enlarged—first, with the use of graham bread, or sweet potatoes, or a small quantity of thoroughly baked potatoes, or with bread crusts well buttered. This could be continued until later apples and some of the proscribed fruits could be allowed. By keeping a constant watch upon the quantity of urine excreted, and by adding one article only to the diet at a time, it can be immediately seen which substance will prove injurious, and this can thus be again excluded. This careful resumption will finally permit a fairly liberal diet.

These patients must be placed in the best possible hygienic conditions. A change of climate is desirable with many. Of the United States, those west of the great lakes,

along the northern boundary, and the extreme northwestern states—the coast of Washington and Oregon—have proven beneficial, except during the winter, as these patients should not be obliged to resist extreme cold. Patients should spend a great deal of time out of doors. Their minds should be entirely freed from responsibility, care, anxiety and worry. They should wear flannels constantly, and should sleep in apartments having free ventilation, or in the open air in mild weather.

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## DIABETES INSIPIDUS.

**Synonyms:**—Polyuria; hydruria; diuresis.

**Definition:**—This is a chronic constitutional disorder, of nervous origin, characterized by the passage of a large quantity of urine of low specific gravity, which contains no abnormal constituents.

**Etiology:**—This condition is more apt to occur in early adult life, and may be directly traced to shock or to some serious injury, which may have been accompanied with fright, or it may follow a heat stroke, or some other direct injury to the nervous system. The transient polyuria of neurasthenics, of hysterical patients, or that due to sudden anger or grief, should not be confused with diabetes insipidus. Blows upon the head and other direct injuries, or cerebral tumors, are sometimes the cause. A number of instances have been found in which there was no doubt that the disease was hereditarily transmitted. It occurs also in tubercular, epileptic and syphilitic patients and in alcoholics, after prolonged infectious fevers and influenza, and as the result of the development of abdominal tumors. Post-mortem investigation, however, carefully conducted, has revealed no characteristic pathological changes with which to account for its occurrence. The pathological conditions observed in the kidneys are only those which will occur as the result of forced, prolonged over-activity.

**Symptomatology:**—The patients who suffer from this disorder are seldom in good health when the first symptoms are observed. There will probably have been a **profuse flow of urine** for some little time before the attention of either the patient or physician is called to it. Or there may have been some other occasion for a urinary analysis, when the low specific gravity of the urine has attracted the attention of the physician and has led to an investigation. It will be observed that there is an **inordinate thirst**, which is only partially relieved by the drinking of a large quantity of water, until the desire to urinate occurs and a large quantity of urine is passed, with a return of the thirst.

The quantity of water passed varies from one gallon to as much as six or eight gallons within twenty-four hours, in extreme cases. An average patient will pass from one to two gallons. The specific gravity of this urine will vary from 1002 to 1005, but I have examined many specimens from many patients where at some time during the twenty-four hours the urinometer would stand at the water point, 1000. When the normal quantity of solids is passed in the excessive quantity of water, the relationship between the solids and water as shown by the specific gravity would necessarily result in a low registration. When the normal solids are reduced, as was the case in the patients above referred to, there are usually other conditions which must be taken into consideration. This same fact is also true when the normal solids are increased or when, with a large quantity of water, the specific gravity of the urine would run from 1010 to 1015. Usually in these cases the urea is in excess.

A simple rule which I have given my students with which to obtain an approximate knowledge of the amount of solids passed is that the weight of the body be multiplied by the arbitrary number six, and this quotient be taken as the standard of comparison to represent in grains the amount of solids he should pass. Then multiply the last two figures of the specific gravity of the urine by the number of ounces

of urine passed. By this rule, then, a patient weighing 150 pounds should pass 900 grains of solids in twenty-four hours. If, however, he is passing a gallon and a half of urine with a specific gravity of 1005, he will be passing 192 ounces of urine, which, multiplied by the last figure of the specific gravity, will represent 960 grains, or an approximately correct amount. This rule applies to all cases in uranalysis, and is often of great service for immediate use.

These patients are **morose, peevish, irritable**, and often **despondent**. There is dryness of **the mouth** and of **the skin**, as all other excretions are deficient. Usually the **temperature** is subnormal, **the pulse** large, round, full and slow. **The appetite** is not often impaired, but from imperfect salivation there is usually impairment of digestion. The loss of flesh is by no means as great as in some cases of diabetes mellitus. The patient is indisposed to exertion, as weariness, exhaustion, muscular aching and transient pains, especially in the loins, are apt to occur from prolonged effort. These patients exhibit a marvelous tolerance to the influence of alcohol, some being able to take enormous quantities without intoxication.

**Diagnosis:**—The diagnosis depends upon the fact that a patient in fairly good health is subject to constant thirst, passes at frequent intervals a large quantity of pale, limpid urine of **low specific gravity**, which contains neither albumin nor sugar. It is distinguished from a transient, inoffensive polyuria by its persistency, and from diabetes mellitus by the dark color and high specific gravity of the urine of the latter disease.

**Prognosis:**—The course of this disease is usually a long one, and during this time there may be no serious impairment of the health. When it arises from causes which in themselves are progressive, or when complications arise, the course of the disease may be more rapid, or death may occur from the complications. A fatal result seldom occurs directly from this malady. Recovery may be promised in a fair proportion of cases.

**Treatment:**—In the treatment of these patients, the central nervous system must have first consideration. **Nerve tonics**, easily appropriated restoratives and upbuilding remedies will lay a foundation for the action of specifically indicated remedies. **Phosphorus** and **strychnin** will usually be selected as the primary essential remedies. Benefit will be derived from the compound syrup of the phosphates, persistently administered. Where nervous hyperesthesia or nervous irritability exists, a combination of **hydrobromic acid** and **ergot**, in the proportion of eight or ten minims of the first remedy, in the officially dilute form, and from ten to fifteen minims of the latter remedy, every three or four hours, may be administered. There will be found frequent cases in which this combination may be used as a routine treatment for the polyuria. Ergot is sometimes given alone in half dram doses four or five times a day for this purpose. Another remedy of much benefit, especially in cases where the skin is cold and the circulation, both capillary and general, is sluggish, is **belladonna**. This remedy exercises a rational physiologically direct influence upon the circulation. It may be applied in the form of a plaster or strong liniment over the spinal cord and across the kidneys. It may be given also internally, in small doses frequently repeated. In occasional cases the hypodermic use of atropin, in one-one-hundredth grain doses, two or three times in twenty-four hours, will be of service; but I prefer the regular administration of one or two drops of the tincture of belladonna every three hours. **Rhus aromatica**, in twenty drop doses every three or four hours, has been advised, but the specific indications for the drug cannot be given. There is probably an occasional case when it will be found of benefit. Some physicians depend upon the use of morphin or codein to produce restfulness and to control the output of urine during the night, that the sleep be not disturbed. I prefer to depend upon the bromids and **hyoscyamus**.

In the feeding of these patients care must be taken that any large quantity of water taken be drunk before the meals

a sufficient time to permit the stomach to be comparatively empty when food is taken. Any fluid taken during the meals should be taken in sips only, to supply the deficiency of the saliva and to facilitate the thorough mastication of the food.

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## CHRONIC RHEUMATISM.

**Synonym:**—Chronic articular rheumatism.

**Definition:**—A chronic disease of the articulations, which is characterized by slow development and by the presence in the joints of pain, tenderness and disability.

**Etiology:**—The condition may follow repeated attacks of the acute form of this disease, or it may develop most insidiously in those who are persistently exposed to dampness and cold, or those who are insufficiently clothed. While it is more common in middle adult life, it occurs in childhood, with some slight modifications of its phenomena. It is thought that there is a slight preponderance in favor of the difficulty occurring in females, but this is questionable. Those who live in poorly ventilated rooms, from which the sunlight is excluded, who are improperly clothed and insufficiently fed with poorly prepared food, will be found liable to the disease. This is especially true among those who, with or without these conditions, are careless of their excretory functions, paying no attention to bathing or to the demands of nature in evacuating the bowels or bladder; who confine themselves without physical exercise in close rooms, and engage in persistent, unremitting, monotonous labor. These conditions are similar to those which induce lithemia, and clinically the two conditions are often found to be associated.

**Symptomatology:**—**Pain** in the joint or joints which are involved in this disease may be the only symptom at first apparent. There is no redness, no swelling, and the pain may not at this time be greatly increased upon movement,

but will increase during the night, and upon the approach of abrupt changes in the weather, and especially upon the occurrence of rainy weather. Later the **joints become stiff**, and movement is painful, and **swelling** occurs. Ultimately the **tenderness** and pain become extreme, and the patient refuses to move the joint. With the swelling there may be also infiltration of the tissues, which will readily pit upon pressure.

In other cases there are deposits in and around the joints, which will at first elicit crepitus on movement, and later will induce immobility. Occasionally the tendons, ligaments and muscles surrounding the joints become involved, and with the calcareous deposits produce deformities of a serious character. There may be, finally, permanent extension or **flexion, dislocation** or **distortions** of various kinds. In the developing stage, while movement is painful, the pain decreases if the movement is continued, and the condition of the joints seems to improve, while during rest the joints stiffen and the pain and edema increase. Metastasis is not as frequent in chronic rheumatism as in the acute form of the disease.

Often this condition will run a long course with little impairment of the general health; at other times the stomach and intestinal tract are subject to considerable derangement; the secretions are deficient, the urine scanty and high colored, and headaches are not uncommon, especially with those who are kept awake by the pain in the joints. Ultimately the health becomes seriously impaired and important complications develop, among which chronic endocarditis is the most common.

**Diagnosis:**—In the diagnosis, other joint disorders will be readily excluded by their characteristic symptoms. The history and gradual development of the symptoms above described will be confirmatory.

**Prognosis:**—These cases seldom make a complete recovery. The condition, however, while seriously impairing the physical action of the patient, is not a menace to life.

The disease may be present from middle life to extreme old age. Complications increase its seriousness.

**Treatment:**—I believe that those patients have obtained the best results who have persisted for a long period in the use of the botanic alteratives and anti-rheumatic remedies, in the form of infusions or decoctions, conjoined with a strict attention to diet and hygienic surroundings. **Macrotys, corydalis, stillingia, polymnia, rumex crispus** and **aralia** are all valuable remedies. These may be selected and tried in accordance with the exact condition of each patient. An infusion of **apocynum** may be given in teaspoonful doses, or this remedy may be combined with one or more of the remedies above named to excellent advantage. **Phytolacca, iris** and **apocynum** will work nicely together, and other specific remedies will be available. **Echinacea, apocynum** and **corydalis** will exercise a beneficial influence also; or **echinacea, corydalis** and **macrotys** will be found of much service. These remedies may be given with **potassium acetate** or with small doses of **potassium nitrate**, which has been a favorite with Professor Whitford for many years.

**External applications** will be beneficial in selected cases. It is a good plan to keep the joints enveloped always in flannel; heat exercises a favorable influence in relieving pain and in promoting local tissue metamorphosis. The joint may be immersed each day, from fifteen minutes to an hour, in hot salt and water, then wrapped in warm flannels and surrounded with hot bricks or hot water bottles; or a flannel may be wrung from hot salt water, applied around the joint, and covered with oiled silk, to prevent its drying, and then packed in hot bricks or hot water bottles for several hours. The use of counter irritation or blistering remedies has not yielded good results in my cases. I have perfect confidence in the persistent use of a mild **faradic current** of rapid interruptions, continued for from fifteen to twenty or thirty minutes with each application, once every day, or every two days. I adopted this course in 1880, and have seen beneficial results almost universally from its use since. I am sure

as good results have been obtained from the use of small batteries as from complicated, expensive apparatus. I have often advised these patients to purchase an inexpensive battery and administer the current themselves. I have not obtained nearly as satisfactory results from the galvanic current.

A **change of climate** and an occasional course of hot baths at the various springs, or a course of Turkish baths properly conducted and adjusted to the individual patient, or the hot air treatment, has been productive of good results. I am in favor of excluding meat from the diet of these patients in a large number of the cases. I decide by the condition of the skin and of the urine. If the skin is dry and the patient has a distinctly uric acid diathesis—lithemia—I prescribe the diet advised for the latter condition, excluding coffee and tea, and advising the use of water freely between meals, and a glass of milk at meal time.

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## MUSCULAR RHEUMATISM.

**Synonym:**—Myalgia.

**Definition:**—A condition in which there is more or less permanent soreness, stiffness, and perhaps sharp, acute pain in the structure of the muscles, especially of the deep muscles of the body, which ultimately extends to the fasciæ and to the periosteum of the bones. Situated in the muscles of the chest this condition is known as mastalgia. In the deep muscles of the loins, it is called lumbago; in the muscles of the neck, it is called torticollis.

It has only been a few years that this condition has been acknowledged as having a right to separate recognition as an independent condition. The writer has had a protracted personal experience which gives to him a clear conception of its character.

**Etiology:**—This disease arises from the persistence of those conditions which induce rheumatism elsewhere in the

system, from the presence of uric acid diathesis, and is coincident with lithemia, and is undoubtedly an indirect or remote result of autotoxemia. It is induced by exposure to cold and damp; patients suffering from the conditions above named are enabled to foretell with startling accuracy changes from warm and dry, to cloudy and damp weather. It occurs in both sexes and at all times of life, above infancy. While it is often classed as neuralgic in character, this is frequently denied; and yet I am sure that the condition of the nervous system has much to do, in many cases, with the occurrence of this disorder. It occurs frequently in neurasthenics and in hysterical patients, and in those who have a predisposition to neuralgic attacks.

**Symptomatology:**—**Muscular stiffness** and **local pain** in a circumscribed area are the commonest symptoms. There are remissions or intermissions for a considerable period, or exacerbations during the presence of this condition, with all patients. There is tenderness on pressure over the sore muscles, and if a mild current of electricity be passed over the affected area, the tenderness is found to be increased. A mild faradic current passed over those portions of the muscular structure which are thought to be free from the disease will often discover acutely sensitive areas in which the disease may ultimately develop. Pain in the muscles of the chest interferes materially with the respiration and is exceedingly annoying, although it does not materially affect the general health of the patient. When over the left side of the chest, it is often mistaken for cardiac pain, and is thus often the cause of much anxiety.

**Torticollis** occurs suddenly after prolonged exposure to cold, especially when the back of the neck is exposed. The manifestation, acute in form, lasts for a period of from five to ten days, during which time the pain is sometimes excruciating, inducing an absolute inability to move the head. At other times, without acute manifestation, there is permanent soreness at the attachments of these muscles and in the tendons, and also in the periosteum of the bones, which

interferes with the movements of the head, and results in more or less crepitus, which may be constantly apparent to the patient, and is annoying indeed.

**Lumbago** is apt to occur after violent muscular exertion, as when from sudden lifting of a heavy weight, or when a quick, violent strain is thrown upon the muscles of the back. This abruptly incapacitates the patient for any muscular exercise for hours, or perhaps days. Extreme soreness develops in the deep lumbar muscles and every motion causes pain. The condition slowly disappears, but for a long time there is weakness in the muscles of the back; the patient constantly dreads an occurrence of the pain, and his anxiety is increased by occasional shooting, stich-like pains in these muscles. For months after the patient believes himself cured the faradic current will find undue sensitiveness over the affected area. So closely do these two latter conditions resemble neuralgia that the writer has no doubt in his own mind that the nerves are directly involved in the disease. I am convinced of this also by the efficient action of **gelsemium** with **macrotys** in the treatment.

There are other muscles in which this disease is occasionally located, such as in the muscles of the scalp, the thick muscles of the arms or thighs, and occasionally the muscles of the abdomen. It may involve also the pleura and the peritoneum.

**Diagnosis:**—Diffused soreness of the muscles on pressure over a given area, with the occurrence of occasional sharp, lancinating pains in the absence of chill and fever, are diagnostic indications. There are but few conditions with which it will be confounded. Except in the pleural and peritoneal forms, which may be taken for acute inflammation, the absence of fever will assist in a correct differentiation.

**Treatment:**—I have obtained excellent immediate results in all of these cases by covering the parts with a fold or two of **warm flannel**, and slowly and steadily **ironing the part** with a hot flat-iron for a period of from ten to twenty

minutes, repeated perhaps three times each day, or oftener if desired, and continued after the acute symptoms have subsided. This simple measure must be thoroughly tried to establish confidence, but in many cases nothing I have used in thirty years' experience has been so highly gratifying to the patient. The heat should be as intense as can possibly be borne, and may be modified by increasing the number of layers of flannel between the iron and the skin.

For internal treatment, **cimicifuga** and **gelsemium** are the specific remedies. The former exercises its direct influence upon the muscular structures, and the latter upon the nerve filaments, and at the same time they influence the central nervous system, stimulate the general elimination, and materially encourage elimination through the kidneys, thus relieving capillary constriction and local irritation in these organs, which is so common in rheumatic conditions, and promoting a free flow of the watery portion of the urine. In pleurodynia and in affections of the peritoneum, **bryonia** and **asclepias** are indicated by the soreness in these serous membranes and by the sharp, cutting pains. In an abrupt attack of lumbago it is good treatment to apply dry cups over the muscles, if the pain will permit, before the ironing process is adopted, but this course, although sometimes productive of immediate relief, is usually objected to.

I have seldom failed to obtain permanent results from the mild **faradic current**, as advised in chronic rheumatism. It has been my habit to use this current over the affected muscles in conjunction with internal medication, twice a day during an acute attack, and every second or third day for weeks succeeding an attack, until no muscular soreness was complained of, even when the current was increased to considerable strength. I am confident that there is but little danger of a recurrence of attacks which are treated with electricity.

These patients, like chronic rheumatics, should be put upon a vegetable diet, with a large quantity of pure water, or upon a free milk diet, and should form habits of eating

which conduce to the absorption and rapid appropriation of the nutritious elements with the least possible errors of metabolism, and everything should be done to encourage elimination. Hot baths are of immense service, and anything that will promote free perspiration will cause the patient to remark concerning his temporary well being. Immediate relief is often experienced from a free sweating. The condition of the stomach should be kept as near as possible to the normal point, and any faults of the nervous system should be overcome, especially any tendency toward nervous debility, which should be promptly restored by correctly adjusted tonics.

These patients do much better in a warm climate or during hot weather in cooler climates. They suffer more during cold weather, and are unable to resist cold, readily becoming chilled. They always express themselves as enjoying better health during the heat of the summer. This is due to the greater freedom of cutaneous transpiration and general elimination at that time.

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## ARTHRITIS DEFORMANS.

**Synonyms:**—Rheumatic gout; rheumatoid arthritis; osteo-arthritis.

**Definition:**—A chronic disorder of the joints, characterized by progressive and usually permanent changes in all the structures of the joints, and by deposits around them, resulting in serious deformity. It is to be distinguished from gout and from acute rheumatism, both of which it resembles in some particular.

**Etiology:**—Heredity has a marked influence in the occurrence of this disease. I have at the present time under observation a family in which the father and his brother died after years of increasing deformity; one son died at thirty, and two sons and one daughter now living have the diffi-

culty in mild form. Another daughter, above forty years of age, has no symptoms of the disease.

The disorder is thought to follow acute rheumatism, and to depend upon the causes which induce that disease. There has been found disease in the spinal cord of many of these patients, such as lesions in the anterior horns, which were degenerative or atrophic in character. It has also been associated with locomotor ataxia, and has seemed to be induced by serious nervous shock or great grief. The trophic changes take place in the structures surrounding the joints, in the skin and muscles, and may be distinctly located in the nerve trunks, closely resembling neuritis, but whether these conditions are primary or secondary is a matter of doubt. An effort is being made at the present time to ascribe the disease to microbic causes, but as yet no progress in this line has been made.

The condition occurs in middle life, only a few cases having been observed in youth. It occurs more frequently in females than in males, in the proportion of four or five to one. Those who are careless in their diet and in their habits of living, who heedlessly expose themselves to abrupt temperature changes, and who do not keep properly clothed, are especially subject to an attack.

**Symptomatology:**—When a difference is recognized in the mode of onset of this disease, this difference is more theoretical than practical, as it is usually impossible to distinguish between those variations which are designated as acute, sub-acute or chronic.

However, it is possible to distinguish between a class of cases in which there is a slow, **progressive deformity** of the joints. It may occur first in one joint of the first finger, and later in the same joint on the opposite hand; there may be some slight differences from day to day in the amount of soreness and pain, but there is a uniform, steady progress of all other symptoms. The joints increase in size and in **stiffness**, or in inability of movement. Occasionally there is no pain in the joints, but the surrounding tissues

may be sensitive; at other times there is pain on attempted movement or upon pressure. Occasionally there are no external appearances of redness or swelling of the covering of the joints; later, as the disease involves other joints of the hands and feet, the pain increases, and may be constant.

The other form mentioned is that in which the joints enlarge much more rapidly at certain times than at other times, and this enlargement is accompanied with extreme pain. Upon voluntary or involuntary movement of these joints a sensation of roughness is experienced, and often a crackling—a crepitus—can be heard in the joints. There are evidences of a primary inflammation having occurred in the synovial membranes, as there is hyperemia and local engorgement. Following this, the cartilagenous coverings of the bones are gradually absorbed, there is a development of fibrous tissue, and bony deposits take place from the periosteum which covers the end of the bones, resulting in roughness of the joint primarily, later, of considerable impairment of joint motion, until immobility occurs, and ultimately complete ossification of the joints.

While the disease affects the joints of the extremities only, in most of the cases there are instances, two of which have come under my own observation, in which the gradual progress of the disease through a period of years ultimately involved every joint in the body, producing not only arthritic changes which were plainly apparent in nearly every case, but inducing permanent contractures. In one of these cases the thighs were flexed upon the body until the chin was fixed upon or between the knees, the legs were flexed upon the thighs, and the feet were dislocated at the ankles and stood nearly parallel with the tibia. The articulations between the vertebræ became ultimately ossified, until the movement of the head upon the neck or of any portion of the vertebral column was impossible. The inferior maxillary was solidly fixed, with the teeth separated perhaps one-fourth of an inch; the forearms were flexed upon the arms, and the hands were held together. The pain with this pa-

tient was excruciating; it was increased by every motion, and even by a slight jar of the bed. He was under my observation for about a year before his death, with but little change in the condition, which had existed for a year or more previously. No treatment was of the least benefit, and nothing but opium gave him any relief. The opium habit was formed when I was called. He was taking thirty drops of laudanum every two or three hours. In undertaking to cure this habit, so greatly was his distress increased that I desisted, considering it a mercy that his agony could be in part relieved by this remedy.

**Heberden's nodes** are those small, bony knobs which form around the joints of the fingers, most frequently in women, in the early stage of this disease. Some of these cases never progress beyond this deformity, and a few of the writers consider this a distinct form of the disease. This condition does not influence the general health of the patient in any marked manner. There will ultimately occur those conditions which result from enforced confinement and inactivity, and there is slow muscular atrophy, with corresponding loss of strength, with occasionally a slowly progressive anemia. Disorders of the stomach occur frequently, with chronic constipation. The condition of the kidneys is not early influenced. There is usually a sufficient quantity of rather pale, limpid urine, and occasionally a trace of albumin.

**Diagnosis:**—This disease is often confused with chronic rheumatism, and occasionally with gout. It must be remembered that chronic rheumatism seldom involves the smaller joints, while gout is paroxysmal, especially in the early stages, at which time both of these diseases are much more painful than this. The bony knobs and the permanently fixed character of the joints, and the progressive character of the disease in the later stages, render the diagnosis unmistakable.

**Prognosis:**—This disorder is incurable. But little benefit, even in the early stages has been accomplished in any of the cases. However, the progress of the disease may be ar-

rested, more or less permanently, by the rigid adherence to a careful course of treatment.

**Treatment:**—These patients should be given alterative treatment in a persistent and active form. The use of the old compound syrup of **stillingia** with **corydalis** and **capsicum**, persisted in for a long period, and varied a little according to the judgment of the physician, will influence some cases. I believe that **echinacea** will be found of some benefit also. It may be given with the **sodium iodid**, as advised in the treatment of syphilis. The use of **potassium acetate** and small doses of **podophyllum** or **iris** will benefit cases in which there are liver complications. A syrup of **hydriodic acid**, as advised for gout, may be given under similar circumstances, to these patients. If there seems to be a slowly progressive anemia, the syrup of the **iodid of iron** should be given in twenty minim doses, every three or four hours. Constipation should be persistently antagonized, and the sewers of the system should be flushed with an abundance of pure water.

Rest to the joints is no advantage in this disease. Joint movement and massage, while they may not decrease the actual condition in the joints, will prevent ankylosis, retard deformity, and contribute to the usefulness of the part, and prevent much ultimate pain.

A free, liberal diet may be prescribed, although an excess of nitrogenous food should be avoided. Vegetarians are less apt to have this disorder than those who partake of meat in its various forms. Coffee and tea should be taken sparingly or be entirely excluded. The use of alcohol does not seem to have much influence in the cause or the development of the disorder, and taken sparingly does not greatly aggravate it.

## GOUT.

**Synonym:**—Podagra.

**Definition:**—A chronic disease resulting from abnormal metabolic changes, characterized by the deposit in the joints of the body and in the contiguous fibrous structures, of the sodium biurate, which results in arthritis, pain, and perhaps more or less permanent deformity.

**Etiology:**—Many theories have been advanced as to the cause of this well-known disorder. It occurs in patients of the higher classes who have but little regular physical exercise and are high livers, addicted to the excessive drinking of sweet wines and malt liquors. It occurs frequently, however, among the poorer classes, who indulge freely in beer and subsist on insufficient food of a poor quality, with unhygienic surroundings. Those who live in the open air and whose employment is actively physical and always out of doors, and who are temperate in their habits, are seldom attacked with this disease.

Occasional cases will be observed in children, but in these it is often ascribed to heredity, as statistics of some countries show that in nearly one-half of the cases the immediate ancestry were afflicted with this disease. I am inclined to think that this is due more to the adoption by the children of the same habits of living as those practiced by the ancestors, rather than to any transmitted tendency to the disease. It occurs more commonly between the ages of thirty and fifty, during the active period of early middle life, and because of the intemperate habits of males, these are more frequently attacked than females.

The constant overeating of highly seasoned foods is a prolific source of this disease. There is an inability on the part of the system to appropriate for the purposes of nutrition only a portion of the foods taken; excretion must dispose of the remainder. When there is overactivity or perversion of the metabolic processes, and where the elimination is insufficient or imperfect, this condition results. As

stated, these factors, combined with insufficient physical exercise, and overexercise of the nervous system under constrained or unhygienic circumstances, are especially favorable. The condition is common among certain metal workers, and is a direct result of chronic lead poisoning.

**Symptomatology:**—There is considerable variety in the forms in which this disease manifests itself. Most commonly there are premonitory symptoms of imperfect or disordered tissue metabolism, which continue for weeks or perhaps months, resulting in the insidious development of gout, with its characteristic phenomena. But occasionally it is distinctly acute in its manifestations. There is disturbance of **the digestion**, with irritability of **the nervous system**, and **insomnia**, for a number of days; **the tongue** is heavily coated, there are eructations of gas and nausea, with some vomiting; occasionally there is a mild diarrhea. This is accompanied with a severe headache, similar to that which is described as sick-headache. There is **scanty urine**, of dark color and high specific gravity, which is passed with burning or urethral irritation. Occasionally the urine is heavily loaded with urates and uric acid, which may readily deposit upon cooling. There is at times muscular soreness, or **cramps in the muscles**, or transient, fleeting, but rather severe pains, both in the muscles and joints. In other cases there is **asthmatic breathing** of rather abrupt occurrence. Rarely, however, a patient will be taken abruptly with the full development of the disease, after having been in apparently excellent health for some time. **Pain**, sharp, intense and severe, of a cutting or stabbing character, increased with every jar or movement, occurs then in the ball of the great toe, or in the metatarso-phalangeal articulation. At the seat of pain the tissues swell very rapidly and become exceedingly sensitive; the skin becomes red and hot and pits upon pressure, and is of a shiny or polished appearance over the entire inflamed area. There is usually a slight **chilliness** with a development of a considerable temperature. It may rise as high as 103° F., but usually 102°

or  $102.5^{\circ}$  F. is the limit. With the fever there is a paroxysm of especially excruciating pain of a crushing character, described as feeling as if the joints were in a vise. These intense symptoms, which usually occur in the early morning, will last perhaps two hours, when there is a rapid abatement of the pain, the fever declines, there is free perspiration, the appetite returns, and the patient is inclined to go about his usual avocation. On the following morning these symptoms will recur, with perhaps increased violence and additional involvement of the same toe on the opposite foot, or of the joints of the hand. The third or fourth attack, however, is hardly as severe as that of the preceding morning, and on subsequent daily recurrences will abate. The fever declines, the swelling abates, and there is a desquamation of the cuticle over the inflamed surface; the skin gradually assumes its normal color, and there is a gradual return to usual health. The health continues unimpaired as long as the patient preserves a strict oversight over his habits of living, and avoids alcoholics and all excesses in diet. But after any overindulgence symptoms of the disorder will reappear, and if the patient has grown careless in his habits the original attack in all its severity will recur. In no case is there suppuration of the joint.

In very rare cases **uremia** results from an acute attack, and **cerebral symptoms**, such as acute **delirium**, excitable **mania**, or **coma**, or perhaps **apoplexy** will result. In other cases, under circumstances in which this disorder is described as retrocedent, the pain and inflammatory symptoms are transferred to some one of the other vital organs, as to the stomach, when there is acute vomiting of a severe type, which greatly increases the almost agonizing pain in the epigastrium and is accompanied with sudden prostration which may be quite alarming. With the abatement of the symptoms in the great toe, the pain may attack the heart, when the pulse becomes small, rapid, feeble, very irregular, and there is dyspnea, anxiety and prostration. Or an acute pericarditis may develop which is likely to terminate fatally.

Repeated recurrences of the acute form of this disease develop a permanency of character which terminates in **chronic gout**. The joints become more or less permanently stiffened with continued soreness in the surrounding tissues. There is an occasional **recurrence** of paroxysms of **pain**, which are not as severe as those of the acute attacks. Deposits of the sodium biurate in the diseased joints result in deformity and in actual dislocation. Finally there is a subsidence or an entire disappearance of the acute attack, with a slow increase in the abnormal deposits. These invade the fingers and the wrists, as well as the joints of the foot. In the fingers the phalanges are sometimes displaced laterally or otherwise, and become ankylosed; in other cases the deposits are made in the larger joints, such as the hip, knee or shoulder, for a short period, but there is seldom deformity or permanent stiffness. While suppuration does not occur, **ulceration** of the **skin**—a necrosis of the covering tissues of these diseased joints—will occur, from which may exude particles of a chalky substance with which the joint is enveloped. In these chronic cases, changes are apt to occur also in the urine. It may still continue scanty and high colored, but will contain albumin and tube casts, but the disorder is apt to produce an interstitial nephritis, especially in patients advanced in life, in which there will be a large quantity of pale urine of low specific gravity, and a considerable quantity of albumin.

These patients, when the disease is permanently established, are liable to acute exacerbations, in which fever develops and constitutional involvement is pronounced. During these exacerbations there may be acute pharyngitis, laryngitis, pneumonia or pleurisy, or the conditions may occur which we have described as occurring during the retrocedent form of the disease.

Nearly all writers recognize a form of gout which is described as **irregular gout**. Sir Dyce Duckworth defined it as a manifestation of gout anywhere else but in a joint.

Those who possess a gouty diathesis exhibit a great

variety of symptoms, which although attributed to the uric acid diathesis, are not due to the presence of this substance, but differ from the uric acid disorder both in the development of the cause and in the manifestation of the symptoms. It may be difficult to determine which of the two conditions is the cause, and in common practice they are often carelessly classed together as resulting from an excess of uric acid. These patients often suffer from intractable nasal catarrh, or from pharyngitis, tonsillitis, or laryngitis, which occurs in an acute form, often from no apparent cause, or peritonitis may occur. Bronchitis and persistently recurring asthmatic attacks are attributed to it. There is at times persistent acid gastritis with anorexia and nausea, and perhaps a disgust for food. There is diarrhea, with severe colic at times, which fails to yield to the usual treatment.

**Myalgia** may be classed under this head. There is muscular stiffness, soreness and more or less pain in the deep cervical and lumbar muscles, in the muscles of the thighs and calves and in the chest muscles. This may be especially severe upon waking in the morning, but may disappear in the early part of the day, to recur on the following day. **Neuralgic pains** are common, and other nervous manifestations, especially **migraine**. **Eczema** is a frequent result of gout, and **pruritus of the genitals** of an exceedingly aggravating character, or pruritus of the skin in any locality, and especially in the palms of the hands and in the soles of the feet, is not uncommon. It also induces itching of the eyeballs or of the inner ear, and keratitis, conjunctivitis, iritis and other eye disorders may occur.

There is no doubt that gout is a direct cause of albuminuria with casts, and of the ultimate development of interstitial nephritis. Its persistent presence in the system induces gravel, and renal and vesicle calculi, which, acting as an irritant to the kidneys, induces renal colic, pyuria, or cystitis, and the entire train of symptoms common to those conditions. It may also cause glycosuria, or remotely, diabetes mellitus.

**Diagnosis:**—The classic appearance of acute gout in the joint of the big toe cannot be mistaken. There is usually a history of high living, dissipation, and but little physical activity. In this form it is quite readily distinguished from acute rheumatism, but when several joints are attacked simultaneously, and fever and other constitutional manifestations appear, then a differential diagnosis is much more difficult. Rheumatism attacks individuals of all ages and of all classes, and the attacks may occur at any time. Thompson has stated that in rheumatism there is a diffused tenderness in the skin and in the tissues surrounding the joints, and in the tendons, while in gout the greatest tenderness in the large joints is elicited upon transverse pressure directly over the condyles. In chronic rheumatism the larger joints rather than the small joints of the hands and feet are affected.

**Prognosis:**—The disease does not readily yield to treatment. The prognosis depends largely upon the conditions; those who have a history of heredity, and who themselves persist in high living, are seldom benefited by treatment, and die in early middle life. When the attacks occur after the age of forty-five the prognosis is better than in earlier life. Alcoholic beverages must be entirely prohibited if relief from any treatment is permanent. Complications of any kind render the prognosis less favorable.

**Treatment:**—The treatment of this disease resolves itself into the treatment of the acute attacks, and ultimately into the treatment of the general condition. So severe is the pain and the local inflammatory symptoms that it is often necessary, for immediate relief, to administer an opiate. **Hot fomentations** are productive of comfort, and the use of **labradol** or **antiphlogistine**, surrounded by **dry heat**, will not only give immediate relief, but will do much toward preventing as severe an attack on the following day. The administration of a single large dose of **salicin** or **salicylic acid** will produce some amelioration. Smaller doses may be

repeated during the day, in anticipation of the attack on the following morning.

In adjusting conditions to a patient suffering from this disease he should spend much time in the open air and must avoid a damp and changeable climate. A **dry, temperate climate** is of much assistance in an ultimate cure. The patient should wear light flannels even in the summer time, and in cold weather he should be at all times warmly clothed. Physical exercise, short of exhaustion, is always desirable. This may be accomplished by horseback riding or by light regular out of door work, whichever is preferable.

Patients of naturally robust constitution, devoid of heart complications, obtain benefit by taking a course of **hot baths**. The baths at Hot Springs, Arkansas, are reputed to be of much service in ridding the system of an excess of tissue waste and of the earthy salts which cause this disease. **Turkish baths** are of much advantage, and should be taken regularly, but not too frequently. Hot air baths, or the alcohol vapor bath, is also beneficial. Feeble patients will seldom be benefited by so rigorous an eliminative treatment. These patients should drink freely of water. A carefully selected mineral water is sometimes of much efficacy. In our locality we have access to the **Waukesha waters**, which are devoid of any earthy salts, are pre-eminently pure, and exercise a simple influence in flushing the emunctories of the system, especially the kidneys. The use of distilled water has been advised, but its superiority has not been proven.

The **course of diet** of these patients must be selected with the utmost care and rigidly enforced. It is a good plan to deprive them for a time of all nitrogenous food, permitting the use of a well selected vegetable diet; however, milk is always permissible, and butter and cream are by no means objectionable. If the stomach is in a normal condition, the patient may take freely of even the coarse vegetables; I believe that cabbage, turnips, lettuce and celery are especially

beneficial. Fruits may be eaten in season, excepting bananas, which I have found reason to exclude. The patient may partake freely of sweet potatoes, stale bread and toast, baked potatoes, hominy, rice, macaroni, sago, tapioca, and of the most of the prepared breakfast foods. Tea and coffee are always objectionable in gout, much more so than in lithemia or in stomach disorders. When it is thought best to permit meat to be added to the diet, the patient should be allowed eggs and oysters, and occasionally a meal of fresh fish. He may eat of fresh beef or mutton two or three times a week; but all cured, salted or canned meats and fish must be rigidly and persistently excluded from the diet. Other articles which should be excluded are fresh bread, hot biscuit or griddle cakes, all pastry, all dishes and fruits which contain an excess of sugar, and cheese. The use of condiments, pickles, sauces and flavoring extracts should be forbidden.

For **beverages** the patient must be satisfied with milk, water and a little cocoa. These may all be taken hot. Hot water seasoned with cream and sugar is sometimes quite palatable. I have only one word to say concerning the use of alcoholics in any form. While some patients might be able to take a little without apparent detriment, they are always in danger of increasing the conditions which induce the disease. There is no absolute safety in any course except absolute prohibition of everything that contains alcohol.

**Medicinal Treatment:**—No depleting measures of any kind should be adopted in the treatment of gout. We have but few remedies that exercise a specific influence on the disease. The pain may be controlled to excellent advantage by a preparation of **sodium bromid** three drams, **sodium iodid** one dram, **morphin** two grains, tincture of **capsicum** one-half dram, syrup of orange peel sufficient to make three ounces. Of this a teaspoonful may be given every half hour or hour. **Colchicum** is considered by the profession at large to be as near a specific in this disease as any remedy we

possess. From fifteen to twenty drops of the **wine of colchicum** may be given during the attacks every three hours, and between the attacks ten drops may be given every four hours. The use of **macrotys** and **acetate of potassium** will facilitate the action of this remedy. The **salicylates** may be continued as long as there is no irritation of the stomach. Because of the possibility of this irritation occurring it is well to select the **salicylate of strontium** in preference to the potassium or sodium salts. Ten grains may be given every three or four hours. Occasionally the **iodids** are advised. If the urine is excessively acid, and an acid diathesis prevails within the system, good results may obtain from the use of the potassium or sodium iodid in reasonable doses. In another group of cases the acidity is not conspicuous, the urine may be neutral or alkaline, and there may be a tendency toward a deficiency of the acids of the gastrointestinal tract. Under these circumstances the **hydriodic acid** will be in every way preferable. It has accomplished excellent results, and is best given in the form of the syrup of hydriodic acid.

The excessive acidity which usually predominates in this condition has been treated to good advantage by the **carbonate of potassium** or the bicarbonate of potassium or sodium. I have succeeded with considerable satisfaction in relieving many of the untoward symptoms and in materially reducing the specific gravity of the urine, by the use of **piperazin**, in from seven to ten grain doses, four times daily. The dose should be administered in a glass of water.

I have read some excellent articles from physicians in whom I have confidence advocating the use of **sulphur** externally over the diseased joints in gout. The remedy is sprinkled freely over a piece of soft flannel and it is also rubbed well over the diseased part, which is then covered closely with the flannel and enveloped in sufficient other flannels to keep the part very warm. This should be continued for several hours at a time every day, or as in the judgment of the physician it will prove most beneficial.

## UREMIA.

**Definition:**—A general toxemia manifested by a group of symptoms, direct or reflex, referable in the main to the nervous system, which are due to the retention in the body, from deficient or imperfect renal action of certain secretory or excretory products of the kidneys.

**Etiology:**—Various theories have been advanced concerning the origin of the toxins which cause the disease. Some of these have been sustained for a time, others have been proven to be untenable, while others are accepted because nothing better is suggested. Whether the retained toxins which induce this condition are the identical substances which should be excreted by the kidneys, or whether they are products due to imperfect or irregular tissue metabolism, is one of the yet unsolved pathologic problems. The consensus of opinion is in favor of the latter belief. Whether the morphologic products which should be excreted are toxic in themselves if retained, or whether these substances are changed chemically when retained, producing other substances which are toxic, is a part of the question that demands solution. The condition occurs most frequently in conjunction with and as a result of some one of the forms of acute or chronic nephritis. It occurs also with diseases which, in their course seriously influence the renal organs, or their functions, such as scarlet fever, diphtheria, typhus and typhoid fevers, cholera, yellow fever and gout. It follows profound septic absorption, and occurs during pregnancy.

Urea and uric acid having been found in increased quantities in the blood in uremia, and in decreased quantities in the urine, the theory was accepted for a long time, that these products were the real cause. Frerichs advanced the theory that when urea was retained in the blood, there was a decomposition of its molecule, the nitrogen of which, combining with the carbonic acid and hydrogen, formed an ammoniacal compound, probably the ammonium carbonate.

This decomposition would be facilitated or retarded by the condition of the system at the time of the retention. This may explain the fact that an excess of urea may be injected into the blood by way of experiment, in a condition of health, without inducing intoxication.

The author, in 1886 and 1887, made a considerable study of uremic intoxication in horses, in the disease known as azoturia. In this interesting study there seemed to him to be strong grounds for Frerichs' theory, as there is often no disorder, if the animal is kept quiet, until the enormous excess of urea is eliminated. Violent, sudden exercise will develop all the symptoms within a few minutes. It seems reasonable to believe that the exercise produces a toxin from decomposition of the enormous quantity of urea in the blood. It is certain that certain changed conditions must exist in kidney disease, before uremic poisoning occurs, as there are a few cases in which there is no apparent diminution accompanied with uremia. Again, in uremic cases there is usually deficiency of the watery constituent of the urine as well as of the solids, while occasionally there is a very large quantity of water, the specific gravity of the urine being low. Again, to further complicate the solution of the problem, there are several forms of deficient renal action, unaccompanied in quantity, either of the solids or of the water.

**Symptomatology:**—Perhaps the most common form of uremia is that form which is characterized by convulsions. This is designated as the **convulsive type**. The **convulsions** may occur without any previous announcement; more commonly, however, especially in puerperal cases, there is an extreme bursting **headache**. The convulsion is epileptiform in character, involving first, the muscles of the **head**, face and arms, to be soon followed by one involving a larger portion of the muscular structure of the body, and quickly becoming general. **The pulse** becomes rapid and usually feeble; there is at first an increase of the temperature, and in occasional cases, the temperature remains high; in others it falls to normal or below. **The mind** becomes involved,

the patient soon becoming unconscious and **coma** ultimately follows.

In other cases of this same form, the premonitory symptoms are marked; there is for some days **headache, drowsiness, dulness, vertigo** and **amaurosis, faulty vision**, spots before the eyes, or the ability to see only half of an object. There may be no apparent alteration of the retina, or there may be congestion or edema, or rupture of a capillary on the retina, or distinct albuminuric retinitis may be present. There may be ringing in the ears and some nausea, with muscular twitchings which increase until the characteristic convulsion appears. This condition is more apt to be present where the uremia is the sequel of some acute disorder. In yet other cases, there are as the first symptoms, **dulness**, quickly passing into **coma**, or dulness followed by **delirium**; occasionally with the delirium there is a mild form of **mania or delusional insanity**, preceding the convulsions and coma. Often the convulsions are followed by paralysis, which may be general or there may be a hemiplegia, or a local paralysis.

There is a form of uremic intoxication in which the first symptom is **difficulty of breathing**. The respiration at first is slightly asthmatic, later this difficulty of breathing increases suddenly with exertion; the patient feels suffocated, and is obliged to assume a sitting posture; the skin of the face becomes dusky, but seldom cyanosed. These symptoms may all disappear, leaving the patient apparently well, to recur again with more or less abruptness after a few days, or they may occur only in the night. As the difficulty progresses the respiration may assume the Chayne-Stokes type, which predicts a serious result.

Another manifestation of uremia is that which involves the **gastrointestinal** tract. This is usually ushered in with **vomiting**, which is violent and persistent, and which can not be traced to any disorder of the stomach, and is not relieved by treatment directed to this organ. Sometimes this is accompanied with constant nausea of an extreme type. It is not uncommon for a severe **diarrhea** to occur

shortly following the vomiting, which may soon amount to a profuse watery purging.

With all manifestations of uremia, **the heart** is early influenced. **Palpitation** with irregular action is common, usually the heart beats slowly and is oppressed at first with a large, round, full, soft stroke. Later it becomes rapid and hard, and still later, in the serious stage of the disease, it becomes very rapid, feeble, soft and easily compressible.

A symptom of uremia which is well-nigh pathognomic and should not be overlooked is the **urinous odor** of the **breath**. It differs somewhat from the characteristic odor of urine, but is sufficiently similar to be easily recognized. Occasionally the odor is ammoniacal like that of decomposed urine. The urine is quite scanty, often completely suppressed. When examined it is of dark color, has a high specific gravity, is sometimes cloudy, occasionally loaded with urates, but is usually deficient in urea and is sometimes wine colored from the presence of blood. It usually contains a large quantity of albumin and tube casts.

**Diagnosis:**—The presence of a scanty quantity of urine which contains albumin, associated with any of the above symptoms, will act as a strong clue to the observing physician. The usual, somewhat erratic symptoms, occurring without unconsciousness, or paralysis, will exclude apoplexy. If hemiplegia, or monoplegia are present, this differentiation will be difficult or impossible. In apoplexy the pupils are unequally dilated and albuminuria is absent at first; in alcoholism, and in opium poisoning, there is an absence of nerve irritation, and of convulsive tendencies. With opium the pupil is contracted, and there is the characteristic odor of the drug on the breath. The increased arterial tension, extreme headache, usually flushed face when convulsions appear, persistent vomiting, the urinous odor of the breath, and accentuation of the second heart sound, are confirmatory before the spasm, causing the spasm to be anticipated where it is not the initial symptom. In **coup de soleil**, or heat stroke, a differential diagnosis is determined by the

existing conditions; the high temperature, more pronounced cyanosis and early absence of albuminuria.

**Prognosis:**—This condition must be invariably regarded as serious. The prognosis is grave but must be based upon the cause and attendant conditions. While many die a large percentage of the cases respond satisfactorily to treatment.

**Treatment:**—**Elimination** is the essential primary consideration in the treatment, whatever the cause of the disease, or whatever the other pathological conditions involved in it. I put my patients immediately to bed and avoid everything of an irritating or exciting nature. If consistent the patient may first have a hot bath, but this is not always admissible. **Heat** is then applied over the kidneys and this is persisted in until these organs are secreting freely. I consider this the most important of all auxiliary measures. I have had success in almost hopeless cases where I permitted no abatement of bearable heat for from three to five days. A hydragogue **cathartic** may be early administered and in sthenic cases a full dose of pilocarpin, especially if the secretory functions have been sluggish. The bowels should be kept freely open for several days. Perspiration should be encouraged by the use of jaborandi or of **ginger, eupatorium** or **asclepias**, in hot infusion. This result may be attained by a warm **wet sheet pack** which can be applied every day for several days if the uremic symptoms persist. This is especially valuable in post-scarlatinal, or post-diphtheritic nephritis. If the patient has a high temperature the sheet may be applied at a little less than the normal body temperature, 90° or 95° F. and that enveloped in a dry, warm blanket. The reaction should be complete in a short time. The hot pack is the safest with children and feeble adults, especially those where an eruption has failed to appear satisfactorily, or has receded.

For the convulsions **veratrum** is the most available remedy. It may be given in from ten to twenty minim doses hypodermically, and repeated in twenty or thirty minutes. The inhalation of **chloroform** may be needed; occasionally

a full hypodermic of **morphin** is advised, but this remedy is rapidly losing its popularity. **Gelsemium** will prevent convulsions if they can be anticipated. Five minim doses may be given every hour until its physiological influence is apparent. It acts favorably also upon the kidneys, relieving the extreme irritation often present, producing dilatation of the capillaries, and increasing the functional renal activity. The dose may be given in an ounce of hot water. Later gelsemium may be given in smaller doses in conjunction with macrotys and hydrangea, to continue the process of renal elimination. The introduction of half a dram of **sodium bromid** and twenty grains of **chloral** in two ounces of hot water into the rectum will be of material service in controlling convulsions.

In cases of nephritis following scarlet fever, or where there is intense local renal congestion, I have overcome the congestion, established free renal secretion and reduced dropsical symptoms, by the administration of one grain of **santonin**, alternated with a minim of **belladonna**, every hour. This is, indeed, satisfactory treatment and will often succeed when other measures have failed.

Other remedies available in bringing about normal renal activity, after the acute symptoms are past, are **chimaphila**, ten drops every two hours, when there is urinary irritation; **polytrichum juniperum** when dropsy results from suppression; **apocynum** when the dropsy is general and the heart weak; **triticum** or **epigea** in hot infusion when it is necessary to greatly increase the excretion of water. When uremic coma threatens, one-eighth of a grain of **caffein** should be given hypodermically every two or three hours. It assists in the elimination of urea and uric acid, overcomes dulness or drowsiness, greatly encourages the action of the heart, and promotes normal respiration. It is indicated with **quebracho** in uremic asthma. In the restoration of the heart's action and of the general strength of the patient, hypodermoclysis of the **normal salt solution**, or this solution injected within the rectum every six hours, will

exercise a general beneficial influence. It is a direct kidney stimulant also, of much power and efficiency.

Echinacea should be given in from ten to twenty drop doses every two or three hours, in every case where uremia is suspected. It should be continued during the entire course of the disorder. It is positively curative of the disease and prevents convulsions, and other complications.

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## RICKETS.

**Synonyms:**—Rachitis; *rachitismus*.

**Definition:**—A constitutional disease of childhood, due to faults of nutrition, characterized by defects in growth and general development, and in the excessive development of the organic structure of the bones, especially of the ends of the long bones, which are soft from deficiency of lime salts. There is also faulty development or malformation of the muscles, tendons and cartilages.

**Etiology:**—An inherited impairment of the vitality, unhygienic surroundings, filth and poor food are the main causes of this disorder. Children whose parents are dissipated in habit, or who are afflicted with syphilis or tuberculosis, are especially liable to have the disease. It occurs also with those who have what has been known in the past as a scrofulous diathesis, now recognized as a phase of tubercular development. There are cases with good surroundings, who have excellent care, with whom there is some serious impairment of the vitality which influences the nutritive functions, resulting in mal-nutrition, from which this disease may develop. By far the larger proportion of cases are found among the poor of large cities, who are crowded together in poorly ventilated houses, which are damp, dark and uncleanly, and where there is no opportunity for exercise in the open air and sunshine. In our own city the Polish Jews and Italians seem to be especially liable to this disorder. It can also be traced to inability on

the part of the mother to impart sufficient vital force to the fetus or to sustain the infant after birth, from the poor quality of her milk. It is very difficult to adjust artificial diet to this class of cases, and thus prevent the development of the disease. As stated, the condition occurs in early childhood, and is occasionally observed to be congenital. It may not appear, however, until the end of the second or during the third year, and is seldom found after puberty, although the results of the disease will continue through life.

All things considered, there is little doubt but that dietetic faults are most to blame for the development of the disorder.

**Symptomatology:**—These patients have the appearance of **poor health** for some little time before disease of the bones is apparent; the child ceases to grow, loses flesh, is **peevish, irritable**, and keeps up an almost **incessant** fretful **crying**. It is unable to properly appropriate its food and seems to be constantly hungry; there are digestive disturbances, more or less marked, which consist of **pain, nausea and vomiting**, and of sour, fermented or undigested food, and diarrhea with acid stools. There is some fever, which is erratic and irregular in character, but is seldom high; the **head is hot**, and the child is always restless. Its **sleep** is greatly disturbed. It has **night sweats**, more or less profuse; sometimes it sweats only on the head and neck, and the perspiration has an unpleasant odor.

Later it will be observed that the child **screams** or **cries** out suddenly when it is moved, and finally it will be discovered that the pain is in one joint only, and is caused by any movement or handling of that joint, which is extremely sensitive. Still later, **enlargement** of the **joint** will become apparent. The disease, however soon extends to other joints; there is an enlargement of the ribs at their junction with the cartilages. These **enlargements** assume the form of nodules or beads, and the condition is described as beading of the ribs. Later the condyles of the femur, the wrist bones and ankles will become affected, and later the bones of the head. There is a bulging often of the

frontal bones, which produces a peculiar square, prominent forehead. The breast bone becomes involved, and so changes its form as to materially alter the shape of the chest, resulting in that condition which is described as pigeon breast. This impairs the shape, development and utility of the lungs, and thus interferes with the proper oxygenation of the blood, and the heart is crowded forward and slightly displaced. The growth and development of the teeth is greatly delayed and the teeth decay early. The child is feeble, listless, seldom interested in amusements of childhood, and soon develops pot-belly.

They are occasionally anemic, but this is not a constant condition. There is **slow and imperfect development of the mental faculties** in many of these cases, or **epilepsy** or **tetany** may occur, and later **chorea** may develop. **Spasmodic croup** is not of uncommon occurrence with these patients, and this condition contributes to the deformity of the chest. As the child advances in age and undertakes to walk, it will be found that the long bones have not the stiffness or rigidity with which to support the weight of the body, and they will gradually become bent; resulting in bow-legs or knock-knees, club-foot or other deformities. There may be also curvatures of the spine or spinal necrosis, or deformities of the pelvis may occur.

Many of these conditions are not characteristic of rickets alone, and their presence does not confirm a diagnosis of this condition.

**Diagnosis:**—The diagnosis depends upon the general failure of the child's health, upon mal-nutrition, its general puny appearance, and later, upon the presence of soreness and pain in the joints, with gradual enlargement and deformity.

**Prognosis:**—But few of these cases die from this disease. Taken early, they are quite amenable to treatment, and should be treated with confidence and assurance. But with the best of treatment, permanent deformity is common.

**Treatment:**—As consulting physician I have observed

that it is an almost universal fault with practitioners to express much doubt, to talk hesitatingly and disparagingly of an ultimate cure, and to exhibit a lack of confidence in their own ability to handle this class of disorders. There is nothing that contributes more positively to an ultimate cure than to cause the parent to feel absolutely positive that the attending physician will advise measures which will ultimately cure these patients if persisted in, provided the parent co-operates perfectly in carrying out every detail of the treatment as advised.

The first attention must be paid to the stomach. Any disorder there present must be corrected, and the diet must be regulated with the utmost care. If the patient is starving on a full quantity of its mother's milk, it must be at once fed, either in part or entirely, upon pre-digested milk, until the condition of the stomach is corrected, when it may be able to take **cow's milk**, either of full strength or diluted in the proportion of one part of water to one, two or three parts of milk, to which a little salt is added. I have had good results from a careful selection from among three or four of the best known of the artificially prepared infant's foods. In other cases, where marasmus is pronounced, I have given from five to ten drops of **bovinine**, every half hour, hour or two hours, with all the **water** the child desires, and no other food for two or three days, thus giving the stomach an almost complete rest until it is able to digest stronger food. A little **sweet cream** may then be given, or other simple **fats** or **proteids**, avoiding sugars and starches. As favorable results were observed, I have administered a teaspoonful of **olive oil** every two or three hours, and have used this substance very freely externally. Internally, the **phosphate of iron**, or the **calcium phosphate**, or some phosphate which is easy of appropriation, as the **sodium phosphate**, will be found of much benefit. It is not uncommon for extreme inactivity of the liver to be found present with these cases, and there may be a slight jaundice, the patient passing feces of a light yellow, grayish or clay color, which will float upon

water. To these I give twenty grains of the sodium phosphate every two hours for several weeks, unless it should act too freely as a laxative, in which case the dose must be reduced. Others of these patients have done very well on the official compound syrup of the phosphates, or upon a good syrup of the **pyrophosphate of iron and calisaya** which contains **free phosphorus**. In other cases I have given an elixir of the **glycerophosphates of lime** and soda, with **hydrastis canadensis** and a small quantity of the tincture of **nux vomica**. I consider phosphorus the essential remedy, and other conditions being properly treated, it will seldom fail to give excellent results. To children five or six years of age, a granule of **arsenate of strychnin**, which contains the one-one-hundred and thirty-fourth of a grain, may be given three times daily. The specific indications for some of our remedies may appear during the course of the treatment, but remedies of the class above named will be more efficient. Those who have treated this disease with the **Schussler remedies** believe that to be the most rational treatment, and productive of highly beneficial results.

These patients should have excellent nursing, should receive a sponge bath at a temperature correctly adapted to each patient, with water to which a little salt is added. The tender joints should be protected by the application of cotton wool, and during the progress of the treatment judgment should be exercised to prevent deformity from improper use of the limbs. The child should be kept out in the open air and sunshine as much as possible, even when the weather is quite cool or even cold, and in cool weather it should be properly protected from sudden changes.

I believe that the dieting and care of the mother during the pregnant term has much to do with the nutrition of the child, and where a dyscrasia exists, or where this disease may be anticipated, the mother should be well nourished, and should receive phosphorus or the phosphates freely during the period of gestation. I have observed many cases where the mother seemed to give the strength of her nervous

and osseous structures in an excess of phosphates to the child, resulting in rapid decay of the teeth or extreme spinal irritation, amounting almost to symptoms of caries. In one case the draft was so great as to result in insanity. The children were born with an over development of muscular and bony tissue. In other cases where the mother presents these symptoms it is because of insufficient supply, and the child is born rachitic. These cases must be carefully studied, individually, and the conditions met with carefully and correctly adjusted treatment.

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## SCORBUTUS.

**Synonym:**—Scurvy.

**Definition:**—A chronic disorder due to a fault of nutrition from lack of variety of food, or from an absence of vegetable food, characterized by anemia, spongy gums, and by sub-cutaneous, sub-mucous and intra-articular extravasations of blood and by rapid failure of strength.

**Etiology:**—This disease occurs alike in both males and females, among those who are restricted in diet or who have no variety of food for a long period. It was common at the time of slow sailing vessels for sailors to subsist upon the same salted meat diet, with but little vegetable food, for months at a time. Explorers, those confined for a winter in the Arctic regions, and sailors, also miners and prisoners, and those confined in poorly kept asylums and almshouses, were subject to it. It is by no means as common a disease among the classes above named as formerly, as the needs of the human system are better understood and are scientifically provided for by our present incomparable methods of preparing and preserving all kinds of food, often unaltered, and in a conveniently condensed and compact form. Refrigeration as now practiced is of great assistance in food preservation. There are now marvelous improvements in general sanitation also. However, the modern habit, more

prevalent among the wealthy, of feeding infants and young children artificially on mechanically prepared foods, has introduced the disease among this class, where previously it was seldom observed. It is caused by keeping the child on the same article of diet with no change for a long time.

A prolonged absence of those organic acids in the food which are present in fruits and vegetables, as well as potassium and other organic salts, seems to predispose to it. There is apt to be a deficiency also of free hydrochloric acid in the gastric juice. Autointoxication is undoubtedly an important element in this disorder.

The disease is found among the feeble and those debilitated by a dyscrasia, or by blood taint, or by malaria, syphilis, scrofula and tubercular disorders, and among the aged. Improper hygiene conduces to it. It differs in its essential underlying conditions from rachitis, and yet the two often coexist.

**Symptomatology:**—The disease is of **insidious approach**. The patient has lost energy and spirit, and becomes **depressed** and **despondent**. He is increasingly unable to perform either physical or mental labor, is wearied with any effort and soon exhausted if the effort is prolonged. He becomes pale or **anemic** and **the countenance** has a peculiar apathetic expression and is somewhat bloated, or has a bruised appearance around the eyes. **The appetite** fails, and breath is foul. **The tongue** is thick and pale and usually clean, although it may be covered with a heavy, moist, dirty coat. **The gums** present a characteristic appearance, which is pathognomonic of this disease. They are often greatly swollen and are of a dusky or purplish color, and bleed very readily; they are soft and spongy, and are prone to deep ulceration and to separation from **the teeth**, which become loosened and are frequently lost.

**The salivary glands** become swollen and often indurated, and **petechiæ** or **ecchymoses** appear upon **the skin** in various places. While **constipation** is common, **diarrhea** may occasionally occur, or it may be present as a constant complica-

tion. **The skin** is dry and has a peculiar hue, and as cutaneous capillary hemorrhages prevail, it assumes a greenish tint similar to the later discoloration of a bruise.

There are **extravasations of blood** into the various parts or tissues of the body. These occur spontaneously around the ankles and in the skin of the lower legs first; subsequently, in the skin of the body and of the arms, neck and face. They involve the structures of the joints, and the joints become enlarged and tender, and they are also subperiosteal in the shafts of the long bone. A severe muscular strain, a blow, or any slight contusion will greatly increase this intercellular hemorrhage. With these there occurs in the muscles of the thighs and calves especially, although it may occur elsewhere, a peculiar brawny hardness or induration of the patches of the muscular structure, from the infiltration, which is painful on pressure.

The **hemorrhagic tendency** becomes **general**, and hemorrhage from the nose, lungs, stomach or bowels, from all the mucous surfaces and from the kidneys, may occur. This condition is accompanied with fever only in occasional cases where complications arise. In uncomplicated cases, the temperature tends to become subnormal, the pulse is feeble, soft, compressible, and hurried after any exertion, and the respiration is shallow and rapid. The urine contains albumin in most cases, is generally scanty and of high specific gravity and may contain disintegrated blood corpuscles or may be mixed with blood in large quantity. In an occasional case **nephritis** will develop.

**Diagnosis:**—The diagnosis of scurvy will be suggested by the peculiar appearance of the gums, especially in infants. A history of restricted diet, greatly prolonged; the depression and rapidly failing health and strength; the hemorrhagic tendency, with the extravasations; and the rapidity with which recovery takes place upon an enlarged and sufficient diet, will fully confirm the diagnosis.

**Prognosis:**—This depends upon the ability to secure a sufficient quantity of correct food before the disease is too

far advanced; upon the results of the hemorrhages and upon the complications. A patient in previous good health should make a full and speedy recovery with the proper treatment, and with sufficient food of the quality and character which the system demands.

**Treatment:**—Inasmuch as this disease depends upon **the dietary**, the consideration of the food is the most important part of the treatment. A knowledge of the disease and its causes has brought about a marked change in providing food for expeditions, for soldiers, sailors and for institutions of all kinds, and the demands of the government in food supplies have done much toward the prevention of the development of this disease, which for these reasons has become rare. Without an abrupt change in the diet, medical treatment has but little influence. Those substances which have been depended upon for food, and which have caused the disease should be omitted and vegetable acids and vegetable substances which contain the deficient potassium salts are to be supplied. Although the digestion is often seriously impaired, the restoration will take place very rapidly if the patient be given the ordinary vegetables, at first in small quantity, and increased as rapidly as can be taken without injury. Fresh oranges of good quality may be eaten freely and the patient should take lemon juice or lemonade as a beverage. Lettuce, celery, cabbage preferably raw, beets, pieplant, tomatoes, with potatoes and the cereals as desired, will materially promote the restoration to health, if no meat diet be taken. Fresh milk may be taken as a beverage and little by little a fresh meat diet may be resumed. This should be brought about with much care and judgment. Pickled, salted or dried meats, or otherwise cured, must be eschewed. This course may be inaugurated with meat juice, beef teas, and the white of eggs, and increased as rapidly as possible. The patient should be kept in bed, in a well ventilated room, in severe cases, until the extreme debility is in part overcome. Out of door

exercise and sunshine with pleasant surroundings are actively conducive to the restoration of health.

The **condition of the stomach** should be restored by the action of specific tonics, such as **hydrastis**, **nux vomica** and **capsicum**. **Hydrochloric acid** dilute, in from five to fifteen minim doses, should be given after eating and may be repeated in half an hour or an hour. The condition of the blood will need **iron** in some easily appropriable form. If antiseptic measures are thought advisable from the indications, **echinacea** should be given or **baptisia tinctoria**, or perhaps **yellow dock**, and **corydalis**. Treatment of the mouth and gums may be necessary and for this purpose an infusion of **white oak bark**, strained, to which is added **colorless hydrastis**, **distilled hamamelis**, and the tincture of **myrrh**, used as a mouth wash freely, will prove of immediate benefit. If diarrhea persists with perhaps a slight tendency to hemorrhage, **geranium maculatum** will prove an excellent remedy. The tincture of **capsicum** applied over the areas of extravasation and over the enlarged joints will materially assist in restoring the normal condition of these parts.

The treatment of **scorbutus in infancy**—the condition known as **Barlow's disease**—consists also of making a pronounced change in the diet, as the symptoms are largely those of prolonged marasmus, efforts may have been made toward changing the diet previously, without results. Radical changes must be instituted. If the patient has been bottle fed, it is well to select a healthy wet nurse, correctly adapted to the age of the child, but with this milk the child should have from five to fifteen drops of bovine, according to the age, every hour or two, or beef juice expressed from a partly broiled juicy steak, which at the time of using may be given in small doses frequently repeated. To this lemonade, or orangeade, should be added, properly sweetened, and later acid jellies may be diluted and given frequently in small quantities.

As rachitis is apt to be present at the same time, the

course of medical treatment suggested by that disease will exercise a full restorative influence in this. The use of the tincture of the **chlorid of iron** or an elixir of the **pyrophosphate of iron** which contains **free phosphorus** in proper doses, and **nux vomica**, or **strychnin** in convenient combination should be given. The restorative influence of **cod liver oil** is of great importance in nearly all of these cases. The agent may be administered both externally and internally, or the oil may be given in proper emulsion, combined with the hypophosphites or the **glycerophosphates**.

There will be in all these cases occasional indications which will point to the demand for specific remedies. These indications should be promptly met, and only good results will accrue.

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## PURPURA.

**Synonyms:**—Hemorrhagic diathesis; *hemorrhæa petechialis*.

**Definition:**—Under this title are included several varieties of extravasation into or beneath the skin and mucous membranes; a condition symptomatic of a perverted condition of the nutrition or of a serious alteration in the character of the blood.

There are two distinct classes of purpura; primary and secondary. The secondary form is the result of the influence of severe diseases; of the conditions which attend these diseases, upon the character and quality of the blood, upon the circulation and upon the circulatory organs, or upon the nervous influence which governs the circulation. These are the infectious diseases, those which are due to direct blood depravation, as scurvy, hemophilia, or anemia and leukemia, malignant growths, and locomotor ataxia, as well as poisons and muscular strain, and the physiologic influence of certain drugs.

The primary form, known as **idiopathic purpura**, occurs from causes which are at present unknown. There are

three varieties: First, the simple form—**purpura simplex**—simple purpura; second, the arthritic form—**arthritic purpura**, **purpura rheumatica**; and third, the hemorrhagic form—**purpura hemorrhagica**.

**Simple purpura** occurs in children as they approach the age of puberty. It will develop during a condition of apparent perfect health, or it may be accompanied only with some apparently simple stomach disorder, or the child may be recovering from an attack of some infectious disease. The hemorrhage occurs in the form of multiple small areas of ecchymoses, the size of a split pea, which gives the skin a finely mottled appearance. It appears upon the ankles and over the shins, soon extending to the knees, or it may appear on the arms, or upon the body. The condition may also appear as minute points of extravasation in the hair follicles, or the extravasation may occur across the skin in streaks known as **vibices** or more general extravasations may appear. The color may be a bright red, or dark purplish red at first but becomes faded later and produces a yellowish green discoloration of the skin and gradually disappear with no increased impairment of the patient's health.

**Arthritic purpura** is of extremely obscure origin. It occurs among males from twenty-five to thirty-five years of age, seldom being seen in females. It is ushered in with fever, the temperature ranging from 100° to 102.5° F., and an acute affection of the joints characterized by tenderness, swelling, and occasionally quite severe pain.

With this there are ecchymoses or petechial spots over the joints which may extend over the extremities, although they appear usually upon the legs only. There may be edema, or bullæ, and hemorrhage may occur from the mucous membranes of the nose and from other localities. The constitutional symptoms may be quite pronounced, and sore throat with derangement of the digestion, or enlarged glands, and albuminuria, may appear. The disorder per-

sists sometimes for months and requires a long time for its complete disappearance.

That form of this disorder which occurs in childhood is known as "**Henoc's purpura.**" It has all the manifestations above described, developing more rapidly and is of a more severe type. It is accompanied with severe pain in the bowels, vomiting and severe diarrhea, and there may be intestinal and renal hemorrhage. The purpura is scantily developed usually. In the **hemorrhagic purpura** we have more extensive extravasations than in either of the other forms. It is frequently a complication either of infectious disease, or it appears while the patient is in poor health from other cause. It occurs during early middle life, but is frequent in young women of feeble vitality. It occurs with marked symptoms and with considerable abruptness. There is disability, loss of appetite, malaise and headache, with fever, but the temperature seldom rises above 103° F. The pulse becomes rapid and ultimately feeble.

It is observed that small petechial spots have appeared upon the skin and these increase to hemorrhagic ecchymoses or extravasations quite rapidly. Nose bleed may appear before these have been observed, but usually they appear nearly simultaneously. The epistaxis is difficult of control and soon recurs and persists, and other hemorrhages occur. The patient becomes weak and soon there is marked prostration with pain through the muscular structures and in the joints and limbs, and in the chest. Other hemorrhages soon follow. There may be hematemesis, or hemoptysis; or hematuria, with perhaps nephritis, may follow, or there may be cerebral hemorrhage. The patient becomes pale immediately, and anemia with extreme pallor is an unavoidable result. The conditions continue for ten or twelve days, except in the malignant form which will terminate fatally usually in a few days.

**Prognosis:**—The prognosis is unfavorable in most cases and should always be guarded. The danger depends upon the extent of the hemorrhages and the amount of blood lost.

**Diagnosis:**—The sudden appearance of a condition pronouncedly hemorrhagic, without scurvy or other pronounced and plainly marked cause of extravasation and hemorrhage, with acute prostration and anemia, will confirm a diagnosis in this disease.

**Treatment:**—Purpura simplex should be treated expectantly. No medication may be needed unless to correct stomach disorders, or other attendant conditions, or to quiet the anxiety of the patient or friends. In pronounced and protracted cases the patient should have **iron** in an easily appropriated form, and the best tonics. The **tincture** of the **chlorid** or **ethereal tincture** of the **perchlorid** will do well. **Arsenic** is advised and the **strychnin arsenate** will prove of service when there is debility of the nervous system with circulatory enfeeblement. Remedies should be avoided which inhibit the coagulating power of the blood, or which act as depressants to the capillary circulation. Ergot and the salicylates are used, but I believe them both to be contraindicated in all forms of the disease because they exercise this depressing or stagnating influence.

The patients should be treated with extreme care and consideration. They should be put to bed and relieved of care and anxiety. The food should be frequently administered in fluid form, and of easy digestion. No depleting or depressing measures of any kind should be used. The hemorrhage should be controlled by **erigeron** or **geranium**, or with the inorganic styptics. **Rhus aromatic** has been extolled and **thuja** will exercise a beneficial influence. The sub-sulphate or the tincture of the chlorid of iron may be given freely or **aromatic sulphuric acid** will be available. For their alterative influence the best of our alteratives should be used; **hydrastis**, **echinacea**, **berberis**, **burdock**, **yellow dock** and **calmia** are advised. The general health of the patient must receive persistent attention and the best of surroundings and an abundance of judicious out of door exercise must be taken.

## HEMOPHILIA.

**Synonyms:**— Hemorrhagic diathesis ; bleeder's disease.

**Definition:**—An hereditary tendency to hemorrhage transmitted by the mother to the child, in which the mother herself may not exhibit the disease.

**Etiology:**—This is emphatically an hereditary disorder and has been traced back for centuries in the same family. In only about one case in eight or ten does the mother have the disease, but she transmits it to her sons, or through her daughters who may not show it, to her grandsons.

It depends upon imperfect, impaired or deficient coagulability of the blood, and probably upon other conditions of the blood, or of the blood vessels and their nervous control, which are not as yet determined. It manifests itself in infancy and in early life and often in those who are apparently in vigorous health and of unimpaired vitality.

**Symptomatology:**—Sudden, persistent bleeding, either spontaneous, from some very slight cut, abrasion or laceration, or from a tooth, where it is difficult of control, is the first evidence of the disease. Oozing from injured capillaries is a common form, when no blood vessel of size has been opened. A bruise from a direct blow, with no laceration, or a severe muscular strain may result in an extravasation of blood into the intercellular tissues, which may be extreme, and which may thus constitute a hematoma. Hemorrhages occur most frequently from the nose, as well as from other parts of the body, and joint affections are not uncommon. These consist of enlargement from hemorrhage into the joints, with tenderness, and ultimately there may be signs of local synovitis or other inflammation. There may be stiffness and soreness of the joints, resembling rheumatism, and finally more or less immobility.

The hemorrhages are most frequent in early life, and often severest in early childhood, but if restrained, will recur with less severity and less frequency as the child grows older, until the tendency with those who survive until adult life

has greatly diminished, or in rare cases has disappeared entirely. More than one-half, however, of those who inherit the hemorrhagic tendency die from hemorrhage before they reach the age of six or seven years. Women may show no other tendency than profuse menstruation, but this is not often productive of serious results.

**Diagnosis:**—The diagnosis depends upon the knowledge of the inheritance of the diathesis and the occurrence of sudden and intractable hemorrhage.

**Prognosis:**—In distinctly marked cases the children will die early. In cases which do not develop early or with any degree of severity the condition may be controlled until the child passes the age of puberty, when there is a gradual decrease in the inclination, the improvement increasing with each added year of life.

**Treatment:**—These patients should be kept under **close surveillance**. They should be placed in early life, and keep themselves in later life, always under the observation and care of a physician who appreciates the condition and realizes the responsibility. They should be schooled in the fact that the existence of the inherited tendency is a constant menace to their life, but that with constant care, each year will bring increasing respite with decreasing liability. The infants should be taken through the period of dentition with great care. At no time should teeth be extracted, and they should be prevented from bruising, scratching or in any way breaking the skin. In adult life they should engage in quiet indoor employment or that in which there is no danger of physical injury; they should submit to no cutting operations of any character, unless absolutely necessary.

The treatment of an attack of hemorrhage should be the same as advised for other bad cases. The patient should be **put to bed** and kept quiet and free from agitation. **Gallic acid, geranium, the compound tincture of erigeron and cinamon, or ergot**, may be used in sufficient doses. **Iron** should be administered and if there is a tendency to petechia or ecchymosis, **arsenic** should be given for quite a

time in conjunction with the iron. In severe cases, the **sub-sulphate of iron**, or the **acetate of lead**, or other inorganic astringents may be necessary. The remarkable influence of **hydrastis canadensis** in large and frequently repeated doses at the onset, and during an attack, and in smaller doses in conjunction with other appropriate tonics for protracted periods between attacks, must be impressed upon each practitioner. From ten to twenty drops of **colorless hydrastis**, or **fluid hydrastis**, or a good fluid extract may be given every hour for three or four doses during the tendency to an attack, and the remedy may be continued to children, in from two to five drop doses, five or six times daily, for several weeks. **Gelatin** internally or by subcutaneous injection has exercised a frequent beneficial influence upon this disease.

## Diseases of the Blood, Lymphatic System and Ductless Glands.

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### ANEMIA.

**Definition:**—A condition in which either a portion of the entire blood has been lost, as in hemorrhage, or in which there has been a reduction of the quantity of the red blood corpuscles, or a reduction of the hemoglobin of these red cells.

When the total quantity of blood has been reduced as in hemorrhage, the condition is known as **oligemia**; when the disease is a reduction of the red corpuscles the condition is known as **oligocythemia**; when there is a deficiency in the hemoglobin the term **oligochromemia** is applied.

A reduction of hemoglobin from any cause usually induces pallor, and we are apt to conclude that paleness of the skin or of the countenance is an invariable accompaniment of all anemias. This sign cannot be relied upon. There are cases of paleness in which the conditions are hereditary or at least congenital from various reasons, independent of deficient hemoglobin. Deficient vascularity may be the cause. On the other hand, there may be a condition of anemia in a patient who, from increased vascularity of the countenance, shows no pallor. Again, there may be such an increase in the quantity of hemoglobin in the corpuscles that a loss of quite a quantity of the red corpuscles will result in no reduction in the normal quantity of the hemoglobin, and in no pallor.

When anemia is the result of a disorder of the blood or of the blood making organs primarily, the condition is known

as **primary, idiopathic, or essential anemia**. When hemorrhage has occurred or when disease elsewhere in the system has acted upon the blood or upon the blood making organs, when, from any extraneous cause, as breathing impure air, a reduction of the normal hemoglobin is the result, the condition is classed as **secondary anemia**.

Two forms of anemia belong distinctly to the primary class. These are known as Chlorosis, and Progressive Pernicious Anemia.

### SECONDARY ANEMIA.

**Synonym:**—Symptomatic anemia.

**Etiology:**—Under this head are included acute and sub-acute anemia from hemorrhage, or those forms which result from causes induced in the system by other diseases. There is not only a reduction of the amount of hemoglobin in each red corpuscle, in most of these cases, but there is also a reduction in the number of red cells. The destruction of the red blood corpuscles may result directly from the breathing of vitiated air; this is immediate and profound in the presence of the vapor of nitric acid; other vapors are slower and many are insidious in their influence upon the red corpuscles. Imperfect food, insufficient food, especially a lack of those principles which assist in the making of red blood, faults in the appropriation of food, either due to imperfect functional activity or to the presence of abnormal growths or cancer of the organs, are all contributing causes.

When the condition is due to a **hemorrhage** the impression upon the system is in proportion to the amount of blood lost. From an injury or during a surgical operation, or from the rupture of a blood vessel, or in post partem hemorrhage, the hemorrhage may produce immediate prostration, or syncope, or it may prove fatal. In hemorrhage from ulceration during the progress of some serious disease there is not only a loss of the total constituents of the blood, but the constituents may be seriously impaired and

toxic elements may be added to the blood. Direct loss may extend over a long period, a small quantity of blood being lost daily, as in metrorrhagia, hemorrhoids, nosebleed, and in certain ulcerative disorders, as gastric ulcer.

This form of anemia also follows other chronic diseases, such as malaria, syphilis, tuberculosis, scarlet fever and diphtheria, and the various toxemias. It also results from the various mineral poisons. It occurs when there is a serious drain upon the albuminous constituents of the blood, as during chronic diarrhea, chronic nephritis, general pyemia and from prolonged excessive mucous discharges. Mothers will occasionally reduce the vital constituents of the body by prolonged lactation and from this, anemia is apt to follow. The condition may arise also from parasites.

**Symptomatology:**—The indications of this disease are few, but characteristic. **The face, lips and mucous membranes generally become pale**, the patient is **breathless**, inclined to faint, subject to **vertigo, nausea, palpitation** or irregular heart action, with transient and irregular shooting pains. There is **loss of appetite**, extreme **weakness, headache**, often of a bursting character, and **constipation**. **The skin** is cool, often clammy, and usually flabby. **The pulse** is weak and is apt to be persistently irregular. There may be dilatation of **the heart** and distinct valvular murmurs, usually from dilatation of the left ventricle. A systolic hemic murmur transmitted to the axilla may be heard over the entire chest.

Considerable difficulty of breathing is often present, with the shortness of breath and sighing respiration, especially on exertion. This may induce an occasional hacking cough or there may be some degree of cough constantly present.

**Anemic headache** is an especially trying complication. It is usually of a bursting character, and is located across the top of the head. Extreme frontal headache is not uncommon, and when the anemia induces, or is accompanied with nervous prostration, there may be a severe occipital head-

ache which may extend down the spinal column and may later induce spinal tenderness, or the occipital headache and the characteristic anemic headache may coexist. **Mental exertion** is almost impossible and forgetfulness and **mental apathy** usually follow. These patients are troubled with insomnia and complain of **hot flashes**, especially during the night. While they are often sleepy and dull, the sleep is broken and irregular, and does not produce rest and restoration.

There is often a slight **effusion** into the cellular tissues, especially of the face and of the ankles. The pallor of the skin makes the edema of the eyelids more conspicuous. In females the **menstrual irregularity** is common. There is deficient quantity of blood and this soon becomes pale and watery and if restoration is not effected will cease entirely.

**Diagnosis:**—The diagnosis depends upon the knowledge of the loss of blood, as in hemorrhage, or upon the character of the blood, as observed under the microscope in obscure cases. The conditions of this disease being understood, there is usually but little, if any, difficulty in diagnosis.

**Prognosis:**—The prognosis is usually good but depends upon the character and severity of the causes.

**Treatment:**—All **hemorrhages** should be immediately **arrested**. All local or remote troubles which are apt to induce hemorrhage should be corrected. The system should be restored by the use of the very best **tonics**. I am convinced that in this form of anemia more can be accomplished by encouraging **nutrition** and the appropriation of **good food** than is accomplished with blood making remedies. The food is sufficiently active in blood making properties if the patient be relieved from physical labor and anxiety, and will rest during the course of the restorative process, taking exercise in the sunshine, always short of exhaustion. The administration of **iron** and other of the

more direct **blood making remedies** will yield good results in nearly all cases and should not be neglected.

### PROGRESSIVE PERNICIOUS ANEMIA.

**Synonyms:**—Essential anemia; idiopathic anemia; corpuscular anemia; Biermer's anemia.

**Definition:**—A serious disease of the blood in which there is rapid progressive disintegration of the red blood corpuscles, accompanied with a tendency towards fatty degeneration. There is not only a decrease in the number of red cells, but there are alterations in the character of the cells and serious changes in the marrow of the bones. There is a slight pathological distinction between idiopathic anemia and Biermer's anemia.

**Etiology:**—There is a direct destruction of the red blood corpuscles or an insufficient supply of these corpuscles or defects in the morphological processes by which the corpuscles are formed. The condition may occur at any time of life among both males and females. It is more common between the ages of twenty and forty-five years, occurs rarely in young children, is not uncommon among those who are fortunately situated and who have the best of surroundings, although the conditions named under chlorosis plainly exercise a causative influence. **Idiopathic anemia** is described by Addison as a form of this disorder which occurs with no discoverable cause, either ante-mortem or post-mortem.

At other times the disease follows certain infectious disorders, either immediately or after a short interval, or it occurs in conjunction with tuberculosis, or hepatic or splenic disorder, or Bright's disease or other chronic disease of the kidneys; or it may be the result of disease which exercises a serious depleting influence upon the system, as chronic diarrheas, hemorrhages, or malignant disease. It also occurs after confinement, or during the course of pregnancy, when there has been serious disarrangement of the

function of the blood making organs, which on their part may result from chronic disease of the stomach or of the gastrointestinal tract. Occasionally it is found after death that the disease was caused by parasites of various characters. The oxyuris vermicularis, the ankylostomum duodenale, the bothriocephalus latus are those most frequently found. It is thought to occur also from toxemias of various kinds.

**Symptomatology:**—It is often impossible to determine the time when this disorder could be said to have started. It is insidious in character and usually of slow development. The patient is **feeble** for a long time and indisposed to any physical exertion; has **weakness, faintness, vertigo**, and finally increasingly severe **headaches**. There seems to be an increase of weight, but the patient will state that it is not “healthy” fat. With this increase there is a peculiar **pale-ness** which is slowly on the increase. Finally there is **shortness of breath**, irregular action of **the heart** or palpitation on little exertion, with **ringing in the ears**, or a roaring in the head, and perhaps temporarily disordered vision. Disorder of **the stomach** is progressive also, beginning with slight nausea, loss of appetite, imperfect digestion and diarrhea. **The tongue** is **pale** and bloodless, as well also as **the gums, lips** and mucous membranes of the mouth. It is thick and flabby and often heavily coated. There is a characteristic pearly appearance to the sclerotic coat of **the eye**, which is diagnostic. With the increase in the weight of the patient there is puffiness of **the face** and a **swollen** condition of the ankles, and the tissues, while increased in size, lack tone, and are deficient in the power of resistance or of muscular contractility. They are flabby and loose and the pallor of the skin increases to a waxy or lemon colored paleness.

**The weakness** is rapidly progressive and prostration soon appears. The patient is too weak to sit up and the tone of voice and manner of speaking indicate extreme feebleness. **The mental processes** are **slow**, the mind becomes feeble,

and there is a slight tendency to **delirium** or wandering of the mind. Every muscular exertion causes rapid and feeble respiration and increases the action of the pulse. There may be **hemorrhages** as the disorder progresses, either from the lungs, stomach or from the nose, occasionally from the womb or from the kidneys. **The temperature** is variable. Occasionally it is elevated and there is a mild fever, but usually it is normal or subnormal and the extremities are cold. **The heart sounds** are feeble and hemic murmurs are discoverable over the base of the heart. The pulsation of the carotids is very distinct and of a peculiar jerky and expansile character.

**Diagnosis:**—The fact that anemia occurs in middle life and more frequently in men than in women, the peculiar yellowish and cheesy appearance of the skin, which is very flabby, and the increase of weight, with the extreme pallor, are all suggestive phenomena. An examination of the blood will show the red cells to be distinctly diminished in number, a condition which is not true in chlorosis. The red corpuscles are nucleated and often increased in size and there are present a large number of megaloblasts. The progressive character of the disease, the increase in all the serious symptoms, the tendency to prostration and to hemorrhage, will all point to this disorder.

**Prognosis:**—The prognosis is always grave. Cases that improve for a while under treatment, or that are apparently restored, are liable to relapses, with a fatal result. The disease runs its course to a fatal termination in from three or four months to a year, or at the farthest to a year and a half.

**Treatment:**—While we can give these patients but little encouragement and the results of the treatment of the disease, are usually unsatisfactory, it is obligatory upon us that every case is treated with the utmost care. All measures which are calculated to restore tone and vitality to the patient, to improve the functional operations of the vital organs, must be adopted and a course of life pursued which provides the very best of hygienic surroundings for the pa-

tient. Out of door air and sunshine and a good digestion are the most important. The food should be selected with reference to its nutritional qualities and ease of digestion. I am in favor of continuing the use of **artificial digestives** in these cases during the entire progress of the treatment. Symptomatic indications should be met according to the knowledge and judgment of the physician, with specific remedies.

The beneficial influence of **arsenic** upon this disease is exceedingly difficult to explain, but it is universally recognized as an efficient remedy. It seems to retard the disintegrating processes and stimulate the functional activity of the organs which are engaged in the blood making processes. It is given in small doses at first, not to exceed four or five drops of **Fowler's solution**, three or four times daily. This is increased one drop each day, up to the point of toleration. If the condition of the patient is such that he can take a large quantity of this remedy without injurious influences, his chances of recovery seem to be correspondingly increased. Patients have been known to take from eighty to one hundred minims of the solution in the course of twenty-four hours without markedly bad effect. A few years ago **bone-marrow** was used as a restorative and it was thought for a while that it would prove a dependable remedy, but its popularity has not greatly increased.

It is important in most cases that the patient should have some preparation of **iron**, and occasionally there will be considerable improvement from the use of this remedy. It is a good plan to push the arsenic to its full effect, then to give the patient a course of iron, omitting the arsenic, and ultimately to resort again to the arsenic treatment. If the patient should seem to be restored and a fair condition of health secured, it is wise to resort to the arsenic treatment occasionally, for a short period, in anticipation of a possible relapse. The use of the tincture of iron in conjunction with stomach tonics, or artificial digestives, may be resorted to with good results. Diarrhea should

always be controlled, as well as other depleting complications. For this purpose **geranium**, **gallic acid**, or the **subsulphate of iron** or **aromatic sulphuric acid**, are all available. The use of **intravenous injections** of the **normal salt solution**, or this substance introduced occasionally by **hypodermoclysis**, or the injection and retention per rectum of a full quantity of the same solution is of much importance. This must not be neglected.

### CHLOROSIS.

**Synonyms:**—Green sickness; chloremia.

**Definition:**—A disease depending upon the reduction of the normal quantity of hemoglobin in the blood, most common among women before the age of twenty years.

**Etiology:**—This condition is directly due to faulty hemogenesis. It occurs in only very rare cases in males, but is of frequent occurrence in girls shortly after puberty and thence until about twenty years of age. It is rare that a case develops after that age, but it is not impossible that it should develop in middle life. The condition is frequently associated with menstrual irregularities. There is usually amenorrhea, exhibited either by deficient or infrequent periods, or by both, but it must be remembered that this condition is the result, not the cause of the deficiency of the hemoglobin.

A specific cause has not been determined. The conditions that lead to it are those which influence the blood making processes; unhygienic surroundings; monotonous, exacting employment in close, unpleasant, badly lighted quarters; improper food and bad habits of eating, and also of living, and of sleeping. These latter apply to girls well envired in the higher walks of life who are by no means exempt from the disease.

There are certain underlying conditions which conduce to chlorosis which are thought to be hereditary, and a **strumous diathesis**, or a tendency to tuberculosis will lay a

good foundation for this disease. When these and other proper conditions exist the disease will often show itself after a sudden mental shock, or violent grief, or after an outburst of anger; homesickness or disappointment in love will cause it.

There is no doubt that chronic constipation or the persistent habit of retaining the urine for long periods results in an autointoxication which will act as a cause of this disorder, and it may be also induced by other toxemias. Menstrual irregularities, among them menorrhagia and amenorrhea, are common among young girl immigrants who cross the ocean. Other abrupt changes in climate, with correspondingly marked changes in the habits of living, precede the appearance of this disease, and are often classed as causes.

**Symptomatology**:—Girls who have previously been well nourished, and of plump and healthy appearance find themselves unable to perform active exercise or to engage in persistent employment without **exhaustion**. They become **despondent, languid, irritable**, and complain of being always tired. Early in the disease **the skin** assumes an unpleasant yellowish or pale hue which soon becomes actually greenish in tinge, or greenish yellow. Later all exercise results in weakness; the patient is troubled with **vertigo, faintness**, some **nausea**; irregularity of **the heart's action**, with palpitation after exertion, and some **difficulty of breathing** are common. **Headache** is a very frequent and troublesome symptom. **The appetite** is always poor, sometimes capricious or perverted, craving abnormal substances, or highly seasoned food; **the digestion** is seriously impaired and, as has been stated, there is constipation in a large per cent of the cases, and **scanty urine**, usually of a high specific gravity. In other cases there is a large quantity of pale urine of low specific gravity. There is also **deficient menstruation, amenorrhea** being very prominent. In occasional cases, without kidney complication, there is puffiness of the face and edema of the ankles.

In a few cases there is such freedom of the capillary circulation in the face or in the lips that, although the blood is deficient in hemoglobin, there is but little if any pallor, the patient being quite rosy or flushed in the countenance, but this is rare.

In some cases there is **slight fever**, but usually the **temperature** is normal or subnormal and the extremities are cold; **the tongue** is thick, pale and flabby, easily indented, and occasionally coated with a thick, greyish white coat. There are persistent eructations of gas and there may be simple **regurgitation of food**. **Hysteria** is a very common accompaniment. This may become the conspicuous condition, and all of its attendant symptoms may be present.

**Diagnosis:**—The diagnosis usually depends upon the observation of the color of the skin. An examination of the blood will usually confirm the suspicion, the hemoglobin is reduced at least one-half, and may be reduced to twenty or even fifteen per cent. This does not, however, prove that there is a great reduction in the number of red blood corpuscles. These may be normal in quantity or but slightly reduced. In this particular a differential diagnosis can readily be made between chlorosis and syphilis by the history and attendant symptoms. A well nourished patient suffering from headache and inclination to syncope and dizziness, with hysterical symptoms and with the characteristic color above specified can hardly be declared to be suffering from any other complaint.

**Prognosis:**—The disease is inclined to be transient in character and in mild cases spontaneous recoveries occur. In acquired cases the prognosis is seldom if ever unfavorable.

**Treatment:**—All **bad habits of eating and living** must be immediately overcome; the patient must be placed in excellent hygienic surroundings and all causes which influence the mind should be removed and hysterical symptoms should be carefully met; however, these may be relieved with the improvement of the **condition of the blood**, as

they are closely related to the menstrual irregularities, and these seldom need any direct treatment for their correction when the faulty conditions of the blood are corrected. It is important that the condition of the blood be quickly restored. This is usually readily accomplished by the use of iron and other well known and accessible restorative agents. Occasionally these patients should be put to bed for a short time and quiet and restfulness should be enjoined. The condition of **the stomach** should receive immediate attention; it should be placed in a condition to receive and appropriate the food readily; the patient should be encouraged to eat normal, plain food with a minimum of condiments in their seasoning. Eggs, milk in abundance, fresh beef, and other nutritious foods of this class, with a well selected vegetable diet, should be partaken of. An excess of fats, fried foods, salted or preserved meat, canned foods, as well as an excess of the carbohydrates and tea, coffee and alcoholic beverages should be excluded.

Particular attention must be given to the persistent constipation which accompanies these cases, and because of the auto-intoxication which the constipation induces the patient should take **echinacea**, or some other specific alterative or antiseptic remedy which is known to antagonize the growth and development of toxins. The use of **cascara sagrada** in some palatable form, or a regular daily dose of the **sodium phosphate** or the **magnesium sulphate**, should be given for their laxative influence. Occasionally, by giving the sodium phosphate in from forty to sixty grain doses three times a day in hot water both a restorative influence upon the nervous system and a laxative effect upon the bowels is obtained. In the administration of **iron** to restore the blood it should be remembered that these patients appropriate a larger quantity of iron than those suffering from other forms of anemia. The oxid of iron in the form of a syrup, the carbonate or the sulphate of iron, are all accessible and beneficial forms. The pyrophosphate of iron is especially valuable, the citrate of iron and reduced iron

have been used with good results. Where there is imperfect digestion, with a probable deficiency of **hydrochloric acid**, the tincture of the **chlorid of iron** will be of much service. I have used **hydrastis** in combination with the iron in nearly all of these cases and believe it to be a remedy of great efficacy. It not only stimulates the nervous system to normal functional activity but promotes to a high degree normal functional action of the stomach and of the organs of appropriation. It certainly facilitates the appropriation of the iron. If there are plainly marked heart faults the use of cactus or strophanthus will not only overcome these but will greatly facilitate the appropriation of iron. The **tincture of copper**, in small doses, or the one-fiftieth of a grain of the **arsenite of copper** three times a day are said to exercise a direct restorative influence upon the blood, similar to that accomplished by iron. Where there is conspicuous impairment of the nervous system, with neurasthenic symptoms, free **phosphorus** should be also given. A phosphorized elixir of the calisaya bark and pyrophosphate of iron is a combination that has accomplished excellent results in my cases. In hysterical cases, indications will appear at times for **gelsemium**, **hyoscyamus**, **pulsatilla**, and perhaps the **bromids**. Where the menstrual derangement does not seem to be corrected by the improvement of the constitutional conditions this result may be brought about by the use of **helonias**, **senecio**, **macrotys**, or **viburnum**.

A happy condition of the mind, with pleasant surroundings, a condition of hopefulness, cheerfulness and restfulness, are all essential to a speedy cure. This disease often occurs when the patients are being crowded through a college course, or when they voluntarily take upon themselves a large amount of extra work in their college course. This should be anticipated and prevented, and if the condition is on the increase, all study must cease until a cure is accomplished.

## LEUKEMIA.

**Synonym:**—Leucocythemia.

**Definition:**—A condition in which, while there is a decrease in the red blood corpuscles, there is also marked increase in the white corpuscles, with pathological alterations in the spleen, in the lymphatic glands, and in the marrow of the bones. When these changes occur in the spleen and marrow together, the condition is called **spleno-medullary** or **myelogenous leukemia**. When in the lymphatic system it is called **lymphatic leukemia**.

It should be borne in mind that the above distinctions are not always plainly marked. There are cases in which the bone marrow is altered, but there is no disease of the lymphatics, and yet the character of the blood is that of the lymphatic disorder.

**History:**—This disease has had an interesting history. Bichat, at the beginning of the last century, described a condition of the blood which is now found in leukemia. Later it was described by other writers as suppurative hematitis. Donne, still later, and J. Hughes Bennett, about 1850, described it, the latter more fully, but both with the idea that the pale color of the blood was caused by the presence of pus cells. Bennett named it leucocythemia, Virchow discovered the real pathology of the disease about 1852 and named it leukemia.

**Etiology:**—The exact cause of this disease has not as yet been determined. Efforts have been made to discover a specific microbic or parasitic origin for the disorder, but these have failed. It occurs among all classes of people, perhaps somewhat more commonly among the Jews, more frequently in males than in females in the proportion of two to one, and during middle life—between thirty-five and fifty years of age. It has followed severe injury, and especially blows directly over the spleen. It has followed gastric and intestinal ulceration, and has appeared in many cases where there was undoubted autointoxication. Vehse-

meyer studied 600 cases with reference to this condition as a cause. It has followed syphilis and chronic malaria, and has been supposed to be associated with tuberculosis. It has attacked those who have long engaged in active physical exercise, and those whose brains and nervous systems were overworked. It has followed severe mental strain, grief, shock and loss of fortune. In women it follows complicated pregnancies, or it may occur during the menopause. In a few cases it has occurred in adult children of parents who had suffered from the disease, but heredity is by no means established as a cause.

**Symptomatology:**—In myelogenous leukemia, among the early symptoms are those of **progressive weakness** with **paleness** characteristic of developing anemia. But while these conditions are conspicuous and pathognomonic, these patients are exceedingly well nourished. Among the early local symptoms is **splenic hypertrophy**; the organ is considerably enlarged and the outline is usually plainly circumscribed. There is considerable **fever, the temperature** varying from 99° to 102.5° F. As the disease progresses the average daily temperature is higher than at the earlier stage. The onset is rather abrupt in the acute form, and the temperature is higher at the onset than in the chronic form. **Hemorrhage** is an early symptom. With this there is **vertigo, nausea, rapid breathing**, with some **dyspnea**, and either **irregular heart action** or marked **palpitation**; the **hemorrhage** is most commonly from the nose or from the gums, but hemorrhage in the stomach, or intestinal canal, or hemoptyses, may occur; cerebral hemorrhage is not uncommon. With **enlargement of the spleen** there is also enlargement of the lymphatic glands. The patient has a feeling of general distress, there is pain over the spleen, and **tenderness in the long bones**, sometimes in the joints, and in the sternum; there is an increase in the pallor, and the anemia becomes a pronounced symptom. **The anemic murmurs** can be readily heard over the heart.

In **chronic leukemia** the onset is insidious, extending

over a longer period of time than in the acute form, sometimes requiring several months in which to develop the characteristic symptoms. There is a **disinclination to physical exercise**; later there is **languor** and pronounced **malaise**. The patient takes but little interest in the things around him, and complains of serious impairment of the health; has **loss of appetite**, and later a repugnance to the taking of food, with more or less **nausea** and occasional **vomiting**. **Diarrhea** is not uncommon. The patient complains of slight roaring or noises in the ears; there is **vertigo**, **faintness**, **exhaustion after exercise**, **loss of breath**, or frequent **deep, sighing respiration**, and **palpitation** with irregular action of the heart. With the evolution of this train of symptoms, the patient observes early a **hardness and enlargement** in the **left side** of the abdomen, and this is sometimes the first symptom for which he consults a physician. This is accompanied with pain and soreness, and as this enlargement increases there is a corresponding increase in the anemia. **The face** presents a puffed appearance, and there is edema also of the ankles and perhaps of the hands.

**The temperature** is usually above normal, although complete intermissions with subnormal temperature are not uncommon. **The pulse** is usually full and large, but soft and compressible, and slightly increased in rate. In an occasional case **the fever** may resemble that of typhoid or of some of the acute infectious fevers, having **the tongue** symptoms as well as some of the enteric symptoms of the former disease. In that form of leukemia which affects the lymphatic glands more positively, **the temperature** is a marked factor in the disease. It quickly reaches a medium high point and is not reduced by the treatment to any appreciable degree. It quickly assumes a form, with delirium subsultus tendinum and coma, closely resembling a severe typhoid case. From this, however, it can be distinguished by petechia, with the rapidly progressive anemia, and occasionally by a painful stomatitis. **The enlarge-**

**ment of the glands** is rapidly progressive, but it is not as great as is observed in the chronic form of lymphatic leukemia. There may be **renal complications**, and occasionally an acute nephritis will develop. The course of this acute form is quite rapid, often terminating in a few weeks.

In the **chronic form** of this variety the **swelling of the lymphatic glands** is a conspicuous and pathognomonic symptom. It is first observed in the **cervical glands**; later it appears in those of the **axillæ**, and still later in the **inguinal glands**, finally involving all of the lymphatic glands of the body. These glands are soft and tender, occasionally quite painful, but do not, as in Hodgkin's disease, compress the other organs or the nerves or arteries and produce the distressing symptoms of that disorder. There is seldom suppuration of these glands. The spleen is also somewhat enlarged, but disease of this organ is not a conspicuous factor, as in the splenomedullary form.

The failing strength, emaciation and anemia are all progressive, are little benefited by treatment, and are diagnostic of the serious character of the disease. While **hemorrhages** are not so severe or so general as in the splenomedullary form, they are a serious factor of the disease, especially of the late stages. The course of this form of the disease is from one to three years.

**Diagnosis**:—The diagnosis is not always simple. There are other conditions which in the main factors closely resemble this. While there is the pallor, the enlarged spleen in the medullary form, and the enlarged glands in the lymphatic form, these are not alone diagnostic. An examination of the blood is absolutely necessary to a positive diagnosis. There are present a greatly increased number of leukocytes, of which a large portion are of the granular, mononuclear variety. There is also an increase in actual number of the polynuclear cells. There are present at the same time nucleated red blood cells. The disease is distinguished from leukocytosis by the increased number of

leukocytes in the latter disease, with an absence of myelocytes; from Hodgkin's disease, by the fact that while the lymphatic glands are enlarged in both cases, the glands are not massed or bunched together as in the former disease. There are also some points of resemblance between this disease and a chronic malarial enlargement of the spleen with anemia.

**Prognosis:**—It is seldom that a case of leukemia recovers. In rare cases, a marked impression upon the progress of the disease may be made by carefully adjusted treatment, and a fatal issue postponed. A very few cases have been reported in which there seemed to be a spontaneous abatement of the progress of the disease and a disappearance of the marked symptoms. A fatal result may be anticipated within three or four years. In the acute form death may occur in from eight to twelve weeks.

**Treatment:**—The treatment, because of the prognosis, is undertaken without confidence, and consequently is seldom as positively and as energetically directed as it would be if the physician felt that there was a chance of obtaining favorable results. An early diagnosis is of the utmost importance; all the habits of life of the patient should be changed, he should be taken to a mild climate, and should spend, if possible, both his waking and sleeping hours in the open air. The mind must be tranquil and must be occupied only with those things which are pleasant and congenial. If improvement occurs, mental exercise may be increased slowly in agreeable lines. The use of **iron tonics**, combined with or alternated with **arsenic** to toleration, and given with full doses of **phytolacca decandra**, will constitute the medicinal treatment in the main. I would positively impress upon every prescriber to watch vigilantly from the onset of the disease for the exact indications for any of our specific medicines, and to persist in their use with the same positiveness as when prescribing for conditions in which he is confident of cure. There will be indications for **aconite** during the pyrexia, occasionally.

for **belladonna** and **bryonia**, and nearly always indications for **phytolacca**. I should certainly give the latter remedy in very large doses. With these, **polymnia uvedalia** has been given in this disease with good results. **Ceanothus**, is another remedy that should be tried. **Chelidonium** and **chionanthus** will also exercise some influence. At the same time remedies calculated to encourage the function of the blood-making organs are especially desired. Recently **grindelia squarrosa** is recommended for disorders of the spleen, and it should be thoroughly tried in this disorder.

Within the past two years several noted authorities have treated leukemia with the Roentgen ray, and in all cases they report some benefit and in a number of case marked improvement. It is possible that we may find in some of the chemical rays which are now receiving investigation a means of controlling the hitherto almost fatal progress of this serious malady.

### PSEUDOLEUKEMIA.

**Synonyms:**—Hodgkin's disease; lymphosarcoma; lymphadenoma; *anemia lymphatica*.

**Definition:**—A condition in which there is extreme enlargement of the lymphatic glands, both from swelling and from an overgrowth of lymphoid tissue, together with a progressive anemia, and lymphoid growths also in the other blood-making organs.

**Etiology:**—But little can be said of the etiology of this disease. Notwithstanding persistent investigation in its pathology, no light has been thrown upon its actual causes. The disease occurs in early middle life, and is more common among males than in females in the proportion of about three to one. Chronic diarrhea, rickets, scrophulosis or tuberculosis are all thought to be contributive causes. Chronic disease of the mouth, resulting in glandular inflammations, has been thought to act as a first cause.

Chronic malaria and syphilis have been found to be pre-existing conditions in many cases, but no positive proof has been adduced as to their acting as exciting causes. The disease is more apt to appear among those who live in unhealthy localities with unhygienic surroundings, and who are careless of their health and are uncleanly. No advance has been made whatever in the study of the causative influence of infections or micro-organisms.

**Symptomatology:**—With these cases there is at first **enlargement of the glands** of the cervical region; it may appear uniformly upon both sides, but is usually observed first on one side. Very early in the history of the disease is an increase of **the temperature**, and if a study be made of the fever it will be found most interesting. Usually there is a period of increasing temperature until  $104^{\circ}$  F. or  $104.5^{\circ}$  F. is reached within three or four days. Then in a few days more this will decline to normal or subnormal, making a complete intermission. There will then be a sudden exacerbation, so that in a single day a high temperature will be reached, and this may last or it may decline slowly for a period of from ten to fourteen days, when the normal point will have been reached again, and the fever will disappear, to recur, occasionally, in much the same manner, after varying periods, and continuing for a longer or shorter time with each exacerbation. In this the condition closely resembles malarial disease, except that the paroxysms are by no means regular. It more closely resembles a relapsing fever, especially that of relapsing typhoid, as the author has met it in practice. Those cases which are characterized by a prolonged period of **high temperature** in each exacerbation are more likely to run a more rapid course and terminate earlier. With the fever there is early **loss of appetite, progressive debility, lassitude, a heavily coated tongue**, and disturbed digestion. This sometimes becomes a complicating factor. With the appearance of the anemia there are more or less **heart symptoms, with difficulty of breathing, loss of breath**

or **sighing respiration** and **palpitation**, on exertion. There may also be paroxysms of **cough**. Many of these symptoms develop later from the extreme enlargement of the glands. This mechanical compression results in **pain**, if upon the nerves, and if upon the trachea and bronchial tubes will induce pain in the chest, **difficulty of swallowing**, **difficulty of breathing**, and at times will interfere materially with talking. The pressure applied upon these organs, and thus interfering also with the circulation in the vena cava and in the jugular veins, results in **venous congestion**, which may become extremely serious. This may be most pronounced in the head and upper extremities, resulting in edema. These tumors may cause **displacement of the heart** and interfere materially with its action, or they may induce serious perversion of the functional action of other important organs. Interference with the digestion is common, and **jaundice** occurs as a direct result of obstruction of the bile ducts from pressure. This same cause interferes with the circulation in the kidneys, and results in an early **albuminuria**, and this, combined with obstruction of the femoral veins, results in **edema of the feet and legs**. Interference of the function of the suprarenal capsules is supposed to cause the peculiar **bronzing of the skin** which is quite a constant symptom in this disorder. **The spleen** is not as greatly enlarged as is observable in leukemia; but it is always involved in the disease, and may extend toward the navel and be distinctly outlined. There is also in occasional cases enlargement of **the thyroid and thymus glands**, and rarely there are corresponding heart lesions, which seem to depend upon the disease of the thyroid. **Itching** of the skin is not an uncommon symptom.

In the development of the enlargement of the lymphatic glands there are some cases in which the cervical glands, are among the first to show signs of enlargement, and with all the concomitant symptoms, will increase in size quite rapidly for a number of weeks. Then all accompany-

ing symptoms abate, and there is no advancement, and the patient is in reasonable health for several months, when another group of glands becomes involved, and all the symptoms recur, to be followed later on with another abatement of the active phenomena, but by little if any reduction of the size of the glands. The anemia is usually progressive from the first, but is by no means as pronounced as in the disorders that have been previously named. There is no reduction of the red corpuscles, nor any marked change in their characteristics, nor of the hemoglobin also, and the leukocytes are not greatly increased; in fact, in a few cases they have been found to be actually diminished. In the final stages of the disease the condition of the blood is very similar to that of an extreme case of secondary anemia.

**Diagnosis:**—It will be readily seen that pseudoleukemia in its early stages could be mistaken for tubercular adenitis; but the exacerbations in this disease, with the irregularity and intermittency of the temperature, and somewhat sudden enlargement of the glands are characteristic; furthermore, this disease is most common in adult life, while the former disease is common in childhood. Again, in adenitis the glandular enlargement is usually confined to one side and suppuration is common, while in Hodgkin's disease there is a uniform enlargement of the cervical glands on both sides, and while the glands are soft suppuration does not occur. Enlargement of the spleen, with pronounced anemia, will assist in the diagnosis of this disorder.

A comparison of the character of the blood in this disease and that of the various forms of anemia heretofore described will be of important assistance in making a correct diagnosis.

**Prognosis:**—The prognosis is always unfavorable when there is an acute development of the phenomena. The disease runs its course within a few months. In the more chronic cases, or in those in which the intermissions be-

tween the periods of progressive development are longer, the case may last for two or three years.

**Treatment:**—But little benefit has been obtained from treatment in this disorder. The use of **arsenic** is advised by all the writers of the old school as being of unquestioned value. There is no doubt that good results will occur from the use of **phosphorus**, especially if given in conjunction with **iron**. A syrup of the **oxid of iron**, combined with phosphorus and **strychnin**, will delay the progress of the disease. I would emphasize the remarks I made in the treatment of leukemia concerning the selection of our specific remedies whenever there are pronounced specific indications for their use. There are some of our writers, in whom we have confidence, who claim to cure **tubercular adenitis** with the use of our vegetable alteratives combined with phytolacca, which is given in full doses internally and applied externally, and it is but consistent with our methods of treatment that we should apply these remedies in this disease, where they are so strongly indicated, and carefully observe their result. Amelioration of the symptoms has been accomplished with the use of **electricity**, and also from the influence of the **X-ray**.

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## MYXEDEMA.

**Synonyms:**—Sporadic cretinism; athyria; Gull's disease.

**Definition:**—This is a constitutional disease, caused by a derangement of the function of the thyroid gland and characterized by an infiltration of mucin into the subcutaneous tissues, resulting in a characteristic swelling, a loss of hair, and perhaps of the nails, progressive mental feebleness, and serious impairment of the circulation.

**Etiology:**—The disease is due to an impairment of the function of the thyroid gland, an inability to supply the secretions which are essential to normal metabolism, from

degeneration, atrophy, and consequent inactivity of the gland. The disease occurs much more frequently in women than in men, and is more common in some countries than in others. It occurs between the ages of thirty-five and fifty, and there seems to be an inclination to its more frequent occurrence among married women at the climacteric, after having borne a number of children.

On the other hand, pregnancy may cause symptoms of this disease which have appeared, to disappear. According to some writers, heredity has some influence in its occurrence. The mother may transmit it to the daughters, and in an occasional case both myxedema and exophthalmic goiter have appeared in the same family.

**Symptomatology:**—Perhaps the first symptom of this disease is a **swollen** condition of the face, which may be taken for dropsy; the condition can be readily distinguished from that disorder by the fact that the skin is firm and resistant to pressure, is rough, dry and inelastic, and does not pit upon pressure. **Ascites**, however, may exist coincidentally in the later stages. **The infiltration** is not confined to the face, but will be found to be nearly uniform at times over the body, which is markedly increased in size. The patient loses facial expression, and an appearance of imbecility is quickly observed. He is **stupid, inactive, dull of comprehension, is difficult to interest** in the surroundings, or he takes an interest in very childish things. **The hair falls out, the teeth are loosened, the mucous membranes of the mouth, with the structures of the nose, lips and tongue, become thickened,** and there is an important change in the character and tone of the voice.

Both **mental and muscular feebleness** increase as time passes, and muscular control is seriously impaired. **The head droops;** the patient looks out from under the eyebrows with a silly expression; he walks with a slow, heavy, waddling, uncertain gait, and falls readily, being unable at times to retain his equilibrium, because of **faults of co-**

ordination. As the **mental failure** progresses, the **disposition** becomes **erratic**; the patient is at times **petulant**, and **irritable** or **excitable**; at other times, **dull**, **listless**, **apathetic**, **despondent**, and subject to **delusions** or **illusions**. Occasionally there are **hemorrhages**, both from the nose and gums, and not infrequently from the stomach and bowels. **Albuminuria** occurs in frequent cases, and hematuria is not impossible.

**Diagnosis:**—The dull, expressionless, swollen countenance, which does not pit on pressure, is the characteristic diagnostic feature of this disease.

**Prognosis:**—The disease is not amenable to medical treatment. It progresses slowly and may not terminate fatally for perhaps a dozen years.

**Treatment:**—No medical treatment has been of any benefit. Glandular remedies offer the most encouragement, but success has not followed their use. There is almost an entire absence of pronounced specific indications for any of our remedies. The disease, however, has yielded to the use of the **thyroid gland of calves** and **sheep**. The gland is given usually in a raw state. It is prepared in the form of a powder, which may be compressed into tablets; or it is prepared as a glycerin extract. The gland may be thoroughly ground or minced, and spread raw upon bread that has been buttered. This should be taken at stated intervals, of such quantity that from one-fourth to one-third, or in adults, one-half, of a gland be taken in twenty-four hours. In cases of simple atrophy, especially in the early stage, there is a prompt response to the treatment. If the gland is diseased or has been removed, the response is slower, and it becomes necessary to administer the substance at intervals, even after the patient has apparently recovered.

Some patients will do as well or better on a very small quantity of the gland; others need a large quantity. Too much can be readily given, when rapid heart action, flushed face, nervous excitability and symptoms of an induced

cerebral hyperemia, with vomiting and vertigo, and occasionally severe headache, will be the result. If these symptoms appear, the remedy should be stopped for a while, and the patient should be put on tonic treatment, and later if the remedy is resumed, it should be administered in very small doses and increased to a point where the results are satisfactory. It is thought that a cumulative influence from the gland substance will occur as a result of over-feeding with it.

### CRETINISM.

This condition is a form of myxedema which depends upon congenital atrophy of the thyroid, or an entire absence of that gland, may be found upon examination of a new-born child. As a result of this malformation these patients develop very slowly, are misshapen, and are often repulsive in appearance; their heads are large, and their faces are bloated and expressionless; the mouth is constantly open and usually the tongue protrudes. They have broad, thick, pendulous abdomens, and their limbs are more or less distorted; there is seldom any great degree of mental development. If they learn to talk, they use but few words and these are incorrectly pronounced. Their locomotion is similar to that induced by myxedema. These children seldom live to adult age. If they do, they are still infants in development.

**Treatment:**—Nothing had been beneficial in these cases until the use of the thyroid extract mentioned above was introduced. Dr. Sidney Kuh, of Chicago, a few years ago recommended the use of iodothyryn in place of the dried thyroid, believing that the unpleasant results of an overdose of the substance were thus avoided.

## ADDISON'S DISEASE.

**Synonyms:**—Bronzed skin; *melasma suprarenale*.

**Definition:**—A chronic disorder in which, with pallor of the skin and loss of strength characteristic of some forms of anemia, there is a peculiar pigmentation of the skin, which presents a characteristic bronzed appearance. With this there is oppressed circulation, feebleness of both the body and mind, and irritation of the gastrointestinal tract, and important changes in the suprarenal capsules.

**Etiology:**—As with the anemias, no specific cause has been found for this disease, but in more than half of the cases which have been examined post-mortem, disease of the suprarenal glands has been found to be present, and among these disorders tuberculosis is by far the most common. However, it is observed that these glands may be seriously diseased with no appearance of the characteristics of Addison's disease. On the other hand, Addison's disease may be present with no disease of the suprarenal glands. The disorder is more common in males than in females in the proportion of nearly two to one, and occurs in early middle life, usually before the age of fifty. It has followed blows upon the back or severe injury to the trunk of the body sufficiently often to cause all writers to believe that it may result from traumatic causes. Injury to the semilunar ganglia of the abdominal sympathetic nervous system, interfering with its control of the function of the suprarenal glands of the kidneys, is thought by most writers to be the actual cause.

**Symptomatology:**—Ready exhaustion from any effort, increasing prostration or general asthenia are the first symptoms of this disease. There is lassitude and a persistent sense of fatigue, which is brought on not only by physical, but by mental exercise. There are symptoms common to anemia, such as tinnitus aurium, sighing respiration, shortness of breath or difficult breathing, vertigo, syncope, and more or less severe and persistent headache.

There is no leucocytosis, but some reduction in hemoglobin. Anemia is present and occasionally it is quite pronounced, although it is usually mild. These patients are not greatly reduced in flesh, but retain their weight, and the abdominal fat is quite often fully preserved. As the prostration increases in its progressive character, the patient becomes despondent, is careless of his habits, is interested in nothing, and becomes peevish and irritable. Quite early in the history of the disease there is loss of appetite and nausea, and ultimately vomiting, which does not seem to be due to a disordered stomach, occurs with increasing frequency and severity. This is undoubtedly due to the wrongs of the sympathetic nervous system. There may be some diarrhea, and pain in the stomach or in the bowels present as a common symptom. The heart is feeble almost from the first, and the pulse is small and easily compressed, and there is a gradual reduction in the blood pressure, which becomes quite apparent in the later stages. The general temperature of the body is usually subnormal, and the extremities are cool. Ultimately increasing dulness, mild delirium, stupor and coma may occur, with perhaps convulsions, which usually precede death but a short time.

The characteristic pigmentation of the skin, is often one of the first evidences of the disease. While it is described as of a bronze color, it may vary from a dirty yellowish tinge to a dusky brown or greenish yellow color, and in extreme cases may be described as dark or of a deep greenish brown. There is no uniformity in distribution of this pigmentation; it is more plainly marked wherever there is a normal increase of pigmentation on the surface of the body, such as in the areola of the nipples, and in the axillæ, groins, on the abdomen, and on the genital organs, but it is deepened first upon the exposed parts. There are also pigmented areas of a dark or bluish color on the mucous lining of the mouth and lips. This may be also discovered in the vagina. The pressure of the clothes

seems to interfere with the pigmentation, as lines corresponding to the pressure thus applied are easily observed in the coloring.

Occasionally with disease of the suprarenal capsules, as a natural consequence there is also disease of the kidneys. In other cases it would seem that the renal disorder is the natural result of a fault in the arterial tension or as a result of some cardiac complication.

**Diagnosis:**—In the earlier stages of this disease the diagnosis is sometimes extremely difficult. Several other conditions have a more or less mottled pigmented discoloration of the skin, such as congestion of the liver with jaundice, or cirrhosis. Cancer and tubercular disease in the abdomen will also result in altered condition of the skin. It occurs in goitre also, in pregnancy, or in chronic uterine disease. After well defined cases are fully developed, the characteristic pigmentation is readily distinguished. Discoloration from the continued use of the salts of silver produces a peculiar discoloration, but to a close observer there is no similarity. In these cases it is plainly a discoloration, and in a number of cases which have come under the observation of the author the discoloration was uniform on all surfaces exposed to the light. The association of a peculiar bronze pigmentation, with progressive weakness, persistent vomiting, which is plainly reflex in character, and of feeble pulse, with usually pain in the loins, will determine this condition.

**Prognosis:**—This disease usually results in death. It runs its course in from two to four years; rarely a patient will live from five to seven or even ten years. In other cases the disease will terminate within a few months.

**Treatment:**—Prior to a positive determination of the character of the disease, these cases will be treated symptomatically, and often there will be satisfactory results from the use of remedies calculated to increase the vitality of the patient, to **improve** the function of the **blood-making organs**, and restore the tone of the blood. Any exertion

should always be short of fatigue. The patient should be surrounded with all of those favorable conditions named for leukemia, and the treatment will be very similar. The use of specific remedies should not be overlooked whenever the indications are plainly apparent.

Much has been written during the last ten years concerning the use of the **suprarenal gland** of the sheep in the treatment of this disease, and theoretically considered it should be beneficial, but in practice its use has not been productive of satisfactory results. Much attention should be paid to the stomach and the digestion, although the probabilities are that treatment directed to the nervous system will allay the diarrhea and vomiting more quickly than that administered for its direct influence upon the stomach. **Electricity** and the **X-ray** should be tried in order to determine their influence. Results have not as yet established confidence in any form of treatment.

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## GOITRE.

**Synonyms:**—Broncococele; struma; thyrocele.

**Definition:**—The name goitre is a general one, including all forms of enlargement of the thyroid gland, whether it be all or part of a gland. Hare recognizes also an inflammation, an "infectious" and "parasitic" form, a "simple" or "benign" form, which includes the hyperplastic or "parenchymatous" form of some writers, as well as the cystic, the amyloid and colloid forms of other writers; also the "neoplastic" or "malignant" form. I rather favor this simple classification, but it does not bring out the pathologic characteristics as a classification should. It has more reference to the cause than to the pathology. Murray's classification recognizes the pathology to a larger degree. He gives the "hypertrophic" or "parenchymatous" goitre, a "fibrous," and a "cystic" goitre, and adenoid of the thyroid gland. When all the conditions found in en-

largement of this gland are considered, this classification does not seem to be all inclusive, as there are goitres in which there is an amyloid or colloid development of the thyroid or a deposit of earthy or calcareous matter in the substance of the gland.

**Etiology:**—This disorder seems in many cases to result directly from the use of drinking water which contains a large proportion of calcareous salts. This seems to be confirmed by the fact that the disease is common in localities where the water is positively from limestone formation. This is the case in mountainous regions, as in Switzerland, in the Pyrenees, in the Himalayas, in the Andes, and in some parts of the Rocky Mountains of North America, especially in Mexico, as well also as in the mountainous regions of New England and Pennsylvania. There are undoubtedly other causes, as it does not occur either endemically or epidemically in various localities where the drinking water contains lime. I have observed it in a number of cases in women of coarse fiber, who from early life lived the life of a drudge, and were constantly forced to do the heaviest of manual labor, with poor, coarse food and with but little care, living in an unhygienic and filthy manner and having none of the refinements of life.

It is more common among women than men. A simple form of enlargement is quite common among American girls during the first three or four years following puberty or during early womanhood. Treated at once, at this time, it is quite amenable to simple measures and may entirely disappear. It seems to depend upon menstrual irregularities. If there is any thyroid enlargement at the beginning of the pregnant state, it may increase greatly in size during that period. In other cases it is first observed during pregnancy. It occurs in the children of goitrous parents, but in many cases the children are subject to the same conditions to which the parents are subject, and the disorder develops directly from these causes. In malignant goitre the cause is evident.

**Symptomatology:**—There are no evidences of this disorder which precede the discovery of some **swelling of the throat**, most frequently appearing first in the right lateral lobe and upon the right side. This slowly increases, with no pain or tenderness and no discomfort, except the slight upward movement of the mass in swallowing. There are no attachments; the mass is readily movable, and later, as its size increases, it presses on the adjacent structures and interferes with the breathing, as well as with the swallowing; it compresses the vagus. It may become very large, extending widely on either side and involving both lobes and the isthmus, and resting upon the walls of the throat; it interferes to a marked degree with the movements of the head. The condition does not interfere to any great degree with the general health, unless it suspends the functional action of the gland or unless inflammation and suppuration should occur.

**Compression of the nerves** and of the **blood vessels** produces sympathetic difficulties and **cerebral hyperemia**. There is **sleeplessness** and hyperemic **headache**, and in rare cases **convulsions**. If there is interference with the functional action of the gland, marked heart symptoms may occur from a form of septic infection. I had at one time under observation a patient with a very large goitre; a large and apparently strong man, about thirty-five years of age, a Norwegian, who insisted upon the rapid reduction of the gland. He consulted an electrician, who used a strong current and iodine externally. Two-thirds of the bulk of the enlargement was reduced in three weeks. The patient was then taken very sick, tachycardia was pronounced, the heart's action was feeble and fluttering, there was a temperature of from 101° to 103.5° F.; he lost strength rapidly, and died four weeks later, with evidences of profound toxemia.

**Diagnosis:**—A movable enlargement in the location of the thyroid gland, the absence of pain, and the absence

of constitutional symptoms, its more common occurrence in young females, are diagnostic points.

**Prognosis:**—The prognosis may be said to be always favorable, as to life. It runs a chronic course.

**Treatment:**—In the treatment of the simple forms of thyroid enlargement the results are very good in the early stages, and often quite satisfactory in the later stages. In the treatment of the chronic forms and those of complicated or mixed character, or which contain calcareous deposits, and the neoplastic form, the treatment is much less satisfactory, and may be devoid of benefit. I have made it a rule to give these patients **iron**, in conjunction or alternation with **phytolacca decandra**, at the same time paying the most strict attention to the condition of the general health. The compound tincture of **iodin** may be applied externally at times, and in the intervals it is a good plan to apply a paste of which the extract of **phytolacca**, in full quantity, is a constituent. I am convinced that when efforts are made to reduce the gland, alterative eliminatives, well selected, and heart tonics will be indicated, and should be selected early, in anticipation of constitutional symptoms or of heart complications. Iris, lycopus and cactus may each have a place in the treatment of this disorder at some time during its progress. In administering **phytolacca** it must be given in increasing doses to the point of toleration. The same is true of **iodin** in any form. I have used **electricity**, both in the form of the galvanic and faradic currents, in the reduction of these glands, and have found it in many cases a remedy to be depended upon. In early cases the measures should be persistent, and where the gland is very large the reduction should be extended over considerable period of time, and free elimination should be sustained without reduction of the patient's strength.

## EXOPHTHALMIC GOITRE.

**Synonyms:**—Graves' disease; Basedow's disease; Parry's disease.

**Definition:**—A serious disorder, characterized by protrusion of the eyeballs, serious heart symptoms, among which the most conspicuous is tachycardia, and some enlargement of the thyroid gland. There is also serious involvement of the nervous system, a conspicuous feature of which are tremors. It must not in any way be confounded with goitre, as commonly understood, as it is in every way a distinct and separate disease.

**Etiology:**—This disorder occurs much more frequently in women than in men, the proportion being six or seven to one, and between the ages of sixteen and thirty-five, although children may be attacked. In men it occurs later in life; it is seldom found in advanced age. It is by no means a rare disease, but occurs quite commonly, being especially observed in the hospitals of the larger cities. The exact cause is not determined. Most writers believe it to be due to abnormal action of the thyroid gland. It is more apt to be a disorder of the sympathetic nervous system. It occurs in young women who are very sensitive and inclined to be slightly neurotic, who have much responsibility, anxiety and worry, and at the same time whose labor requires severe mental action or mental concentration. It may also follow serious menstrual irregularities, early pregnancies or sexual excesses, and it may occur during the early convalescence of severe and protracted disease. It may also follow a case of simple goitre. There is some argument for the statement that the condition is hereditary. It seems to be the antithesis of that which occurs in myxedema and cretinism. There seems to be an excessive secretion from the thyroid gland diffused throughout the system, and an undue activity of the functional action of the thyroid.

**Symptomatology:**—The early symptoms differ materi-

ally in the different cases. There are a very few cases recorded in which the evidences assumed an acute form. There were pronounced **nervous symptoms**, apparent **agitation** of the nerves, **tremors** and **excitability** with **rapid heart action**, **palpitation**, **sighing** or **difficult respiration** and **vomiting** and **purging**, and the **protrusion** of the **eyeballs** increases rapidly. Most commonly, however, the onset of the disease is slow or gradual, the early symptoms are the **irregularity** or the **rapidity** of the **heart's action**, the nervous excitability or **tremors**, and a very gradual increase in the protrusion of the eyeballs.

In still other cases the **exophthalmos** is the first symptom. This may increase rapidly until it becomes extreme and constantly attracts attention. It may be impossible to close the lids over the balls. Von Graefe designated this inability when the eyes were directed downward as a characteristic sign; Stelwag pointed to the widening of the palpebral fissure, with retraction of the lids, showing the sclerotic coats above and below the iris. In this case winking is materially interfered with.

The vision is seldom impaired. The condition of the nervous system is a conspicuous factor. The patient is **depressed** and inclined to **despondency**; there is general **nervous weakness** and functional disorder. **Insomnia** is a common complication. The patient may have an irritating cough, and occasionally **difficult breathing** becomes a serious complication. This is not apt to be present unless there is considerable enlargement of the thyroid. There is a **tremor** in the muscular system which is more perceptible in the fingers. Usually it is fine, but in rare cases it becomes coarse and conspicuous. It may be observed when the patient is holding the hand out with the palm turned upward. **Diarrhea** occasionally occurs, and **loss of appetite** with **indigestion** is a common symptom. In serious cases obstinate **vomiting** occurs from sympathetic causes, and this must be looked upon with apprehension. The nervous irritation may finally become very great, so

that the patient starts or trembles with every noise, and magnifies every cause of irritation to an extreme point. There is a gradual general failure with loss of flesh and increasing debility.

While the name of this disease suggests the enlargement of the thyroid as a conspicuous factor, this may be entirely absent at first, and only slowly develop, at no time becoming very great. There is an increase in the vascularity of the organ and undue activity of its secreting function, which has been mentioned. It is usually soft, and fluctuates somewhat, and varies quite perceptibly in size at different times. This is due to the circulatory derangement in the gland. It does not become hard, as in some cases of goitre.

If the fingers be pressed gently against the gland, a distinct thrill will be felt, and occasionally a regular pulsation will be observed. These patients may sweat profusely, and are sometimes subject to a discoloration of the skin, a pronounced pigmentation which is usually plainly apparent in the face. There is pruritus, urticaria, and occasionally edema.

**Diagnosis:**—The exophthalmos and nervous tremors accompanied with tachycardia are pathognomonic of this disease. The diagnosis is confirmed by enlarged thyroid and constitutional symptoms named. An early mistaken diagnosis can be made by the fact that the exophthalmos and thyroid enlargement may be delayed for quite a little time after the nervous and heart symptoms are apparent.

**Prognosis:**—Occasionally one of these patients will make a complete recovery; more often the conspicuous symptoms will abate and the condition become more or less permanent for perhaps months or even a year or more, until a marked relapse will appear. In other cases the treatment will materially reduce the symptoms and result in a gradual abatement of all the phenomena, until the patient is restored to a condition of health, which, while not satisfactory, will be more or less permanent, the patient

continuing in this condition for years, with perhaps no return of the conspicuous symptoms. The sudden occurrence of tachycardia with vomiting, diarrhea and prostration, is evidence of serious advancement of the condition.

**Treatment:**—These patients should be subjected to **enforced rest** for a prolonged period. The nervous irritation should be controlled, and everything should be done to promote **mental quietude**—a lack of anxiety and excitability. The climate undoubtedly exercises a conspicuous influence. A moderate elevation, a **dry atmosphere** and a **uniform temperature** are very desirable requisites. **The food** should be palatable, nutritious, and its ready appropriation should be encouraged. For the acute symptoms those remedies which act as special **heart sedatives** may be given in small doses, frequently repeated at times. At other times **gelsemium** will be available. **Lycopus** has exercised a beneficial influence in a few cases. **Strophanthus** and **cactus** have been advised by different writers, and I am confident that these remedies may be correctly adjusted to certain conditions. **Veratrum** should be given also, when the feebleness of the heart's action is not pronounced. **Mistletoe** has been suggested as exercising a favorable influence upon the action of the heart, and **apocynum** will be serviceable if edema be present. A number of writers have expressed themselves as enthusiastically in favor of **fucus vesiculosus**. It seems to exercise a direct influence upon several of the existing conditions. When there is pronounced disturbance of metabolism, or when the thyroid gland is conspicuously enlarged, **echinacea** and **phytolacca** may be administered. The regular school place much confidence in **ergot** and **salicylate of sodium**.

**Thyroid feeding** is advised to increase the size of the thyroid gland and its functional activity, and to promote the conditions that depend upon the functional action of this gland. This course for most cases would seem irrational, as exophthalmic goitre is due to an overactivity of the gland; therefore, instead of increasing the glandular

activity, this should be diminished. If the increased activity depends upon circulatory disturbances—among which seem to be some capillary engorgement—**ergot**, **belladonna** and the **bromids**, or the **iodids**, would be indicated, because in their physiological activities they would reduce the local hyperemia. Gelsemium should also exercise a special beneficial influence on the condition.

**Thyreoidectin**, a substance recently brought before the profession, has produced good results in four cases which have been brought to my notice.

Surgical measures are adopted by many, but great care should be exercised in selecting the cases which would be benefited by operation. The entire gland should never be removed, and satisfactory results occur only in a few cases where surgical measures are adopted. **Electricity** has been applied with some benefit, but its stimulating influence must be guarded against.

## Diseases of the Spleen.

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So intimately is the function of the spleen related to the character and construction of the blood that disorders of that fluid are apt to involve the spleen, and actual disease of the organ does not occur except as the result of disease elsewhere. In no case does an original or primary attack occur in this organ.

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### SPLENIC HYPEREMIA.

**Acute Hyperemia**, sometimes known as acute splenic tumor, may precede or accompany the onset of acute splenitis, as in inflammation of other organs. An acute engorgement of the organ occurs as the result of a direct injury, as from a blow or a wound, or as a vicarious condition from suppression of the menstruation, or from other conditions which induce acute inflammation.

**Passive Hyperemia** is a disease of slower development, and occurs during the course of and as a result of chronic malaria, or it follows those conditions which are induced in the liver by any influence, either mechanical or circulatory, which impede or obstruct the portal circulation.

The **symptoms** are a sensation of fulness and weight in the left hypochondrium. The organ is considerably enlarged, often greatly so, and tender; rarely is there much pain. When the hyperemia is intense, as occurs after an injury or from abscess, a **rupture** of the capsule of the organ may occur. It may also follow typhoid fever, or it may occur during severe intermittent fever, and from an

epileptic seizure. The symptoms are those of intestinal perforation and concealed hemorrhage. There is shock, rapid prostration and collapse, with feeble and failing heart action, cold sweats and syncope.

In splenic engorgement the organ can be plainly felt through the abdominal walls. It is found to extend downward and forward, as outlined by dulness on percussion. In some cases the outlines of the organ can be plainly seen through the abdominal wall.

**Treatment:**—The treatment will be the same as that suggested for acute splenitis.

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## SPLENITIS.

**Definition:**—An inflammation of the spleen, which may be acute or chronic in character, or which may terminate in splenic abscess.

**Etiology:**—In acute splenitis the condition occurs most commonly as the result of malarial fever; also as the result of typhoid, typhus and relapsing fevers. It follows small-pox, erysipelas, pneumonia, peritonitis, endocarditis and purulent inflammation of any organ.

**Symptomatology:**—There is a sensation of fulness, pressure or weight in the left hypochondrium, with the evidences of enlargement of the organ upon palpation and percussion. There is some discomfort, but little pain or tenderness, unless the serous covering of the organ is involved in the inflammation (perisplenitis). The conditions from pressure may produce palpitation or dyspnea, or a peculiar irritating cough. If fever be present, it is probably due to the primary condition from which the splenitis has occurred, and the character of the fever will depend upon that condition. If the inflammation terminates in necrosis of tissue and abscess, the fever may be due solely to that fact. If the abscess should rupture, sudden pain is then a marked symptom. This may be located in the region

of the stomach, into which abscess of the spleen has ruptured. If this should occur it will immediately be followed by vomiting of blood and pus, and by great prostration.

**Diagnosis:**—The diagnosis of actual inflammation will be more or less difficult, as every case of enlargement of the organ cannot be said to be an inflammation.

**Prognosis:**—The curability of this disorder depends upon the curability of the disease which induces it.

**Treatment:**—Palliative measures alone may be all that is necessary as far as the treatment of this organ is concerned, provided skilful treatment be directed to the disease which has induced the inflammation. **Belladonna** and **bryonia** will antagonize local hyperemia and the premonitory symptoms of acute inflammation. They do much toward preventing the development of this disorder. The circumstances under which it arises are those of depraved, vitiated blood, and **alteratives** with **anti-periodics** are always needed.

Where splenic disorders are associated with those of the liver, I have obtained the happiest of results by the use of the specific liver remedies, carefully selected. Scudder laid great stress upon the action of **polymnia uvedalia** in enlargement of the spleen, and other observers have confirmed his conclusions, especially upon that form induced by chronic malaria. The remedy has not received the attention it seems to deserve. **Grindelia**, **ceanothus**, **cheli-donium**, **carduus marianus** and **potassium iodid** exercise a curative influence in diseases of the spleen. These remedies may be selected in the treatment of chronic enlargement of the organ from whatever cause. They are especially active when, as stated, the disease is due to obstruction of the portal circulation. If the chronic enlargement is due to malaria, periodical manifestations should be treated with **quinin**, or with the **ferrocyanid of iron**, especially if anemia be present; or with **arsenic**, for its constitutional influence, in addition. Abscess of the organ must be freely opened and irrigated.

Other conditions of the spleen which are occasionally found are **infarction**, which is due to the fact that the terminal arteries or the arterioles are obstructed from the influence of other inflammations, notably from ulcerative endocarditis, or from septic thrombus in the splenic veins, from protracted fever. This may result in abscess, and should be treated for that condition.

**Hydatid cysts of the spleen** are seldom observed. Although not an impossible condition, it is not capable of diagnosis without an exploratory operation.

**Tumors or malignant growths of the spleen** are very rare. They may be granulomata, melanotic sarcoma, secondary carcinoma, or lymphadenoma. They are always secondary, and as the attention is usually directed to the primary condition, they are seldom discovered during life. Where cancer has been plainly located in the pylorus, or in the region of the gall bladder, and later similar symptoms develop in the region of the spleen, the involvement of that organ may be inferred during life.

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### MOVABLE SPLEEN.

This organ may be displaced from its normal position, and may occupy a position much below the normal. This is caused by a direct blow or severe muscular strain, which stretches or tears its supports; by tight lacing; by the hypertrophy of the organ from disease, or by the influence of intra-abdominal tumors or enlargements, or from the pregnant womb. In determining whether the movable organ is the spleen or the kidney, the splenic notch must be discovered by palpation. There will be absence of splenic dulness in the normal locality of the spleen. The kidney is smaller and harder and imparts a greater sense of resistance to the fingers. The condition is treated by replacing the organ, and by the careful application of a bandage with a pad which shall retain it in its position.

The patient should be obliged to occupy a recumbent position for considerable time, and should not rise from that position while the bandage is removed. During this time, if the organ is enlarged, the measures advised for the cure of that condition should be resorted to. The persistent application of heat is as important in the reduction of enlargement of the spleen as in enlargement of the liver. Surgical measures are advised for the support of this organ, but the results have not been as satisfactory as could be desired.

# Diseases of the Muscles.

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## ACUTE MYOSITIS.

**Synonym:**—Acute polymyositis.

**Definition:**—An inflammation of the structure of the voluntary muscles, which exhibits itself in either an acute or sub-acute form.

**Etiology:**—The disease seldom follows muscular strain or direct injury, as would be supposed, but develops because of the presence of some toxin in the muscle structure, although no specific micro-organism has been isolated. It is more frequently observed in males, and occurs during middle life. It has appeared during the course of severe infectious fevers and diabetes.

**Symptomatology:**—The disorder develops slowly, with a gradual increase of rigidity of the muscles, usually of the limbs, first with soreness and finally pain and swelling. All movement is difficult and painful, and finally serum infiltrates into the structures, producing an edema which may become general.

There is marked malaise and indisposition to physical exercise. There may be slight chilliness with a mild fever and nausea and vomiting and loss of appetite and an inability to masticate or swallow food from involvement of the muscles of the head and neck. Constipation is common. Acute inflammation of contiguous organs may occur during its course. As the disease progresses the tongue may become dry and coated with a brown coat, and the mucous membranes are dry and dark colored, resembling a typhoid condition without the characteristic fever. In most par-

ticulars the symptoms very closely resemble those of *trichina spiralis*.

**Treatment:**—The treatment will consist of **echinacea** in ten drop doses, and **cimicifuga** in drop doses, every two hours. **Aconite** may be indicated for the fever, and its action will enhance the influence of the other remedies. The indications for **arnica** in small, frequent doses will be conspicuous in some cases. If the tongue is dark with dry mucous membranes, give **turpentine** internally in five drop doses every two or three hours. The indications for **acids** must be met also, if present. Hydrochloric acid may be given after eating.

Externally antiphlogistine should be applied for twenty-four hours, and it may be necessary to reapply it for the same period every four or five days. In the interval the application of the diluted distilled extract of **witch hazel**, or diluted **arnica**, or **arnica** and sweet milk when the soreness is extreme, will be of service. **Apocynum** should be given if the edema becomes conspicuous, especially if there is any heart weakness.

There is a form of myositis in which permanent hardening—an actual ossification—takes place in the structure of the muscle. This is known as **ossifying myositis**. It is of rare occurrence. It occurs in males in early adult life. The actual cause is unknown. Calcareous matter is deposited into the sheaths of the muscular fibrillæ and around the joints, producing permanent rigidity. No **treatment** has as yet exercised any beneficial influence upon the disease.

## PROGRESSIVE SPINAL MUSCULAR ATROPHY.

**Synonym:**—Progressive muscular atrophy of spinal origin.

Because of an atrophy of the anterior horns of the spinal cord, which involves the ganglionic cells, degenerative changes take place in the peripheries of the nerves, which directly affect the muscles to which the nerves are distributed. The cause of this is prolonged overwork in some cases, while in others, in which it may appear in childhood or early youth, there is a history of heredity.

**Symptomatology:**—The condition occurs most frequently in males, and is first discovered in the hands. It may affect both hands simultaneously, or attack one first and the other later. The hands become stiff and progressively weak, and lose their delicate co-ordinating power. The thumb is weak and assumes the same position as the other fingers, like that of an ape.

The muscles between the bones are atrophied, causing deep grooves to appear. Muscles of the arm are next affected, usually the deltoid first. Muscles of the leg or legs may be the next in order, the quadriceps femoris showing it as early as any. From this it attacks various groups, not especially those in contact, until the entire muscular structure may be involved. There are irregular fibrillary twitchings, and as the muscles atrophy there is a corresponding diminution in the reflexes, until they disappear entirely and a progressive loss of voluntary motion occurs. The atrophy may ultimately affect the diaphragm, when serious results and complications occur, with an especial tendency toward important and usually fatal lung changes or bronchitis. The condition extends over several years, being of slow progress.

## PROGRESSIVE NEURAL MUSCULAR ATROPHY.

**Synonyms:**—This is **progressive peroneal muscular atrophy** of Gowers, or the **progressive atrophy** of Charcot-Marie, or the **progressive neural atrophy** of Hoffman.

**Symptomatology:**—This is a primary neurotic atrophy, in which the muscles below the knee are affected, beginning with those to which the peroneal nerves are distributed. Later the muscles of the hand and arms may also be involved. The muscles of the foot become very weak, later those of the leg, first the peroneal muscles, and later the anterior and posterior tibial muscles, and a progressive atrophy is apparent. The foot drops on attempting to walk, and walking is difficult or impossible. There is a loss of reflex, with fibrillary contractions and perhaps a form of **club foot** may develop. In rare cases it may involve the muscles of the trunk and face. It is usually of slow progress. It may be hereditarily transmitted.

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## MUSCULAR DYSTROPHIES.

A form of degeneration of the structure of the muscles is recognized, which is nutritional in character and in which the nerves or the nervous system are not involved, being positively in the muscles themselves. These changes are apt to occur early in life, and seem to be due to inherent lack of vitality in the muscles or to an imperfect development of the muscles. They may follow direct injuries or result from protracted infectious fevers, but these causes are probably the inducing causes only when the predisposing condition is present.

The muscles waste away, become shortened and pigmented, or a deposit of fat cells within the sarcolemma takes place, or the fat may be also deposited between the sheaths. On the other hand there may be actual enlarge-

ment of structure with progressive loss of power. This is due to an actual hypertrophy of the fibrillæ or to an overgrowth of connective tissue.

The form known as **pseudo muscular hypertrophy** is characterized by a peculiar enlargement of the muscles of the calves in children usually occurring before the age of eight years. With this enlargement the patient walks imperfectly and with much effort, stumbles and falls over trivial obstacles and is quickly tired from the effort. The muscles of the front of the thighs soon show enlargement out of proportion to the normal development of the muscular system of the child. With this, however, there is apt to be atrophy and weakness of the muscles of the back and of the gluteal muscles exhibiting itself in a protruding belly and more or less anterior spinal curvature. As the disease progresses it involves other groups of muscles. Sometimes the atrophy is apparent and sometimes fatty or albuminoid degeneration induces hypertrophy. The disease often induces permanent contractures of groups of muscles. There is no disturbance of the reflexes nor usually of the sensation.

That form of **progressive muscular dystrophy** known as Erbs juvenile dystrophy begins usually about the age of puberty and affects the muscles of the shoulders, including the pectoral and deltoid muscles, the trapezius muscles, the rhomboids and the latissimus dorsi. These become very weak as the hypertrophy progresses, permitting the shoulders to fall forward with perhaps, ultimately, spinal curvature. The shoulder blades are very conspicuous. The disease may progress until the gluteal muscles and the muscles of the thigh and calf may also become affected. This is not widely different from the pseudomuscular type, except that it occurs a little later in life.

There is still another type of dystrophy which is designated as the **Landouzy-Dejerine type**, in which degeneration involves the muscles of the face, arm and shoulder. It begins in the muscles of the eyelids and mouth, material-

ly changing the facial expression and resulting in an expressionless or stupid appearance. It may affect the muscles of the eyeball, resulting in loss of control. Fortunately it does not readily attack the masseters, although there is difficulty in closing the lips, and as a result there is a dribbling of the saliva. It ultimately involves the muscles of the arms and shoulders and may finally progress until it includes the other dystrophies previously described. This condition is distinctly hereditary and shows itself in both males and females between the ages of six and sixteen years.

**Prognosis:**—The prognosis in all of the forms of atrophy and dystrophy is not good as to recovery, but while usually progressive there may be a stay in their progress and with more or less deformity the patient may live for years.

**Treatment:**—The treatment of all forms, either of atrophy or dystrophy, is by no means specific. In those cases which are undoubtedly hereditarily transmitted there will probably be but little benefit from the treatment. It would be much better for the members of these families not to marry, as the children are of more or less imperfect muscular development usually. If a systematic course of massage and muscular exercise, which should in no case be weakening, could be laid out for these patients from early infancy, there is no doubt that much benefit might be obtained.

The nutrition and general muscular and nervous tone of all of these patients must be encouraged. They must be built up until they are in the very best possible physical condition. For this purpose the digestive and appropriative organs must be kept in a normal condition and a systematic plan of diet must be laid out, from which condiments and pastries are excluded. Those in whom the disease develops from overwork should not necessarily adopt a life of inactivity, but a change of employment is necessary. They should follow some course which will involve other groups of

muscles or the entire muscular system, except the wasting muscles.

They should spend their time largely out of doors and in the sunshine, in a mild climate. Those remedies which improve the muscular structure and muscular system should be selected. The **calcium phosphate** and the **magnesium phosphate**, or free phosphorus, when there are sufficient lime salts in the system, will be the first remedies that will be demanded. To arouse the muscular fibrillæ, as well as to stimulate the central nervous system, **hydrastin** and **strychnin** will be demanded. In other cases the **strychnin arsenate** will be a most serviceable remedy. The **zinc phosphid** may be given for a considerable period with good results. The doses should be small with children and repeated every two or three hours. The **cupric arsenate** in one-hundredth grain doses three or four times daily will benefit some cases.

By all means the most serviceable measures will be **massage**, systematic muscular movements, **vibration** and **the electrical current**. In the application of this current each patient must be studied separately. In some of these the galvanic current will be of benefit, others may be treated with the spark, others with the electric shower, while still others will receive benefit from the faradic current. A very mild current persisted in for a long time has been more satisfactory with me than any other course, some marked acquired cases having been thus cured.

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## MYOTONIA.

**Synonyms:**—Thomsen's disease; *myotonia congenita*.

**Definition:**—A congenital condition of the muscular structure without involvement of the nervous system, in which, with hypertrophy of the muscular fibers, there is a characteristic slowness in contractility or in relaxation after the muscles have contracted by voluntary action; a

tendency for the muscles to remain in a condition of contraction.

Only a few cases of this disease are on record. It was first described by a physician named Thomsen, who was a sufferer from it. It occurs more frequently in men than in women, and while it is not directly traced to a nervous origin, the individuals suffering from it are more or less neurotic. It has shown itself after severe muscular exercise, after prolonged exposure to cold, and after extreme fright.

**Symptomatology:**—After a period of rest of the muscles, the patient finds that he is unable to contract the muscle promptly; its action is slow, and when the desired contraction is complete there is a tendency for the muscle to remain in a state of contraction. Because of lack of promptness in contractility or relaxation, the movements of the hands, arms and legs are materially interfered with. If the hand grasps an object, it cannot let go; walking becomes almost impossible; in attempting to walk the condition may be conspicuous at first, but as the efforts are repeated for some little time they will become less and less marked, until the walking becomes normal and the tendency has disappeared. If muscular movement continues, even in a mild form, there will be no return of the trouble. It appears after prolonged rest.

This condition includes all the voluntary muscles, except the masseters and the sphincters and the muscles of deglutition. It may be followed by some mental disturbance, which arises principally from anxiety concerning the condition. From this the patient may become despondent or irritable, and other nervous phenomena may show themselves. There are no constant changes in the reflexes, but there are marked alterations in the electric reactions.

The tendency to the condition is increased by mental excitement, by physical exhaustion, and by exposure to cold. It is decreased by mental tranquillity, rest and the

application of heat. Pain, except an occasional cramping sensation, is seldom present.

Sufficient opportunity has not as yet been offered for a full study of the influence of **treatment** upon the condition. So far but little benefit has been obtained from any course adopted. These patients must lay out a plan of life for themselves in which, cold, nervous excitement and fatigue are entirely avoided. They should live in a warm climate, and largely out of doors. Medicine is of doubtful utility. Indications plainly pointing to a course of tonic treatment may arise. There may be cases in which the suggestions advised for the treatment of muscular atrophy may be applied, in whole or in part, to great advantage.

## Special Diseases.

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### HEAT STROKE.

**Synonyms:**—Sunstroke; thermic fever; insolation; heat prostration; *coup de soleil*.

**Definition:**—A condition of acute disorder of the nervous system, resulting from exposure to excessive heat.

**Etiology:**—The condition may be induced by prolonged exposure to the direct rays of the sun on a hot day, **sunstroke**, or it may be due to confinement in a hot, poorly ventilated room, heat stroke or thermic fever. Individuals working in the streets of a city, or teamsters, outdoor carpenters, stone masons and hod carriers, soldiers, those engaged in out of door activities, or other individuals who are continuously exposed to the hot sun, are subject to sunstroke. Those who work in blast furnaces, engineers, stokers, cooks and bakers are among those who are affected by heat stroke.

Those who are addicted to habits of dissipation, and especially beer drinkers, are liable to this condition. There is no doubt that it occurs more readily where there is imperfect metabolism, or imperfect elimination, as auto-intoxication renders the individual more liable to attacks. This may have previously existed, or it may develop from the rapid formation of toxins from the heat, or the two conditions may be combined. Those laborers who are careless of their habits, and who are filthy as well as intemperate are directly influenced under circumstances where the temperature ranges from 85° to 95° or 100° with a considerable humidity of the atmosphere. Those who are

fatigued from overwork or from mental exhaustion, or who suffer from excitement or nervous irritation and irritability, and especially those who have had a previous attack of heat stroke, are all prone to the influence of heat.

The direct influence of the excessive heat upon the heat centers, where elimination and heat radiation is temporarily suspended, is the immediate cause of the disorder. One of two conditions may exist: either the heat centers may be paralyzed, with loss of inhibiting power, in which case thermic fever is induced, or the vasomotor nerves may be paralyzed, in which case exhaustion follows, with normal or subnormal temperature and profuse sweating.

**Symptomatology:**—Usually in sunstroke the individual complains of discomfort from the excessive heat for a considerable period before any real symptoms appear. There is **dizziness**, a strong disinclination to further physical exercise, **weakness** and **oppression**. These symptoms being overlooked and the patient continuing in the sun as before, is suddenly attacked with a **violent headache**; he falls to the ground and soon becomes **unconscious**. **The face** becomes very red or livid, and later cyanotic; **the blood vessels** of the head and neck are all distended, and often there is a **violent convulsion**; there is difficulty in **breathing** and the breathing soon becomes stertorous, or it may be rapid and shallow. **The temperature** rises rapidly to perhaps 110° or 112° F.; the pulse may reach 160, though usually it is from 125 to 140. **The pupils** first become contracted; as paralysis advances they become dilated.

In other cases the patient falls unconscious, but may be partially aroused. He complains of a headache, or holds the head with his hands; he is conscious of a difficulty of breathing and shows signs of much distress. Later **delirium** develops which may assume a wild or excitable type; **the skin** is hot and dry, and **the urine** is suppressed. **The temperature** in these cases may not exceed 105° or 106° F. Later the stupor increases to coma, the pulse be-

comes very rapid, and the Cheyne-Stokes respiration is observed. There may be **incontinence** of both the **urine** and the **feces**.

In yet other cases the patient complains for several days of being oppressed by the protracted heat; he does not sleep day nor night; is restless, suffers from extreme headache and disordered digestion with colicky pains; there is vertigo and chromatopsia or blurred vision. There is little if any perspiration, the skin continuing dry; there is urinary irritation with but a small quantity of water passed. Under these circumstances, when the stroke comes it is apt to be more severe.

In heat prostration the symptoms are those of **profound asthenia** or of acute development; there is dizziness, nausea, faintness, more or less severe headache with drowsiness, and some chilliness. **The temperature** falls, the skin becomes cold and clammy, the face is very pale, and prostration is plainly apparent. The temperature may fall from one to three degrees below normal at first, although later it may rise to two degrees above normal.

**Diagnosis:**—The fact that the patient is laboring in a heated atmosphere and that the attack is sudden, with other conspicuous symptoms which have been named, suggest the condition. It must be distinguished from apoplexy, from alcoholic intoxication, from uremic intoxication, and from some forms of meningeal trouble.

**Prognosis:**—Unless the sudden unconsciousness is extremely severe at once, the prognosis is usually favorable, although it requires a considerable period of care and attention to restore perfect health. Patients who have been once overcome by heat never recover their power to resist heat, and are subsequently subject to unpleasant symptoms, often when the heat is but little increased. The direct rays of the sun with these patients sometimes produces unpleasant symptoms.

**Treatment:**—The treatment of an acute attack of this disorder must be vigorous and energetic; the patient must

be taken to a cool place, stripped of his clothing, and every effort made to **reduce the temperature** of the body. Usually the head is packed with **ice**, an ice bag is applied to the spine, and **cool water** is poured over the surface of the body. However, I am confident that if the body be exposed to the air, and the surface of the body with the face and neck be sponged with **hot water**, and then thoroughly fanned, that a more rapid reduction of heat occurs; elimination is immediately favored. I am also confident that a prompt restoration of the elimination is nearly as essential as the reduction of heat, and this is not favored by the use of cold alone. There is an extreme tendency toward determination of blood in the nerve centers, and this the application of cold favors also. Heat will materially assist in equalizing the temperature, attracting it to the surface of the body. Moist heat on the body surface promotes dissipation of heat also; a gentle flagillation of the skin of the extremities with the flat of the hand and an upward rubbing to promote the venous circulation is of much importance. Where unconsciousness exists, it is well to wrap the feet and legs in blankets wrung from hot mustard water. The temperature should be watched with the thermometer in the rectum, and as it approach a manageable point the extreme activity of the efforts at restoration may be suspended.

Hypodermic injections of **strychnin** and **atropin** are sometimes of good advantage. If the heart is failing, **digitalis** may be injected in proper quantity. An active physic is sometimes administered in these cases to advantage, as a thorough evacuation of the bowels is of considerable service. Following this the patient should have an enema of the normal salt solution.

It is seldom that medicine can be given by the mouth during the period of unconsciousness. **Belladonna** is indicated, and the carbonate or the **chlorid of ammonium** may be beneficial, but the usual sedatives will not act with sufficient promptness until after consciousness is re-

stored. At this time, the patient being put to bed and properly cared for, and the temperature not above 102.5° or 103° F., **gelsemium** and **aconite** in moderate doses may be given every hour; or if nervous excitement is intense, small and repeated doses of the bromids may be given. Where there are evidences of cerebral congestion, continuing after reaction has occurred, it is well to give medium doses of **ergot**, or ergot and a **bromid**, or **hydrobromic acid**, to control delirium, but more especially to prevent the development of a possible secondary meningitis. It will be necessary to give the patient the very best of care and treatment for several days. He should be kept in bed, and every possible cause of excitement or worry should be excluded. Other symptoms may appear, which should be treated in accordance with their specific indications.

Patients who work out of doors, under the hot sun, should be educated, if possible, in measures which conduce to warding off attacks. It is useless to caution those addicted to the use of alcohol of the danger of indulgence while working in the sun or in a hot place. Individuals readily impressed by heat, should avoid excitement or violent exercise in high temperatures; should live temperate lives, and should especially pay the closest attention to elimination, seeing to it that there is no constipation and that the skin is kept active by frequent bathing. They should eat light but sufficient food, and should see to it that their places of occupation are well ventilated. When exposed to heat, if there are symptoms of fulness in the head, or vertigo, or nausea, or faintness, during the continuance of the work, the work should be immediately suspended, the patient should lie down in a cool place, should bathe the head in cool water, and should keep very quiet.

Those working in the sun will obtain much benefit by frequently wetting the hair in cool water, or by keeping a handkerchief or a fold or two of wet blotting paper in the hat.

## OBESITY.

**Synonyms:**—Adiposity; *lipomatosis universalis*.

**Definition:**—A deposit of fat in the tissues or in the structures of the organs of the body in such quantities as to produce discomfort and inconvenience, or to impair the functional operations of the organs.

It is impossible to lay down hard and fast lines by which we may always distinguish between a healthy and an unhealthy state of fat in a corpulent individual. A man may weigh 300 pounds and be in no way inconvenienced by it, while another at 225 may find his actions impeded and his health impaired by it.

**Etiology:**—A tendency to “leanness” or to “fleshiness” exists in different families, and is hereditary. Every member of a family may from infancy be fat and rotund, and yet always in perfect health. One member of such a family may by excessive eating or drinking so increase his weight from an increase of fat as to induce ill health, and perhaps progressive debility. On the other hand, a single child in a family, all of ordinary or average weight, may take on fat rapidly at birth, and become excessively fat and unwieldy in early life, and decline in health after puberty until death occurs before middle life. Those who are naturally “fleshy” may be light eaters, or they may practice habits of dieting, and yet retain their full weight, or even gain in weight.

The most common cause is physical inactivity and over-eating, or the excessive drinking of malt liquors and wines. Those drinkers who partake exclusively of brandy and whiskey are not inclined to become obese, while the beer-drinking nations or people are disposed to fat. Those given to luxury and a sedentary life, those of a lymphatic or phlegmatic temperament, are prone to obesity. On the other hand, these habits of life may be induced by obesity.

The condition occurs at all times of life up to sixty years of age, is less common between twenty and forty,

and common during the change of life in women and at the same period of life in men. The tendency to obesity is greater in women than in men.

This disorder follows typhoid fever occasionally, or other serious disease, as acute rheumatism or gout. It occurs with diabetes and after certain surgical operations, as the removal of the ovaries and testicles.

**Symptomatology:**—Among the first symptoms induced by an excess of fat are those of **weariness** upon slight effort with **loss of breath**. This latter condition may follow weakness of the heart's action, or it may be caused by the restricted movement of the chest walls. The fact that the using of the limbs or the moving of the body of a patient so greatly increased in weight requires greatly increased muscular effort is often overlooked. The face becomes flushed upon any exertion and the patient gets out of breath quickly because the increase of muscular strength is seldom if ever proportionate to the increase of weight. Another cause of oppressed breathing is the fact that there is a greatly increased capillary circulation constructed, as the fat is deposited, to supply all the tissues, and thus a greatly increased amount of work is required of **the heart** without a corresponding increase of the power of the heart. **The pulse** with these patients is at first full, round and sluggish; later it is small and compressible, and there is frequent **palpitation**, which may follow even the least exertion, or which may occur after eating. The patient is disinclined to stand, some of them refusing to walk; they are **dull, drowsy** and usually **sleep** more than patients in normal condition, although there is an occasional patient who is troubled with **insomnia**, is **restless** and passes uncomfortable nights.

There is an occasional plethoric patient in which the pulse beats are full and strong but slow; ultimately brachycardia is constant. There may be a persistent **sub-normal temperature**. When **fatty degeneration of the heart** occurs with these patients, the pulse becomes small,

rapid, intermittent or irregular, and the arterial tension is reduced.

Some of these patients have an **inordinate appetite**, with an excellent digestion. Refusing to control the appetite, they indulge in starches, sugars and fat-producing foods, which greatly increase the already extreme fat. On the other hand, there are fat patients who retain their fat, or even increase in weight, upon a very small quantity of food, sometimes eating only a small meal twice a day and this a very simple one. Others suffer from constipation, and where care is not exercised the feces accumulate in the bowels, because of inactivity and imperfect peristalsis, and this is a fruitful source of autointoxication. The most of these patients sweat freely and profusely.

Fatty deposits may occur around the other organs, or there may be fatty overgrowth or fatty infiltration with enlargement of the liver or kidneys also. The urine is usually free in quantity, but of low specific gravity, as these patients are usually troubled with greatly increased thirst and drink a corresponding amount of water.

Obese patients are subject to hernia, and from heart weakness are also liable to have passive pulmonary congestion, asthma or bronchitis. They may also be attacked with glycosuria or albuminuria. Arteriosclerosis is not uncommon, and as a result cerebral hemorrhage and apoplexy may occur.

**Treatment:**—Two essential factors which must be considered in the treatment of these cases are **diet and exercise**. These conditions are applicable in preventing the development of fat in those who anticipate it, especially those who are young. Those in whom evidences of fatty degeneration of the heart or other vital organs are apparent must be guarded in physical exercise. In patients of otherwise good health, food should be selected which, while it sustains the muscular power, provides no additional fat-forming substance, and physical exercise should be taken systematically and in increasing quantities in

proportion to the developing strength, if possible, in the open air. This not only includes regular employment, but mild athletics and gymnastics, with other out of door sports.

It is a common habit among lady patients who are plump and rotund naturally to fear that they will ultimately become too fleshy, and to adopt a course of diet or of living which brings on other disorders. Others take, of their own accord, arsenic or other injurious remedies to prevent the development of flesh, or to decrease that which is really a normal amount. The physician should caution these patients that a reduction of the normal fat may result in uterine displacement, or floating kidney, or in gastroptosis. Much education is needed by all of these patients, which it is the duty of the physician to impart.

While this is true in general, young patients who are unduely obese should be encouraged in outdoor sports and in physical exercise, and should be taught self-control in eating and in drinking, as the drinking of too much water promotes the increase of fat in all cases. Regular habits of abstemiousness in eating must be acquired. It is possible that patients will become accustomed to a narrow diet and take pleasure in it. No effort should be made with these patients to reduce the fat, but simply to prevent an increase of the deposit. This rule applies also to those in advanced life. At this time any effort at reduction of fat may be detrimental by inducing serious changes in nutrition or in metabolism.

Measures calculated to actually reduce the quantity of fat are more safely conducted between the ages of twenty and forty than at any other period, and even at that time no effort should be made if there is chronic disease of the heart or of the kidneys. The patient must thoroughly understand that a sudden or rapid reduction is impracticable and unsafe; that only gradual reduction, with close attention to the general health at the same time, is permissible, and that those measures, especially physical exercise,

which contribute to the desired result, must never be excessive, but must be continued with patience and perseverance in a judicious manner over a long period. Furthermore, it is necessary to continue the course, in part at least, after the results are satisfactorily obtained, until this course of living and the conditions resulting from it in the system become fixed and established and become the habit of life of the individual. Otherwise, upon returning to ordinary conditions, not only will the weight lost be regained, but there may be a tendency to a further undue increase of weight.

Because of the fact that alcohol must be oxidized in the system, this prevents the proper oxidation of food, and makes it imperative that alcohol in any form should be excluded. In planning the diet many writers advise an arbitrary course for all. The diet list of Ebstein, or Oertel of Munich, or of Banting, are laid down as those upon which all patients may subsist. I am convinced that we cannot lay down hard and fast lines in diet any more than we can in medical treatment.

It is safe to say that those substances which are directly convertible into fat, or which carry fat cells directly into the blood, such as starches, sugar and rich foods, are to be discarded in the selection. This includes wheat flour made in any form, potatoes, corn, beans and peas. On the other hand, bulky vegetables, if the digestion will permit, may be advised where starch is not the prominent constituent, and string-beans, cabbage, lettuce, celery, cauliflower, spinach and tomatoes may be eaten, with lean beef and eggs. For breakfast a patient may take a piece of well-toasted bread, a sliced orange or banana, or a small piece of lean meat. If coffee or tea is taken, it should be in limited quantity and without seasoning. At noon the patient may eat quite freely of boiled fish, may take graham bread, stale, and preferably toasted, and may eat of the vegetables named quite freely. Any of the fruits in season, except perhaps grapes alone, may be taken as des-

sert. At night the patient may have a bowl of soup, or of consomme, or some form of vegetable pureé carefully prepared; steak, roast beef or fish may be taken in reasonable quantity, and vegetables also may be taken at this meal, with fruit, and, unless it causes insomnia or nervous excitability, coffee may be drunk at this time.

If these patients are subsisting upon so small a quantity of food as to feel the inconvenience of the restricted diet, or, as some complain, are constantly hungry, it is a good plan to take a light meal in the middle of the afternoon, such as a glass of milk or a cup of tea, with oatmeal, crackers or zwieback, and some celery or lettuce.

It will be necessary to adjust a rigid course to every patient, but the food should be thoroughly masticated and always taken short of full gratification. The quantity of water taken must be sufficient for the vital processes in the system, but if the thirst is excessive, should be limited.

In taking exercise a regular employment out of doors, adjusted to the ability and condition of the patient, is in every way preferable to exercise which is taken simply for the sake of the exercise. While the latter is beneficial, it is apt to be irregular, and often fails of accomplishing the desired result. Golf or ball playing is almost sure to be overdone. Athletic or gymnastic exercises are seldom correctly adjusted, horseback riding, walking or rowing are subject to the whim of the patient and to the condition of the weather. However, any of these may be formally or rigidly indulged in until satisfactory results are obtained.

The use of medicines in preventing the deposit of fat or in reducing obesity has not been satisfactory. There is a class of patients which have received benefit without injury from the concentrated juice of the poke berry—*phytolacca decandra*. I have prescribed this in patients who suffered from serious stomach and intestinal disorders, or with some cerebral disorders, and have succeeded not only

in reducing the fat somewhat, but I have relieved the other condition, and have stopped the increase of fat. I believe the influence of the remedy will promote a normal action of the other glandular organs, while it retards the digestion and appropriation of fats. It also promotes oxidation. I have advised the use of bladder wrack—*fucus vesiculosus*—in obesity, and have obtained favorable reports, but have not had opportunity to observe its action myself.

In 1878 Wilhite stated that the remedy is not a reducer of fat in healthy patients, but where the deposit was the result of a vitiated condition, or where the patient was cold and torpid with clammy skin, with large, flabby rolls of fat, with a relaxed and pendulous abdomen, or with a tendency to extreme inactivity, the remedy would act quite promptly in overcoming these morbid tendencies and in imparting tone to the vascular system and to the sympathetic nervous system—that it would act best upon patients of the lymphatic temperament. The use of the thyroid extract in overcoming obesity has gained considerable ground in the last few years. The dose must be adjusted carefully to each patient, and it must be borne in mind that it not only reduces fat, but increases nitrogenous waste at the expense of the nitrogenous tissues; therefore nitrogenous food must be given freely while the remedy is being administered. It may be begun in doses of two grains twice a day, and slowly increased, watching for its influence upon the heart, and upon the circulatory apparatus. It may be increased to five or six grains three times daily. Heart remedies may be needed, with strychnin or other tonics while this agent is being taken, and the patient should be cautioned against overexercise.

# Intoxications.

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## ALCOHOLISM.

**Synonyms:**—Drunkenness; alcoholic inebriety; alcoholic intoxication.

**Definition:**—A depraved condition of the system, induced by the more or less constant use of alcohol.

With these individuals there is either a constant or a periodical desire or craving for drink, which when gratified to an excess, induces certain peculiar manifestations which are classed by different names, according to their characteristics. **Drunkenness** is the acute intoxication which results from over indulgence at any one time; **mania a potu** is an acute mental derangement or mania, a “crazy drunkenness,” occurring from extreme or prolonged indulgence, in individuals of a highly nervous temperament. **Dipsomania** is a form of mania in which periodically the individual exercises no restraint over an intense desire which occurs at that time, but indulges to great excess, while in the intervals there is no desire or indulgence whatever. **Delirium tremens** is a condition of hallucination which occurs after prolonged excessive indulgence, or from the abrupt withdrawal of alcohol, in which the patient sees himself surrounded by snakes or vermin, or is attacked by foes or by vicious animals or distorted animals or demons.

**Etiology:**—Repeated indulgence in the use of alcoholic beverages induces a depraved condition in the system, which, on its part, demands the further use of the substance. The first cause is gratification, the predisposing causes are environment and habits of life. Those whose social or

business conditions bring them in contact with it, those who are engaged in laborious or exhausting work, who are exposed to extreme vicissitudes and to severe weather, are more apt to indulge. Those who have had extreme business reverses or are subject to great sorrow or grief, or prolonged ill-health or disappointment, are liable to take to drink. Heredity is no longer believed to be an important factor, except as an enfeebled constitution or imperfect will power may be transmitted from parent to offspring, which permits the ready acquirement of the habit if there is any indulgence. However, I have seen one case in which the mother had a strong desire for whisky during pregnancy, which she refused to gratify. A boy was born with a condition of irritability which was controlled only by feeding him small quantities of diluted whisky. The desire, intense and uncontrollable, was always present as he grew up, and he died a drunkard after many years of manly, intelligent struggle against it. The parents did not indulge in it. This was no more than a birthmark, although other cases somewhat similar have been reported.

Alcohol is a drug and a poison; it is neither a food nor a drink. Its habitual use antagonizes the vital processes of the body, interferes with the operations of the functional organs of the body, produces pathological changes in nearly all of the tissues, and lowers the vital power of the system to resist disease, thus greatly increasing not only the liability to attacks of disease, but rendering them more complicated and more intractable when occurring.

It is only in recent years that alcoholism has been recognized by writers as a distinct disease. Not later than twenty years ago the subject was discussed thoroughly in current periodicals, with more opponents of the theory than advocates. The effect of the drug is such as to interfere materially with mental action; it destroys the finer sentiments, love, humanity and the noble aspirations, subdues the will power, obliterates conscience, interferes with the exercise of judgment, and stimulates the development

of criminal tendencies. The patient loses his desire to work and his ability to transact business, or to conduct himself properly in social circles; he becomes careless of his habits, untidy, and even filthy.

**Symptomatology of Drunkenness:**—When the individual is “getting drunk,” he usually becomes at first exhilarated and hilarious, but there is a great difference in different individuals; another may become depressed, another irritable and ugly, another simply passive and good natured. Following the stage of exhilaration, in which there may be an increase of the mental functions, with a flushed condition of the face and considerable volubility on the part of the individual, is the stage of muscular relaxation, or functional paralysis, more or less pronounced. In this stage the mind is erratic, the will power is gone, the power of speech is perverted. There are some faults of vision, and pronounced muscular incoordination; the face is bloated and somewhat cyanotic, the eyes are dull, and usually there is nausea and vomiting; there is a staggering gait, all tending to stupor or heavy sleep. The skin is cold and covered with a cool perspiration. When the patient becomes completely overpowered and sinks into unconsciousness, there is heavy, stertorous breathing; the pulse is large, soft, slow and full, and the temperature is subnormal, and the odor of alcohol is upon the breath. Often the muscular relaxation is so complete that there is urinary and fecal incontinence. This condition of coma so closely resembles that of apoplexy, or of uremic coma, or the coma from acute cerebral congestion, or from a blow upon the head, that sometimes patients suffering from these conditions are supposed to be drunk and receive no attention until death occurs. On the other hand, so severe may have been the intoxication, in a rare case, that the patient does not recover consciousness.

**Treatment of Drunkenness:**—These patients are usually put to bed and allowed to sleep off the effect of the drink. They awaken after many hours of heavy sleep, very much reduced in strength, often irritable, with extreme headache

or a full and uncomfortable sensation in the head, and no appetite. If there has been no vomiting at the onset of the symptoms, it is a good plan to produce vomiting by a hypodermic of **apomorphine**, or some nauseating emetic. However, further depression is to be avoided. A hypodermic of **strychnin**, or a full dose of **carbonate of ammonium** and **digitalis**, **liquor ammonii acetatis**, or a strong infusion of **capsicum**, are sometimes of service in overcoming the effect of the drug. I have obtained excellent results where there was nervous excitability by the use of fifteen grains each of **chloral** and **sodium bromid**, with the tincture of **capsicum**. **Apocynum** will be found a valuable remedy with which to settle the stomach, and to strengthen the action of the heart, after a debauch. Some patients habitually drink dilute **vinegar** to recover themselves from a debauch. It is said to act promptly in some cases.

**Acute Alcoholism** is considered under the head of **Drunkenness**.

**Chronic Alcoholism** includes that form of drunkenness in which the habit has become so thoroughly fixed and is so little resisted that there are frequent debauches, or in which the patient persists in keeping up a single debauch for a period of days or even weeks by persistent drinking. Another form of chronic alcoholism is that in which the patient is able to keep himself in an apparently normal condition, or where no acute manifestations of intoxication are apparent, while thoroughly under the influence of the drug almost continuously.

The **periodical drunkard** is one who resists the desire completely for weeks at a time, or in whom the desire may not be strong for that period, when he suddenly yields to it and continues in a prolonged debauch for a considerable period.

**Symptomatology**:—The pathological conditions induced by the persistent use of this drug include nearly all chronic derangements in some form. The chronic symptoms may be of slow development; there is impairment of digestion,

a perverted appetite or a complete loss of appetite; there is discomfort in the stomach before eating and the food increases the distress; the tongue is heavily coated and the breath is foul. The patient often has a spell of vomiting upon rising in the morning. Insomnia is frequently persistent, and constipation is common. There is sometimes progressive muscular debility, with mild incoordination or tremor, especially of the hands and of the tongue; ultimately the whole body trembles and ataxic symptoms are not uncommon. There is a flabby and relaxed condition of the muscles; the countenance becomes swollen and pale, or assumes a peculiar bloated appearance, and the nose becomes purplish or dark red in color and is often considerably enlarged.

In the advanced stage of the disorder the gratification of the desire and the means for its accomplishment absorbs the entire time and attention of the individual, everything else being subordinate to this; and as all conditions are increased by persistent gratification, the condition becomes finally most deplorable, and terminates ultimately in more or less complete dementia.

**Delirium tremens** may follow a prolonged debauch at any time during the history of chronic alcoholism, especially if the patient has neglected to take food or the system has been deprived of the nourishment which the food would supply. It may also occur after an attack of "mania a potu" or after an attack of dipsomania.

Periodical drunkenness conduces materially to the occurrence of delirium tremens; it is quite common for these patients to suffer the most extreme prostration, with nervous irritability, when coming out from the effect of a debauch. Extreme irritability of the heart's action, with violent palpitation, intermittent and irregular action, great feebleness, with extreme despondency and suicidal tendencies, have appeared in many of these patients, to be quickly followed, if the patient is not carefully treated, first by mild hallucinations, and ultimately by a pronounced attack of delirium

tremens. It is not impossible that patients who are seldom thoroughly drunk, but are always on the verge of drunkenness, will slowly develop the phenomena of delirium tremens, which may be precipitated by a little excessive indulgence. The liquor is taken to relieve the extremely distressing general condition of the patient, or the desire is strengthened by the occurrence of disaster, or grief, or disappointment.

At times, in undertaking the cure of chronic alcoholism, the liquor is shut off abruptly, and stimulation and nutrition are not compensatory with the condition induced by this forced abstinence, and as a result delirium tremens appears. It is preceded by prolonged sleeplessness, mental depression, restlessness, and almost complete absence of any desire for food. There is extreme feebleness, irritation of the stomach and nausea, and occasionally thirst that is not appeased. Finally the countenance assumes a peculiar, wild expression, and the imagination is greatly exaggerated. Sounds are heard and objects are seen and impossible conditions are imagined.

Ultimately the patient seems to be surrounded by snakes or loathsome reptiles, or is chased by impossible enemies, or is attacked by wild animals. All this increases to an extreme degree the intense nervous excitability of the patient, until often suicide is attempted, as to him it is all real. The condition continues until the patient is completely exhausted and sinks into a temporary unconsciousness; occasionally the delirium progresses until coma and death result.

It is not uncommon for some fever to develop under these circumstances, which may assume a typhoid type, with deficient secretion, dark mucous membranes, dark-coated tongue and sordes. As delirium progresses there may be subsultus tendinum, coma vigil or carphologia. At any time during the progress of the disorder, if the nervous excitability can be controlled and sleep induced, the symptoms will abate and ultimately disappear entirely. In other

cases, during the violent delirium the strain upon the heart is so great that death may suddenly occur, or there may be hemorrhage into the brain and the patient may die from apoplexy. Congestion of the kidneys and hypostatic congestion of the lungs are not uncommon results of this extreme state.

There is a certain class of sensitive patients of a highly nervous temperament which will develop an acute alcoholic insanity upon taking but little liquor. This condition—**mania a potu**—may also occur in other neurotic patients, whenever they become thoroughly drunk, whether it requires much or little to induce it. With these there is every evidence of insanity; the patient has a flushed face, full, bounding pulse, bright eyes, and great nervous excitement. He loses complete control of himself, and all the depraved or vicious elements predominate; he becomes furiously destructive, and has at times no regard for human life; all humane sentiments are abolished. These exhibit an exaggerated physical strength and are often able to resist the combined efforts of several strong men to hold them.

**Treatment:**—Of the manifestations of chronic alcoholism, two conditions must be kept in mind—the one of extreme asthenia, in which the general feebleness is very pronounced, and the other in which the nervous tension is temporarily high and there is great excitability and exaggerated muscular activity. The former should be treated with **non-alcoholic stimulation**, and with the very best and most **concentrated nutrition**, and **external heat**. Among the stimulents that may be used are **capsicum**, **xanthoxylum**, the **carbonate**, **acetate** or **chlorid** of **ammonium**, **strychnin**, and **avena sativa**. **Cola** is also used for this purpose, and the tincture of **red cinchona**.

While the condition of excitability should be treated with sedatives, it must be constantly remembered that there is a constant tendency toward relaxation, which sedatives may precipitate and carry to a dangerous point. Consequently

the sedatives should either be in themselves of a stimulating nature or they should be combined with stimulants. I have given thirty grains of **chloral** and fifteen grains of **sodium bromid**, in a single dose, to these patients, and have repeated almost the same quantity in an hour or two, but have given concentrated nutrition with the ten or fifteen drops of the tincture of **capsicum** in a teacup full of **hot water** at the same time, or have administered the twentieth of a grain of the nitrate of **strychnin** hypodermically. The **bromid** or the **valerianate** of **ammonium** are excellent remedies at this time. Where collapse is threatened, it is sometimes advantageous to wash out the stomach with hot water, and to inject into the tissues, by **hypodermoclysis**, a full quantity of the **normal salt solution**, as hot as consistent. For the general depraved state of the system, induced by the chronic use of alcohol, there is no doubt that measures now in vogue are of great efficacy in changing the condition abruptly toward ultimate restoration. These cures are conducted most satisfactorily in institutions established for that purpose.

The **entire environment** is calculated to encourage recovery, to separate the individual from his former surroundings, to exercise over him temporarily, proper control and discipline, until his will power is re-established, and to furnish the proper adjustment of those physical conditions which are essential in the greatly impaired condition of his health. The **moral environment** of the individual is of the utmost importance. He must be made to see the awful evil of the habit, and the benefits of a moral and religious atmosphere, which strictly excludes everything that would permit indulgence and which strengthens and fortifies those sentiments which control inordinate desire. The attention of the patient should be centered upon music and upon art, and a carefully selected course of reading should be laid out, but which will not demand too great mental concentration.

Anders says: "Temperance revivals may be said to do permanent good only in those similar neurotic cases that

are fortunately impressionable to appeals by total abstinence orators, but in order to maintain the reformed drunkard's pledge it is often necessary that interested persons continue to watch, guide and inspire the individual, in order that a weakened will may not precipitate a cyclic lapse into his old habits."

Institutional treatment provides for the desire for a short time by permitting the patient to continue a small quantity of some alcoholic beverage for a few days. They usually combine it with **apomorphin**, or give enough of this agent hypodermically to induce and continue slight nausea. At the same time hypodermics of powerful nerve stimulants are administered. The substances most commonly used for this purpose, both in institutions and by the general practitioner are strychnin nitrate, **hyoscin**, or **hyoscyamin hydrobromate**, and the **gold and sodium chlorid**.

In 1891 Yarochevski performed a number of experiments to determine the antagonistic power of strychnin over alcohol. His conclusions were that strychnin suppressed the toxic influence of alcohol by increasing the resisting power of the system. During the same year Portugalo, of Samaria, reported that he had cured 450 cases of alcoholism by the use of **strychnin nitrate**. He prepared a solution of two grains to the ounce of distilled water; he gave an injection, from four to eight minims of this, every twelve hours for from five days to a week.

A number of articles have appeared in the current periodicals of the past five years in favor of the use of **hydrobromate of hyoscin** in this condition. Miles, of Denver, in an article before the National Association in 1902, advised a solution of one grain with one dram of alcohol, in three ounces of distilled water; of this, ten minims was the initial dose. This is given when the desire is strong, and repeated in an increased dose, if necessary, in half an hour, to produce sleep. The third dose at that time is seldom needed. This induces a mild delirium, with hallucinations and some flushing of the face. It should be repeated on

consecutive days for a few days, at least, but often the desire is gone after the first day. This, however, will return unless the patient is carefully treated. In periodical drinkers the return of the desire should be met promptly with the use of this remedy. It is efficient in sobering a drunken person, sometimes producing most striking results.

The use of the **gold and sodium chlorid**, both by the stomach and by hypodermic injection, has been strongly advocated, and its beneficial results have been confirmed. I have found periodical drunkenness to be successfully treated at home by the use of **avena sativa**, tincture of **capsicum**, tincture of **red cinchona**, **hydrastis canadensis**, and **strychnin** or **nux vomica**, at the same time, and, most important of all, the **careful feeding** of the patient. He should have a fixed quantity of the most concentrated nutrition every two hours. I have given half of an ounce of cream with a half an ounce of bovine and five drops of the tincture of capsicum. Concentrated meat juices or fruit jellies, or hot ginger or **cardamom** tea, are beneficial. These patients sometimes will take a very large quantity of **strong coffee** with good results, especially if an abundance of rich cream is combined with it. The disadvantage of treating these patients at home, as I have stated, is that they will not submit to discipline and are with difficulty kept from their previous associates.

Other conditions may be met as they occur, in accordance with their indications. The general restoration of the patient must have the most thoughtful consideration by the physician. The functional action of every organ must be brought up to tone by the proper measures and tonics for the permanent restoration of the nervous system. The rehabilitation of the nervous force is of first importance. This may be brought about by the use of **strychnin** or **nux vomica**, and by **avena sativa**, **phosphorus**, **quinin**, **iron**, **hydrastis**, and other tonics of this character.

## THE OPIUM HABIT.

**Synonyms:**—Morphinism; opium inebriety; opiumism.

**Definition:**—A depraved condition of the nervous system, induced by the more or less constant use of opium or its alkaloids.

At the present time it is seldom that we find addictions to opium. Morphin is the substance now commonly used, because of the smallness of its dose and, unfortunately, of its accessibility. At one time opium, either in the form of the gum or the solid extract, which were made into pills, or laudanum or paregoric, was frequently used.

**Etiology:**—This habit is acquired in various ways. Unfortunately, by far the most common is the prescribing of the substance to relieve pain or to induce sleep, the patient knowing that he is taking morphin. Later he supplies himself and continues the use of the substance, not only because of the fact that it relieves pain, but because of the sense of comfort and tranquillity produced by it. Physicians are very often to blame, either for instituting the habit in the patient, or in prescribing a course which makes it possible for the patient to continue the habit. Every prescription which contains this sedative should also carry an order to the pharmacist not to repeat the prescription.

Those of early adult life, and women more frequently than men, acquire the morphin habit. It was stated by one observer that seventy per cent of his morphin patients were physicians. It is more common in warm than in temperate climates. In southern Asia the habit is formed under much the same circumstances, and to as great, if not to a greater extent, than the liquor habit of this country and Europe.

A result of acute or chronic disease, there is often distress, pain or sleeplessness, which follows and persists for a long time. The pain may be local, as the result of an injury, or it may be from neuralgia or from some joint disease, or from rheumatism. The use of this anodyne con-

tinuously for but few weeks induces a habit, a demand for the remedy that is more exacting than that of alcohol when once firmly established, and when the disease is cured and the discomfort is entirely relieved, the habit remains, and if not satisfied produces the train of symptoms hereafter named.

There is no doubt but certain temperaments or certain mental traits conduce to the forming of this habit. Those who are dependent, who have not positive will power; those who are submissive and weak in their habits, who readily yield to every desire, and who give up to disease readily; those whose health and mental strength are impaired by chronic disease, or by the cares and worry of business, or by grief, sorrow or disappointment, are among those who more readily form this habit.

**Symptomatology:**—The symptoms which result from the use of the remedy develop slowly. At first there are no symptoms; the patient will use the agent for a considerable period before he observes that at stated intervals after using it he becomes irritable, restless, nervous, and there is a longing for a repetition of the drug and for its influence. Yielding to this, the craving increases, and the period of satisfaction is progressively shortened, and the amount necessary to accomplish the desired result must be increased. The secretions throughout the body become lessened; the skin becomes dry, irritable and harsh; itching is a most troublesome symptom; there is a dinginess or sallowness of the skin and anemia ultimately follows.

The patient loses energy, both mental and physical, becomes languid, listless, despondent and inclined to neglect all duties. He loses his sense of responsibility, will power and moral tone. He becomes dishonest and treacherous, unreliable and deceitful. The inclination to deceit, prevarication and falsehood is especially conspicuous. It is a most deplorable fact that many of these patients, who have been honorable, truthful and trustworthy, become absolutely irresponsible and unreliable. They acquire a peculiar skill

and adroitness in deceit, and apply this to a marked extent in obtaining the drug and in misleading those who have charge of them. They readily become gamblers, and are subject to sexual perversions. They become slovenly and forgetful, and monomania, or kleptomania, or delusional insanity are not uncommon results.

The appetite is poor and often perverted, digestion is more or less imperfect, and there is constipation. In rare instances, however, diarrhea may occur, or diarrhea and constipation may alternate, or there may be a mild, chronic form of dysentery. The urine is scanty and high colored usually, and there is often a chronic irritability of the urethra, or pain and irritation at the neck of the bladder.

The pulse becomes slow, full but feeble, and there is irregularity of the action of the heart, often palpitation, and oppressed breathing. Occasionally there is a distinct, characteristic cardialgia, which may be quite persistent. Myalgia or other pain and soreness in the muscular structure, or cramps in the deep muscles, is a common symptom. Another result is sexual impairment and perversion of the reproductive function.

**Diagnosis:**—Unless the physician is informed by friends of the habits of the patient, it is with difficulty sometimes that the true nature of the disease can be determined, as the patient cannot be depended upon to truthfully state the facts. The manner of the patient, as well as a knowledge of the symptoms as narrated, will assist materially in the diagnosis.

**Prognosis:**—It is seldom that this habit induces conditions which produce death, or even materially shorten life, but a cure in general practice is well nigh impossible, because of the inability to restrict the patient. Patients confined in hospitals and institutions are quite frequently cured.

**Treatment:**—The necessity of building up the general health and strength of the patient and of restoring his moral tone is of the utmost importance. He must be interested

in some light vocation, more or less absorbing in character. A high moral atmosphere, becoming interested and engaged in philanthropic work, as the relieving of other unfortunates, will conduce materially to an ultimate cure. At the onset it is almost imperative that the patient should be kept in an institution, and should have the attendance of a companion of a quiet but positive and firm temperament. The diet of the patient should be selected with much care. It must be highly nutritious, palatable, readily digestible, and somewhat stimulating in character. It is usually impossible to withdraw the supply of morphin abruptly, as alcohol is stopped. This results in a train of acute symptoms which may be very serious. The best course is the **gradual reduction** of the quantity allowed, over a period of from five to eight days. During this time, the patient must have, in addition to the very best of nutrition, as above stated, some stimulation, and concentrated tonic treatment. The use of **strychnin** in hypodermic doses of one-twentieth or one-thirtieth of a grain every three hours, or of fifteen drops of the concentrated tincture of **avena sativa** in two ounces of hot water, every two hours, will be of material benefit. An infusion of **capsicum** with the food, or capsicum combined with the compound tincture of **cinchona**, and given with a teaspoonful of **bovinine**, every two hours, will be of much service during the withdrawal period. Another excellent combination is the compound tincture of cinchona and the fluid extract of **cola** nut, equal parts of each, and half-teaspoonful doses of the mixture given every two or three hours. Where there is considerable excitability, the patient should have **gelsemium** or **passiflora** in full doses, or the **sodium bromid** may be occasionally given. For sleeplessness, **hyoscyamus**, with concentrated hot drinks at bedtime, such as hot broths, hot beef tea, hot milk or hot malted milk, beaten with an egg, all of which may be given with a little tincture of capsicum or with a little salt added, are of material benefit. The common red peper may be used.

The use of the **hydrobromate of hyoscin**, in one-one-hundredth grain doses every two hours, for a period of two or three days, is now recommended as of much benefit in the treatment of this habit. As the drug is withdrawn, the patient is confined with an experienced attendant and is isolated. The remedy produces dulness, drowsiness, a partial suppression of the secretions, and usually delirium, which may be quite pronounced. The patient, kept well under the influence of this remedy for a few days, is then permitted to gradually recover from its influence, the agent being gradually reduced in quantity. It may be necessary to sustain the heart and circulation by the use of strychnin at the same time. Small doses of the hydrobromate should be continued for some time, or at intervals, as irritability and restlessness recur.

It must be borne in mind that the recovery of these patients, and the prevention of the recurrence of the habit, depends upon the entire removal of the conditions which originally caused the habit to be formed. The patient's mode of living, environment and associates, often, must be all radically changed. If pain still persists, if worry, anxiety and trouble are yet constantly present, without some strong compensating influence of a moral or spiritual nature the patient is apt to resort to the drug again.

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## PLUMBISM.

**Synonyms:**—Lead poisoning; saturnism.

**Definition:**—A condition of chronic poisoning which results from the slow absorption of lead, usually in the form of some of its salts.

**Etiology:**—Water passing through new lead pipes will produce lead poisoning quite rapidly. When water has stood in these pipes for some time an oxid precipitates which forms an effectual coating over the entire surface of the pipe and prevents further absorption. The condition fol-

lows the handling of substances containing lead. Those who manufacture paints of which the lead carbonate forms the body, or painters, plumbers, and those who manufacture type, shot, lead pipes and tubing, or other substances made of lead, all may contract the disease from absorption. The absorption need not necessarily be from direct contact, as the substance impregnates the atmosphere and may be inhaled, so that parties working in close rooms with this substance, or sleeping in newly painted rooms, will contract the disease. The use of lead cosmetics has frequently induced the disease in women. Other incidental causes are glazing, typesetting, lead mining and glass grinding. Much food is contaminated by lead, either intentionally or accidentally, and this fact accounts for the occurrence of lead poisoning in cases in which the cause cannot be otherwise explained. In the making of butter, of candy, and sometimes in the making of bread, a chromate of lead is used for coloring; various substances used for food, as yeast, chocolate and various kinds of candy, as well as tobacco also, are wrapped in lead foil, and thus the disease is induced.

The substance is absorbed through the stomach and bowels, through the skin, very sparingly through the mucous membranes, and quite freely through the lungs. It is eliminated through all the emunctories, but more freely through the kidneys.

**Symptomatology:**—These patients show a characteristic weakness, which is among the first apparent symptoms. Muscular weakness is very pronounced. The patient is unable to continue physical exercise for but a short time, and he finds muscular contractility greatly impaired. The condition known as **wrist-drop** is one of the various local paralyses which may follow the persistent intoxication induced by this agent. Quite early there are spasmodic muscular contractions, or cramps of the deep muscles. With this condition there early appears a characteristic blue line on the borders of the gums, notably around the canine and

incisor teeth. This blue line is formed by the deposit of lead sulphid, and may be apparent before other symptoms appear. If the patient's teeth are kept clean and free from tartar, this blue line may not appear, as it results from a union of the lead with a very minute quantity of sulphuretted hydrogen, which is given off in the decomposition of the tartar. The gums become swollen, spongy and sensitive, the breath smells badly, and the patient complains of a constant metallic taste in the mouth.

Another characteristic symptom is colic. Pain in the abdomen, usually located in the region of the navel, of a spasmodic, paroxysmal, griping character, is very common. It radiates outward through the abdomen, and is at times most excruciating. It is not infrequently accompanied with vomiting and cold sweats. In some cases it is both paroxysmal in its exacerbations and constant between the paroxysms, but more of a dull, heavy persistent character, but bearable. There may be pain also in the thighs, legs and in the deep muscles of the back and in the hips. There is a sensation of hardness in the abdominal walls, or a hard band may extend around the abdomen, passing through the umbilicus. Owing to the fact that there is a tendency towards circumscribed anesthesia in the surface of the skin, or even general anesthesia in extreme cases, there is no tenderness on pressure over the abdominal wall.

The appetite is poor, digestion is imperfect, the mucous membranes of the mouth and tongue are pale, and the tongue is thick, broad and flabby, and often coated with a heavy, dirty coat. Constipation of a very obstinate character is also characteristic. The movements are infrequent and are very hard and dark colored, often passed in the form of scybala, with much pain from irritation in the rectum, or from fissures or ulcers, which are apt to form, or from an intense rigidity of the anal sphincter.

Anemia is a common symptom with lead poisoning. The face sometimes assumes a leaden hue, or a hue similar to that of chlorosis. There is a marked reduction of hemo-

globin in the blood, and occasionally of the red corpuscles.

In pronounced cases the cerebral symptoms are conspicuous. These manifest themselves in severe headaches, in mental feebleness, with forgetfulness, mild delirium, hysteria, and occasionally in mental aberration, or in a mild form of insanity. In extreme cases there may be convulsions, aphasia, hemiplegia, or hallucinations, tremors and coma. There may be also a neuroretinitis or amaurosis.

In long protracted cases, interstitial nephritis may be induced, or there may be enlargement of the heart or distinct arteriosclerosis.

**Diagnosis:**—The pathognomonic symptoms of this condition are the blue line on the gums, the colic, with constipation and wrist-drop. These, with the history of the case, will be sufficient to confirm a diagnosis.

**Prognosis:**—The prognosis is good in the absence of complicating disease of important organs.

**Treatment:**—The first consideration in the treatment is prophylaxis. The patient must be removed entirely from the conditions which have induced the disorder. All occupations or any habits or practices in which lead is used must be temporarily or permanently suspended. The second consideration is the conversion of the lead into some substance readily eliminated, and the rapid elimination of that substance. The most perfect cleanliness must be insisted upon, and those who insist upon working in lead are recommended to drink **lemonade**, or water in which a small quantity of **sulphuric acid** is dissolved, and to drink milk freely. If from twenty to thirty grain doses of **magnesium sulphate**, or ten grain doses of **potassium iodid**, be given every three hours, there will be formed a soluble lead salt which will be readily eliminated. This course will directly antidote the influence of the poison. The use of **magnesium sulphate** or **Glauber's salt** in sufficient doses will effectually overcome the persistent constipation.

In the treatment of the colic, **morphin** and **opium** should be avoided if possible, although there are cases in which a

hypodermic of morphin is of permanent value. Any measures that will alleviate the pain until the patient will become somewhat saturated with **turpentine** will be efficient, but five drops of rectified oil of turpentine should be given every two hours while the pain continues. This is especially indicated when there is muscular hardness with steady, dull, grinding pain in the abdomen. During an acute attack of pain the spirit of **chloroform**, or ten or fifteen drops of chloroform in an emulsion, may be given every half hour or hour, while **libradol** is freely applied hot over the bowels. This produces an anodyne and antispasmodic effect. A **hot bath**, or an occasional Turkish bath, will not only relieve the pain, but the perspiration which is induced will assist in the elimination of the poison. The injection of a quart of the **normal salt solution** every night or every second night, in feeble cases, will not only improve the strength of the patient, but will stimulate the action of the kidneys, and thus promote elimination.

In the treatment of the nervous symptoms the use of **electricity** is of importance. It should be applied either in the galvanic or faradic currents, according as the condition seems to demand, and its use should be persisted in. **Strychnin** should be given at the same time, to antagonize the paralyzes; it is best given in conjunction with **hydrastin**. I succeeded admirably in one case in the use of Abbott's strychnin arsenate granules, 1/134 grain. Of these I gave at first two every three hours; later, one every three hours, whatever other treatment was indicated. The benefit obtained from these granules was so conspicuous that the patient ceased consulting me, and supplied himself with the remedy of his own accord, and continued it until he was entirely well.

**Iron** is sometimes of importance in anemic cases. The food should be carefully selected with reference to its nutritional value and ease of appropriation.

## CHRONIC MERCURIAL POISONING.

**Synonyms:**—Mercurialism; ptyalism.

**Etiology:**—This condition was at one time very common, and although a serious difficulty, it was thought by the profession to be necessary in some cases to produce some of its symptoms in order to relieve other diseases. It is caused by the use of mercury in large doses; it is also caused by the inhalation of the vapors of mercury, and occurs among those who work in quicksilver mines and among those who use quicksilver in the manufacture of mirrors, barometers, thermometers and hydrometers. The mercurial poisoning which occurs in the arts is due to the fact that the substance is volatile at all ordinary temperatures, and may be readily absorbed through the lungs in respiration.

**Symptomatology:**—The first symptom is salivation. This is accompanied with tenderness and swelling of the gums, and is soon followed by sponginess of the gums and a tendency to ulceration. There is a metallic taste in the mouth, the teeth become loosened, and in extreme cases there is destruction of the jaw. The breath is usually offensive. The nails become brittle and break off, the hair falls out, and there is some discoloration of the skin. The appetite is lost, and there is considerable irritation of the stomach with diarrhea and colicky pains. There is scantiness of urine, which is dark colored, has a high specific gravity, often contains albumin, and in prolonged cases, tube casts. With this also anasarca occasionally develops. A characteristic phenomenon of mercurialism is tremor of the muscles. This tremor is at first quite fine, but later it is coarse, readily observed, and may even assume the form of chorea, involving the entire muscular system. It begins in the tongue, and shows itself in the speech; later it affects the hands and arms. These patients become nervous, restless, irritable, and mild forms of paralysis appear, which may ultimately be quite extensive. There may

be severe pain in the muscles, with numbness and impeded motility; the urine is heavy, scanty and albuminous; dropsy is apt to follow. It is a deplorable fact that mothers suffering from mercurialism will transmit a greatly impaired constitution to the children, who may be weak, imperfectly nourished, rachitic, or ultimately tubercular.

**Treatment:**—A course similar in the main particulars to that of lead or arsenic poisoning will be needed. The toxic element should be discontinued and the patient removed from contact with it. He should take active alteratives, with **iodid of potassium**, in order to improve the condition of the blood. As a mouth wash the **tincture of myrrh** in a solution of **potassium chlorate** will be productive of good results; or a dram of potassium chlorate and two drams of tincture of myrrh may be added to four ounces of a strong infusion of **white oak bark**, and used freely. Other remedies of value for internal use are **phytolacca decandra**, **geranium**, **hydrastis** and **collinsonia**.

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## CHRONIC ARSENICAL POISONING.

This condition is now rare. The most prominent symptoms are progressive debility, anemia, eruptions upon the skin and persistent catarrh of the mucous membranes. There is a peculiar pallor of the face, which has been envied by some thoughtless young women, who have taken arsenic internally to induce a similar condition, and have thus induced chronic poisoning. With the anemia there is edema first of the eyelids and subsequently of other subcutaneous tissues. An irritation appears in the mucous membranes of the eyes and nose, and in the respiratory tract, which results in coryza, or in a chronic form of catarrh. Catarrh of the stomach or of the intestinal tract quickly follows, with the symptoms of indigestion, mal-assimilation, nausea, vomiting, or dysentery, diarrhea and more or less pain. A characteristic symptom is tingling or

numbness of the skin of the extremities, or a condition of hyperesthesia may first occur. Skin eruptions, such as urticaria, herpes, eczema or persistent acne, are common. Occasionally there is a characteristic bronzed pigmentation.

As a direct result from the action of this remedy there is a degeneration of the anterior horns of the spinal cord, with degeneration of the peripheral nerves throughout the entire body. This finally results in paralysis, especially of the legs, with atrophy of the muscles.

**Treatment:**—The agent in any form must be discontinued or the patient should be removed from its influence. The **potassium iodid**, in ten grain doses four times a day, will promote the elimination of the poison; the use of **strychnin** is also advised. For the anemia **iron** must be given. **Hydrastis** and other tonics of this character will not only improve the condition of the nervous system, but will assist in the cure of all the catarrhal phenomena. These remedies will also overcome the paralysis as well. For this purpose also **galvanism** is of much importance. The use of electricity by no means should be overlooked. For the coryza the use of small doses of **sodium salicylate** will be of much benefit; the remedy should be given in five grain doses four times daily. If there are excessive catarrhal discharges, these may be temporarily restricted by the use of **belladonna** or **atropin**, and the condition may be cured with five-drop doses of **turpentine** every three or four hours. For the nausea and vomiting equal parts of **bismuth** and **ingluvin**, two or three grains each, in two drams of mint water, may be given every half hour until the stomach is quiet. **Hydrastis** and **artificial digestives** will be needed until the function of the stomach is entirely restored.

## FOOD POISONING.

**Synonym** :—Bromatoxismus.

A condition of poisoning by infected food, or food which has decomposed. It is quite common, and may occur in isolated cases, or it may affect an entire family or a number of people, as in the case of parties where toxic ice-cream is served, or poisonous food substances may be sold throughout an entire neighborhood. Various specific names have been more recently applied to certain classes of intoxication which are significant. The term **sitotoxismus** refers to poisoning by vegetable substances which have become mouldy or otherwise contaminated with bacteria. **Ichthyotoxismus** refers to poisoning from unhealthy or decomposing fish. **Mytilotoxismus** refers to the poisoning induced by eating oysters, clams, shell fish and mussels in a state of decomposition. **Kreotoxismus** results from the eating of infected meat. **Galactotoxismus** refers to poisoning from impure milk. **Tyrottoxismus** applies to intoxication from the tyrotoxin of Vaughn, which he isolated from cheese and ice-cream.

**Symptomatology** :—These patients suffer from violent vomiting and extreme gastrointestinal pain of a griping character, with watery diarrhea. They soon become greatly prostrated; the pulse is small, feeble and perhaps irregular; there are severe cramps in the muscles of the legs and arms; the extremities, as well as the face and nose, and sometimes the breath, are cold. There is a profuse, cold perspiration, the skin is relaxed, there is great muscular weakness with depression, extreme vertigo, dyspnea, dullness of the mind, dimness of vision, dilated pupils and great wakefulness. Often the mouth is very sore, and occasionally there is hematemesis or hematuria.

There is some variation in the severity of the symptoms as induced by the different poisons. Those from meat and fish toxins are apt to be the most severe. However, severity in any case depends upon the quantity of the in-

fectured substance ingested and the state of the stomach in promoting its absorption.

**Treatment:**—In the treatment of these conditions the bowels should be thoroughly evacuated. If vomiting has not been sufficient to evacuate the stomach, this must be thoroughly irrigated. It is well to use a high **colonic flush** after the bowel movement, or this may be used at any time if action of the bowels is delayed. After the intestinal canal is evacuated, a full quantity of hot **normal salt solution** should be introduced, unless it becomes necessary, because of the severity of the symptoms, to introduce this by **hypodermoclysis**. Immediately the stomach is evacuated, the ordinary gastric sedatives should be used to control the irritability, in order that remedies may be introduced to antagonize the toxins in the system. **Bismuth** and **inglavin** will quiet the stomach if given in frequent doses. They may be given in half an ounce of hot water to which a drop of the **tincture of capsicum** is added. **Echinacea**, **hydrastis canadensis**, and perhaps **berberis** should be given. In some cases **calcium sulphid** will be indicated.

At no time should the condition of the strength of the patient be overlooked. The action of the heart must be maintained, whatever else is demanded. It may be necessary early to use **strychnin** or **nitroglycerin** hypodermically. In some cases brandy may be used hypodermically with good results. It is often of much importance, especially if the skin be very cold and the temperature subnormal, that the patient be wrapped in a blanket wrung out of hot water, or hot mustard water, and a dry blanket with hot water bottles applied over this.

# Parasites.

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## DISTOMIASIS.

There are four varieties of parasitic diseases in man induced by trematode worms, which we will mention here.

**Hepatic Distomiasis:**—This disease is caused by the liver fluke—*distoma hepaticum*—common in domestic animals, and thus introduced into the human stomach. Its life history is very interesting. It inhabits the bile ducts and induces enlargement of the liver and jaundice. Later the liver may become nodulated and atrophy and ascites may result, ultimately death may follow. The abdominal walls over the liver become very tense. This disease is quite common in Japan and China.

**Pulmonary Distomiasis:**—(Parasitic hemoptysis.) This serious condition is induced by the presence of the *distoma pulmonale*, or the lung fluke. It is also common in Japan and China. It may be mistaken for pulmonary hemoptysis. The parasite is taken with the drinking water. In the United States it infests ports. It causes cough, the spitting of blood and a sputum similar to that of pneumonia. It may invade the brain and induce epilepsy.

**Hemic Distomiasis:**—A blood infection from the presence of a blood fluke, the *distoma hæmatobium*, or *bilharzia hematobium*, is common in northern Africa. It causes urinary irritation and some pain and hemorrhage from the kidneys. Other organs are affected, but no characteristic or serious constitutional symptoms are observed.

**Intestinal Distomiasis:**—This condition is common in Egypt and India. It is induced by an intestinal fluke, and

presents symptoms which may be mistaken for amebic dysentery or the common forms of diarrhea.

**Treatment:**—But little has been accomplished in the removal or the destruction of the distoma within the human system. Some volatile, mildly diffusible agent, like **creosote** or **turpentine**, should act favorably in their destruction. The **male fern** has been used with good results in hemic distomiasis. The disease may be controlled and the influence of the parasite antagonized by indicated measures. Symptomatic treatment should always be instituted.

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## TÆNIÆ.

**Synonyms:**—Sestodes; tapeworms.

These worms, found in the intestinal canal, are made up of segments, rectangular in shape, varying greatly in size, from a quarter of an inch to an inch and a half long, and from the sixteenth of an inch to perhaps half of an inch in width. The segments develop from the head, and each segment may reproduce itself. There is no organic connection between the different ones. The worm is attached to the intestinal mucous membrane by its head, and although very many of these segments, attached or separated, may be removed, unless the head is destroyed the worm will be reproduced. The head has four suction disks and a slender neck, from which the segments follow, as it were, in joints, one after the other, increasing in length and width as they increase in number.

The **tænia solium**, or the pork tapeworm, develops from the ova, which are taken into the stomach with the food of the hog. The shell of the ovum is dissolved in the stomach and the embryo is set free. This penetrates the coats of the gastrointestinal tract, and is carried by the blood to the muscles, where they become incysted and develop a new worm. The eating of raw pork permits the development of the worm in the intestinal tract. Another form, called the

**tænia saginata**, or beef tapeworm, is somewhat larger than the pork worm and differs in some minor constituents. The segments are thicker and longer, and when expelled with the feces, have some independent movement. Man is infected from this by eating raw beef. There is another form of tapeworm, the **tænia nana**, or dwarf tapeworm, which is developed in and conveyed by the eating of fish. It is more common in Russia and other foreign countries than in America. This form may induce serious blood changes and anemia.

**Symptomatology**:—There are no constant symptoms of the presence of tapeworm; its presence may not be known until the segments are observed in the feces. The first evidences are those of a gastrointestinal catarrh, with imperfect digestion and impeded nutrition. The patient loses some weight, complains of various unpleasant symptoms, illy defined. There is dizziness, some nausea and an erratic appetite, which may be irregular or exceedingly voracious, the patient eating a great deal and yet losing strength and weight at the same time. When the patient becomes aware that the worm is present, it is a cause of great anxiety. He becomes despondent, melancholy, broods over his condition, and female patients become hysterical. Later, distinct nervous symptoms, such as chorea, loss of coördination, mild convulsive movements, or epilepsy, appear. The nervous symptoms are apt to develop early with children. Reflex symptoms, somewhat similar to those caused by the round worm, are likely to appear, in addition to the nervous phenomena of dilated pupils, faults of vision, or a well-developed chorea.

**Diagnosis**:—No assurance of the presence of a worm can be given without the appearance of the segments in the feces.

**Prognosis**:—The prognosis is always favorable.

**Treatment**:—The treatment consists of removing the worm, which is by no means a simple process. Any symptoms that appear as a result of the presence of the worm

will disappear with the removal of the worm. The treatment must cause the head of the worm to loosen its hold upon the mucous membrane. Its influence will only be temporary unless the head is removed. It is necessary to use an active physic after the anthelmintic has been taken, to thoroughly remove every portion of the worm, and especially the head. It is necessary that the patient should be prepared for the treatment by fasting and by a thorough cleansing of the bowels. The patient should take a little milk only, but may take an abundance of water, and perhaps a slice of dry toast. The remedy is best given in the morning before breakfast, after having fasted the day before.

The most common remedies are **pomegranate bark**, **granatin** or **pelletierin**, **male fern**, **koussou**, **creasote**, **turpentine**, **pumpkin seeds**, and **chloroform** and **thymol**. In administering pomegranate bark, the bark of the root is used. Of this four ounces should be macerated in a quart of water and boiled down to about five or six ounces. This may be given in three doses, an hour apart. Another preparation is pumpkin seed meats, of which eight ounces should be eaten at once. Still another is a decoction of koussou, of which an ounce in a quart of water may be boiled down to a pint. Two or three ounces of this may be taken every half hour until three or four doses are taken. A full dose of **epsom salts** must be given an hour or an hour and a half after either of these remedies has been taken. I have removed tapeworm with an emulsion of **creasote**, without much change of the diet. I have had an emulsion prepared, each dram of which would contain one drop of creasote, and have given this three times daily, the first day in dram doses, the second day in two dram doses, the third day in three dram doses. Then the patient has an active physic. If the worm is not entirely removed, three days' rest should be given and the same course repeated. Some patients will take a much larger dose at the beginning and will permit this dose to be increased. Several authors advise the use

of **thymol**. It should be given in full doses, and the dose may be repeated in one or two hours and followed by a physic.

Nearly all measures advised for the removal of tapeworm are harsh, to a greater or less degree, and the condition of the stomach and bowels, or of the system, of the patient must have subsequent attention to restore the normal condition as quickly as possible.

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## UNCINARIASIS.

This condition, also known as **ankylostomiasis**, is induced by the different varieties of the uncinaria. The parasite is called **ankylostomum duodenale**, or hook worm. It belongs to the family of strongylidæ. The parasites are found in the jejunum, and cause a thickened condition of the structure of the walls of the intestines. They are taken in with infected water or food, from the earth or clay in which it develops. It has been thought to penetrate the skin also with filthy patients, and is supposed to cause a brown itch which occurs in warm climates. The parasite entering the blood channel and its toxins being absorbed, a peculiar form of anemia is induced. It is designated by various names, as brickmaker's anemia, tropical chlorosis, miner's disease, hook worm disease, and other local names. It develops wherever individuals of careless and filthy habits are continuously working in the soil.

**Symptomatology**:—The symptoms are similar to those of pernicious anemia. The early stages are characterized by colic, disordered stomach, and a slight anemia, which is soon plainly progressive in character. The colic is the pathognomonic symptom. There is an irregular appetite, which at times becomes voracious or perverted, craving indigestible substances. The patient becomes weak, is out of breath on little exertion, is indisposed to physical exercise, and may have a slight fever. There is some edema

of the ankles and wrists and of the face. Occurring early in life, it produces a changed condition of the expression of the face, and the hair falls out, and there is poor general development, with an enlarged abdomen.

**Treatment:**—The treatment advised for trichinosis will accomplish good results in this case. All indications should be promptly met. **Male fern, santonin** or **thymol** may be given internally from time to time. It will be necessary to pay a good deal of attention to the blood. **Iron** and other restorative tonics must be freely used. There is a probability that the **oxid of manganese**, or the **permanganate of potassium**, or perhaps **echinacea**, will antagonize the development of the cause in the blood, and will assist in the restoration of the red blood corpuscles, and promote the oxygen-carrying power of the blood. Other indications for treatment should be met with positiveness and persistency.

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## TRICHINIASIS.

**Synonym:**—Trichinosis.

**Definition:**—A disorder induced by the presence of the *trichina spiralis*, in the structure of the muscles throughout the system.

**Etiology:**—The *trichina* inhabits the intestines of the hog. The female brings forth a brood of embryos which immediately penetrate the walls of the intestines and invade the structure of the muscles, where in larval form they attain maturity in from twelve to sixteen days. They set up an inflammation in the structure of the muscle, from which the worm becomes encapsulated. This capsule may become calcified, retaining the parasite in an active form for a long period. As thorough cooking of pork destroys them, they are only conveyed when the pork is raw or but partially cooked.

**Symptomatology:**—In from six to ten days after eating infected meat, symptoms of muscular irritation appear, al-

though gastrointestinal symptoms from penetration and consequent irritation of the mucous and muscular coats of the intestines may be present in two or three days after the meat is eaten. These symptoms are diarrhea, with colic more or less severe, followed by vomiting. There may be a mild form of acute gastroenteritis with chilliness and some fever. The face may be somewhat swollen, or puffy, around the eyes. There is malaise, headache and general distress from the extreme aching, soreness and stiffness, and pain in the muscles. This points so strongly to muscular rheumatism that that condition is often diagnosed. At the expiration of perhaps a week, the muscular symptoms are by far the most conspicuous evidences present; with these the gastrointestinal symptoms may in severe cases assume a form similar to that of typhoid fever. The temperature may reach  $104^{\circ}$  F. with mild remissions. The pulse will vary as the temperature varies. There is tenderness in the abdomen, which may, from edema or ascites, become enlarged. It is seldom that tympanites appears. The tongue and mucous membranes of the mouth are dry and dark colored, there is a brown or black coat on the tongue with other distinctly typhoid manifestations.

As the myositis develops the muscles are used with much pain and difficulty. Mastication and the swallowing of the food are painful, and talking is distressing. Later there is difficulty of breathing, because the muscles of the chest and especially of the diaphragm are involved. The puffiness of the face, which appears early, increases until there is edema of the lids and of the muscular structures of the body. It may also involve the larynx and the bronchial tubes, producing serious stenosis with consequent increased difficulty in breathing.

There is progressive weakness, every muscular effort producing exhaustion. Because of the weakness of the muscles, the patient sweats freely, and there is much emaciation and anemia, with headache and insomnia. Irritation or local inflammation of the skin may develop, as boils,

acne, herpes and urticaria, or there may be only a persistent pruritis.

Complications such as hypostatic pneumonia or bronchitis may develop but these are by no means common. The condition which is described as typhoid is not true typhoid and should not be so treated. The kidneys may become involved and in rare cases there may be hematuria, but scanty and high colored urine which contains albumin and tube casts will be found in nearly all cases.

**Diagnosis:**—A differential diagnosis from the symptoms is difficult. When an entire neighborhood is affected, as is sometimes the case, a post mortem has been made on a patient who had shown typical symptoms and the microscopical examination of a piece of a muscle has determined the cause and character of the disease. A microscopical examination of the feces carefully prepared and pressed between two thin pieces of glass may show the parasite. This examination may be made with a strong magnifying glass.

Depending upon the symptoms, the extreme muscular soreness, with difficulty in mastication and swallowing are unlike the symptoms of any other condition. Typhoid symptoms, except tympanites and rose spots, should distinguish the condition. The extreme muscular involvement with fever and puffiness of the face are also characteristic.

**Prognosis:**—Thoroughly infected cases are likely to die from this disorder. The mortality is twenty-five per cent or above. There may be mild infection and a correspondingly mild development of the symptoms. These cases usually recover. An early diarrhea is favorable; a late prostrating diarrhea, with progressive heart failure, and some tendency to delirium, are unfavorable symptoms.

**Treatment:**—An invariable rule should be laid down among families who eat pork, that the meat should be thoroughly cooked. Pork sausages, and ham, boiled by manufacturers, and sold as boiled ham, is especially dangerous. The latter is not thoroughly cooked, often, the center of the ham being in some cases plainly raw.

It is a simple thing to prevent the development of trichinosis in pork by keeping the animals in thoroughly clean pens, free from their own excrement and free from rats. If they are furnished with an abundance of flowing water and are fed on clean vegetables and with grain or bran, trichina will not develop.

The treatment at first will be symptomatic, the fever and chilliness receiving the same attention as in other cases. Immediately diarrhea appears the intestines should be thoroughly cleansed. It is wise to give sthenic patients a good, active physic, and follow this with a **colonic flushing**, with water which contains an antiseptic, or **turpentine**. Intestinal antiseptics are undoubtedly of service at the onset. Vermifuges, such as **santonin**, male fern, **spigelia**, **thymol** or **menthol**, may be given with good results, during the first three or four days. For the extreme muscular soreness, **arnica** in small doses, with **aconite** and **macrotys**, will be indicated, and the muscles should be bathed with the distilled extract of **hamamelis**. In any locality where the soreness is extreme, **antiphlogistine**, or hot applications, may be applied with benefit.

Prof. Whitford was at one time called in consultation to a neighborhood where nearly every family was said to have one or more cases of typhoid fever. The diagnosis, in the doctor's mind, was not justified by the total symptoms. However, the dry, thin, pointed tongue, the dark red, dry mucous membranes, the dry, brown coat on the tongue with fever, pointed directly to **turpentine** as the indicated remedy, whatever the cause of the disease. He prescribed five drops of this agent every two hours, and took a small section of a muscle from a patient dead from the disease, for examination. A diagnosis of trichina was confirmed, but the treatment was not changed. Thirty patients in the town were thoroughly saturated with turpentine, and all recovered. Others not receiving turpentine died. It was found that the butcher had been selling infected pork for several weeks.

## NEMATODES.

This group includes the cylindric or round worms which infest the intestinal canal. There are four well known varieties; these are the *ascaris lumbricoides*, *ascaris vermicularis*, *trichocephalus dispar*, and *trichina spiralis*.

### ASCARIASIS.

This condition is caused by the presence of the *ascariæ*.

The *Ascaris Lumbricoides*, or long, round worm, is much more commonly found in children than in adults, and usually before the age of ten years. The worm is shaped much like an ordinary earthworm, but has the additional peculiarity of being provided with small papilla or hairs. They are usually found in the small intestine. By what means they are introduced into the body is not known. They wander from the intestine into the stomach, and occasionally find their way upward through the esophagus, and may enter the bronchial tubes, or pass out through the mouth or nostrils. They have passed through the gall ducts, producing obstruction and jaundice, or ulcer and abscess have been formed. They have passed through intestinal perforations, or through an ulcer in the appendix into the peritoneal cavity. They occasionally pass out through the anus. They seldom occur singly, and as many as from a dozen to twenty may be found in the same patient. These worms vary in length from five to fifteen or eighteen inches.

**Symptomatology:**—The symptoms induced by the round worm are those of intestinal irritation. While these symptoms are in part usually present in all cases, it must be remembered that they are seldom all present at the same time. It must be further remembered that this train of symptoms may be induced by other local irritants; or worms may be present with no symptoms whatever, their presence not being known until they are evacuated.

There may be intense itching of the nose in children, the

child rubbing or boring the nostrils, with bloated abdomen, restless sleep, crying out in affright, grinding of the teeth at night, groaning in sleep, the tongue deep red and coated, deficient saliva, nausea, vomiting, fetid breath, complete loss of appetite, or a depraved, erratic appetite, with longings and thirst; diarrhea, with slimy stools, or constipation; vomiting and purging after meals, with colicky pains; itching at the anus; constant desire to urinate, or urinary incontinence; a constant, dry hacking cough.

There may be, also, sympathetic nervous symptoms, as hyperesthesia of the skin, muscular twitchings, convulsive movement of the hands, or there may be choking sensations with general convulsions, with violent muscular agitation, or chorea may follow. Occasionally there will be an erratic fever, which may become quite high, or there may be cold skin with profuse sweating.

**Treatment:**—This train of symptoms will usually be relieved by **santonin**, whether worms are present or not. The agent may be prescribed with confidence in half-grain doses to children, every two or three hours, for two days, lessening the dose if the urine becomes very yellow. The agent will destroy the worms also. I am in the habit of combining from five to fifteen grains of powdered santonin with two drams of the fluid extract of **spigelia**, in a two-ounce mixture, with **syrup of acacia**. This should be thoroughly rubbed in a mortar, and the bottle should be shaken before administering the remedy, as santonin is insoluble. To very small children this may be given morning and night only; to large children it should be given three or four times a day, if possible when the stomach is empty, or before meals. To adults the dose should be correspondingly increased. If the bowels are moving normally, there will be no necessity for a laxative. If they are somewhat inactive, a laxative may be given on the night of the third day.

It may be thought necessary to give a little **aconite** for the fever, or **gelsemium** or the **bromids** in small doses for

the nervous irritation. But santonin is in itself a nerve sedative, especially to reflex nerve irritation, and may be depended upon to relieve these symptoms although it sometimes requires a little time.

The **Ascaris Vermicularis**, or oxyuris vermicularis, the pin or seat worm, the small thread worm, is found in the rectum, although it may infest the entire colon. It varies from a quarter of an inch to an inch and a half long, it is found not only in young children, but in adults, and in very filthy women, may infest the vagina. It seldom produces constitutional symptoms. The local symptoms are a sensation of itching, burning, or crawling at the anus. In children the itching occurs at the time the child goes to bed, or immediately he gets warm in bed.

They may be present in great numbers and may persist or recur for a long time. They may be readily observed in the feces, and are occasionally known to be present for a protracted period, but no effort is made to destroy them, because so little inconvenience is experienced.

**Treatment:**—Thorough cleanliness is the essential condition in the treatment, the bowels should be moved each day, a light laxative being necessary if there is a tendency to constipation. A small hot injection into the rectum after a bowel movement of a strong solution of soap, will bring the most of them away. If this is not effective an injection of one-half ounce of **quassia**, in a pint of boiling water, cooled to the temperature of the body, should be injected twice daily.

If the itching has induced an eruption or an eczema of the anus, this must be carefully treated with a **bismuth** or **mild zinc ointment**.

The **Trichocephalus Dispar** or **ascaris trichiura**, the long thread worm is found in the colon and in the cecum, sometimes in great numbers. It is a very thin, slender, hairlike

worm about two inches long. It is more common in adults than in children.

**Symptomatology:**—The worm may be found in the feces, and no symptoms may appear by which its presence is known. Or there may be symptoms of intestinal irritation, similar to but usually much milder than those of the *ascaris lumbricoides*.

**Treatment:**—The treatment is the same as that prescribed for the long round worm. In addition to the use of **santonin** and **spigelia** internally, the colon should be thoroughly flushed until completely evacuated. There may be then introduced a solution of **quassia**, or the normal salt solution to which is added a few drops of **creasote**, or a few drops of **turpentine** may be added with good results.

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## PEDICULOSIS.

**Definition:**—The conditions induced by the presence of lice on the body, or on given localities of the body.

There are three common kinds of lice. These are the *pediculus capitis* or head louse, the *pediculus corporis* or body louse, and the *pediculus pubis* or crab louse.

The **Pediculus Capitis** is small, white or grayish white, with a triangular head provided with two hairy antennæ. It has six legs. The female lays its eggs which are called nits, on the hairs. These mature in six or eight days. The parasite is conveyed from one individual to another by contact.

**Diagnosis:**—The finding of the parasite, where incessant itching of the scalp is present, determines the condition.

**Treatment:**—The treatment consists in thorough cleanliness and the removal of the parasites and the nits. The use of tobacco water will be sufficient when but a few are found. In extreme cases it is necessary to cut the hair and saturate the head with **petroleum** or **kerosene** for a few hours, after which a thorough washing with sulphur soap

will leave the head free. If the insect has induced pustules or eczema, zinc ointment should be applied for a few days.

The **Pediculus Corporis**, or body louse, is larger than the head louse and infests the clothing more than the skin. It is found persistently only on those who are habitually filthy. It sucks blood from the sweat pores and induces irritation and soreness of the skin with scales. It induces intolerable itching.

**Treatment:**—The parasite may be destroyed by cleanliness of the clothes and by washing with **sulphur soap**, or diluted sulphur water, or water to which a small quantity of **sulphuric acid** is added. This is almost an immediate cure for the **acarus scabiei**, which is found on the hands and between the fingers and induces extreme itching and a quite serious skin inflammation.

The crab louse—**Pediculus Pubis**—inhabits the hair of the pubis and of the axillæ and in filthy men the beard. It is destroyed by a strong infusion of tobacco or by kerosene and subsequent cleansing. It will return promptly unless the parts are kept persistently clean.

## FILARIASIS.

**Definition:**—A condition induced by the presence in the blood of a white threadlike worm, the **filaria sanguinis hominis nocturna**, found principally in hot climates. This, however, is only one of the several varieties of filariæ, others of which, such as the **filaria loa**, or the **filaria sanguinis hominis diurna** may induce the disease. The parent worm is found in the lymphatic channels which they obstruct, producing a lymph stasis, or subsequently a lymphangitis is induced, with occlusion of the lymphatics.

**Symptomatology:**—The symptoms involved in filariasis are chyluria and elephantiasis. Chyluria is the presence of chyle in the urine, caused by the engorgement and ultimate rupture into the urinary passages, of the lymphatics of kidney or bladder, which are obstructed by the filaria. **Elephan-**

**tiasis** is a lymphangitis associated with lymph stasis from the obstruction of the lymph channels. This latter condition is most commonly located in the scrotum of the male or in the labia of the female, or in the legs. It also involves the hands, arms, breasts, the walls of the abdomen, and in some cases the muscular structures. They sometimes assume enormous proportions among the natives of the tropics and produce the most unsightly deformities. There may be present a characteristic fever with various symptoms which differ in different cases.

In **Hematochyluria**, induced by filariæ, both blood and chyle are found in the urine. Chyluria does not seriously impair the health in all cases. It may occur either steadily or intermittently for a number of years.

**Treatment:**—In chyluria a rigid diet and rest, with proper attention to any other conditions involved, is as much as can be done. The only treatment for elephantiasis is the excision of the enlarged parts when they become so heavy that they are a serious impediment. If the female worm should happen to be located in the excised part the excision will cure the disease.

These diseases can be in part prevented by cleanly habits of life and by carefulness in the use of drinking water and by protection from the mosquito which carries the larvæ and the embryos of the filaria, and which is probably the real infecting agent.

# Diseases of the Nervous System.

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## DISEASES OF THE PERIPHERAL NERVOUS SYSTEM.

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### NEURALGIA.

**Definition:**—Neuralgia is a painful affection of the nerves, either in their course or area of distribution, which is characterized by remissions and intermissions, and is due to functional disturbances, central or peripheral, or to neuritis.

**Etiology:**—Hereditv is a common factor; members of families of neurotic tendencies being most subject to the disease. Women are more frequently attacked than men. Children are seldom affected, as it occurs most commonly after middle life. It is usually a sign of debility. It is frequently associated with the anæmias. Sometimes it is an early sign of neurasthenia. It is seen early in the onset of certain acute affections, especially typhoid fever. It is seen as a symptom of reflex irritation particularly the trigeminal nerve being affected from carious teeth. Exposure to cold will bring on attacks in susceptible persons. Plumbism, gout, diabetes and rheumatism are causes. Autointoxication, whether from imperfect action of the bowels, liver or kidneys, will predispose to attacks. Pressure from tumors and aneurisms, and from scars of old wounds will cause it. Causes similar to those of rheumatism, including lithemia, have induced it.

**Symptomatology:**—There may be sensory disturbances before the onset of pain, such as tingling and a feeling as if

the part was being stretched. The onset of the pain may be sudden, and is spoken of as tearing, stabbing and burning. It is paroxysmal in character. The area affected is usually painful to pressure and motion. There are frequently painful points along the course of the nerve bundles affected. Usually the attacks occur every few minutes for some hours, and in severe cases for days. In rare instances they persist for months and years, being worse at certain times of the day. Not infrequently the paroxysms accompany the onset of the menstrual periods. Either pallor or congestion of the affected part are sometimes seen. Various cutaneous eruptions in the area of the affected nerve may appear. The hair sometimes shows profound trophic disturbances; falling out of the hair, and changes in its color being observed.

**Diagnosis:**—Neuralgia is distinguished from neuritis by the fact that the former presents a history of repeated attacks, is not so constant in location, is not usually accompanied by muscular weakness and relaxation.

**Varieties:**—Clinically the varieties are usually established on an anatomical basis, the most important of which are

(1) **Tri-facial Neuralgia, or Tic Douloureux:**—This is an affection of the trigeminal nerve. It most frequently affects the ophthalmic division. In severe attacks none of the divisions is spared, though it may be more intense and continuous in one than in the others. The symptoms are referable to the division of the nerve chiefly attacked. When it is the ophthalmic, besides the pain, there may be lachrymation and the conjunctivæ may be injected and painful. In the supramaxillary division the pain is most intense along the upper teeth. When the inframaxillary division is involved, pain is marked about the ear, the lower jaw and teeth. Speech and mastication are attended with pain and salivation may occur. In all cases pressure at the exit of the nerve-trunk and at the entrance of a branch into a muscle is painful. Sometimes pain is felt at the occipital protuberance and over the upper cervical vertebræ. In

protracted cases the skin of the affected area may be indurated. Herpes may develop about the eye and lip, and spasmodic movements of the face, tongue or jaws are seen in severe cases.

(2) **Intercostal Neuralgia**:—This type is the second in importance. It may develop independently but is usually secondary. It is most frequently seen in women between 20 and 35 years of age. It is common in hysteria. The most frequent cause is dyspepsia. It is seen in neurasthenia. It should be remembered that the pain in vertebral caries and aneurism of the aorta is felt in the intercostal spaces. It is most common on the left side and in the spaces between the fifth and ninth ribs. The pain is very severe, especially on movement of the intercostal muscles. The painful points are over the vertebral exit, over the middle and at the sternal end of the nerve. A herpetic eruption commonly develops along the course of the affected nerve.

(3) **Coccydynia**, or coccygodynia, is regarded as neuralgia affecting the lower posterior sacral nerves.. It is more common in women than in men, and is caused by exposure, parturition, constipation and trauma. There is pain on pressure and at stool. The sitting posture is markedly painful and walking is interfered with.

(4) **Metatarsalgia**—Morton's disease—is confined to the third and fourth metatarso-phalangeal articulations, and usually of one foot, and is due to a pinching of the metatarsal nerve. It is most frequent in women.

(5) **Tarsalgia**—Policemen's disease—is caused by incipient flat foot, as Morton's disease may also be caused. It is seen in people who have gone barefoot a great deal and in those whose occupations require them to be much on their feet, as policemen and soldiers.

**Treatment**:—No class of diseases, in their treatment, tax the skill and judgment of the physician more than the neuralgias. The obscure cause of the pain, the persistence of its recurrence, its influence upon the health of the patient,

and its intractability to treatment, make these conditions most trying indeed.

When the cause can be determined it must of course be removed if possible. Surgical causes must be looked for and treated surgically, but conditions may be present from these causes, which demand the most careful selective treatment, and even after an operation has been performed, medicinal treatment may be needed to relieve the painful habit, to soothe irritability, to restore the function of the nerve, and also to restore general tone to the nervous system.

I have observed gastric acidity, sometimes extreme, to be present in a large majority of simple, transient, but often severe forms of neuralgia. For this a saline laxative is of first importance and the use of neutralizing remedies. I have controlled very severe pain in facial neuralgia, in the teeth and in other localities, as well as gastric neuralgia, by a single dose of thirty or forty grains of **sodium bicarbonate**. This condition of acidity must always be looked for in any form of neuralgia and must be corrected at the onset.

Attention to general elimination is essential in most of the cases. Constipation must be overcome and the condition of the kidneys and skin must have attention. Lithemia must be treated both dietetically and medicinally. I am in the habit of instituting a diet which excludes nitrogenous foods and both tea and coffee in those cases where the specific gravity of the urine is above 1022, for a few weeks, much as in the treatment of chronic rheumatism. In all cases nutrition is of the utmost importance as there is an underlying local or general exhaustion or "starved" condition of the nerve or of the nervous system. Those cases which are attributed to reflex irritation are often due more to a lack of power, a deficiency of force, or a weakness in the sympathetic nervous system.

The use of **morphin** in most of these cases should be proscribed. There is no class of cases in which the habit

is more quickly formed. There are present the prime conditions—pain and exhaustion—which lead to the formation of the habit. An occasional hypodermic may be administered with judgment, in severe cases.

In neuralgia of the head, whatever the form, **gelsemium** in full doses may be given, after any excessive acidity of the stomach is neutralized. A dose of five drops of the specific medicine, or from ten to twenty drops of the tincture, may be repeated every half hour for three or four doses, in severe cases, or until ptosis and other evidences of its physiological action appear. In threatening cases during intermissions it may be given three or four times daily. In malarial cases it may be given with **quinin** to correct the periodicity and may be continued alone in careful but sufficient doses during the paroxysms.

Aconite is of service in some of this class of cases but its field is limited. **Belladonna** is a better remedy. This remedy is of signal service also in cervical neuralgias and also in intercostal and lumbar neuralgia, when the circulation is feeble and the skin is constantly moist and cool and the extremities are cold. Prof. Whitford has had great success with it. He advised it in full physiological doses, almost to the limit of toleration in extreme cases. He also advises in feeble cases that it be given in conjunction with **ammonium chlorid**. A mixture which contains one drop of specific **belladonna** and five grains of the ammonium salt may be given every half hour for a few doses, and may be given continuously in persistent cases every two doses. Some patients will need larger doses than this even.

**Bryonia** and **aconite** will be of service in intercostal neuralgia and in pleurodynia, and occasionally **asclepias** in fifteen minim doses every two hours, either alone or with **gelsemium**, will be indicated.

In neuralgia of the deep muscles, or when there is soreness and tenderness of the muscles, or when a lithemic condition prevails, **macrotys** may be given with any of the above named remedies. I have always argued that **aconite**

enhanced the influence of this remedy when it was not contraindicated, and macrotys and gelsemium work especially well together.

In lithemic and rheumatic conditions, the salicylates or salicin should be given. The use of the synthetics is not usually attended with permanent benefit.

Hot applications and mild counter irritants will be of some assistance in certain cases. Tonics and restoratives are needed in nearly all cases. There must be a general and permanent upbuilding of the nervous system. In greatly enfeebled cases electricity will be of great benefit and must not be omitted. Massage and vibration are productive of excellent results occasionally.

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## SCIATICA.

**Definition:**—Sciatica is an affection of the sciatic nerve chiefly characterized by pain along the course of the nerve. Usually it is a neuritis either of its plexus of origin or of the nerve trunk itself. Sometimes it is a functional neuralgia.

**Etiology:**—It is rarely seen before adult life and men are more commonly affected than women. Those having suffered from rheumatism and gout are predisposed to the disease. Exposure to cold with severe muscular exertion, and to wet, will bring on an attack. Habitual constipation, pressure from tumors and spinal caries are causative factors. The pressure of the fetal head in pregnant women will bring on acute attacks and if unduly continued may set up a neuritis in the nerve. Diseases of the hip joint are occasionally responsible for sciatica. Systemic poisons favor its occurrence, especially lead, syphilis, diabetes, malaria, influenza and typhoid fever. Traumata over the nerve or at the sciatic notch and excessive fatigue of the lower limbs are sometimes responsible for the disease.

**Symptomatology:**—The characteristic symptoms of sci-

atica are pain and tenderness. The pain may be felt within the pelvis but it is particularly felt below the gluteal fold and in the upper half of the thigh; sometimes in the branches of the nerve below the knee, especially the external popliteal. The onset of the pain is frequently gradual though it may be sudden. The patient can usually trace the pain over the anatomical distribution of the nerve, which is most severe at the sciatic notch, and in the middle of the thigh. Pressure over these points elicits pain. The pain is constant, though subject to exacerbations and is liable to be worse at night. There is muscular stiffness, and disability. Walking or standing increases the suffering. When a patient is in bed he lies with the limb partly flexed at the hip and knee and the ankle extended. If the leg is extended while the patient is lying down pain is produced and there is much muscular resistance. There are characteristic tender points. The tender points of *Valleix*, are the gluteal, over the sciatic notch, the trochanteric, over the great trochanter, over the nerve in the middle of the thigh, the popliteal, at the division of the nerve, the fibular over the external popliteal just below the head of the fibula, behind the external malleolus, and on the dorsum of the foot. In protracted cases there may be muscular wasting, especially of the glutei of the affected side. The bearing of the weight on the sound limb may give rise to scoliosis, with the lumbar curve convex to the sciatica and the compensatory dorsal curve oppositely convex. Swelling and herpes occasionally occur. The limb during an attack is usually cooler to the touch than the opposite side.

**Diagnosis:**—The disease is to be differentiated from lumbago by the fact that the pain of the latter is not so severe and does not have the characteristic points of tenderness and only occasionally radiates to the sciatic region. Psoas abscess is discovered by tenderness in the groin, by the deep seated intra-pelvic character of the pain, and by the usual constitutional symptoms of infection. The lightning

pains of *tabes dorsalis* are not accompanied by tenderness of the affected area, nor by the constant pain and the disability of sciatica. Affections of the hip-joint are easily discovered by the presence of tenderness only over the joint. The characteristic tender points and type of pain will almost always make the diagnosis of sciatica clear. Care should be especially exercised in the diagnosis to locate the cause of the attack. Therefore the pelvic organs and the spinal region should be carefully explored, as the treatment depends upon the cause.

**Treatment:**—The treatment given for neuralgias will be applicable in sciatica in a general way, especially the hygienic and dietary suggestions. Specific conditions met with here are treated the same as those conditions would be treated if met with in other neuralgias, in neuritis or in other painful nerve disorders. All causes of the disease must be removed and free and perfect elimination should be restored.

At the onset of acute cases, or immediately on the occurrence of the pain in recurring cases it is my practice to cover the sacral region with a folded flannel and have the surface thoroughly and persistently **ironed** every four or six hours with a sadiron or flatiron as hot as can possibly be borne, for a period of from ten to twenty minutes at each seance. I have aborted simple but severe cases with this process without much medicine. At times the ironing should be continued down the entire course of the nerve.

In persistent stubborn cases I have obtained very good results from the application of a French **thapsia plaster** over the sacral area continued to minute pustulation. This result obtained in four or six hours by the strong French plaster is of far greater and more permanent efficacy than the results obtained in twenty-four hours by the milder plasters of home manufacture. The old fashioned tar plaster or the application of **croton oil** over the origin and course of the nerve, have produced good results. A strong **aconite** liniment or a **belladonna** plaster or a liniment made

of aconite, belladonna and **chloroform** persistently used and covered with warm flannels will be useful in the less severe cases.

Internally, full doses of **gelsemium**, or gelsemium and **macrotys**, either alone or with from five to ten grains at each dose of **potassium nitrate**, will be of benefit, or **the salicylates** may be substituted in this combination for the potassium salt. In periodic or malarial cases **quinin** should be given with the gelsemium. **Apocynum** has been of service in this disorder but its influence is not explained. Half of a dram of the specific preparation is added to four ounces of water. This is given in teaspoonful doses every half hour during the severe pain and later every three or four hours. The use of **belladonna** and **ammonium chlorid** will be of much service in the congestive types of the disorder and when the skin is moist and cool or cold and the capillary circulation enfeebled.

The deep injection of various anodyne preparations over the origin or course of the nerve has been of benefit at times. Five drops of pure **ether** has produced good results. The deep injection of gelsemium will sometimes do much good when its internal use has failed. **Chloroform** and **apocynum** have been used in this manner.

**Dry sulphur** in a flannel bag has been applied and kept hot and the leg has been enveloped in sulphur for days at a time with relief. Cures of extremely stubborn cases are claimed for this method. I have treated all chronic cases with a persistent mild faradic current during the course of the medicinal treatment and have obtained relief and permanent cures which I am confident I could not have obtained without it. It is administered each day. Massage and vibration are of service in selected cases.

## NEURITIS.

**Definition:**—Neuritis is an inflammation of a nerve, and is usually accompanied with more or less degenerative changes in the nerve affected. It may be acute or chronic. The process may chiefly involve the perineurium and is known as **perineuritis**; it may involve the connective tissue surrounding the nerve bundles and the nerve fibrils, when it is known as an **interstitial neuritis**. Or it may involve the nerve fibrils themselves, and is called a **parenchymatous neuritis**. These distinctions are not usually of clinical significance, though the latter variety is present in the chronic form and the process is one of degeneration.

**Etiology:**—The etiology is varied. It may be caused by traumatism, as blows, cuts, stretching and pressure. Exposure to cold is a frequent cause. Bacterial poisons in the blood give rise to it, as after typhoid, diphtheria, malaria and smallpox. It may extend from neighboring foci of infection as tuberculosis, osteitis and osteomyelitis. Poisons taken into the system as alcohol, arsenic, lead, mercury and opium are responsible for attacks. In the tropics an endemic and epidemic form known as **beri-beri** is common. In certain trophic changes manifested by skin eruptions, as herpes zoster, neuritis is seen. Where a single nerve with its branches is involved we speak of a simple neuritis. But where the peripheral nerve branches of a considerable area are involved, it is called a multiple neuritis.

### SIMPLE NEURITIS.

**Synonym:**—Localized neuritis.

**Etiology:**—The most common causes are exposure to cold, traumatism, pressure from tumors, as morbid growths and aneurism, pressure due to posture, as lying on an arm during sleep or a surgical operation, or from a crutch or artificial limb, and the extension to the nerves of diseases involving neighboring parts.

**Symptomatology:**—Symptoms vary widely, depending

upon the cause and location of the disease and the extent of the pathological process. In mild cases we have paræsthesia, as pricking, tingling, or numbness, which may be felt at the site of the lesion, and in severer cases at the periphery of the nerve. In cases of traumatic infection of the nerve involved there is extreme pain of a stabbing nature, and tenderness to pressure along its course. If the neuritis is due to pressure there is loss of motor power, more or less complete, in the muscles supplied by the nerve. When degenerative processes have taken place in the nerve fibrils trophic changes in the muscles and skin are noticeable. The muscles are wasted and the skin appears dry and glossy and the hair and nails may drop out. The reaction of degeneration is present. Later there may be no response to galvanic electricity. Injuries to the parts supplied by the nerves lead to sloughing.

**Diagnosis:**—The diagnosis takes into consideration the presence of some form of toxemia, a history of exposure, or of injury to the nerve affected. Sensory and motor symptoms are limited to the course and distribution of the nerve.

**Prognosis:**—The prognosis depends upon the severity and curability of the cause of the neuritis. Most cases of simple neuritis are amenable to treatment. The nerves have an extraordinary power of regeneration. Chronic neuritis may follow an acute attack.

**Treatment:**—The relief of pain is the first essential in the treatment. This is accomplished in some distinctly acute cases by libradol applied hot or other **hot plastic dressing** or by a **hot poultice**. **Menthol** and **ichthyol** rubbed in proper proportions with **lanolin** and applied freely on gauze will often give relief. Other soothing applications may be devised from the various anodyne remedies. Many cases will need anodynes internally or hypodermically. **Morphin** should be given only in an emergency and repeated only as positively demanded. **Cannabis indica**, **conium**, or **codeine**, will relieve pain without the danger

of forming a habit. An occasional dose of one of the coal tar synthetics is safer far than morphin in the rheumatic types of this disorder. The internal treatment will consist of **macrotys**, **gelsemium**, perhaps **bryonia** or **colchicum** and the **sodium salicylate** or **potassium nitrate**. In edema **apocynum** will be needed. Where the skin is dry and hot and the secretory organs are inactive the use of **pilocarpin** or **jaborandi** will be indicated.

When the acute symptoms are relieved measures must be adopted for the restoration of the function of the part. These must not be instituted during the active stage and they must be discontinued when irritation or increased pain or sensitiveness result from their use, or when weakness or exhaustion follow. **Capsicum** or other stimulating non-irritating applications may be used externally, while **phosphorus**, **hydrastin**, **nux vomica** or **strychnin** are given internally, in full and sufficient doses. **Xanthoxylum** and **quinin** will be useful also.

I am partial to the application once or twice daily for a few minutes only—from five to eight minutes, perhaps—of a very mild **faradic current** of medium rapid interruptions. This must not produce weakness of the part nor distress. After a time, only good results being observed, this current may be increased until mild muscular contractions are induced. This promotes the restoration of sensibility and normal motility as well.

Massage, Swedish movement and vibration may all be adjusted judiciously and thus prove of service in the ultimate cure of the disorder, in restoring the nutrition of the parts through the improvement of the general and capillary circulation.

### MULTIPLE NEURITIS.

**Synonyms:**—Peripheral neuritis; disseminated neuritis; polyneuritis.

**Definition:**—Multiple neuritis is an inflammatory or degenerative process affecting at once many peripheral nerves; it is symmetrical in its distribution.

**Etiology:**—This disorder usually has a toxic origin. The poisons may be introduced from without or elaborated within the body. Those introduced from without the body are most frequently alcohol and lead. Others of this class are arsenic, copper, mercury, coal gas, carbon bisulphid, phosphorus, mercury and anilin.

Poisons elaborated within the body having toxic effects upon the peripheral nervous system are those of the acute infectious and of diathetic and dyscrasic states. Those of special mention are typhoid, diphtheria, influenza, scarlet fever, pneumonia, smallpox, malaria, syphilis, leprosy and beri-beri. Diabetes, rheumatism, tuberculosis and septicemia should also be mentioned. The disease occurs, naturally, most frequently in adult life, as the majority of its causes are then most active. Alcoholic neuritis is most common in women. Beri-beri is an epidemic form of multiple neuritis seen in the tropics and in ports communicating freely therewith. The etiological agent of this form is not known.

Some cases arise, as in simple neuritis, from exposure to cold, over-exertion and trauma. There are cases for which no cause has been discovered which are classed as idiopathic in origin, though as our knowledge advances this class grows smaller.

**Symptomatology:**—The variety of causes naturally gives a complex symptomatology. It is possible, however, to trace a fairly constant outline for all forms, at the same time mentioning the distinguishing characteristics of the most important special forms.

There may be a rise of temperature at the onset, or this may be absent. In the acute febrile type of cases this is marked, and the onset resembles in every way the onset of acute infectious diseases in general, with chills, headache, backache, anorexia and sometimes nausea and constipation. The cardinal symptoms are manifest in abnormality of the several nerve functions themselves, and are sensory, motor, trophic, and in some cases mental.

**Sensory Symptoms:**—These are the earliest symptoms having to do with nerve functions, and in the majority of cases are the earliest whatsoever. There are numbness, tingling and pricking in the extremities. Pain ensues, which may be dull and constant, or very severe, and is described as boring and stabbing. The pain is increased by pressure and motion. Pressure over the thicker parts of the flexor muscles especially elicits pain. There may be anesthesia and hyperesthesia in patches of the skin near to each other.

**Motor Symptoms:**—After the pain develops, weakness in the affected limbs is experienced; gradually the loss of muscular power takes on the features of an ascending paralysis, or the paralysis may begin in the arms.

The characteristic foot and wrist drop develop early as the extensors of the wrists and flexors of the ankles are involved. In severe cases muscular power is quite generally lost, even the facial and intercostal muscles being involved. Paralysis of muscle groups may ensue and contractures result. The phrenic and pneumogastric nerves may be involved and tachycardia and dyspnea occur; paralysis of the heart or diaphragm may bring the case to a fatal termination.

The tendon reflexes are diminished. In severe cases the reaction of degeneration is present, and there may develop loss of response to galvanism.

**Trophic Symptoms:**—The nutrition of the muscles and the skin suffers. The muscles become flabby and wasted, sometimes to an extreme degree. The skin may show edema, vasomotor paralysis, loss or abnormal growth of hair or nails, localized areas of sweating, herpes, or a dry, glossy condition. Sometimes there is swelling of the joints, simulating acute articular rheumatism.

**Mental Symptoms:**—The memory is sometimes impaired; intellectual processes are confused; the patient may relate imaginary events—"pseudo-reminiscence"—which in multiple neuritis is sometimes termed Khorssakoff's disease.

Certain etiological types deserve special mention. Alcoholic multiple neuritis is the most common type, and is most frequent in women who are secret, steady tipplers. Indeed, the development of the neuritis may be the first evidence the family and physician have of the alcoholism.

In multiple neuritis due to lead, it is to be emphasized that the inflammatory process, as a rule, is not widespread, and that the sensory nerve fibers are not involved. In such cases the paralytic symptoms are seen chiefly in the extensor muscles of the hands and fingers. There is usually a history of lead colic. Anemia is marked. The characteristic gingival blue line is pathognomonic. It is especially noteworthy that in this type sensory disturbances rarely occur.

In marked contrast in this respect are those cases due to arsenic. Pain is extreme and always present. Gastro-intestinal disturbances are usually associated. The paralysis is usually more general, involving both arms and lower limbs. Ataxic symptoms, closely resembling those of tabes dorsalis are most marked in this form of multiple neuritis and skin eruptions are more common.

**Diagnosis:**—The sensory symptoms, with more or less loss of muscular power, attacking certain nerve trunks and sparing others to a greater or less degree, with a history involving one of the etiological agents mentioned above, point to multiple neuritis. It is differentiated from acute anterior poliomyelitis by the marked sensory symptoms of multiple neuritis and the fact that the former disease occurs, as a rule, in children, and the latter in adults.

Chronic cases and those due to arsenic simulate tabes dorsalis. The latter is differentiated by the Argyle-Robertson pupil, the girdle sensation, the absence of muscular weakness, and the gait. The ataxic gait of multiple neuritis is the characteristic steppage, in which the foot is lifted high as if to clear the pendant toes of an obstruction, and then the foot is brought down flat, "flail fashion."

Cases coming on acutely with cardiac and respiratory

distress, general edema, pallor and gastro-intestinal disturbance make the picture one of acute nephritis or heart disease; in such cases careful tests should be made for the sensory and motor, and especially the reflex symptoms, which point to a peripheral nerve disorder. The bladder and rectal symptoms of myelitis, together with paralysis of both motion and sensation, will differentiate this disorder.

**Prognosis:**—The prognosis depends upon the possibility of removing the cause. In the vast majority of cases it may be said that the prognosis is good as to a cure, even though the disease may have lasted several months or even a year. Recovery is usually slow, and there may be periods when the disease is stationary or even tends to relapse, but most cases, under appropriate treatment, have a decidedly hopeful outlook.

**Treatment:**—In the treatment of this serious condition specific indications are not so plainly apparent as general indications, but the results of the treatment are usually more satisfactory than in other forms of paralysis. These patients should be **put to bed** and should be treated with much care. The hygienic surroundings and the food must receive attention. It is desirable that they should drink water freely and should further promote elimination by mild perspiration, or by occasional Turkish baths or other **hot baths**, if the strength will permit. The recovery will take place more satisfactorily in warm weather than in the winter, as elimination is promoted by the temperature and conditions of the weather.

The first consideration in the medical treatment is the acute symptoms. The fever must be controlled and the pain relieved. **Hot applications** must be persisted in over the areas of pain. At times, where the local sensitiveness is extreme, a plastic dressing may be of service.

For the fever **aconite** is usually the indicated remedy. When hyperesthesia is present **gelsemium** may be given with aconite, in small doses frequently repeated, only so

long as its indications are present. If echinacea be given with these remedies, the results will be even more satisfactory.

Pain in most cases is an important factor. It is best to avoid the depressing synthetics and opium preparations, if possible. Usually gelsemium, **hyoscyamus**, **cannabis indica**, **conium** or **codeine** may be used with advantage.

Where the feebleness is pronounced and anesthesia is present **nux vomica** or **strychnin** may be administered to advantage, and a very mild current of faradic electricity may be applied. If these conditions are at all severe and there is pronounced loss of muscular power, **capsicum** locally should be used, and **phosphorus** and **avena sativa** may be given internally, with increased doses of strychnin. There is a class of these cases in which the one-sixty-seventh of a grain of strychnin arsenate may be given every two hours for a considerable period with only good results.

The loss of muscular power, which is characteristic of this disease, should be treated with the faradic current, which must be adapted to individual cases. Certain of these will receive more benefit from a mild current with rapid interruptions, while quite a number will be benefited by a greatly increased current with slow interruptions. **Massage** and **vibration** judiciously applied, may afford relief. **Passive motion** is of service and contractions are successfully treated by fixation.

When multiple neuritis follows acute infectious disease, the condition must be treated with reference to the cause. In most cases the symptoms will serve as a safe guide in the selection of the remedies. When so caused it is not uncommon to find disorders of the heart occurring early, as a result of the nerve disorder. Inasmuch as **cactus** is a pure nerve tonic of high order, it is safe to administer that remedy early in the disease, and persist during the entire course of the disorder, unless there be undue irritation of the heart with exalted tension and increased activity, when **cactus** is contraindicated.

For this condition, and especially if tachycardia be present, the persistent use of cold applications to the precordium will exercise a prompt and satisfactory influence. Where the arterial tension is low, cactus will be found a very sufficient remedy. It will enhance the influence of strychnin when the condition of low tension exists with paralysis.

Patients with this disorder, having heart complications, must lie quietly in bed and must appreciate the serious danger there is from a sudden rise to the sitting posture, or from getting out of bed suddenly, or from any increased muscular effort that would throw a sudden strain upon the heart or suddenly increase its action.

The cause of this condition must be determined and at once removed. This includes the exclusion of alcoholic beverages and careful attention to the eliminative functions of the entire system. Where inorganic poisons are supposed to have caused the disease, agents which will neutralize any portion of these substances which may remain in the system should be administered. The results of organic poisons may be antagonized, especially those affecting the character of the blood, and the blood may be restored by the use of **echinacea** or the **calcium sulphid**, or the judicious use of **iron** or iron and **arsenic**, or arsenic and the **iodids**. The potassium iodid is suggested in large doses for its influence upon the glands. I am in the habit of combining small non-irritating doses of **podophyllin** and **phytolacca decandra**, or **yellow dock**, with this remedy, believing that this class of alteratives stimulates the functional activities of the entire glandular system. The judicious use of laxatives, and at times physics, is authorized.

## MIGRAINE.

**Synonyms:**—Hemicrania ; sick-headache ; megrim.

**Definition:**—Migraine is a peculiar paroxysmal headache, usually unilateral, and often accompanied by nausea and vomiting, and disturbances of vision and of the vasomotor system.

**Etiology:**—A neuropathic inheritance is often marked with those subject to this disorder. The female sex is more frequently attacked than the male. It may begin in early childhood, though the majority of cases begin at puberty. It is more common among those of intellectual training and habit than those whose occupations are largely manual.

By some it is regarded as an athetosis of the trigeminal nerve with consequent neuralgic manifestations ; by others as due to meningeal vasomotor disturbances ; and by others as a sensory neurosis, having its periodic discharges, analogous to the motor discharges of epilepsy. Disorders of the female genitalia, the uric acid diathesis, and lack of outdoor exercises are predisposing factors. Eye-strain undoubtedly has a marked place in its etiology. Emphasis should especially be placed on faulty metabolism and auto-intoxication dependent upon insufficiency of the digestive and eliminative organs. Migraine is therefore in the majority of cases a toxic condition dependent upon deficiencies in the functions of the gastrointestinal tract, the liver and kidneys. The anemias are directly related to the condition.

Attacks may be brought on by mental and physical fatigue, emotional excitement, dietetic errors, toothache and exposure to extremes of heat and cold.

**Symptomatology:**—In many patients there are premonitory symptoms a day or more before the attack. These consist in a feeling of malaise with irritability, or there may be depression. The attack most frequently comes on in the morning, unless it is precipitated by excitement or exposure. It begins in the forehead or occiput, on one side of the head, and usually has a place of maximum intensity,

which in the majority of cases is the region of the eye. The pain is throbbing, usually tense, occasionally dull, and is increased by noises, light and jars. Sometimes there are ocular disturbances or bright flashes, spots dancing before the eyes, restriction of the visual field, and hemianopia.

Nausea and vomiting usually occur. Sometimes the attack is cut short by the thorough emptying of the stomach. After the food remnants are vomited, the vomitus becomes greenish and sour, and is spoken of as "bilious." In some patients there are cerebral symptoms, as tinnitus, vertigo, stupor and confusion of ideas. Those who are disposed to sleep are usually relieved by several hours' slumber or the night's rest. The patient usually appears pale and exhausted. The pulse is small, slow and hard. The attacks are periodical, coming on at intervals of one, two or four weeks. In women they are prone to appear with the approach of the menstrual period.

A given attack may last a few hours or several days. As the menopause is established, the attacks usually cease and do not reappear.

**Diagnosis:**—Usually the history shows an hereditary influence, which always speaks strongly for migraine. The attacks are periodical and recur in the same location. Ocular and aural symptoms help to differentiate it from neuralgia, though the latter may coexist. Nausea and vomiting are a cardinal part of the disorder.

**Prognosis:**—The disorder is always obstinate and frequently intractable. There is no danger to life, but a degree of invalidism may be induced. Where the cause can be ascertained, as in eye strain or autointoxication, the cases can be cured.

**Treatment:**—It is seldom that these patients do not have stomach complications. There is usually hyperacidity, and quite frequently constipation is present. In nearly all cases there is insufficient bowel movement. Upon rising in the morning the patient should take a sufficient quantity of a solution of the **citrate of magnesia**, or a **seidlitz powder**,

and after eating it is a good plan to take a full dose of from twenty to forty grains of the **bicarbonate of soda**. This treatment, taken early in the day, when from the premonitory symptoms the patient anticipates an attack, will often ward off an attack. If the headache be present, this course will shorten its duration in this class of cases. I have overcome the headache and cured the tendency to its recurrence by the use of the following combination, which I have referred to before: Powdered **hydrastis**, **ginger**, **colombo** and the **subnitrate of bismuth**, of each one ounce; **magnesium carbonate**, four ounces; mix thoroughly. Of this give a small teaspoonful in two ounces of water, after each meal in the milder cases, and every three hours, without regard to the meals, in the severer cases. Where the urine is scanty and high colored, and especially where it contains the so-called brick dust deposit, the patient should persistently drink an abundance of water. He should also take six or eight grains of the **citrate of potassium** or of **lithium**, every four hours, for a short time. An infusion of **epigea** can readily be prepared, in the proportion of one ounce of the herb to the pint, to which these salts may be added in proper proportion, with a little **borate of sodium** or **benzoic acid**. This should be drunk freely. The use of hot water, freely, before meals is of benefit also.

For immediate relief it is sometimes necessary to administer an anodyne. The physician will do his patient an incalculable amount of harm if he advises him to get a five-grain powder of **phenacetin**, or of **acetanilid**, or to take an antikamnia tablet, thus enabling the patient to supply himself with this class of remedies and to obtain temporary relief whenever he chooses to do so. If these remedies, or **morphin**, must be given, it must be absolutely without the patient's knowledge, or in some combination that would entirely mislead him as to its character.

Five-drop doses of **gelsemium** every half hour will sometimes satisfactorily relieve this pain.

When the liver is at fault, **chelidonium** will sometimes

quickly relieve the pain, acting better than the more commonly used liver stimulants. Externally, hot applications, and **menthol**, with occasionally the **oil of wintergreen**, both externally and internally, will give relief. At other times counter irritation, or dry cups to the nape of the neck, will be of service. Where eye faults are suspected, a careful examination must be made and glasses correctly adjusted.

The diet must be carefully adjusted to the individual patient. I have found it necessary to completely exclude animal foods for a period of two or three weeks in the early course of the treatment. I believe coffee and tea to be often very injurious also.

It is sometimes necessary to make a complete change in the occupation of the patient, or in his habits of living, or of climate. The condition of each patient must be carefully considered with reference to all of these factors in the treatment.

So commonly is autotoxemia, either in part or altogether, the cause of these headaches, that attention to elimination is always necessary, and treatment similar to that advised in lithemia, or in rheumatism, with **hot baths** and blood remedies, is of the utmost importance. Alteratives, eliminatives and restorative tonics will be productive of good results in nearly all cases, if correctly adjusted. An exclusion of nitrogenous food is necessary when with imperfect elimination there is dark, heavy urine, especially loaded with urea and the urates.

# Diseases of the Spinal Cord and Its Membranes.

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## MENINGITIS.

**Definition:**—Meningitis means inflammation of the meninges. There may be cerebral meningitis or spinal meningitis, or a combination of both, cerebro-spinal meningitis. Further anatomic distinction may be made between pachymeningitis, inflammation of the dura mater, and leptomeningitis, inflammation of the pia-arachnoid. Still further, the anatomical distinction may be made between internal and external pachymeningitis. The inflammation may spread from one membrane to the others, or to the substance of the brain or cord. Clinically, the anatomical classification cannot always be strictly followed, but in the description of the meningitides it is a useful outline.

## PACHYMENINGITIS.

**Definition:**—Pachymeningitis is an inflammation of the dura mater, and may affect the external surface or the internal surface of this membrane, or both simultaneously.

## PACHYMENINGITIS EXTERNA: SPINAL.

**Etiology:**—Pachymeningitis externa is a process secondary to inflammation, usually of nearby structures. It is most commonly secondary to spinal caries, as in vertebral tuberculosis, Pott's disease. Other cases are due to tumors or abscesses eroding the vertebrae. Suppurating pleuritis, peritonitis and abscesses of the posterior mediastinum

sometimes give rise to the disease. Spinal meningitis may also arise by direct extension of infection from cerebral meningitis. It may follow attacks of pneumonia, of typhoid fever and acute articular rheumatism, in which the specific micro-organisms of these diseases are the etiological agent. In such cases, however, the meningitis usually involves all the coverings of the cord.

**Symptomatology:**—The symptoms vary with the location and extent of the inflammation. As the disease is secondary in the vast majority of cases to local disease in contiguous structures, the symptoms do not present the acute features seen in inflammations of the meninges arising out of the acute infectious diseases. There is tenderness over the diseased area of the spine and pain along the course of the nerves issuing from this region. The skin and muscles supplied by these nerves are hyperesthetic. There is consequent rigidity of these muscles. After some weeks or months anesthesia and paralysis develop. In extreme cases compression of the spinal cord will cause typical symptoms, especially spastic hemiplegia, with incontinence of urine, either from paralysis of the bladder or of the sphincter alone.

**Diagnosis:**—The history of the disorder is all important in arriving at a diagnosis. The demonstration of a chronic inflammatory process, especially one affecting the vertebræ, with the slow and progressive development of the symptoms, will point to pachymeningitis. It is to be distinguished from myelitis by the slow onset, the absence of girdle sensation, and the late appearance of paralytic symptoms.

**Prognosis:**—The prognosis is that of the causative disease. The focus of the infection must be abolished. If surgery can effect this, relief may be afforded.

**PACHYMENINGITIS INTERNA: SPINAL.**

**Definition:**—Pachymeningitis interna is an inflammation of the inner surface of the dura mater, of a chronic nature, often accompanied by hemorrhage.

**Etiology:**—The male sex is more subject to the disease than the female, because of the more frequent exposure of men to the causative factors of this disease. It usually occurs in the active period of life. Prolonged exposure to cold, as in the occupations of teamsters, sailors and trainmen. Injuries to the back are favorable to the development of the disease. Toxic conditions are often responsible, especially those due to rheumatism, gout and syphilis. Chronic alcoholism is an important cause. The lesion has been called hypertrophic pachymeningitis, because of the successive layers of sclerotic formation, which not only greatly thicken the dura, but follow the course of the blood vessels into the spinal cord. Hemorrhages frequently take place, as sclerotic areas of the vessels undergo softening and rupture. The lesion may be found throughout the entire length of the cord, or be limited to the cervical region. These pathological changes are found in general paresis of the insane.

**Symptomatology:**—The onset of the disease is slow. For a long time the only complaint of the patient is of pain over the spine and in the periphery of the spinal nerves, with considerable tenderness at these points. Anesthesia is a later symptom. Motor and trophic symptoms gradually develop. Paresis and atrophy of the muscles supplied by the affected nerves appear. If compression of the cord takes place in the progress of the disease, the reflexes of the affected limbs are increased. The muscles below the point of attack are spastic. Contractures not infrequently occur.

Trophic symptoms may appear in the skin, as bed sores are not uncommon. The general health of the patient is usually decidedly affected, and he is an easy victim of intercurrent disease.

**Diagnosis:**—The disease is to be differentiated chiefly from myelitis. As has been suggested in the discussion of the pathology, the meningeal affection is one in its later development with an involvement of the cord, so that a myelitis is present. The pain of pachymeningitis is more pronounced than that of myelitis. The rectal and vesical sphincters are commonly paralyzed in myelitis, but escape in pachymeningitis. Rigidity and contractions of muscles are rare in myelitis, but quite common in pachymeningitis.

**Prognosis:**—In favorable cases a cure is sometimes secured, and the symptoms arrested in others. The patient is usually much broken in general health, which is a serious obstacle to a hopeful outlook.

### LEPTOMENINGITIS: SPINAL.

**Definition:**—Leptomeningitis is an inflammation of the pia-arachnoid envelope of the spinal cord, and may be acute or chronic. In the majority of cases the dura and the cord substance are simultaneously affected.

### ACUTE SPINAL LEPTOMENINGITIS.

**Etiology:**—These diseases cover a larger range of the life period than do the inflammatory diseases arising in the dura. Both sexes are commonly affected, though males somewhat more frequently than women in the cases among adults. In these latter the disease may be brought on by the same causes considered in the discussion of pachymeningitis, especially traumatism, exposure to cold, alcoholism, gout, rheumatism and syphilis. Tuberculosis is the most common cause found in general practice. Rarely the disease is a sequence of the acute infections, especially pneumonia, typhoid, scarlet fever, yellow fever and variola. It is more often seen as a complication of pyemia and septicemia.

In epidemics of the cerebral type of leptomeningitis the

spinal meninges are frequently involved. As is well established, the etiological agent in these cases is the *diplococcus intracellularis meningitidis*.

**Symptomatology:**—In the syphilitic and tubercular cases the onset is slow and the symptoms are not often so acute. In other cases the onset is quite sudden. There may be a general feeling of uneasiness, with restlessness, or of weariness, for a few days. Vomiting occasionally occurs without apparent cause, and may appear frequently for a day or two before the acute onset. This symptom is seen commonly in children, but is somewhat infrequent in adults. The vomiting is not accompanied by nausea, is of a projectile character, and continues after the acute symptoms are established. The pronounced symptoms are ushered in suddenly by a severe chill, followed by agonizing pain in the back and shooting into the limbs. There is a rise of temperature, possibly to 103° F., though in the course of the disease the temperature may at times be subnormal. The pulse is usually rapid and irregular, but the pulse and temperature do not correspond with each other as they do in other infections. The pulse may be very rapid still when the temperature is falling, until the temperature becomes subnormal. There is great tenderness in the spinal region, which is elicited by percussion, or by the application of heat from a sponge dipped in hot water, or by the hot water bag, or by a mild electric current. Movement of the patient causes great pain.

In a few hours the spinal muscles are rigid, and if the cervical meninges are affected, there is retraction of the head. The limbs are rigid and are usually in a flexed position. The abdomen has the so-called scaphoid form, due to the contraction of the abdominal muscles. The accessory muscles of respiration are often so spastic that breathing may be interfered with. If the disease ascends to the medulla, Cheyne-Stokes respiration may develop and, likewise, great interference with the function of the heart.

The rectum and bladder are at first spastic and retention, partial or complete, takes place.

The reflexes for a day or two are exaggerated, but later are diminished or wanting.

The skin shows vasomotor disturbances, and may be pale, or flushed, or livid in hue. Pressure by the finger is followed by a deep-red and persistent mark, the *tache cerebrale*.

If the patient lives through the acute stages, wasting and paralysis of the muscles may occur and bed sores develop.

**Diagnosis:**—The cardinal points in making a diagnosis are the rapid onset, the pain in the spinal region, radiating into the limbs, the increase of pain on movement, and the varying relation of pulse and temperature.

In myelitis the paralysis occurs early and the pain is insignificant or absent, though the two diseases are frequently associated. Hemorrhage into the substance of the cord gives immediate paralysis and usually little or no pain.

Tetanus presents points of similarity, but in this the early and sustained fever, the spasms, the early spastic paralysis of the muscles of deglutition, the excessive hyperesthesia without pain, and the history of traumatism assist the diagnosis.

The rigid form of tetany very closely simulates meningitis, if the history is not heeded. In tetany there is a history of long duration, frequent remissions, amenability to spinal sedatives, and the absence of sensory symptoms of a pronounced character.

Muscular rheumatism need hardly be considered as closely resembling meningitis.

**Prognosis:**—The prognosis depends upon the virulence of the infection, the acuteness of the onset, the height of the temperature, and the tendency of the disease to implicate the upper portion of the cord. Children and the aged succumb readily. The outlook is always grave.

**Treatment:**—In the treatment of the various forms of

pachymeningitis no specific course can be laid down. Hygienic and dietary measures are of the utmost importance. Internal medication has exercised but little apparent influence upon the disease. Our knowledge of the action of the drugs upon the circulatory apparatus of the meninges would suggest the persistent use of small doses of ergot and the fluid extract of **physostigma**, with the sodium or **potassium iodid**, or some of the recent forms of **organic iodin**. The early and continued use of echinacea, will do much toward antagonizing the development of the disease and will encourage the elimination of inflammatory products.

In the treatment of acute leptomeningitis a full appreciation must be had at once of the seriousness of the disease and of the difficulty experienced in its management. The patient should be put to bed in a dark, quiet room, and all attendance and care should be conducted in a quiet, unexcitable manner. The fever must be met promptly. **Aconite** and **ergot** are usually indicated at first. Ten drops of the tincture of the first and twenty drops of the fluid extract of the second, in four ounces of water, should be given in teaspoonful doses every hour. Any tendency to twitchings of the muscles or spasm must be met with the **bromids** or with small doses of **chloral**. An application of a strong mustard poultice to the spine, followed by a hot **plastic** dressing, is indicated.

If with the decline of the temperature there is dulness with dull eyes and cold skin, **belladonna** must be given. If the **gelsemium** indications are pronounced, this remedy must be prescribed. Between the extremes in the indications for these two remedies there is a point where **calabar bean** is the most serviceable of all remedies, given in five-drop doses of the tincture, every two hours.

In all cases an internal antiseptic is indicated, and **echinacea** will be most useful. The **sodium iodid** will assist in the subacute and chronic cases. Where muscular soreness is great, **macrotys** or **arnica** will prove service-

able. If typhoid symptoms occur, with suppressed secretions, *baptisia*, or *rhus toxicodendron*, or hydrochloric acid, will prove beneficial.

There are details of the treatment suggested by more or less rare indications, as well as the care of the patient, which may be met by measures suggested in cerebro-spinal meningitis in the first volume of this work, page 101.

### CHRONIC SPINAL LEPTOMENINGITIS.

**Etiology:**—The chronic form of this disease usually follows an acute attack, but may be the sequence of tuberculosis, alcoholism and syphilis.

**Symptomatology:**—The symptoms are diminished as compared with the acute form. Pain in the back with tenderness over the spine are the predominant symptoms. Spasm is not marked and is frequently absent. The inflammation in the chronic form is quite circumscribed, so that symptoms appear in a much more limited zone. The radiating pains and the paresthesias are marked. Herpes and other skin lesions are noted in cases where degenerative changes have taken place in the nerve roots.

**Diagnosis:**—The history of an acute attack is the most hopeful clew in the recognition of the lesion. The symptoms are quite indefinite. The presence of spinal tenderness, with attacks of neuralgic pain radiating into the back, without paralysis, except it be that which remains from an acute attack, constitute the most prominent symptoms.

**Prognosis:**—The prognosis is good as to life. A final cure, however, is doubtful. If the case is syphilitic, the successful treatment of this disease will, of course, be likely to cure the meningitis. If tuberculosis is the cause, the prognosis depends upon the amenability of this disease to treatment.

**Treatment:**—But little can be suggested in the line of treatment. General conditions must have strict attention. The stomach must be put into a normal condition, and

elimination must be sustained in as nearly a perfect manner as possible. The patient should reside in a **warm climate**, although extreme heat is objectionable. Benefit is derived from the use of **dry cups**, or counter-irritation adjusted to the condition of the patient, and from the judicious use of baths. Where there is extreme tenderness over the spinal column, I have given **aconite** in full doses three or four times daily, and have applied hot plastic dressing at night, with excellent results. The occasional application of a very mild current of faradic electricity will be beneficial. Objections to the use of the current in any form are based on observations made from the use of strong currents or from the spark. Internal medication, directed to the condition itself, has not been productive of satisfactory results.

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## HEMORRHAGE INTO THE CORD TISSUE.

**Synonyms**—Spinal apoplexy; hematomyelia.

**Etiology**:—Hemorrhage into the substance of the cord is induced by those conditions which cause meningeal hemorrhage. It is usually due to injuries of the spine, especially to blows, falls and severe wrenchings. Excessive venery has been followed by spinal hemorrhage. Divers' palsy, or caisson disease, is sometimes accompanied by hematomyelia, due to the sudden reduction of high atmospheric pressure when the worker comes to the surface. Continued convulsions, as in chorea, tetanus, asphyxia and the *status epilepticus*, may produce punctate hemorrhages. Arterio-sclerosis and miliary aneurisms are of rare occurrence in the vessels of the cord, hence these causes do not contribute so much to spinal as they do to cerebral apoplexy; a myelitic softening may erode the vessels so as to cause hemorrhage. The majority of cases are in adult males, as the most frequent causes are more commonly operative among these.

**Symptomatology**:—The symptoms depend upon the

kind of hemorrhage. If it is of the infiltrating type, and therefore secondary to other pathologic processes, there may be sensory and motor symptoms of a more or less mild type for a day or two, or even for several weeks previous to the acute onset. In a primary focal hemorrhage the onset is sudden. The earliest symptom is severe pain, of course, following the nerves whose spinal origin is implicated in the lesion. There are darting pains in the limbs, girdling pains about the trunk, and there may be pains that resemble visceral crises, like angina pectoris and abdominal colic. In from a few minutes to an hour paraplegic symptoms develop. The legs weaken, possibly one more than the other at first, but presently both are involved and motor power is lost, so that the patient drops helplessly to the ground. There is occasionally a relaxation of the bladder and rectal sphincters occurring with the paraplegia. Usually the pressure is soon relieved to a degree and there is some improvement, but in a day or two myelitic softening develops and the paraplegic symptoms increase again. Quite early in the attack spasms of the muscles supplied by the affected nerves are apt to occur. With these developments the picture soon changes to one of myelitis.

**Diagnosis:**—The diagnosis depends upon the pain, the suddenness of the attack and the absence of fever. A gradual development of paraplegia without marked pain and with fever is doubtless myelitis.

**Prognosis:**—The prognosis depends upon the location and extent of the lesion. When it affects the cervical portion of the cord or the lumbar enlargement, the prognosis is more grave than where it is in the dorsal region. The onset of myelitis makes the prognosis grave. In favorable cases appropriate treatment may do much toward the relief of the condition.

**Treatment:**—The treatment of hemorrhage into the spinal cord and hemorrhage into the spinal membranes is essentially the same, and is given fully in the next article.

## HEMORRHAGE INTO THE SPINAL MEMBRANES.

**Synonym:**—Meningeal apoplexy; hematorrhachis.

**Definition:**—Hemorrhage may take place outside the dura mater, or between the dura mater and the pia-arachnoid, or between the arachnoid and the membranes of the pia mater.

**Etiology:**—Meningeal apoplexy may take place at any age, but usually occurs in adult life. Injury to the spine is the most common cause. It may follow severe convulsions and great physical exertion or violent muscular strain. Disease of the vertebræ may cause it. Aneurism of the vertebral or basilar arteries and of the thoracic aorta may rupture into the spinal canal. If from aneurism of the thoracic aorta, it would occur, of course, after the aneurism had eroded the vertebral body. Syphilis and arteriosclerosis are favorable to it, as are also such hemorrhagic states as puerpera and scurvy. Acute infectious diseases which involve the meninges are sometimes accompanied by hemorrhage. Long and difficult labors may give rise to hemorrhage into the cerebral meninges of the child, which may find its way also into the spinal canal.

**Symptomatology:**—The severity of the symptoms depends, of course, upon the extent of the hemorrhage. If the hemorrhage is slight, the symptoms are not marked. If it is considerable, there is sudden sharp pain in the back, about the level of the hemorrhage. The pain may be reflected along the course of the spinal nerves, and is usually neuralgic in character. Pressure symptoms occur in large hemorrhages, beginning with muscular spasm, which may be in the form of convulsions. Symptoms of loss of power develop immediately. The paralysis is not so complete as in cases of hemorrhage into the cord or as in myelitis.

**Diagnosis:**—The diagnosis is difficult, and the real condition is often overlooked. The history of injury to the spine, with the absence of fever, differentiates it from men-

ingitis, although it is not uncommon for meningitis to develop after a few days. The pain, in severe cases, will differentiate it from myelitis, while the paralysis is not so complete as in the latter disease.

Assistance to the diagnosis may be afforded by lumbar puncture, in which case disintegrated blood will appear in the spinal fluid.

**Prognosis:**—The prognosis depends upon the amount of the hemorrhage, the occurrence of secondary infection, and the location of the hemorrhage in the meninges, as the higher up it is the more unfavorable the outlook. If the blood is rapidly absorbed, the prognosis is favorable. If the patient survives the first fourteen days, the outlook is good, though disability of a varying degree may remain.

**Treatment:**—In the treatment of hemorrhage, either into the membranes or into the structures of the cord, the patient should be put to bed immediately and should lie on the face most of the time, changing to either side for a time for change of position, but should not lie continuously upon the back. If hemorrhage could be anticipated, or if it could be known that hemorrhage was actually occurring or was continuing, or that it was likely to recur, **ergot**, **gallic acid**, the compound tincture of the **oils of cinnamon** and **erigeron**, or other astringents, could be given with advantage, but these agents would have no beneficial influence in overcoming the effect of the hemorrhage or in removing extravasated blood. However, ergot is beneficial in preventing stasis or engorgement of the membranes of the cord and in overcoming acute local congestion. Passive or hypostatic congestion can best be relieved by **aconite** and **belladonna**. The use of cold applications to the spine, and counter-irritation, are calculated to act upon these conditions, and will undoubtedly be beneficial during the active stage of the disorder.

The important treatment, however, is the removal of the blood clots and other foreign products and the restoration of the function of the part. The first condition can be

brought about by the use of five-grain doses of **sodium salicylate**, or of the **sodium iodid**, every two or three hours. The second condition, the restoration of the function of the parts, is brought about by the use of **nux vomica**, **strychnin**, **hydrastis**, or **xanthoxylum**, internally, or by the use of **electricity** in the form of the mild faradic current, or by massage or vibration. Surgical operations have been performed to remove the clot or the blood serum, in cases where the pressure was so great as to threaten immediate serious results, but it is questionable if the operation is justifiable.

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## MYELITIS.

**Definition:**—Myelitis is an inflammation of the spinal cord. The term, however, is a generic one. According to its clinical course it may be acute, subacute, or chronic. If the pathological process extends across a given segment of the cord, it is called a **transverse myelitis**. If it exists in scattered foci throughout the cord substance, it is spoken of as **disseminated myelitis**. If it extends upward or downward, it is termed an **ascending** or a **descending myelitis**. If the process is a slow one, due to pressure from disease of the vertebræ or meninges, or to tumor, it is called **pressure myelitis**. A central form is seen, in which the lesion or lesions are found along the central canal.

**Etiology:**—Acute myelitis may follow traumatism to the spinal cord, as concussion, laceration, and hemorrhage into the cord substance. Exposure, severe strain and sexual excess predispose to it. Inflammatory processes in nearby and related structures may spread by contiguity or continuity of structures, as in infections of the vertebral meninges, and brain. Myelitis most frequently follows infectious and intoxications. All the acute infectious diseases may be followed by it. Influenza, gonorrhœa, pyemia and septicemia are especially mentioned. Syphilis frequently

leads to it, both by a thrombotic process and from syphilitic meningitis and gumma. Alcohol may be placed in the same category with the acute infections, as an active and frequent cause of myelitis.

**Symptomatology:**—Obviously, the symptoms of myelitis vary with the cause and with the location and extent of the pathological process. When the disease is due to one of the acute infections, there may be produced symptoms more or less acute, varying from a few days of malaise with mild fever, to **convulsions, high temperature** and **chills**. If the cause is due to hemorrhage into the substance of the cord, the onset is necessarily sudden, and the entire train of disease manifestations is soon developed, while in cases due to compressions all symptoms are gradually and slowly developed.

The spinal symptoms themselves, while varying in extent and severity, are pronounced in type. The cord segment or segments involved are plainly declared by the area in which the symptoms, whether sensory, motor, trophic or reflex, show themselves.

**Sensory symptoms:**—The **girdle sensation**, just above the area affected, is characteristic of transverse myelitis and is dependent on irritation of the nerve roots by the pathological process in the cord. A **hypersensitive area** partially or completely girdling the body, with the bloated sensations below it, points to myelitis and is of great importance in locating the lesion. Together with the **anesthesia** in the territory supplied by the nerves below the lesion, there are frequently **paranesthesias**, especially **numbness** and **tingling**. If the posterior roots and the meninges are involved, pain and tenderness are felt over the spine, at the level of and above the lesion. Where the lesion is in close relation to the central canal, we have the characteristic phenomena of loss of temperature and pain sensation, with preservation of tactile and location sense.

**Motor symptoms:**—Necessarily, the motor functions are affected in the same manner as the sensory—that is, in the

area supplied by the nerves having their spinal origin in the territory of the lesion.

There may be partial or complete **paralysis** of the muscles below the lesion, depending upon the amount of cord tissue involved. If the lesion is of a disseminated character, certain muscle groups will be affected, as in poliomyelitis. Control of the sphincters is always interfered with, and there may be **incontinence** or **retention** in varying degrees. Of course, the most complete damage to vesical and rectal functions is seen when the lumbar enlargement of the cord is involved. The tendency in myelitis is to a **paraplegic** distribution.

**Reflex Symptoms:**—At first the reflexes are lessened in the region below the lesion, and abolished in the region particularly supplied by the locality of the lesion. Later the reflexes are exaggerated and the paralysis is of spastic type.

**Trophic Symptoms:**—**Vasomotor paralysis** is shown in the skin, the affected muscle groups waste, and the reaction of degeneration is present. **Bed sores** are prone to appear, and **cystitis**, often extreme in character, frequently develops.

**Diagnosis:**—In poliomyelitis the paralysis is usually of a monoplegic type and sensation is not interfered with.

In meningitis neither motion or sensation are interfered with, and there are the characteristic **pain** and **tenderness** over the involved area. Locomotor ataxia presents the Argyle-Robertson pupil, persistent loss of reflexes and the characteristic lightning pains.

Landry's paralysis is known by the steady advance of the paralysis from the feet and legs upward, the absence of rectal, bladder and trophic symptoms, and the normal sensation.

The diagnosis is to be based on the relation of symptoms to anatomically related cord functions. The paralysis is of a paraplegic tendency, and the sphincters of the bladder and rectum are involved as a rule. The band of hyperesthesia with diminished sensibility below it is a practically

constant accompaniment. The reflexes are lost early and afterward exaggerated.

**Prognosis:**—The prognosis is always grave. Partial recovery frequently takes place, but some marks of the disease are always left in the atrophy and spasticity of the muscles most deeply involved. Death occurs usually from bed sores, cystitis or nephritis. Involvement of the cervical cord is almost invariably fatal from arrest of the functions influenced by the vagus nerve. Involvement of the lumbar segment is more grave than that of the dorsal, because of its relation to the urinary organs.

**Treatment:**—In the treatment of this disease, in the acute form, a course may be adopted somewhat similar to that named for acute meningitis. The fever will be satisfactorily controlled by the use of **aconite**, in combination with one of the three following remedies, according to their indications; if the skin and extremities are cool or cold and the patient is dull and inactive, **belladonna** should be combined with aconite; if the skin is hot and dry and the patient is excitable and restless with contracted pupils, **gelsemium** will be the remedy selected for the combination; if the patient has no nervous excitability and the skin is normal in temperature, or warm and moist, **ergot** will be a desirable remedy. I have much confidence in this agent when properly adapted. **Rhus toxicodendron** will be indicated by a sharp, quick, hard pulse, denoting nervous irritation of the circulatory apparatus, with disturbed sleep, especially if the tongue be thin, red and pointed at the tip. If the patient is wakeful and very restless, has a degree of nervous excitability whenever an attempt at sleep is made, he should have **hyoscyamus**. If the case assumes a sub-acute type and progresses slowly, especially if there be an inclination to increasing dulness, **calabar bean** should be given. When severe pain in the deep muscles of the back, or persistent muscular aching, are present, five drops of **gelsemium** and two drops of **macrotys** may be given every hour until three or four doses have been taken. They should

then be continued in smaller doses until that condition disappears. Attention must be paid to the condition of the bladder, that the urine be not retained.

In the treatment of the chronic form of this disease the patient should be kept quietly in bed, and should lie upon either side or upon the face rather than upon the back. As the health improves, he may assume a semi-recumbent position or a sitting posture, but active muscular exercise is to be avoided. A change of climate and of other environment is desirable, and the utmost pains must be taken with the selection of the food. The use of **hydrastis** and other bitter tonics with **iron**, and later with **phosphorus** or the **phosphates**, are the proper remedies. The use of **massage**, **electricity**, carefully adjusted **baths**, and in certain cases **vibration**, will be found to restore the general muscular and nerve tone.

### ACUTE ANTERIOR POLIOMYELITIS.

**Synonyms:**—Infantile paralysis; acute atrophic spinal paralysis.

**Definition:**—An acute myelitis involving mainly the anterior cornua of gray matter in the spinal cord, usually sudden in onset, and occurring most frequently in children.

**Etiology:**—The disease occurs between the ages of one and four years, though it is not uncommon in older children. It is rare in adults. It has been observed that more cases occur in the warm months than during the cold season of the year, although it is not particularly a disease of warm climates. That it is of infectious nature is strongly suggested by its frequent occurrence in epidemics and during the course of, or convalescence from, the acute infectious fevers, especially the exanthemata, and the fact that the onset is very often accompanied by fever and gastric disturbance, and occasionally by convulsions and delirium. Dentition, traumatism and cold have been assigned an important role in the etiology, but it is doubtful that they have

any direct part. They may exercise a predisposing influence.

**Symptomatology**:—The onset is usually with fever and a general sense of discomfort. **The temperature** rises to from 100° to 103° F., and lasts from a few hours to several days. The symptoms are not severe at the onset, although as a rule **convulsions** sometimes occur. The case may be dismissed as of but little importance, when suddenly **paralysis** is seen to have developed. Indeed, it is a very common form of the development of the disease for a child to awake in the morning with paralysis of one or more limbs after only a slight indisposition having been noted the evening before. The paralysis is always most extensive in the beginning of the attack. There is a tendency to recovery more or less complete, and the parents can usually be assured the first day that the paralysis will not increase. But while the general paralysis of one or more limbs becomes modified, it is soon seen that there is permanent impairment of one or more muscle groups functionally related. These muscles undergo **atrophy**. They lose their response to faradic electricity, usually by the tenth day. The increased response to galvanism lasts about six months, when this is lost. The prognosis in regard to the recovery of affected muscles can be judged by the increase or decrease of response to faradism.

Muscular atrophy may become so far advanced that **contractures** occur, the muscles being but fibrous bands. **Atrophy of the muscles** about the joints, as the deltoid, may result in considerable laxness of the joint, permitting the head of the humerus to fall away from the joint socket. This process may be furthered by atrophy of the bone in young subjects, and in severe cases.

There are, as a rule, no sensory symptoms, though possibly the bundling of the affected muscles at the beginning of the attack may cause some discomfort. The lower limbs, as compared to the upper limbs in frequency of attack, are affected in the proportion of three to one. The muscles of

the eye, face and tongue are occasionally affected, and those of the trunk in rare cases.

The form of development of the disease in adults does not differ materially from that above described, except that in children, aside from muscular atrophy, the growth of the bones and muscles governed by the affected cord segments fail of normal development.

**Diagnosis:**—The disease is never recognized in the early febrile stage. The development of paralysis without some sensory symptoms, especially after only a slight illness, renders the diagnosis not difficult. If the reaction of degeneration occurs in a few days in certain muscles, while other nearby but functionally distinct muscles show a tendency to recovery, the diagnosis is certain.

**Prognosis:**—The course in an average case is as follows: (a) A febrile stage of from a few hours to a few days, with rapidly increasing paralysis; (b) a stationary stage of several weeks; (c) a period, up to the end of a year, of improvement from the initial symptoms; (d) a stage of permanent disability. Only very rarely is the disease dangerous to life. The return of faradic response in the muscle is a sign of some degree of recovery. In statements made to parents and friends the pathology of the disease must be kept in mind; that is, that nothing will restore the ganglionic cells which the disease has destroyed in the anterior horn of the cord. Of course, the prognosis depends upon the degree of damage done to these cells.

**Treatment:**—In the treatment of these cases absolute rest in bed is necessary. A hot plastic dressing should be applied to the spine for two or three days, and that special sedative should be selected which is most plainly indicated by existing symptoms. This sedative course, with attention to the condition of the bowels and bladder, should be adopted for the first few days, with the addition every hour or two, if the skin is dry, of a drop or two of *jaborandi*, or some other agent which will produce mild diaphoresis. If there is a rheumatic tendency, small doses of salicylate of

**sodium** may be administered for a double purpose—not only to remove the conditions upon which the rheumatism depends, but to promote the absorption of any products of the inflammation that may be present at the seat of the inflammatory action. Nervous excitability must be restrained in every case, and rest, quiet and an abundance of sleep must be secured.

When the acute stage has passed and the paralytic symptoms remain, the patient may have small doses of **strychnin**, or of the **strychnin arsenate**, with the use of mild stimulating counter-irritation. The application, not only over the spine, but over the muscles of the back and limbs, of the tincture of **capsicum**, persisted in, short of producing any eruption of the skin will be of advantage. The further use of mild currents of **electricity**, or of **massage** or **vibration**, will be suggested by the character and persistency of the existing phenomena. Deformities which occur should be treated with the proper appliances, in accordance with the judgment of the physician.

### SYRINGOMYELITIS.

**Synonym:**—Syringomyelia.

**Definition:**—Syringomyelitis is a condition in which more or less of the central portion of the spinal cord undergoes degeneration, resulting in the formation of tubes. The process consists in the development of a mass of neuroglia, which encroaches upon the neighboring tissue and later breaks down, forming the cavity characteristic of the condition.

Clinically the condition is characterized by loss of pain and temperature sense, while the tactile sense is preserved; by the progressive development of muscular atrophy, and trophic changes in the skin, muscles, bones and joints.

**Etiology:**—The disease is not a common one. The literature gives reports of 300 cases, though more have been observed. It is more frequent in men than in women. It is

thought in some cases to be of congenital origin. In others, disease of the spinal arteries is thought to be the cause.

**Symptomatology:**—The characteristic symptom of the disease is the dissociation of sensory functions; **the pain and temperature sense** in the affected areas is lost, while **the tactile sense** is unimpaired. The areas in which this dys-esthesia is seen are not symmetrical, but are found irregularly distributed over the body. The most common portion of the cord affected is the cervical portion, though other portions suffer.

A **progressive paralysis** develops. If the spinal muscles are affected, **curvature of the spine** may occur. Nutritional changes take place as the disease progresses. A slight cut or burn may refuse to heal, or **superficial gangrene** may develop.

A type of the disease known as **Morvan's disease** is characterized by the formation of painless but destructive **whitlows**, and by neuralgic pains.

**Diagnosis:**—In typical cases the disease is not difficult to recognize. The combination of sensory anesthesia with integrity of the tactile sense; progressive muscular atrophy, beginning in the small muscles and of a flaccid, atonic type, and an amyotrophic paralysis are pathognomonic.

**Prognosis:**—The prognosis is not good as to a cure. Life may be prolonged considerably, depending upon the portion of the cord affected. Bulbar and lumbar symptoms are grave.

**Treatment:**—It is evident that the treatment for this serious condition directed to its cure will be unavailing. The symptomatic indications should be met as presented, and functional disorders should be overcome. The preservation of the general health and physical tone of the patient at a point as near normal as possible will materially conduce to the prolongation of life.

## LATERAL SCLEROSIS.

**Synonyms:**—Spastic paraplegia; spastic spinal paralysis; primary lateral sclerosis; Cole's palsy.

**Definition:**—Lateral sclerosis is a nervous disease, in which degenerative changes are found in the pyramidal tracts of the spinal cord, giving rise to stiffness and spasticity of the muscles, especially of the lower extremities, and usually progressing to a condition of paralysis.

**Etiology:**—The disease is found more often in men than in women, and in the third and fourth decades of life. Congenital defects of the pyramidal tracts are thought to have a relation to the etiology in some cases. It is also regarded by some as a parasymphilitic affection. Cases have been noted in which injury to the back has seemed to determine the condition, and in which there was no demonstrable septic taint. Exposure to cold has been quite definitely connected with the onset of some cases.

**Symptomatology:**—The symptoms are of gradual onset. At first the patient is aware of a sense of **weariness, and stiffness in the legs** and possibly in **the arms** is complained of. The spasticity of the muscles of the limbs increases; **the reflexes** are exaggerated, and **ankle clonus** may occur from efforts to walk, as the foot touches the ground. **The knees** are drawn together by the spasm of the adductors, and sometimes they overlap. **The feet** are dragged from the knees, and complete spastic paralysis, at length, occurs.

Electric changes do not take place and sensory and trophic changes are not present, and sphincteric control is impaired. There is usually obstinate constipation. **The Babinski reflex** is present, as it always is when the pyramidal tracts are involved.

**Diagnosis:**—The diagnosis is not usually difficult. Hysteria in the female has occasionally produced conditions that simulate lateral sclerosis. The age and sex of the patient, the presence of the Babinski reflex, with the spastic type of paralysis, make the picture quite complete.

**Prognosis:**—Patients may live twenty or thirty years. The progress of the disease is usually slow. Recovery cannot be very hopefully looked for as to the paralysis itself.

**Treatment:**—In the treatment of this condition it must be borne in mind that there is much irritability of the spinal centers, which is apt to be increased by the use of strychnin, nux vomica or other spinal stimulants which seem to be indicated by the paralysis. Well selected stimulating sedatives can be used in medium doses, but spinal sedatives alone seem to exercise a better influence over the condition as a whole. **Gelsemium**, **cimifuga**, the **bromids**, **conium**, and in rare cases **chloral**, all in moderate doses, may be selected. **Hydrastis** and **xanthoxylum**, persisted in, will be of material benefit in improving the general tone of the patient, and **capsicum**, externally applied, has been of some benefit.

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## AMYOTROPHIC LATERAL SCLEROSIS.

**Definition:**—This disease shows degenerative changes in the lateral columns of the cord and also in the adjacent gray matter. It is characterized by a spastic paralysis of the lower extremities with progressive muscular atrophy. The pathology determines it to be a combination of chronic poliomyelitis with lateral sclerosis.

**Etiology:**—The disease is usually found in the third and fourth decades of life. Exposure to cold, violent exertion and traumatism are found in some cases to have preceded the onset. Toxic causes are traceable in some cases, especially alcohol, arsenic, mercury and lead. A congenital defect of development in the central nervous system perhaps establishes a susceptibility to the characteristic degenerative changes.

**Symptomatology:**—The symptoms depend to a degree upon the portions of the cord affected. When the cervical portion of the cord is attacked, there is at first a sense of weakness in the hands. With this loss of power the mus-

cles are found to be spastic. The condition gradually extends to the whole **arms**, the muscle groups not being selected, but all the muscles involved en masse. **The reflexes are exaggerated.** The Babinski phenomenon is present. If the medulla and pons are affected, symptoms of bulbar paralysis are seen.

**The lower limbs** present the characteristic signs of lateral sclerosis, together with **muscular atrophy** when the dorsal portion of the cord is involved. Contractures occur in the progress of the disease. The hands become greatly deformed, and the feet may be distorted into any form of talipes. Intelligence is not usually affected. In some cases a mild form of dementia develops late in the course of the disease.

**Diagnosis:**—The lack of sensory symptoms differentiates the condition from cervical meningitis, and from injury and pressure on the cord in the dorsal and lumbar portions. A pure progressive muscular atrophy is known by the absence of exaggerated reflexes and spasticity.

**Prognosis:**—The prognosis is unfavorable so far as recovery is concerned. The disease lasts from two to ten years. As the lesion tends to affect the entire system of motor tracts in the cord, the onset of bulbar symptoms is common and necessarily shortens the period of life expectancy. Death usually occurs from complications or intercurrent disease for which the paralysis prepares the way.

**Treatment:**—The treatment must be conducted with much care. Stimulants are of doubtful efficacy, especially if the trophic centers are involved to a considerable degree. They are especially likely to increase the spastic disorder in the extremities. **Static sparks** to the spine and to the affected limbs have been applied with some apparent benefit. **Massage** is indicated, but should not be carried to an extreme. **General tonics** will be demanded in many cases. In this, as in other forms of obscure spinal disease, the fact that a permanent cure is probably impossible should not deter the physician from prescribing with confidence for

any symptoms which may appear which would suggest a reliable specific remedy. The influence of the remedy in controlling the indicated phenomena will be of benefit in contributing to the general health of the patient.

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## LOCOMOTOR ATAXIA.

**Synonyms:**—*Tabes dorsalis*; posterior spinal sclerosis.

**Definition:**—Locomotor ataxia is a disease in which degenerative changes have taken place in the posterior columns of the spinal cord, which are manifested clinically by incoordination of movement, loss of the deep reflexes, involvement of the special senses, particularly of the eyes, and trophic and sensory disturbances.

**Etiology:**—Men are affected more commonly than women, in the proportion of ten to one. The disease is rarely seen in persons under twenty-five years of age, though children with hereditary syphilis are occasionally its victims. It is one of the parasyphilitic diseases, a luetic history being found in from seventy to eighty-five per cent of the cases. Some writers aver that ninety per cent and upwards of the case are due to syphilis.

Traumatism is causative in some cases, and exposure to cold and wet have been assigned as of etiological moment. Mineral poisoning, great exertion, other diseases of the cord and sexual excesses may have a causal relationship to the disease.

**Symptomatology:**—Locomotor ataxia is usually divided into three stages: the **initial** or **pre-ataxic stage**; the **ataxic stage**, and the **paralytic stage**. The pre-ataxic stage presents a number of sensory symptoms first; they are a feeling of **numbness**, especially in the feet, the patient feeling as if his feet are encased in thick wool; itching or darting **pains** in the scrotum and rectum and in the legs are common. Attacks of **vertigo** and of **double vision** are noticeable. Areas of **tactile anesthesia** may be discovered on the trunk.

There is sometimes noted a sense of **constriction** about the **waist** or **chest**. The patient has a sense of profound **exhaustion** without effort. In the motor realm there is **uncertainty of walking** and of station, especially in the dark. The **patellar reflex** is lost usually in the first year; vesical control is often impaired; **the pupils** fail to respond to light, although they respond to accommodation; **optic atrophy** may begin early in the disease, and progress to complete blindness; contracted pupil is frequent; usually there is obstinate constipation. **Deafness** occurs, which may be transitory or may progress to totality.

**The ataxic stage** is a development of the motor symptoms before mentioned. **The gait** becomes uncertain; the patient picks his way carefully, uses a cane and watches the ground. There is difficulty in rising or turning suddenly. **The feet** are far apart, they are lifted high and are brought down with force. **The steps** are irregular in length, and the patient feels as if he would lose his balance. **Static ataxia** is also marked. If the patient stand with feet together and eyes closed, he will sway and possibly fall, if not supported. The reaction of degeneration is not present. **The muscles** may lose tone from lack of use; the **lancinating pains** in the legs, and sometimes in the back, loins and head, are increased and often are very severe; **herpes** may develop. Areas of anesthesia are found in the legs, feet and toes. Sometimes the phenomenon of **delayed sensation** is present; that is, the prick of a pin is not felt for some seconds after it is inflicted. **The pupils** are sometimes contracted to pin-point size.

**The paralytic stage** at length supervenes. The muscular strength is good, but the patient has largely lost his muscle sense. With closed eyes he does not know where his legs are. The degenerative changes in the cord frequently extend to the lateral tracts, and paralysis completely incapacitates the patient. Vesical control is entirely lost. **Trophic changes** in the joints are seen. A painless swelling, usually in the knee, sometimes in the hip, takes place.

Spontaneous dislocations and fractures occur. The so-called perforating ulcer of the foot is another trophic change that is seen not uncommonly. **Cystitis** is apt to occur and may close the scene. The patient is easily the victim of inter-current disease and has little power of resistance against it.

To this broad outline must be added several secondary symptoms, especially the "**crises**" of various sorts. The "**gastric crises**" consist of violent pains in the abdomen with vomiting and vertigo. In a less number of cases there are "**intestinal crises**," consisting of a diarrhea with much tenesmus and colic. "**Renal crises**" resemble attacks of renal colic. "**Laryngeal crises**" are known by attacks of severe cough, which occurs in paroxysms and is associated with dyspnea, due to spasm of the glottis. "**Vesical**" and "**rectal crises**" are also seen at times, always characterized by severe pain.

**Diagnosis:**—The disease, in the course of time, presents certain cardinal symptoms which, taken together, make the recognition of the disease positive. These are the loss of the knee jerk, known as Westphal's symptom; the Argyle-Robertson pupil—that is, the loss of the response to light with the power of accommodation unimpaired; the Romberg symptom, or the static ataxia, and the lightning pains. Of course, to these may be added the motor ataxia.

In early cases "rheumatic" pains, ocular disturbances, the loss of power and gastric attacks should direct us to test the patellar and pupillary reflexes. In late cases the ataxia will direct us at once to the remaining important members of the clinical syndrome.

The pains may suggest a multiple neuritis, but in this latter the pains are more constant and not of the lancinating character. Cerebellar tumor determines a staggering gait instead of the typical tabetic walk. The knee jerk is not abolished in cases of cerebellar tumor and there are no shooting pains. The loss of the knee jerk will distinguish the disease from the various forms of paraplegia.

General paralysis of the insane may be difficult of separa-

tion, as in this disease many of the physical signs of locomotor ataxia are present. But the mental condition of the tabetic patient remains unimpaired, and the sensory symptoms are much more marked.

**Prognosis:**—As to a cure the prognosis is unfavorable. However, the symptoms may last a great many years. Indeed, the development of tabetic symptoms may be so remote in time from the early syphilitic attack that the patient is not inclined to believe in their relationship. Of course, the paralytic stage ushers in the beginning of the end. The pre-ataxic and ataxic stages may last from a few months to several years.

**Treatment:**—Lack of confidence in his own ability to cure this disease often causes the physician to neglect the use of measures which would not only relieve many of the distressing symptoms of locomotor ataxia, but would stop the progress of the disease and materially prolong the life of the patient. I have under observation at this time a typical case of eight years' standing, in which the characteristic phenomena, when fully developed, were very severe, and the progress of the disease during the first year was very rapid, and seemed to promise a most unfavorable outcome. The disease was precipitated abruptly by an operation on the rectum by a specialist, who advocated the theory that the anal sphincter must be dilated and "pockets" removed for fear of reflex irritation. The progress of the disease was stopped at the end of the first year by the hypodermic injection, daily, of lymph compound. The patient's nervous system was built up by the phosphates in various combinations and by other well selected tonics. The stomach and intestinal tracts were kept in as nearly a normal tone as possible. The entire muscular system was built up and its integrity was in great part restored and preserved by systematic massage and properly adjusted physical exercise. The patient had confidence in his attending physician and was courageous for the first five years. He then became despondent, melancholy and morose. His business associates

then persuaded him to adopt Christian Science. This restored his confidence, caused him to become cheerful and hopeful. In fact, its influence upon his mental condition was good in every way, and he returned with renewed confidence to the measures advised by his physician. Thus by a combination of all possible adjustable influences this patient has been able to attend to his business and has been in otherwise excellent health for the past six or six and a half years.

In the treatment of these cases the general nervous tone of the patient must be preserved and every function of the body must be sustained as nearly intact as possible. Nutrition I believe to be of the utmost importance. This, I think, was the only influence obtained from the lymph compound referred to in the above case. It seemed to supply nourishment directly to the diseased nervous structures.

The idea that syphilis is the cause of the large proportion of these cases, prevails, as stated, in general hospital practice in the large cities. It is not so found, in general practice, in the smaller cities and in the rural districts. Some writers advise anti-syphilitic treatment in all cases. Such a course may be productive of harm. Small doses of the **iodids**, and also of **alteratives** which restore the blood and at the same time restore the integrity of the blood-making organs, will be found of service in certain cases, but tonics are the remedies most frequently indicated by the disease processes.

**Physical exercise**, conducted out of doors, or systematic exercises indoor under the charge of an experienced attendant, will do good, provided that no degree of tire, and especially that no exhaustion, be produced. **Massage** must not be overdone. Vibration is apt to be too severe, and only in an occasional case will it produce benefit. An extreme is readily reached with all of these measures. Cold, or even cold baths, are usually objectionable, as the patient is deficient in the power of resistance. An occasional **hot bath**, or frequent hot sponge baths, always judiciously given and followed by a mild salt rub, will be found beneficial in

most cases. Where lithemic conditions prevail, it is important that nitrogenous food be excluded for considerable periods, and that all of the excretory functions be preserved intact. Under these circumstances the hot bath may be prolonged until a mild perspiration is induced, and this may be continued for a time, if it does not cause weakness.

General nervous irritation may be controlled by the **bromids**. These are of benefit also for the lightning-like pains, for which **cannabis indica** and **conium** may also be prescribed. Occasionally a combination may be administered, for its general influence on pain and distress, each dram of which contains one-sixteenth of a grain of **morphin**, five grains of **sodium bromid** and one-eighth of a grain of **cannabis indica**, with perhaps one minim of the tincture of **capsicum**. This may be given every hour when the distress is at all severe. At times either **gelsemium**, **hyoscyamus**, **passiflora**, **valerian**, **scutellaria**, or **macrotys**, may be adjusted to the existing conditions in accordance with the exact indications.

In the selection of tonics for these cases I believe that phosphorus exercises the most direct influence. This may be given either as free **phosphorus** alone or in various combinations, as the syrup of the **phosphates**, the **glycerophosphates** or the **hypophosphites**. The **zinc phosphid** is a very useful remedy, as also is the **hydrastin phosphate**. Both **arsenic** and **copper** are highly recommended as tonics. The **cupric arsenite** in one-fiftieth-grain doses in a tablet will combine the influence of both in a convenient and beneficial form, and will be occasionally of more service than better known tonics. **Iron** is of service where anemia threatens, and also when from any cause there is impaired oxygenation. **Strychnin** is commonly used with benefit. **Digitalis**, **cactus** and other heart tonics will be needed when that organ becomes impaired. The use of the **galvanic current** is authorized. The current should be diffused over the muscles of the back from the positive pole, with the negative pole to one or both feet. A **mild faradic current** through

the hips, or through the sciatic nerve from its origin, and over the muscles of the thighs, legs and feet it beneficial.,

I have obtained the best results by applying this current very mild and continuing it until the muscles begin to tire, repeating the application every third or fourth day for a number of weeks.

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## HEREDITARY ATAXIA.

**Synonyms:**—Friedreich's disease; hereditary ataxic paraplegia; Friedreich's ataxia.

**Definition:**—A hereditary disease, characterized by the usual ataxic symptoms, with paraplegia, including impairment of speech, showing itself between the ages of two and eighteen years. It depends upon lesions in the posterior and lateral columns of the spinal cord.

**Symptomatology:**—It is observed that there is a slowly progressive loss of co-ordination, noticed first in the movement of the legs, and subsequently in the arms. It differs somewhat from locomotor ataxia. **The gait** is tottering and staggering or swaying, with choreic movements of the arms and lack of control of the head, which may continue when the patient is at rest. The face loses its expression, and there is difficulty in talking. In walking there is less of stamping of the foot than in locomotor ataxia, and the foot assumes a deformity known as the **pes cavus**. Occasionally the hand becomes deformed.

These cases are not cured, but they often progress slowly, have periods in which there is no advancement of the disease, and the patient may live to adult age or even early middle life.

**Treatment:**—**Good care** of the patient and strict attention to its habits of life are the first requisites in treatment. Medicine is of but little avail, except in preserving the integrity of every function, meeting indications for treatment as soon as they appear. Tonics, and carefully applied massage used

early, will conduce to the growth and physical development of the child, and should not be neglected.

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### MARIE'S ATAXIA.

**Synonym:**—Marie's cerebellar hereditary ataxia.

**Definition:**—A form of ataxia resembling that of Friedreich, with the addition of a marked increase of the knee-jerk. In fact, it is now thought to be probable that the two are varieties in the manifestation of the same disease. Pathologically this disease involves less of the cord, depending upon a congenital defect in the cerebellum. It develops later in life, usually between the ages of twenty and thirty years.

**Treatment:**—The same only can be said that is said of Friedreich's ataxia, as no specific indications for treatment present themselves. Symptomatic indications should not be overlooked, even if but transient in character.

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### ACUTE ASCENDING PARALYSIS.

**Synonyms:**—Landry's paralysis; acute progressive paralysis.

**Definition:**—An acute form of paralysis which begins in the lower extremities and ascends, finally involving the trunk, the arms, the muscles of the chest, neck and face, terminating by paralysis of the medulla.

**Symptomatology:**—The disease occurs more frequently in men between the ages of twenty and thirty-five years. The onset is quite abrupt; there is a general sense of approaching illness, with **malaise**, which is soon followed by **tingling** in the feet and legs, which soon amounts to **pain**. This is accompanied with **weakness** in the legs, and soon there is complete loss of power. **The muscles** of the body then become involved, **the reflexes** are decreased, although

the involuntary muscles are the last to be affected. After a few days the muscles of the chest and arms become paralyzed, the **respiration** is difficult, the **speech** is imperfect, and swallowing is also difficult. Motor paralysis is more rapid than that of the sensory nerves. The mind usually remains clear. There is no muscular atrophy and the sphincters are the last to be affected.

The course of the disease is rapid; it may terminate in two or three days, or a fatal end may be postponed even as long as twenty-one days, although two weeks is usually the extreme length.

**Treatment:**—The suggestion made for the treatment of acute myelitis will apply in these cases. The patient should be put to bed, and should be instructed to lie upon the face or upon the side rather than upon the back. **Counter-irritation** should be applied, especially over the lower portion of the spine, and any measures that are calculated to increase the active blood supply in the capillaries of the extremities should be adopted. There is no doubt that agents which will antagonize infection will retard the progress of the disease, and as **echinacea** has won a considerable reputation in its influence upon acute inflammations of the cord, it would be well to try the effect of this remedy in large doses of from twenty to thirty drops, combined with **xanthoxylum**, every two hours. Any agent that will reduce the amount of blood in the circulation of the cord, without influencing the capillaries of the skin, will be beneficial. **Ergotin** has been suggested, but while its influence on the central circulation is desirable, it should be combined with a capillary stimulant, as belladonna.

## BULBAR PARALYSIS.

**Synonyms:**—Duchenne's disease; glosso-labiolaryngeal paralysis.

**Definition:**—A disease of middle life, depending upon lesions in the medulla oblongata or "bulb," affecting the motor nuclei, characterized by paralysis and atrophy of the tongue and lips, as well as of the larynx and pharynx.

**Symptomatology:**—The disease may appear either in an acute form, or, developing more gradually, it may assume a chronic character. In the acute form the **inability to articulate** is of abrupt appearance, and may be accompanied with vomiting. **The throat** being included in the paralysis, there is **difficulty of swallowing**, or **strangling**—choking. Mastication is difficult and later almost impossible, and there is **dribbling of the saliva**.

In the chronic form the symptoms are of slow development. At first the tongue is paralyzed, and later the lips. The articulation of syllables containing certain letters, such as d, e, g, k, l, n and t, are especially difficult. The lower part of the face becomes involved, altering the expression, and fibrillary contractions of the muscles involved occur.

**Treatment:**—**Tonics, restoratives and nerve stimulants**, as well as **electricity**, are indicated, to be adjusted to the exact conditions observed in each patient. The experiences of the past offer but little encouragement in adaptation of medicines.

# Diseases of the Brain and Its Membranes.

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## CEREBRAL MENINGITIS.

**Definition:**—An inflammation involving the membranes of the brain. Anatomically considered, these are the dura mater, the pia mater and the arachnoid. The dura mater may be involved alone; the pia mater and arachnoid are always attacked conjointly. These inflammations are distinguished as **pachymeningitis**, **pachymeningitis interna**, and **leptomeningitis**.

## PACHYMENINGITIS.

**Synonyms:**—Simple meningitis.

**Definition:**—An inflammation which is confined to the external layer of the dura mater of the brain, usually occurring from traumatic causes, although disease of the middle ear, or severe infectious disease, may cause it.

**Symptomatology:**—Among the first symptoms are those of a general impaired condition of the health, with **lassitude** and **depression**, accompanied by persistent **headache**. There is in most cases quite a pronounced **chill**, with **fever**; the patient becomes inactive, is disinclined to effort of any kind, becomes dull, drowsy or stupid, and is finally with difficulty aroused. It is seldom that convulsions occur, but mild forms of paralysis may appear.

**Treatment:**—In the natural course of the inflammation, which is usually of septic origin, pus is formed, which must be liberated; the other symptoms are treated symptomatically. The use of **aconite** and **ergot** will be found of great service. A dose of one drop of the former with eight or

ten drops of the latter, in the form of a strong tincture, should be given every two hours, alternated with **echinacea** in twenty minim doses. **Sodium iodid** or **sodium salicylate** may also be given, and may be combined with the **echinacea**. Another remedy of value is **calcium sulphid**. In cases where the stupor is prolonged and where the prognosis seems to be favorable, five drops of the tincture of **calabar bean** may be given every two hours with good results.

### PACHYMENINGITIS INTERNA.

**Synonyms:**—Hematoma of the dura mater; hemorrhagic pachymeningitis.

**Definition:**—A disease characterized by the formation of a blood tumor or by the extravasation of blood into the inner membrane of the dura mater. It follows inflammation of the external membrane of this tunic, or it may occur as the result of other severe infectious disease. It is usually secondary in character.

**Symptomatology:**—It is doubtful if this disease is ever recognized during life as having occurred independently of an inflammation of the external membrane. The presence of increased headache, with other symptoms of compression, with hemiplegia or monoplegia, will be the characteristic symptoms. Occasionally convulsions occur.

**Treatment:**—Suggestions made as to the treatment of the various forms of meningitis will be applicable to the condition as whole. If pressure symptoms are pronounced, an operation may be necessary to remove the clot. If pressure symptoms from hemorrhage could be anticipated, the use of **ergot** would be positively indicated. The paralyzes may be treated with the usual measures—**strychnin, electricity and massage**.

### LEPTOMENINGITIS.

**Definition:**—An inflammation of the pia mater and of the arachnoid membrane.

**Etiology:**—The disease occurs in conjunction with acute infectious disorders. It follows erysipelas, pneumonia, pyemia and septicemia, typhus and typhoid fevers, smallpox, scarlet fever and measles. It occurs from mastoid abscess following otitis media, and as this disorder is apt to be caused by measles, the condition is more apt to be a sequel of measles than of the other infectious disorders. It may also occur in conjunction with chronic rheumatism, gout, arteriosclerosis and Bright's disease. When caused by tubercular infection it occurs in childhood; otherwise it is most frequent between the ages of thirty and forty-five years.

**Symptomatology:**—There may be symptoms of meningitis, present during the course of any infectious fever, from cerebral engorgement, which are temporary only. The symptoms of leptomeningitis are **retraction of the head**, with severe **headache**, often occipital, **vomiting**, and a rather **high temperature**, with **rapid, quick, hard pulse**. If suppuration occur, **chill** and **septic fever** are pronounced. The mind is soon affected and **delirium** is usually present. Where the headache is occipital, showing that the disease is located at the base of the brain, there may be **optic neuritis**, with **strabismus** and **ptosis**. The pupils are usually contracted at first from irritation of the nerves of the oculomotor area; later, when paralysis of these nerves occur, the pupils will be widely dilated. **Emaciation** is usually quite rapid. A **tetanic rigidity** of the spine, with pronounced retraction of the head, will occur with opisthotonos.

**Treatment:**—If a correct diagnosis is made, the treatment suggested for cerebro-spinal meningitis, on page 101 of the first volume of this work, will be found effectual. The most of the measures there suggested can be applied in these cases, provided the indications are plainly marked. Disease of the middle ear must be treated as an independent disorder.

## ENCEPHALITIS.

**Synonyms:**—Acute cerebritis; acute encephalitis.

**Definition:**—An acute inflammation of the structure of the brain, occurring independent of inflammation of the contiguous structures, usually infectious in character. It may follow scarlet fever, measles, smallpox, erysipelas, influenza or ulcerative endocarditis.

**Symptomatology:**—**Vertigo** and **severe headache** are the first symptoms. Either with these or quickly following, there is **chill**, with rapidly **rising fever**, rapid pulse and **rapid respiration**; **vomiting** occurs suddenly and **delirium** follows within a short period. In cases where the infection is extreme, coma may appear within the first twenty-four hours.

The condition is very pronounced, usually at the onset, and the patient shows **extreme illness** within a few hours from the onset of the attack. The **heat in the head** is plainly apparent; occasionally the face is flushed, though this is not a constant symptom. The delirium may assume a violent character. As the disease is usually local or confined to a circumscribed portion of the brain structure, the **paralyses** will appear in those areas which are supplied from the part affected. There may be hemiplegia, monoplegia or hemianopsia with aphasia. There is intellectual impairment, and **epileptic seizures** may occur. In extreme cases there may be strabismus, ptosis and nystagmus and some ataxia. Facial paralysis is not uncommon.

**Prognosis:**—This condition is a most serious one, but has proved amenable to treatment, and with care a large proportion of the cases should recover.

**Treatment:**—**Cold to the head** is universally advised. This is supposed to produce capillary contraction and thus reduce the amount of blood in the cerebral capillaries. I have seen superior results accomplished by frequent doses of **ergot**, two or three drops of the fluid extract every hour in adults. At the same time **belladonna** should be given to drive the blood into the capillaries of the skin and into the

extremities. A proper combination of these two remedies can be made with excellent results. **Aconite** is usually indicated for the fever, but in pronouncedly sthenic cases **veratrum** in full doses will serve an excellent purpose. The indications for these remedies must be studied carefully, and the adaptation must be correctly made. **Gelsemium** is a most valuable remedy when its indications are present, as they often are—the hot skin, flushed face, bright eyes, contracted pupils and nervous excitability or restlessness. When the case is prolonged beyond twenty-four hours, there is a point in which **calabar bean** in small doses exercises results superior to those of other remedies.

At the onset of this disease it is a good plan either to set the patient in a tub of **hot water** which contains a small quantity of **strong mustard**, keeping him there until the lower part of the body and the legs are red, or in some cases it is better to wrap the body and legs in a small flannel blanket wrung out of **hot mustard water**, and this covered with **hot dry flannel** and kept hot for two or three hours. The patient should be kept very quiet in a dark room, and all causes of disturbance and excitement should be excluded.

After the acute symptoms have abated and there is a promise of convalescence, remedies calculated to remove effusion and other products of the inflammation should be given, such as the **sodium** or **potassium iodid**, the **sodium salicylate**, **calcium sulphid** or **echinacea**.

## HEMORRHAGE INTO THE BRAIN. CEREBRAL THROMBOSIS. CEREBRAL EMBOLISM.

**Definition:**—When from rupture of one of the cerebral blood vessels hemorrhage occurs, a group of symptoms are produced which are classed under the general head of **apoplexy**. This condition in common parlance is termed “a stroke,” “a paralytic stroke,” or “a stroke of palsy.” Technically speaking, **cerebral hemorrhage** is a much better name for the condition, as it clearly expresses the cause of the entire train of symptoms.

While the symptoms in general which are induced by the presence of a thrombus or an embolus are very similar to those induced by hemorrhage, there are some characteristic differences in the symptoms of each which are clearly defined under symptomatology of this disease.

The condition is characterized by loss of consciousness, paralysis and stertorous breathing, due to cerebral compression from the presence in the tissues of a quantity of blood. The hemorrhage may take place into the cerebellum as well or into the medulla, or into the meninges.

Conditions of cerebral engorgement or compression arise, from uremia or from temporary forms of cerebral congestion, in which there is no extravasation of the blood or other brain lesion, but of which the symptoms so closely resemble apoplexy that the condition is described as “apoplectiform.”

**Etiology:**—Hemorrhage into the brain usually arises from a rupture of a small artery, or from capillary rupture. It is only occasional that venous hemorrhage induces compression. When this is the case it is caused by direct injury. The hemorrhage occurs much more frequently into the cerebrum than into other portions of the brain. There may be a susceptibility to rupture in the blood vessels by changes in the structure of their walls which have been produced by disease. The immediate cause of the rupture is a

sudden increase of the blood pressure within the blood vessels of the brain. This may be induced by violent muscular effort which increases the action of the heart, by violent straining, by a shock, or by extreme anger or rage, or great grief. With aged patients, however, it often occurs in the night, or at times when the patient is quiet and restful and not subject to any mental disturbance. This is more apt to be the case where there is arteriosclerosis. A blow upon the head, and sometimes a violent fall or severe injury to other portions of the body, may result in cerebral hemorrhage.

The condition occurs during the course of infectious diseases, such as rheumatism, rheumatic or an ulcerative form of endocarditis, diphtheria, syphilis, and conditions which affect the character of the blood. It is also induced by the use of alcohol. Not more than fifteen or twenty per cent, at the farthest, of the recorded cases have occurred before the age of forty, and because of frequency of exposure to the inducing causes, and especially because of the use of alcohol, the condition occurs much more frequently in men than in women.

**Symptomatology**:—When apoplexy occurs from a direct injury, there is no warning of an approaching seizure. When it depends upon increased blood pressure, there are symptoms of **cerebral fulness**, with **vertigo**, **excitability** and **restlessness**, usually **violent headache**, and some **paresthesia**, with occasional choreiform movements.

The patient is first seized with a violent attack of **vertigo**; he may clasp the head with his hands, and may **cry out** or **groan**, and if standing he will immediately **stagger and fall** to the ground, as if he had received a violent blow upon the head. He is found to be **unconscious** at once, if the cause is severe. Because the hemorrhage and loss of consciousness are simultaneous, the latter is attributed to compression, but this is not borne out in every case, because occasionally unconsciousness occurs suddenly from cerebral engorgement, or with apoplectic symptoms, when there has not been sufficient hemorrhage to cause pressure.

As the patient falls it will be observed that his **face** has a peculiar grayish appearance at first, and is very **pale**, although later it may become irregularly **flushed**. The **breathing** is altered at once, the patient gasps for breath, or has jerky, irregular respiration for a short time, which soon becomes slow, quite regular and noisy—stertorous—from absence of voluntary muscular control. Both the inhalation and the exhalation are performed with force, and the cheeks are distended with each expiration.

Immediately, from the shock, the **pulse** is irregular, quite rapid, small and compressible. But soon it becomes slow, full, and the tension is materially increased, unless the shock is severe enough to induce death, in which case there will be no reaction on the part of the heart, but the pulse will become increasingly rapid, irregular and small and feeble until death occurs.

As a further result of the shock, the entire **muscular system** of the patient is immediately **relaxed**. But after a few moments it will be found that the limbs on one side are recovering to a degree their muscular tonicity and may be moved, while those on the opposite side retain their flaccidity and do not regain power, a **hemiplegia** having been induced. If the limb is lifted and permitted to fall, it will fall heavily.

It will be observed that the **face** is **distorted**; there is a contraction of the muscles on the uninjured side and relaxation from paralysis of the muscles on the opposite side causes a smooth appearance of the skin and an entire absence of expression on the injured side, from loss of balance between the muscles of the two sides of the face. It is seldom that the paralysis effects the muscles of the trunk as completely as those of the limbs.

The muscles of the forehead are not so completely involved, and the eyes can be opened and closed. Usually the **pupils** are dilated, but if there is irritation of the third nerve from hemorrhage in the pons, the pupils will be contracted. The **temperature** is unstable; at first it usually

falls, and in the milder cases it is apt to continue low; in severe cases, and especially those which are apt to terminate fatally, especially when the hemorrhage is at the base of the brain, the temperature may slowly increase, as in one of my recent cases, in which it reached 108° F. at death.

**The sphincters** are involved in the paralysis, and if the bladder and bowel are full when the hemorrhage occurs, involuntary movement of both is apt to occur; if they are empty and fill slowly, they may fail to empty themselves until distention, especially of the bladder, becomes serious. These should have attention from the first, and during the period of unconsciousness the bladder should be catheterized every eight or ten hours, if involuntary evacuation does not occur.

According to the location of the injury and its severity, or the extent of the extravasation, the patient may remain unconscious for from an hour to several days. However, the liability to recover lessens with every hour of the unconsciousness, after the first twenty-four or thirty-six hours. When improvement begins, the tension of the pulse is lessened, **the breathing** becomes more natural, less labored and a little more rapid, if it has been previously very slow, and the patient slowly regains his consciousness.

With patients advanced in life it is not uncommon for the shock to last but a short time, when almost complete consciousness will return, the patient taking some interest in the things around him. After a few hours it may be suddenly noticed that he is breathing heavily again, has become thoroughly unconscious, and paralysis of one side will be observed. In one of my patients there were three mild attacks within two days before the final attack occurred.

It is possible that the paralysis may be entirely overlooked during the period of unconsciousness, but as the condition of the respiration and circulation improve and consciousness returns, the altered expression of the face will be noted, and the eye will be turned away from the paralyzed side. It is with difficulty that the patient can talk, and if

**the tongue** is protruded, it will be found to turn toward the affected side.

When the reaction occurs after thirty-six or forty-eight hours, inflammatory changes take place at the seat of the lesion, and even in favorable cases fever may set in. With **the fever** there may be more or less **delirium**, with spasmodic movements of the affected structures. Only in serious cases does the temperature increase to an unusual height. In favorable cases the fever declines after a short time and improvement in all the conditions slowly takes place. With favorable cases slow improvement may take place without interruption, and in early middle life all of the functions may be restored, although complete restoration is rare. The measure of improvement or recovery, however, varies greatly in the different patients. There may be contractures, and there is usually persistent paralysis, the arm recovering more slowly than the leg. Following later in the history of the case, there is muscular atrophy. Some of the patients suffer to a degree from mental failure, become emotional, irritable, and sometimes exhibiting distinct evidences of insanity.

**Embolism** is a condition in which there is obstruction of the cerebral capillaries or of the arteries of the brain by a substance which is floating in the blood, having been introduced at some distant part of the circulation. When apoplexy occurs from embolism, it is possible to find some source of the clot or foreign body, as when the condition occurs during the course of a case of endocarditis. The unconsciousness which develops is apt to occur during the waking hours of the day, and may slowly increase. The impression that it makes upon the system, the shock, is much less than in hemorrhage, and all of the evidences of cerebral compression are less alarming. There is apt, also, to be more muscular irritability in the affected areas, exhibited immediately by muscular twitchings, than in hemorrhage. So rapidly is the collateral circulation established

that improvement is apparent after a few hours, and after a few days only a partial monoplegia may remain.

**Thrombosis** is an obstruction of the cerebral blood vessels from a fixed plug, due to inflammation of the vessel or to an injury which results in occlusion, or to other permanent obstruction. This condition is more apt to be present in aged patients, and the paralysis which follows the obstructing of the circulation develops during sleep or while the patient is quiet and restful, and is apt to be slowly progressive. There are always premonitory symptoms which may have shown themselves for a few days previously, or which may have been present for quite a prolonged period. It is seldom the consciousness is completely lost with a thrombus; it is not abruptly lost, but may steadily increase to coma, which is finally recovered from, the patient's mind showing no result of the serious condition. Usually, however, these patients are subsequently forgetful, are feeble in mind, irritable and emotional, with rapidly developing childishness or senility.

While the above symptoms should distinguish quite clearly between the three conditions named—of cerebral hemorrhage and embolism or thrombosis—it is often impossible from the symptoms to determine which of the three conditions is present. Hemorrhage, however, is the cause of the symptoms, according to Dana, six times as frequently as an embolus or a thrombus.

**Treatment:**—The theory of the profession in the past, that a full pulse in apoplexy demanded that the patient be **immediately bled**, has received a serious shock from the investigations of Cushing, who claims that the high pressure is due to an effort on nature's part to maintain the blood supply in the brain, and that unless this blood supply is maintained death will result. If this be true, the immediate reduction of the quantity of blood in the circulation will materially contribute to a fatal issue, as the leading physicians of our school have always claimed. Equalization of the circulation is with us the most important object to be

attained. The head of the patient should be elevated and the extremities should be placed in a hot mustard foot bath, or a **hot sitz bath** may be given. There is marked benefit at times from applying a **tight cord or band** around the upper part of both of the thighs, thus blocking the return flow of the venous blood, retaining it in the extremities, for a period of perhaps a half of an hour, when the cord may be slowly loosened. At one time it was thought necessary to give these patients a dose of **croton oil** for its derivative influence—for its counter-irritant effect. But active purgation has been abandoned by the best of authorities. A cathartic sufficiently active to produce a free movement, and administered sufficiently often to prevent obstruction or even constipation, is desirable.

If the face is flushed from the first, giving evidence of a very full condition of the cerebral circulation, twenty drops of the **specific ergot** may be given, and this may be repeated in half of an hour if the condition has not disappeared. If the pulse is full, large, round and increased in rapidity, **veratrum** may be given in full doses every hour, but if the pulse is slow, or if it be small, rapid and feeble, this remedy is positively contra-indicated. If vomiting occurs, the patient must lie upon the side rather than upon the back, in order that no strangling take place. The tongue should be drawn forward and retained in that position during the extreme unconscious period.

When fever arises the indications for small doses of **veratrum** may be present, but usually **aconite** in small doses is plainly indicated. When the period of reaction has subsided and the functions of the various organs of the body are all inclined to inactivity, it is well to administer **strychnin**, beginning with small doses and slowly increasing. For the paralysis, especially when late in life, strychnin is especially indicated. Dr. H. K. Stratford, at the time of this writing still engaged in active practice, at the age of eighty-six, and who has had three strokes of paralysis since his sixty-fifth year, claims that he obtained marked and perma-

ment benefit in each case from doses of strychnin which are usually considered much above the maximum. He claims to have taken the one-tenth of a grain of the nitrate of strychnin every two or three hours for a period of several weeks without intermission.

The restoration of the paralyzed parts after two or three weeks have passed may be facilitated by the use of the **faradic current**, with muscular movements, **massage** and carefully applied **vibration**. The condition of the stomach must have careful attention and indigestion must be avoided. The food should be selected with care, and the use of artificial digestives is advisable.

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## TROMBOSIS OF THE VENOUS SINUSES.

**Definition**:—An occlusion of a sinus by septic inflammation of some portion of the endothelium. The majority of the cases follow suppuration within the middle ear, the infection being conveyed from that disorder.

**Symptomatology**:—Fever has probably been present from the preceding inflammation. It now assumes a septic form; there is **severe headache** with vomiting, and there may be profuse **perspiration** and **diarrhea**. Over the area surrounding the thrombus there is **pain** and **tenderness**, some **glandular enlargement**, and perhaps **muscular contraction**, inducing **wryneck**. Infarctions within the lungs, kidneys or spleen may occur. When the thrombus forms within the cavernous sinus, there is **engorgement** of the **capillary circulation** of the upper part of the face, and there is plainly apparent fulness of the veins of the retina.

**Treatment**:—Medicine has but little influence in this condition. The remedies directly indicated would relieve the local congestion temporarily, but surgical measures are essential if recovery takes place.

## DISSEMINATED SCLEROSIS.

**Synonyms:**—Multiple sclerosis; insular sclerosis.

**Definition:**—A condition depending upon the irregular distribution of sclerotic patches in different areas of the structure of the brain and the spinal cord, or of both. It may also take place in the structure of the cranial nerves. The condition affects both sexes alike, occurring more frequently during early adult life.

**Etiology:**—No specific cause has been named for the disorder. It occurs during the course of infectious diseases, especially those involving the nervous system, and has been thought to occur more frequently with those who suffer from hysteria. It has followed extreme exposure to cold, as well also as developing from traumatic causes.

**Symptomatology:**—The first symptom usually observed is weakness of the lower limbs, which soon amounts to an actual loss of power, which may extend to the arms as well. The symptoms, as they progress, resemble those of spastic paraplegia, complicated with plainly apparent ataxic symptoms. **The knees** may give way upon effort to walk, and **the legs** will soon fail to support the body. With this increasing local weakness, **the general health** and strength will be found to be slowly failing, and sometimes marked nervous irritation is present, or symptoms of a **hysterical** character may develop and a **general loss of co-ordination** will take place.

The conspicuous symptoms are **muscular tremor**, a peculiar disorder of the speech, which is called **scanning**, **staccato** or **syllabic speech**, and **nystagmus**. The tremor occurs when the patient undertakes to use the limbs, and is absent when the limbs are quiet. It is therefore called **intentional tremor**, although the patient is not able to prevent it. It is sometimes impossible for the patient to take hold of or retain his hold upon an object, and especially to carry a glass of water to his mouth. The tremor of the head is noticeable, a nodding motion being usually sus-

tained. The patient walks with difficulty, from the combined influence of the weakness in the limbs, the ataxic symptoms and of the paralysis. In talking the patient speaks slowly or in drawling manner, uttering each syllable distinctly, but drawing it out to an unusual length.

There is a peculiar oscillation of the eyeballs, which corresponds with the intentional tremor above mentioned, as it is only observed when the patient undertakes to fix his eyes upon some object. The sight may fail completely because of the formation of the sclerotic patch on the optic nerve or at the optic chiasm. **Optic atrophy** may be readily recognized with the ophthalmoscope. The Argyll-Robertson pupil is often present.

The mind of these patients may be slowly impaired; they become forgetful and emotional; later insanity may follow or dementia may result.

**Prognosis:**—The disease is of slow development and may last for a number of years. If apoplectiform attacks, which are not uncommon, occur, there is a tendency to convulsions and the condition becomes more serious. If pregnancy occurs during the progress of the disease, the disorder advances with greater rapidity.

**Treatment:**—But little has been accomplished in the treatment of this serious condition. Remedies and measures calculated to restore the nutrition of the nerve centers, are of the utmost importance. It is therefore necessary to retain, to the highest degree of perfection, the functional action of the digestive and appropriative organs, and to relieve the nervous system of any cause of irritation. I am convinced that the use of the **animal extracts**, of forced concentrated nutrition, and of the use of the **mild galvanic** current, with the proper manipulation of the muscles by systematic **massage**, will do much in retarding the progress of the disease, and in preserving the integrity and usefulness of the parts.

## INFANTILE CEREBRAL PARALYSIS.

**Definition:**—A condition depending upon faulty development of portions of the brain structure, characterized by symptoms which would depend upon the portion of the brain which failed to develop. There may be bilateral paralysis, or hemiplegia. In the bilateral form, commonly known as **spastic diplegia**, the legs alone, or the legs and arms may be included in the paralysis. This form differs materially from the second form in which mental failure and more or less complete idiocy are apt to follow the lack of cerebral development. There is still a third class mentioned by most authors, in which with epileptic seizures, there is paralysis of the nerves of special sense, and as a result the patient may be blind, or blind and deaf, and consequently dumb.

**Symptomatology:**—As the condition is present at birth, the symptoms will appear as the development of the child should progress. However, there are occasional cases in which **spasms** occur early, which may be either unilateral or general. If no convulsions are present the **absence of muscular tone** or the absence of any inclination to contract the muscles, with **difficulty of swallowing**, may be observed. If convulsions are present, the temperature will rise to 104° or 105° F. As the child grows older it will be observed, from day to day, that there is a **loss of power**, usually on one side of the body, and that there is no inclination to move the head, or ability to support the head upon the neck when the child is held erect. The arm and leg on that side are not voluntarily moved. Later **contractures** occur, the hand is flexed upon the forearm, and club foot develops—the paralyzed limbs do not increase in size as the other limbs. This ultimately produces **distortion**, or if the child lives, marked **deformity**. In some cases, where the disease affects the muscles only, the brain may not be impaired, and mental development may progress as in ordinary children. **Spastic diplegia**, which may

affect both the arms and the legs, as the disease progresses, is characterized by rigidity as well as by loss of power. This is more plainly marked in the legs than in the arms, in which various deformities may ultimately occur. **Rigidity** of the muscles of the back may finally occur, inducing a fixedness of the spinal column. In severe cases the reflexes become exaggerated, and imperfect muscular development is almost universal, rendering the patient helpless. There are no trophic or sensory disturbances, and the control of the sphincters is not impaired. As these cases progress still further, especially where the intellect is impaired, epilepsy is apt to be present.

**Treatment:**—But little can be said concerning the treatment of these patients. Artificial measures calculated to restore the tone of the parts should invariably be faithfully tried, and if the least improvement is observed, they should be persisted in. The use of a very mild **galvanic current** or the **faradic current**, properly adjusted, should stimulate some cerebral development, if applied to include the entire nervous system of the child. The treatment of convulsions must be symptomatic, as the epilepsy resulting from this disease is seldom cured. If the nutrition of the nerve centers could in any way be forced directly to the parts demanding nutrition, there would be a promise of improvement from such measures. The treatment of epilepsy by nutritional measures gives promise of better results than any course which has been previously adopted. The use of **animal extracts, lymphs, bone marrow, and blood**, properly prepared, with the serums or nuclein, would, if administered properly and persisted in, make a pronounced impression upon many of these cases. As childhood advances, mental training of a specific character, adapted in all its details to the demands of the individual, and if possible conducted in an institution, should be of much service. Nervous irritations must always be controlled by **sedatives**, if possible. Much has been said concerning the possibility of improving these cases by surgical operations

upon the skull, but practically considered, no marked benefit has yet been reported. It is doubtful if surgical measures will ever have a wide field of application.

# Functional Diseases of the Nervous System.

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## APHASIA.

**Definition:**—An inability to properly comprehend words, or an inability to properly use words, or a total loss of the power of speech, all dependent upon cerebral lesion, either from traumatism or from disease. The most common causes are the consequent softening from embolism or thrombosis. Congestion or hemorrhage from injury may result in transient aphasia, which will disappear as the congestion abates or as the blood clot is absorbed. Injuries to the brain affecting the structures of the speech centers will produce this condition. It is apt to follow infectious disease, also, or toxemia from any cause.

**Symptomatology:**—Impairment of the ability to speak may come on suddenly. It is apt to be quite complete at first, and improve somewhat as time progresses. In some cases the patient is enabled to use but few words, or perhaps a single word, which he may use constantly. There are cases, in which the condition was induced by injury, where a sentence was unfinished when the injury was received, which he will continue to repeat. If the impairment of the brain does not affect the sensory centers, he may be able to appreciate these errors of speech and may be taught to correct them, or while conscious of the error, it may be impossible for him to correct it. At other times the patient is unable to write words, or unable to write the words which he can speak; or he may have lost his power to understand the meaning of words which he may be able to speak.

When the sensory centers are impaired, there is a form of disturbance known as **sensory aphasia**, in which the patient can hear ordinary sounds, but is unable to recognize spoken words. This is called **word deafness**. **Word blindness** is another manifestation of this same condition, in which he cannot see or understand written or printed words. This may be independent of any speech defects, the patient being able to talk fluently.

There is a farther manifestation of aphasia in what is known as **mind deafness** or **mind blindness**, an inability to recognize sounds of any kind or the meaning which they might convey, or to recognize previously well known objects, or to recall any uses that might be made of them.

**Treatment:**—When the condition is functional, **care, education** and **training** will result in satisfactory improvement in most cases. When induced by injury or by local pressure, as from hemorrhage, bone pressure, abscess or tumor, the cause of the pressure must be removed by surgical operation. Medicine will be of service only as it will relieve pathological conditions which are plainly manifest from well known indications. They may be temporary in character, or may be of sudden onset, as acute congestions, or remedies may relieve the congestion and the inflammatory processes induced by an injury, and may promote the absorption of serum or blood clots, resulting in a slowly progressive but permanent improvement.

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## INFANTILE ECLAMPSIA.

**Synonyms:**—Infantile convulsions; spasms.

**Definition:**—A condition of general muscular spasm, occurring from transient causes, usually reflex in character, but often direct, which induce undue irritability of the nervous system, the convulsive phenomena ceasing when the cause is removed. This condition is common to infancy and childhood; it may occur in youth, but rarely after puberty or during adult life.

**Etiology:**—Any cause which will induce acute peripheral irritation may, through transmission of this irritation to the central nervous system, cause convulsions. Irritation of the stomach or of the intestinal canal occurs from overloading or from the ingestion of indigestible substances, as cherry pits, grape seeds and other foreign substances. It occurs also from derangements of the digestion, and from the presence of undigested food, with infants from milk curds, and from the products of the fermentation of undigested food. It occurs from the irritation caused by the cutting of the first teeth, and from congestion and irritation due to developing inflammation in any of the structures of the stomach or intestinal canal. It occurs from those fevers which involve these structures, and from other inflammations, such as pneumonia, diphtheria, scarlet fever, small-pox and nephritis. It also occurs from local injuries and burns, or from falls or direct blows upon the head. Other causes of convulsions are uremic intoxication, terror and the pressure of instruments in delivery. Convulsions caused by inflammation of the structures of the central nervous system are not properly classed under this head.

**Symptomatology:**—Occasionally the first evidence of illness is the convulsive attack. Usually the patient will complain of some pain in the location of the irritation; there will be general nervousness, fretfulness, irritability, and a flushed face, with some fever, but none of these symptoms may be conspicuous before the convulsion occurs. In other cases, with a mild chill there occurs a distinct fever, in which the temperature may range from  $101.5^{\circ}$  to  $103.5^{\circ}$  F. He may lie quietly without apparent disturbance, until slight muscular twitchings are observed, or until it is noticed that the thumb is held across the palm of the hands and is enclosed in the clasped fingers.

So common is muscular twitching a premonitory evidence of general convulsions that it should always have treatment when occurring with any acute disorder in which other nervous irritation may be apparent. The spasm

begins in one arm, usually the right. Almost immediately in severe cases, the head is drawn backward, the muscles of every portion of the body become rigid in contraction, the eyes are fixed, the respiration becomes temporarily suspended, and then irregular; the face becomes cyanotic and the pulse very rapid. Quickly, however, the condition changes, the spasms become clonic in character, the limbs are jerked or twitched and there is contortion of the face. The alternate contraction and relaxation of the muscles causes the patient, who is usually unconscious by this time, to appear as if in great agony. The tongue may be bitten, and a froth escapes from the mouth, which is sometimes streaked with blood. The attack lasts usually only a few moments, often passing off before the physician can reach the bedside. As the attack subsides, the respiration becomes slower and more regular; the pulse becomes stronger, fuller and less rapid, and the child falls into a sound sleep, or may pass into coma.

There may be but a single attack, but it is not uncommon for an interval of rest to follow which may last from a few minutes to perhaps twenty-four hours, when the evidences of irritation will reappear and another convulsion will occur. They may occur during the course of twenty-four or thirty-six hours with increasing severity, and after progressively shorter intervals. Such cases must be considered grave. When, after protracted intervals of perhaps one, two or three days, the convulsions recur, there is a tendency to the formation of a habit—for the condition to become epileptiform in character, and to subsequently develop into epilepsy.

**Diagnosis:**—This depends upon the exclusion of epilepsy and of diseases which have convulsive phenomena among their characteristics, as inflammations of the structures of the central nervous system.

**Prognosis:**—The cause of the condition must always be considered in the prognosis. When the cause is transient and of easy removal, there is but little danger, and com-

plete recovery may be assured. When the cause is deep seated and of difficult removal, and the attacks are severe or persist in their recurrence, the prognosis must be guarded. When children have been previously in poor health, the prognosis as to recurrence or as to permanent structural changes occurring from the convulsions must be guarded.

**Treatment:**—If called during a convulsion, the entire effort must be at once directed toward its control. The patient may be immediately placed in a **hot bath**, care being taken that the bath shall not be too hot, as I have known children to be scalded so badly that the scalds were much more serious than the cause of the convulsion. In mild cases this will cause the muscular structures to relax and will give at least temporary relief. During the convulsion medicine should not be given by the mouth, but as relaxation takes place one, two or three drops of **gelsemium**, or a solution of from two to five grains each of **chloral** and **sodium bromid** may be given. If the convulsive movements do not cease, the patient may have a few whiffs of chloroform, which in children above three years of age may be crowded in severe cases until complete relaxation occurs. The effect of the **chloroform**, however, is transient, while the effect of the internal medicine is more permanent. For several years I have carried in my case a solution which contains fifteen grains of chloral and fifteen grains of sodium bromid, with *cannibus indica* one-fourth of a grain to each dram. Of this I administer five, ten or fifteen drops in water every ten or fifteen minutes, and expect permanent relief.

When relaxation is complete, without waiting for the child to awaken, the bowels should be thoroughly irrigated. It is sometimes necessary to repeat the irrigation until the irrigating fluid returns clear. If the convulsion occurs following a meal, or during the season of fresh fruits in summer time, when the child may have overloaded his stomach, without the knowledge of the parent, it is sometimes neces-

sary to administer a mild but effectual emetic. I use **ippecac** in warm water, as it produces no great degree of nausea or other disturbance. When fever is present, **gelsemium** and **aconite** will usually be indicated. When the convulsion occurs at the onset of the fever, the specific treatment of the fever indications will usually be all that will be necessary, as it is seldom that they recur, unless the structures of the central nervous system be involved in an inflammation.

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## PUERPERAL ECLAMPSIA.

**Synonym:**—Puerperal convulsions.

**Definition:**—A condition of general muscular spasm, occurring at or near the time of confinement, although I had one case where convulsions were persistent for twenty-four hours, with the phenomena of puerperal eclampsia during an abortion at three months.

**Etiology:**—The condition has been attributed to uremic intoxication. The cause is undoubtedly complex and toxic in character, although the presence of the child in the womb seems usually to have much to do with it. The condition depends also upon functional disorder, upon faults of metabolism and insufficient excretion.

**Symptomatology:**—While in some cases there are no premonitory symptoms, in the majority of cases there have previously been severe headaches, persistent gastric disorder, with more or less albumin in the urine. In occasional cases there has been but a trace of albumin, but no dropsical effusion. In others there has been but a trace of albumin and considerable effusion. In cases of puerperal nephritis the albumin is present in large quantities.

There may be, as stated, no premonitory symptoms; the patient may pass from an apparently happy condition of mind into a most profound convulsion. This is not uncommon. In other cases the headache will increase until it becomes almost unbearable; there is restlessness, nervous

irritability and perhaps muscular twitching. But even with the severe headache, the convulsion occurs suddenly and unannounced at times. The convulsion is usually most violent in character, involving the entire muscular structure. The face becomes engorged with blood, respiration is irregular, the pulse is very rapid and small, but usually of good strength, at least during the first paroxysms. Relaxation may occur within a few moments, to be quickly followed by another attack. Often the attack is prolonged and may continue for one or more hours, until the patient is thoroughly exhausted, or until cerebral hemorrhage may occur. If repeated attacks are of increasing severity or of increased frequency, the outlook is bad.

**Treatment:**—If the convulsion occurs before the birth of the child, it is usually advisable to control the convulsion by **chloroform**, and during the anesthesia so induced, to deliver the child. It is considered advisable in all cases to empty the womb at once. Forced dilatation may be necessary and instrumental extraction is usually required.

If delivery has taken place and there is high arterial tension, the use of **veratrum** is demanded. This agent should be administered hypodermically, during the convulsion, in fifteen minim doses, of specific veratrum, or of a good, pure preparation every twenty or thirty minutes, until at least three doses are given. The toleration of these patients to this remedy is most remarkable; but few have shown toxic symptoms. One physician in whom I have perfect confidence asserted to me that in one case of puerperal eclampsia of a most persistent character, in which there seemed to be no chance for the patient, he did not stop to measure the quantity of veratrum he used, but injected every half hour a hypodermic syringe full until there was some abatement of the symptoms, when the quantity was not reduced, but the period of administration was lengthened, until within twenty-four hours he had administered more than an ounce of the specific medicine. The final recovery of the patient was complete. Veratrum may be given before delivery.

Other remedies which will control these convulsive seizures are the **chloral** and **bromid mixture** referred to in infantile convulsions; **gelsemium** in full doses, and the old combination of **lobelia** and **capsicum**. *Passiflora* has not met our expectations, and **gelsemium** cannot be depended upon in cases that are sudden and at all severe. When the convulsion has been controlled, it is well to irrigate the large bowel, and introduce a full quantity of the normal salt solution to restore the strength of the patient, as the shock is usually most profound.

The treatment of albuminuria of pregnancy need not be presented here. I simply desire to call attention to the importance of keeping the kidneys active by mild measures, and of antagonizing renal congestion. This is accomplished by the persistent use of heat over the kidneys, especially if backache, headache and even slight swelling of the ankles are present. With these I administer a combination in dram doses, every three hours, which contains in each dose one drop of **gelsemium** and two or three drops of **macrotys**. This, with some modifications according to the condition of the patient, has been productive of excellent results.

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## EPILEPSY.

**Definition:**—Epilepsy is a chronic nervous affection, characterized by attacks of unconsciousness more or less complete, occurring suddenly at irregular intervals, and usually accompanied by convulsions. The form known as **petit mal** is not often accompanied by convulsions, and in **Jacksonian** or localized **epilepsy** there is no loss of consciousness.

**Etiology:**—The etiology of epilepsy is not known. There are, however, certain factors that are closely related to the disease, some of them in certain cases being directly causative. Injuries to the brain are in many cases followed by epilepsy. Heredity doubtless plays an important role in

the etiology, as a considerable proportion of patients have a neurotic family history. Alcoholism in their ancestors lays the foundation for the disease in not a few cases. Syphilis predisposes to it, and some recognize a syphilitic epilepsy.

It sometimes follows the acute infectious diseases, such as diphtheria and scarlet fever. It is commonly considered that irritating influences cause epilepsy reflexly, especially intestinal worms, uterine disease, foreign bodies in the nose and ear and adherent prepuce. These may have their influence in unbalancing an unstable nervous organism.

The influence of sex is not great, most observers, however, agreeing that males are affected more frequently than females. The disease, in the majority of cases, develops in early life, the age of puberty showing the largest number. Cases rarely develop after the twenty-fifth year of life.

**Symptomatology:**—In a considerable proportion of cases the epileptic seizure is inaugurated by the so-called “**aura**,” which is usually a peculiar sensation in some part of the body, most frequently in the epigastrium, and which seems to come over the person like a cloud. The aura may be motor, such as a spasm of the face or hand or other muscle groups. It may involve one of the special senses, and occur as flashes of light, a disagreeable taste or odor, or a transient loss of hearing. It may be a disorder of sensation, such as numbness, tingling or sensations of cold and heat. Or the aura may be psychic, often a sudden condition of mental confusion or vertigo. Not all cases present the aura, but it is quite characteristic of epilepsy, and the patient soon recognizes it as a warning signal of the convulsive attack which, accompanied by a peculiar scream, the “**epileptic cry**,” immediately follows.

**The convulsions** are at first tonic. The arms are flexed at the elbows, the wrists are flexed on the forearms, and the fingers are clinched into the palms. The patient **becomes unconscious** and falls, the muscles of the whole body being strongly contracted. The tonic spasm is followed by a mo-

mentary relaxation, after which the spasms begin again, but are clonic in character. **The arms** and legs are thrown violently about and **the jaws** are opened and closed with such vigor that sometimes **the tongue** is lacerated by the teeth. The salivary glands pour forth an abundance of saliva, which appears at the lips as a froth, sometimes bloody from the wounded tongue. **The eyes** are staring and the pupils dilated. **The features** are drawn and the face is cyanotic, and **respiration** ceases for the moment. Sometimes the bowels and bladder are voided involuntarily. The stage of tonic spasm lasts from ten to thirty seconds, rarely as long as one or two minutes. The clonic spasms begin to show remissions in from one to three minutes, which become longer, till the features having regained their normal position and color and the body relaxed, the patient enters into the condition of **profound coma**, which lasts a variable time.

On awakening, the patient has a confused memory of what has happened. He may have severe headache and muscular pains from the violent nervous storm through which he has passed.

**Complications.**—The complications of an epileptic attack are those to which the sudden loss of self-control and the violent motor phenomena make one liable. Particles of food may be aspirated into the glottis, the patient may fall into fire or water, which he is near, or from a height, or into machinery, if he is mechanically occupied. After many attacks, extending over years, there is usually pronounced mental impairment.

**Diagnosis:**—The disease is usually easily recognized. Patients may have attacks during sleep and have no memory of them the following morning. They awaken tired and aching without known cause, possibly with a sore and wounded tongue, and blood upon the pillow and the bed linen soiled from the involuntary passages. Hysteria is to be differentiated by the fact that its onset is usually later in life and attacks occur in connection with events that appeal to the emotional nature. The convulsions show purposeful

movements. For example, there may be the attitude of fright, of grief, of ecstasy, of voluptuous feeling, of erotic desire and of rage. The head may be beaten upon nearby objects as if by intent. The arms are thrown about as if an impression were to be made or a feeling expressed. The whole scene is that of a person truly off balance nervously, but trying to express some tremendous emotion or do some forceful if not intelligent act. In addition to this, the hysterical person frequently talks during the attack, but the epileptic never does. Consciousness is generally preserved in hysteria and vesical and sphincteric control is not lost.

In uremic convulsions the urine contains albumin in pronounced quantities, there may be muttering, the attack is frequently prolonged, and involuntary evacuations do not occur.

**Prognosis:**—Ordinarily the disease does not present a grave outlook as to duration of life. Accident during an attack, as drowning, may terminate the scene. The cure of the disease, however, is rare, but cases due to injuries of the cranium and to syphilis are more amenable to successful treatment, than others.

**Treatment:**—In no disease has the influence of medicines been more unsatisfactory, when directed to a permanent cure, than in this. Because of the sudden occurrence of the attack, and because of the absence of aura in many cases, or neglect to heed the warning that an aura gives, medicines are not often given for their immediate influence in preventing an attack. If the approach of an attack is signaled in any manner, a full dose of some **active anti-spasmodic**, such as **chloral**; the **bromids** or concentrated **amyl nitrite**, will usually ward off the attack. During the attack but little can be done for the patient unless **chloroform** be administered. In cases which are very severe or prolonged, the patient should be placed upon a soft bed in a horizontal position, and a piece of wood, rubber or cork should be placed between the teeth, to prevent biting of the tongue. The muscular movements should be restrained only sufficient to pre-

vent immediate injury, as from violent blows or burns. He should be kept in a quiet room until all the results of the attack have passed away.

In preventing future attacks the stomach and intestinal canal must have first attention. There is no doubt that gastrointestinal irritation is the primary inducing cause in very many cases. This may account for the frequent marked and satisfactory influence of the **strontium bromid** in epilepsy. This agent is very efficient in its influence upon nervous disorders of the gastrointestinal tract, and this fact, combined with the sedative effect of the bromid upon the nervous system direct, enhances its general influence. In many cases it has proven to be by far the best of the bromids. The dose is about the same as that of other bromids. The **potassium bromid** has been long in use, and exercises its best influence when there are no stomach complications and where the muscular system of the patient is in good tone and of good development.

Other remedies which have a direct influence upon the stomach, such as **hydrastis** and other **bitter tonics**, must be used for specific conditions that may appear, and the intestinal glandular organs must be put into the best possible tone.

Nearly all of the nerve sedatives have been lauded in the treatment of epilepsy, but while many of them have reduced the number of attacks or the severity of the attack, but few of them have produced actual cures. The most severe case of epilepsy that it was ever my lot to see was controlled for eighteen months by the use of very large doses of the fluid extract of collinsonia every three or four hours, as high as a tablespoonful being given at a dose. It finally lost its influence. This case was that of a boy nine years old, in which finally a very severe attack completely blotted out every vestige of intelligence or instinct.

**Gelsemium** has not proven of much service in epilepsy. I have controlled the attack in a few cases with concentrated **passiflora** in large doses, equal to one or two drams of the

specific medicine. In other cases I have failed signally. **Ceanothe crocata** and **solanum** have not been productive of satisfactory results in my hands, but others in whom I have the utmost confidence speak highly of these remedies in certain selected cases.

When the aura is sufficiently distinct, the patient should carry with him **amyl nitrite** pearls, and should be taught to break and inhale one immediately. By this means the attack may be warded off. The patient must understand that the severity of the condition increases with the increase in the frequency of the attacks, and that, on the other hand, improvement occurs in proportion as the attacks are warded off; that in obtaining a final, complete cure, every convulsion that occurs gives him a material back-set and retards the ultimate cure in a proportionate manner.

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## CHOREA MINOR.

**Synonyms:**—Acute chorea; St. Vitus' dance; St. Anthony's dance; Sydenham's chorea.

**Definition:**—An acute disease of childhood, characterized by irregular muscular movements, sometimes limited to certain groups of muscles, at other times involving muscles of the face and arms or of the trunk; occasionally affecting one arm and one leg.

**Etiology:**—The disease occurs more frequently in girls than in boys, and is apt to appear at about the age of nine years, although it is very common between ten and twelve. In girls it may occur after the fifteenth year, but in boys very seldom. Children who suffer from nervous irritation, or whose nervous system is excitable, suffer more commonly than those who are of a quiet, or of a somewhat phlegmatic temperament. Where there is a family history of nervous excitability or other neuroses, the condition is more apt to occur.

Children with these peculiar nervous tendencies who

from any cause become anemic or insufficiently nourished, or who are physically active, carrying muscular exercise to an extreme, will be more readily attacked by this disease. These attacks have been brought on from watching another patient who was suffering from it. Children who suffer from chronic tonsilitis or from rheumatism are especially susceptible to this disease. It may be caused also by infectious disease, such as whooping cough, erysipelas, the exanthemata, including scarlet fever and diphtheria, as well as all forms of septic infection. Reflex irritation and pregnancy are inducing causes in a few cases. It has been brought on by emotional excitement, by shock and by sudden terror.

**Symptomatology:**—At first the child may be simply accused of being more **nervous** than usual, and simple **erratic muscular movements** may secure for him considerable censure, in the belief that they are voluntarily performed. The child is constantly moving, it being almost impossible for him to remain quiet. There may be observed also an inability to walk properly or to handle articles without dropping them, and he is accused of awkwardness and carelessness.

The first involuntary movement will occur either in the corner of the mouth on one side of the face, or in the twitching of one shoulder, as if to adjust an improper fit of the clothes. There is a slight **rotation of the body** from one side to the other, and occasionally the chin is forced outward, or is drawn downward to the shoulder on one side. These movements increase in severity, and soon all may occur, until the muscles of the upper extremities and trunk, usually more on one side than the other, are affected. Finally there will be **jerking of the leg** on one side, which materially interferes with the walking. These movements closely resemble voluntary movements, but are incomplete and without object or purpose. A disgusting feature is the involvement of **the tongue**, with a constant inclination to stick it out, apparently endeavoring to touch a far-away

point on the cheek or to touch the chin. When the tongue is involved, the ability to talk is seriously impaired. If the disease progresses, the child is unable to wait upon himself; he must be fed and clothed, and may be unable to walk without assistance. He becomes irritable and fretful, and he may laugh, or cry violently with no cause. He becomes peevish and often becomes angry without cause.

The **appetite** becomes capricious; there is usually **constipation**, and **anemia** is very common. In some cases there is **emaciation**. **Nocturnal incontinence** of urine is apt to occur. While the involuntary movements usually cease during sleep, they may continue in exaggerated cases and prevent sleep. Heart complications, usually **endocarditis**, are not uncommon.

**Treatment:**—There are two factors in the treatment of these patients that I consider of prime importance. These are **rest and nutrition**. The patient should be separated from every possible cause of excitement. If the onset is at all sudden, he should be separated from all of his surroundings and all of his companions. He should be **put to bed** and should be quietly and unexcitably entertained. He should have the constant attendance of some one person, who would intelligently adjust all conditions to the condition of the child. All reference to the choreic movements should be avoided; he should not be censured or even criticised, and the condition should be apparently ignored.

I believe that **concentrated nutrition** of easy digestion is an important element in the restoration of these patients. I would advise that the patient have every three hours some palatable food, in a concentrated form, as much as the child cares to take, provided there is no subsequent disorder of the digestion. It will be necessary, especially if the child be kept in bed, to pay attention to the bowel movements and prevent constipation. Usually simple enemata will be sufficient with children. With young adults it may be necessary to administer mild non-irritating antacid laxatives.

One of our best remedies for this disease is **macrotys**. It may be given in doses of from one to two drops of a common tincture every three hours, or twenty drops of the specific medicine may be added to a four-ounce mixture and a teaspoonful given every two hours. **Scutellaria** is an excellent remedy also, and so harmonious is its influence with that of **macrotys** that the two remedies may be combined to excellent advantage. Occasionally an infusion of **skullcap** will act better than any of the pharmaceutical preparations. Where the nervous excitability is very great, **gelsemium** in full doses, sufficient to produce mildly its physiological influence, will be found beneficial. In fact, many of our writers claim to have cured this disease with this remedy alone in active doses. If the condition disturbs the sleep, I am in favor of combining the **hyoscyamus** in small doses with the **gelsemium**. Another good remedy is **cypripedium**. This remedy can be given in full doses and may be combined with the other remedies, if indicated. I have cured several cases of this disease with **exalgin** in small doses—from one-half to one grain every three hours—for a period of only four or five days at a time; then, after a lapse of three days, resuming it again for an equal length of time. The regular profession have considered **arsenic** a specific in these cases, but because we can give no reason for its action I have not administered it when I could obtain good results from the more rational measures; consequently I have found but few cases where I felt obliged to try it. **Asafetida**—the gum-resin—made into pills, and taken persistently, has cured chorea.

I consider **iron** a necessary remedy in by far the larger proportion of the cases. I have given the common **tincture of the chlorid** in five-minim doses, with excellent results. The precipitated carbonate in an elixir of **hydrastis canadensis** will serve an excellent purpose. It is occasionally good practice to add the special sedative remedy to this combination.

## HEREDITARY CHOREA.

**Synonym:**—Huntington's disease.

This condition, while hereditarily transmitted, does not always appear in consecutive generations, but may skip one generation, although the parents of the child affected will be found to possess one or more neuroses. It is a disease of early adult life, and is characterized by **muscular twitchings** of the face or upper extremities, which slowly increase within the area which they occupy until the entire muscular system may be involved. The movements resemble **gesticulations**, or **strange facial contortions** or **grimaces**, all of which are subject to limited control when the patient desires to use the muscles voluntarily. With the progress of the disease there is mental failure, and occasionally a mild form of paralysis. The condition involves the motor nerves only; sensation is not affected. It interferes with normal muscular movement and prevents the healthy action of the various nutritive organs of the body, so that the patient becomes weak, and perhaps finally bedridden, although he may live for many years.

**Treatment:**—But little has been accomplished in the treatment of this condition. If the patient can have an attendant who will provide for all of his necessities, who will keep him out of doors and away from all possible excitement, and will see to it that the integrity and the functional action of every organ is preserved fully, there may be some abatement of the symptoms, or there may be a stay in the progress of the disease. But little benefit has been obtained from the use of medicines.

## PARALYSIS AGITANS.

**Synonyms:**—Shaking palsy; Parkinson's disease.

**Definition:**—A chronic nervous disorder, characterized by continuous tremor of the different parts of the body, especially of the forearms and hands.

**Etiology:**—But little is known concerning the real cause of this disease. A typical case which came under my observation was one in which the patient was subject to epileptic paroxysms, which occurred at long intervals for a period thirty years before symptoms of this disease appeared. The patient's mind was bent intently upon one object for the entire period, never varying therefrom to take even the least recreation. The disease develops usually after fifty years of age, the larger proportion appearing before fifty-five; a few cases are recorded which have developed after sixty-five. It is very rarely that it occurs in youth or early adult life. More than twice as many men are affected as women. It is more than likely that intense mental strain, persistent worry and continued exacting employment in narrow lines, has much to do with the cause of the disease.

**Symptomatology:**—In typical cases the appearance of evidences of the disease are very slow, and the first appearance of the **tremor** will not always attract attention. In rare cases extreme terror has brought on the disease rather abruptly. The fingers exhibit the first tremor, it usually occurring in those of the right hand. There is a peculiar motion observed between the thumb and the first two or three fingers which is characteristic of the disease. It appears as if the patient was rolling a pill between the ends of the fingers.

The tremors have a rhythmical character, and when the patient is agitated they are apt to become increased until the nodding movement of the head and the shaking of the hand may be as severe as if the patient were suffering from a pronounced chill. During the waking hours these tremors

are constant, except when the patient undertakes to perform a definite voluntary act, when for the time being they may be in abeyance. During sleep they are suspended. So uncertain, however, are the acts of the patient that he dreads to handle anything that he would dislike to drop, and writing is almost impossible.

As the disease progresses the legs become involved in the movements. In some of the cases the lower jaw is affected. In rare cases the condition is accompanied by **muscular aching**, so severe as to prevent sleep. Under these circumstances the movements continue when the patient should be at rest, thus multiplying the causes of exhaustion. Still later, as the disease progresses, it will be observed that there is a **slight muscular rigidity** or stiffness, which, slowly increasing, causes all movements to be performed in a slow and awkward manner, as the muscles do not respond promptly to the will of the patient. This especially includes the muscles of the neck, occasionally of the face, and in nearly every case those of the back. As these muscles become stiffened, as the disease progresses, the patient assumes a **peculiar attitude** and a characteristic gait; the head is carried forward, the chin is slightly elevated, and the patient walks with short-hurried steps, as if in danger of falling forward. It is only in the latter stages of the disease that marked paralysis occurs. The feet are apt to be everted, and it is usually impossible to keep the ankles or knees from knocking against each other. Inability to use the limbs, however, does not occur until in the final stages of the disease, and in some cases the patient may have the disease in a marked manner for many years with no paralysis. It is seldom that there are **sensory disturbances**. The mind may not be affected, except from the depression which the presence of the disease causes. There is a characteristic facial expression to these patients—an **immobility of the features**—which is compared with the wearing of a mask. The patient talks slowly, in a monotonous, high-pitched tone, with a marked

tremor to the voice. The mouth is often kept open, and there is a constant dribbling of the saliva.

**Treatment:**—These patients should be separated from every cause which has in any way seemed to contribute to the appearance of the disease. The mind should be freed from care, and should be gently but firmly turned into other channels. A general physical exercise, always short of tire or exhaustion, should be resorted to in a manner, if possible, in every way agreeable to the patient. Medicines have not as yet accomplished very much in staying the progress of the disorder. Those which are most specifically directed to the condition are **macrotys**, or **hyoscyamus** or some one of its alkaloids, **hyoscin**, or **hyoscyamin**, and **scutellaria**. The **phosphates**, if given early, will exercise a nutritional influence over the nerve centers. Fowler's solution of arsenic is advised, but it is a questionable remedy. Where the tremor is extremely severe and is accompanied with nervous irritation, **cimicifuga** and **gelsemium**, or **veratrum**, may be given for a short time in full doses. Occasionally benefit will be obtained from the use of **chloral** or the **bromids**. The condition of the general health of the patient must have the constant attention of the physician. At no time should any functional derangement be overlooked.

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## NEURASTHENIA.

**Synonyms:**—Nervous exhaustion; nervous prostration.

**Definition:**—A condition in which, from overtaxing of the nervous system, there is a loss of nerve power or nerve force, with general exhaustion; a more or less complete inability to perform physical or mental labor, usually with functional failure of one or more of the important organs of the body.

**Etiology:**—This conditions is emphatically a disease of our modern civilization. It is caused by the intense men-

tal strain incident to the various occupations in the large cities; to the transaction of business in the manner now almost universally adopted, forced upon us by close competition, by intense activity in all lines of trade; by hurry, worry, anxiety, perplexity, responsibility and confusion, and, I am confident, by one cause almost universally overlooked; that is, the *noise* of the city—the ceaseless din—for eight or ten hours of each day to those who come into the city to do business, and for twenty hours out of the twenty-four to those who live in the city. It is also caused by late hours and deficient sleep. Our present method of forcing the youth in the schools and the students in colleges has much to do with laying a foundation for subsequent nervous prostration.

The disease is more common in middle life. It occurs much earlier with women than with men. I have seen typical cases in overworked young college women at nineteen or twenty. In these the symptoms are apt to occur in acute form, are quite amenable to treatment, usually readily cured. Masturbators among young men show signs of the sexual variety of the disease quite early. By far the most common form, however, occurs at about the age of forty or forty-two years, in men who have been engaged in early, hard, absorbing mental labor, who have assumed heavy responsibilities, and have been burdened with cares, anxieties, perplexities and annoyances of business without respite. It occurs among women in middle life, and with these, oftener, I am inclined to think, than is commonly supposed, from forced, unwilling sexual indulgence. It occurs from frequent child bearing and as the result of the anxiety, responsibility and care of the children. Under these circumstances it is frequently accompanied with hysteria.

A mature physician of my acquaintance believes that a change occurs normally in men between the ages of forty and forty-five years, which corresponds in part to the menopause in women; that if he has passed a somewhat unex-

citable life, with out-of-doors exercise, and has indulged in no sexual excesses, and has avoided alcoholic beverages, he may not observe it to any marked degree; in fact, it may be entirely overlooked; but that mental overwork, worry and sexual overdraughts may cause it to become conspicuous and to show itself to a greater or less degree, often with extreme nervous exhaustion.

Among other of the many causes which predispose to neurasthenia are disappointment in love, unhappy marriages, heredity which entails neuroses or a dyscrasia, or a previously weakened or impaired nervous system; also severe mental shock, as great grief, the loss of property, or anything that would induce an abrupt change in business or social life. It is also brought about by a physical injury which causes shock to the nervous system. Physical shock will precipitate a case of neurasthenia with all its typical manifestations, where no predisposition has previously existed, but where the patient has been subject to those conditions which predispose to the disease it is very likely to bring on the disorder at once.

While reflex irritations assist in the development of this disorder, they are seldom if ever its sole cause. It is not often that their influence would be observed if other conditions had not materially reduced the nervous force of the patient. I believe they act largely through their irritating influence upon the sympathetic nervous system, which results in what may be termed a local exhaustion of sympathetic nerve force. This, of course, enforces the general nerve exhaustion when otherwise induced.

**Symptomatology:**—There are no classic symptoms which will represent this disease. There is simply a deficiency of nerve force or power, an absence of strength and inability to perform mental labor, a disinclination to physical or mental exertion, all from actual inability. The real condition may be overlooked, and the disease is apt to be attributed to that organ or function which is most immediately and conspicuously influenced by the sudden and

more or less complete withdrawal of nerve force, and consequently of the power to perform its duties.

If the spinal system is first affected, as it is apt to be in young women and in sexual neurasthenics, there is spinal tenderness, erratic pains in the shoulders and back, and a most aggravating, unbearable occipital headache which involves the medulla, is located at the junction of the head with the spinal column and may involve the muscles of the neck, inducing great local tenderness and pain. The sensation is described as if the neck was in the tight grip of a vise, and often it is relieved by gripping the muscles firmly with the fingers. The patient can only rest, in some cases, by placing a rolled-up pillow or a tight, hard roll of cloth under the back of the neck, forcing the head back. Invariably with the headache there is a great excess of phosphates in the urine.

With the extreme general weakness, the back aches, the muscles ache and are sore, and there are disturbance of sensations and of heat distribution. The outside of the thighs are cold and numb, or at times the skin in this locality prickles and there is hyperesthesia from the hips to the knees, as in one of my patients, to a most painful degree.

There are some symptoms, as muscular pain, quick, shooting pains through the muscles of the thighs and legs, with inability to use them perfectly, which resembles locomotor ataxia; in fact, this disease may occur during the progress of neurasthenia.

The gastric symptoms of neurasthenia are apt to be the most conspicuous. From absence of nerve force with which to accomplish these functions, digestion and assimilation are imperfectly performed. The food ferments in the stomach if taken in quantity, as it often is, because the appetite may be unimpaired, or even increased from the necessity for nutrition; pain is induced, diarrhea follows, and other of a long train of symptoms common to an attack of chronic gastric catarrh. Either hyperacidity or achlor-

hydria may be present. I think the latter condition is apt to be most constant.

A most troublesome and even alarming symptom with those who do not fully comprehend the exact situation in all its bearings is palpitation, which seldom occurs, however, independent of conspicuous gastric symptoms. This is apt to cause anxiety and worry, and thus interfere with the recovery of the patient. In more acute cases in young women I have observed irregularity of the heart, fluttering, violent disturbance upon little exertion, and in one case, extreme and alarming dyspnea, with flushing of the face upon going upstairs, however slowly. In this and in other cases, I have observed heart murmurs, sometimes quite conspicuous, which, however, have always readily disappeared as improvement progressed. Pain in the heart is not uncommon, and throbbing in the abdominal aorta is sometimes quite conspicuous. In anemic patients throbbing of the carotids is plainly marked. Faulty nutrition may result in loss of flesh, but I have found almost this entire train of symptoms to exist with no anemia or loss of weight.

Neurasthenic patients become irritable, peevish and morose. There are erratic headaches with faults of vision; sleeplessness is sometimes a most intractable and aggravating complication. A feeling of weakness or exhaustion is always present, and the usual exertion, if persisted in, will sometimes precipitate an exhaustion which is simply indescribable, and which induces a general distress which may amount almost to agony. It cannot be appreciated without being experienced, and thus these patients do not always have the sympathy the case merits.

Those who suffer from sexual neurasthenia are extremely despondent, and may develop suicidal tendencies; the mental condition is greatly aggravated, in young males, by a morbid fear of nocturnal emissions and a dread of impotency.

**Diagnosis:**—The danger in diagnosis is that perverted functional action in some organ will cause the actual dis-

ease to be overlooked entirely. This very frequently occurs. It is sometimes almost impossible to persuade the patient that serious heart or stomach disease is not present. That complete exhaustion of the nerve force is alone to blame for the whole trouble. The fact that any exertion, physical or mental, induces general exhaustion, is of prime importance in determining diagnosis of neurasthenia.

**Prognosis:**—When the condition is uncomplicated by actual organic disease, the prognosis is always favorable, if the patient can be persuaded to be separated from the aggravating causes and will take sufficient rest. The use of alcohol or the drug habits will greatly retard a complete cure.

**Treatment:**—In the treatment of neurasthenia there are two primary essential considerations. The first is the complete removal of the patient from the environment and other causes of the disease, or the removal of the causes themselves; and rest. These two considerations comprehend a radical change in the habits of life of the patient for the time being. It is surprising how rapidly many of these patients will build up with no medicine whatever, if the entire environment be changed. The mind must be relieved from worry, anxiety and responsibility; this is, in my mind, absolutely essential. With this the patient must be brought in contact with those scenes and those conditions which do not require any mental concentration, but which are a constant source of pleasure and happiness to him. Changing scene, devoid of noise and confusion, is very desirable. The fields, the hillside, the woods, quiet and solitude, to those who have been in the noise and din of the city, and rest in the open air, are all conducive to improvement. In exaggerated cases, where the patient cannot be taken into the country, it is beneficial and often essential to put the patient to bed for a protracted period. Enforced rest cannot but result in good, provided, however, the patient is not still brooding over care or anticipated troubles. If a patient is placed under the care of a quiet, cheerful and

efficient nurse, who will supply him regularly with highly nutritious, palatable food, who will talk only on cheerful subjects, who will read occasionally for short periods from very light literature, marked improvement will be noticed after but few days. To accomplish this it is necessary in many cases that the patient be taken to a sanitarium or a hospital, and completely removed, not only from his everyday surroundings and business cares, but separated from his own family and from all those with whom he is otherwise constantly meeting. A certain amount of mental discipline is essential, which cannot be obtained in the home. When this method is carried out fully, the patient is not allowed to help himself any more than if he were suffering from the extreme stages of a prostrating fever.

Auxiliary to this is the use of massage in proper hands, judiciously applied, as well as the use of mild currents of electricity, in well selected form, and perhaps vibration, with sponge baths, and later with hot baths, or a cold shower, according to the power of the patient's system to immediately react.

It is necessary that local conditions should have direct, carefully adjusted treatment at the same time, but as previously intimated, these must not be considered as essential conditions, and the underlying nervous exhaustion overlooked. Tenderness of the spinal cord and spinal irritation must be treated with dry cups and sedative measures; nervous irritability must be soothed to an extent, although the persistent use of sedatives is objectionable. Insomnia, which is one of the most troublesome evidences of nervous exhaustion, should be treated by nutrition and mild stimulation, rather than by the use of sedatives. A glass of hot milk taken at bed time, or a bowl of hot beef tea with a few graham crackers, will sometimes produce sleep much more satisfactorily than strong nerve sedatives. I once thoroughly alarmed a patient, and came nearly losing the patronage of the family, by inducing profound sleep from nine o'clock in the evening to seven o'clock the next morn-

ing, after many nights of wakefulness, by the use of a tablespoonful of bovine.

It is seldom that it is not necessary to assist the digestion. If predigested food is not administered, some simple artificial digestive should be taken with every meal. It is seldom necessary to treat the stomach directly, as it would be in a case of catarrhal gastritis, as usually the stomach faults are in proportion to the severity of the nervous exhaustion, and will disappear as the nervous system is restored. However, a close observation should be made, to distinguish between actual gastrointestinal disorder and that which depends solely upon deficiency of nerve force.

A condition of lithemia is often present with neurasthenia, which must be treated as under other circumstances. Constipation must be overcome, the patient must drink an abundance of water, and must avoid tea, coffee and alcoholics. I have found these to seriously complicate the severer cases. Autotoxemia must be looked for, as it is present in many cases. In sexual neurasthenia the first essential condition is to completely restore the patient's confidence. The next is an entire cessation of those habits which have brought on the condition.

Medicinal agents should be selected in accordance with the conditions to be combated. The remedy which is of first importance in neurasthenics is **phosphorus**. It should be given either as free phosphorus in the form of the tincture, the glycerophosphates, wheat phosphates, the syrup of the hypophosphites, or the compound syrup of the phosphates. One of these forms should be selected and administered for from twenty-one to twenty-eight days, when it should be discontinued and another form selected, and this continued for an equal length of time, to be replaced by still another form, coming back ultimately to the first of these, and going over the same course again. I am a firm advocate of rotation in the use of nerve restoratives and tonics in the treatment of neurasthenics.

Other remedies that may be selected are the **phosphate of**

iron, the sodium phosphate, *avena sativa*, *hydrastis*, iron, in some easily appropriable form, the gold and sodium chlorids, strychnin or the strychnin arsenate, and cactus. The latter is not only a nutritional remedy when the heart is feeble, but it is a nerve restorative of much value. These and all remedies, it must be remembered, must be given only as indicated, as rest is of more importance than medicine. The indications must be considered from day to day, and if they are not plainly apparent the remedy should be discontinued.

Much attention should be paid to the selection of the food of the patient. It should, of course, be nutritious, easily digested and of ready appropriation. Inasmuch as with many of these patients there is a deficiency of hydrochloric acid, the digestion of milk is more apt to be satisfactory, and not attended with the formation of curds; consequently the free use of milk, regularly administered, the use of hot milk, or, as I have found in some patients with serious gastric disturbance, the regular administration of ice-cream, or the taking of a glass of ice-cream soda, is sometimes of pronounced benefit. Eggs should be administered freely to those who can take them; a raw egg in the morning before breakfast, or from one to six raw eggs taken during the course of the day, will materially aid in the restoration of the strength.

Where the urine is scanty and persistently of high specific gravity, with excessive urea or urates, I withdraw the larger portion of the nitrogenous articles of diet from the food for a few weeks and advise the free use of fruits in season.

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## TETANY.

**Synonyms:**—Idiopathic muscular spasm; tetanilla.

**Definition:**—A condition characterized by tonic spasms of the extremities, usually affecting the arms alone, but involving at times not only all of the extremities, but the

muscles of the trunk as well. It occurs in distinct attacks, more or less prolonged, with intervals of freedom. The condition occurs in children above the age of seven or eight years, but is more common after puberty. It is uncommon in infants or mature adults. The cause of the condition is undoubtedly an obscure general infection. No specific cause has been determined. People who occupy a fixed position in their labor, as shoemakers and tailors, with no variety of muscular movement, are thought to be especially liable to it, thus causing the disease by some writers to be classed as an occupation neurosis. Those children who are attacked are apt to be in general poor health, or to suffer from a pronounced dyscrasia, or to have at least some of the symptoms of rachitis.

**Symptomatology:**—With these cases there is usually persistent headache, the tendon reflexes are slightly diminished, the cutaneous reflexes are exaggerated. In nearly every case disorder of the stomach is present. With the headache the patient has aching or pains in the limbs, and is disinclined to any muscular effort. Stiffness is observed in the muscles of the fingers first, then of the hand and forearm. The fingers then become flexed upon the hand, or, as is sometimes the case, the hand is first flexed upon the wrist, with the fingers extended. The feet and the toes, when the lower extremities are affected, are subject to similar contractions. The toes may be forcibly flexed and overlap each other, or the foot may be flexed at the ankle, resembling club foot. In severe cases the disease progresses to the muscles of the neck, throat and trunk. The contractions are not as fixed as those of tetanus, as it is occasionally possible to straighten the flexed member without great pain, but left to itself the contraction will quickly recur. However, in pronounced cases an effort to reduce the spasm causes pain, sometimes very severe. Trousseau observed that an attack could be generated in an affected limb by pressure upon the nerve trunk or blood vessels of the limb, continued from half a minute to four or five min-

utes. He also observed that if the affected limb be surrounded by an elastic band, and the nerves of the limb tapped upon, that the spasm could be induced. This is called "Trousseau's sign."

**Diagnosis:**—The diagnosis of this condition is not difficult. It cannot be confounded with tetanus because the symptoms of the latter disease are too distinctly pronounced. It is easily separated from epilepsy and from hysteria, and has but few resemblances to acute convulsions. The fact that it can usually be produced at will by Trousseau's method is positively confirmatory.

**Prognosis:**—The prognosis is good, all things considered. The cases are amenable to treatment, and serious results from the continuance of the condition are not apt to occur.

**Treatment:**—All causes which may contribute to the existence of the disorder must be dealt with positively in the line of their more exact indications. All conditions of the stomach must be corrected, and for the time being the amount of labor required of the stomach in the digestion of food must be limited, consistent with a good degree of nutrition. It is well to administer remedies which will antagonize autotoxemia, which will promote tissue metabolism and normal excretion. In those cases where there is a tendency to rickets, the nervous system must be built up with the phosphates. I have succeeded in satisfactorily combating the condition by giving the patient gelsemium during the entire period of the continuance of the contractures, at the same time administering hydrastis in small doses, with other non-stimulating gastric tonics. It is necessary to neutralize excessive gastric acidity, to promote regular normal evacuation of the bowels, by mild saline laxatives, and to encourage the action of the skin and kidneys in order to promote the excretion of morbid principles of any character. When anemia is present, iron is indicated, among the other restoratives, and the patient should be kept out of doors as much as possible, under pleasant, agreeable circumstances.

## INDEX.

- Abdominal dropsy, 258**  
**Abscess of the liver, 204**  
**Acute alcoholism, 486**  
**Addison's disease, 445**  
     definition, 445  
     diagnosis, 447  
     etiology, 445  
     prognosis, 447  
     symptomatology, 445  
     synonyms, 445  
     treatment, 447  
**Adhesive peritonitis, 255**  
**Adiposity, 476**  
**Albuminuria, 317**  
     definition, 317  
     diagnosis, 319  
     etiology, 317  
     prognosis, 321  
     symptomatology, 319  
     treatment, 321  
**Albuminoid infiltration of the liver, 220**  
**Alcoholism, 483**  
     definition, 483  
     etiology, 483  
     symptomatology of drunkenness, 485  
     synonyms, 483  
     treatment of drunkenness, 485  
**Alcoholic inebriety, 483**  
**Amebic dysentery, 147**  
**Amputation of the tonsils, 62**  
**Amyloid degeneration of the liver, 220**  
     definition, 220  
     diagnosis, 221  
     etiology, 221  
     prognosis, 221  
     symptomatology, 221  
     synonyms, 220  
     treatment, 221  
**Amyloid kidney, 299**  
     definition, 299  
     diagnosis, 300  
     etiology, 299  
     prognosis, 300  
     symptomatology, 299  
     synonyms, 299  
     treatment, 300  
**Amyotrophic, lateral sclerosis, spinal**  
     566  
     definition, 566  
     diagnosis, 567  
     etiology, 566  
     prognosis, 567  
     symptomatology, 566  
     treatment, 567  
**Anemia, 419**  
     definition, 419  
**Anemia, Biermer's, 423**  
     corpuscular, 423  
     essential, 420-423  
     idiopathic, 420-423  
     lymphatic, 437  
     primary, 420  
     progressive pernicious, 423  
     secondary, 421  
**Angina tonsillaris, 52**  
**Ankylostomiasis, 511**  
**Ankylostomum duodenale, 511**  
**Anterior poliomyelitis, acute, 560**  
     definition, 560  
     etiology, 560  
     symptomatology, 561  
     synonyms, 560  
**Aphasia, 596**  
     definition, 596  
     sensory, 597  
     symptomatology, 596  
     treatment, 597  
**Apoplexy, 583**  
**Apoplexy in diabetes, 365**  
**Appendicitis, 174**  
     definition, 174  
     diagnosis, 178  
     etiology, 174  
     symptomatology, 175  
     prognosis, 178  
     treatment, 179  
**Appendicitis, catarrhal, 175**  
     gangrenous, 176  
     obliterative, 176  
     perforative, 176  
     ulcerative, 176  
**Aptyalism, 41**  
**Arsenical poisoning, chronic, 503**  
**Arthritic deformans, 382**  
     definition, 382  
     diagnosis, 385  
     etiology, 382  
     prognosis, 385  
     symptomatology, 383  
     synonyms, 382  
     treatment, 386  
**Arthritic purpura, 413**  
**Arthritis, rheumatoid, 382**  
**Ascariasis, 516**  
     symptomatology, 516  
     treatment, 517  
**Ascaris lumbricoides, 516**  
     trichuria, 518  
     vermicularis, 518  
     treatment, 518  
**Ascending myelitis, 556**  
**Ascending paralysis, 575**  
     definition, 575  
     symptomatology, 575  
     synonyms, 575  
     treatment, 576  
**Ascites, 258**  
     definition, 258  
     diagnosis, 260  
     etiology, 258  
     prognosis, 260  
     symptomatology, 259  
     synonyms, 258  
     treatment, 260  
**Ataxia, hereditary, 574**  
     locomotor, 568

- Marie's, 575  
   cerebellar hereditary, 575  
   hereditary, 574  
 Athyria, 441  
 Atrophic cirrhosis of the liver, 207  
   symptomatology, 208  
 Atrophic spinal paralysis, 560  
 Atrophy of the liver, acute yellow, 219  
   definition, 219  
   diagnosis, 220  
   etiology, 219  
   prognosis, 220  
   symptomatology, 219  
   synonyms, 219  
   treatment, 220
- Barlow's disease, 411  
 Basedow's disease, 452  
 Bed-wetting, 351  
 Biermers' anemia, 423  
 Biliary calculi, 228  
 Bleeder's disease, 416  
 Bloody flux, 144  
 Bloody urine, 323  
 Bright's disease, 267  
   acute, 267  
   chronic, 276-284  
 Bromatoxismus, 505  
 Broncocele, 448  
 Bronzed skin, 445  
 Bulbar paralysis, 577  
   definition, 577  
   symptomatology, 577  
   synonyms, 577  
   treatment, 577
- Cancer, gastric, 117  
   diagnosis, 121  
   etiology, 118  
   location, 117  
   occurrence, 117  
   prognosis, 122  
   symptomatology, 119  
   synonyms, 117  
   treatment, 123  
 Cancrum oris, 33  
 Carcinoma of the liver, 224  
   definition, 224  
   diagnosis, 226  
   etiology, 224  
   prognosis, 226  
   symptomatology, 225  
   treatment, 226  
 Carcinoma of the stomach, 117  
 Cardialgia, 128  
 Cardiospasm, 134  
 Catarrh, acute gastric, 71  
 Catarrhal appendicitis, 175  
   enteritis, 153  
   definition, 153  
   diagnosis, 155  
   etiology, 153  
   prognosis, 155  
   symptomatology, 154  
   treatment, 155  
   icterus, 214  
   jaundice, 214  
   diagnosis, 216  
   etiology, 214  
   prognosis, 216  
   symptomatology, 215  
   synonyms, 214  
   treatment, 216  
   nephritis, 267  
   stomatitis, 21  
   definition, 21  
   etiology, 21  
   symptomatology, 21  
   synonyms, 21  
   treatment, 21  
 Catarrh, chronic gastric, 80  
   gastric, acute, 71  
   of the common bile duct, 214  
   pharyngeal, 47  
 Cerebral embolism, 583  
   hemorrhage, 583  
   meningitis, 578  
   definition, 578  
   thrombosis, 583  
 Cerebritis, acute, 581  
 Chloremia, 427  
 Chlorosis, 427  
   definition, 427  
   diagnosis, 429  
   etiology, 427  
   prognosis, 429  
   symptomatology, 428  
   synonyms, 427  
   treatment, 429  
 Cholangitis, 236  
 Cholecystitis, 236  
   definition, 236  
   diagnosis, 237  
   etiology, 236  
   prognosis, 237  
   symptomatology, 237  
   treatment, 237  
 Cholelithiasis, 228  
   definition, 228  
   diagnosis, 233  
   etiology, 228  
   hyperchlorhydria in, 233  
   prognosis, 233  
   synonyms, 228  
   symptomatology, 230  
   treatment, 233  
 Cholera infantum, 165  
   definition, 165  
   diagnosis, 166  
   etiology, 165  
   prognosis, 166  
   symptomatology, 165  
   treatment, 166  
   morbus, 171  
   definition, 171  
   diagnosis, 172  
   etiology, 171  
   prognosis, 172  
   symptomatology, 172  
   synonym, 171  
   treatment, 172  
   nostras, 171  
 Chorea, acute, 608  
   hereditary, 612  
   minor, 608  
   definition, 608  
   etiology, 608  
   symptomatology, 609  
   synonyms, 608  
   treatment, 610  
   Sydenham's, 608  
 Chronic alcoholism, 486  
   delirium tremens in, 487

- symptomatology, 486  
 treatment, 489  
 Chyluria, 331, 520  
   definition, 331  
   diagnosis, 331  
   etiology, 331  
   prognosis, 332  
   symptomatology, 331  
   treatment, 332  
 Cirrhosis, atrophic, of the liver, 207  
   hypertrophic, of the liver, 207  
   of the kidney, 284  
   of the liver, 207  
     definition, 207  
     diagnosis, 210  
     etiology, 207  
     prognosis, 210  
     synonyms, 207  
     treatment, 211  
 Coccygodynia, 524  
 Cole's palsy, 565  
 Colitis, 157  
   definition, 157  
   diagnosis, 157  
   etiology, 157  
   prognosis, 158  
   symptomatology, 157  
   treatment, 158  
 Colitis, mucous, 158  
 Confluent aphthous stomatitis, 24  
 Congenital hypertrophic stenosis of the pylorus, 114  
 Congestion of the liver, 199  
 Constipation, 184  
   definition, 184  
   prognosis, 186  
   symptomatology, 185  
   synonyms, 184  
   treatment, 187  
 Contracted kidney, 284  
 Convulsions, infantile, 597  
   puerperal, 601  
 Coprostitis, 190  
 Corpuscular anemia, 423  
 Costiveness, 184  
 Coup de soleil, 471  
 Cretinism, 444  
   treatment, 444  
   sporadic, 441  
 Croupous pharyngitis, 50  
   definition, 50  
   diagnosis, 51  
   etiology, 50  
   prognosis, 51  
   symptomatology, 50  
   synonym, 50  
   treatment, 51  
 Croupous stomatitis, 25  
 Curvature of the spine, 564  
 Cystic kidney, 311  
 Cystitis, acute, 337  
   definition, 337  
   diagnosis, 339  
   etiology, 337  
   prognosis, 340  
   symptomatology, 338  
   synonym, 337  
   treatment, 340  
   chronic, 343  
     definition, 343  
     diagnosis, 344  
     etiology, 343  
     prognosis, 345  
     symptomatology, 343  
     synonym, 343  
     treatment, 345  
 Cyst, renal, 311  
 Delirium tremens, 483, 487  
 Descending myelitis, 556  
 Desquamative nephritis, 277  
 Diabetes insipidus, 371  
   definition, 371  
   diagnosis, 373  
   etiology, 371  
   prognosis, 373  
   symptomatology, 372  
   synonyms, 371  
   treatment, 374  
   mellitus, 358  
     definition, 358  
     diagnosis, 365  
     etiology, 360  
     history, 358  
     prognosis, 367  
     symptomatology, 363  
     synonyms, 358  
     treatment, 367  
   saccharine, 358  
 Diabetic apoplexy, 365  
   coma, 365  
 Diarrhea, 141  
   inflammatory, 161  
   serous, 141  
   tubular, 158  
 Diffused nephritis, 267  
 Dilatation of the colon, 194  
   definition, 194  
   diagnosis, 194  
   etiology, 194  
   prognosis, 195  
   symptomatology, 194  
   treatment, 195  
 Dilatation of the esophagus, 68  
   symptomatology, 69  
   treatment, 69  
 Dilatation of the stomach, 107  
   definition, 107  
   diagnosis, 109  
   etiology, 108  
   prognosis, 111  
   symptomatology, 109  
   synonyms, 107  
   treatment, 111  
 Dipsomania, 483  
 Diphtheritic dysentery, 147  
 Dislocated kidney, 312  
 Disseminated myelitis, 556  
   neuritis, 533  
   sclerosis, 591  
     definition, 591  
     etiology, 591  
     prognosis, 592  
     symptomatology, 591  
     synonyms, 591  
     treatment, 592  
   vesicular stomatitis, 23  
 Distomiasis, 507  
   treatment, 508  
   hemic, 507  
   hepatic, 507  
   intestinal, 507  
   pulmonary, 507  
 Diuresis, 371

- Dropsy, 258  
   abdominal, 258  
   of the peritoneum, 258  
 Drunkenness, 483  
 Dry mouth, 41  
 Duchenne's disease, 577  
 Dysentery, 144  
   definition, 144  
   diagnosis, 148  
   etiology, 144  
   prognosis, 148  
   symptomatology, 145  
   synonyms, 144  
   treatment, 148  
   amebic, 147  
   chronic, 152  
     symptomatology, 152  
     treatment, 152  
   diphtheritic, 147  
   tropical, 147  
   typhoid, 146  
 Dyspepsia, acute, 71  
   chronic, 80  
   catarrhal, 80  
   nervous, 124  
 Dystrophies, muscular, 465  
 Dystrophy, Landouzy-Dejerine, 468  
  
 Eclampsia, infantile, 597  
   puerperal, 601  
 Elephantiasis, 520  
 Embolism, cerebral, 583  
 Encephalitis, 581  
   definition, 581  
   prognosis, 581  
   symptomatology, 581  
   synonyms, 581  
   treatment, 581  
 Enlargement of the liver, 218  
   of the spleen, 433  
 Enteritis, 161  
   catarrhal, 153  
   follicular, 161  
   membranous, 158  
 Enterocolitis, 161  
 Enteroptosis, 195  
   definition, 196  
   diagnosis, 197  
   etiology, 196  
   symptomatology, 196  
   synonyms, 195  
   treatment, 197  
 Enuresis, 351  
   definition, 351  
   etiology, 351  
   symptomatology, 352  
   synonym, 351  
   treatment, 352  
 Epilepsy, 603  
   complications, 605  
   definition, 603  
   diagnosis, 605  
   etiology, 603  
   prognosis, 606  
   symptomatology, 604  
   treatment, 605  
   Jacksonian, 603  
 Eructations, 136  
 Esophagitis, 64  
   definition, 64  
   diagnosis, 65  
   etiology, 64  
   prognosis, 65  
   symptomatology, 64  
   treatment, 65  
 Esophagus, dilatation of, 68  
   stenosis of, 66  
   stricture of, 66  
   ulceration of, 69  
 Essential anemia, 420, 423  
 Exophthalmic goitre, 452  
   definition, 452  
   diagnosis, 454  
   etiology, 452  
   prognosis, 454  
   symptomatology, 452  
   synonyms, 452  
   treatment, 455  
 Exudative nephritis, 267  
  
 Fatty degeneration of the liver, 222  
 Fatty liver, 222  
   definition, 222  
   diagnosis, 224  
   etiology, 223  
   symptomatology, 223  
   treatment, 224  
 Fibrinous stomatitis, 23  
 Filaria sanguinis hominis diurna, 520  
   sanguinis hominis nocturna, 520  
 Filariasis, 520  
   definition, 520  
   symptomatology, 520  
   treatment, 521  
 Filaria loa, 520  
 Floating kidney, 312  
 Flux, 144  
 Follicular enteritis, 161  
   stomatitis, 23  
   tonsillitis, 53  
 Food poisoning, 505  
   symptomatology, 505  
   synonym, 505  
   treatment, 506  
 Friedreich's ataxia, 574  
   disease, 574  
  
 Galactotoxismus, 505  
 Gall stones, 228  
 Gangrenous appendicitis, 176  
   definition, 128  
   diagnosis, 129  
   etiology, 128  
   prognosis, 129  
   symptomatology, 129  
   synonyms, 128  
   treatment, 129  
   stomatitis, 33  
   definition, 33  
   diagnosis, 35  
   etiology, 33  
   prognosis, 35  
   symptomatology, 34  
   synonyms, 33  
   treatment, 35  
 Gastralgia, 123  
 Gastrectasis, 107  
 Gastric anesthesia, 137  
   cancer, 117  
   carcinoma, 117  
   catarrh, acute, 71  
   definition, 71  
   diagnosis, 73  
   etiology, 71

- prognosis, 73  
 symptomatology, 73  
 synonyms, 71  
 treatment, 73  
 catarrh, chronic, 80  
 hemorrhage, 115  
 hyperesthesia, 137  
 neuralgia, 128  
 neurasthenia, 124  
 neuroses, 124  
 ulcer, 97  
   definition, 97  
   diagnosis, 100  
   dietetic measures, 104  
   etiology, 97  
   prognosis, 101  
   symptomatology, 93  
   synonyms, 97  
   treatment, 101  
**Gastritis, 71**  
 acute, 71  
 catarrhal, acute, 71  
 suppurative, 78  
 toxic, 75  
   definition, 75  
   diagnosis, 76  
   etiology, 75  
   prognosis, 76  
   symptomatology, 75  
   treatment, 77  
 chronic, 80  
   definition, 80  
   diagnosis, 85  
   dietetic measures, 88  
   etiology, 80  
   hygienic measures, 86  
   lavage of the stomach, 93  
   medicinal measures, 92  
   prognosis, 86  
   symptomatology, 82  
   synonyms, 80  
   treatment, 86  
 catarrhal, chronic, 80  
   phlegmonous, 78  
**Gastrodynia, 128**  
**Gastrorrhagia, 115**  
 General peritonitis, 237, 245  
 Gin-drinker's liver, 207  
 Glenard's disease, 195  
**Glomerulo-nephritis, chronic, 277**  
**Glossitis, 36**  
 acute, 36  
   definition, 36  
   diagnosis, 37  
   etiology, 36  
   prognosis, 37  
   symptomatology, 37  
   treatment, 37  
 chronic, 38  
   definition, 38  
   diagnosis, 39  
   etiology, 38  
   symptomatology, 39  
   synonym, 38  
   treatment, 39  
   superficial, 38  
**Glossolabiolaryngeal paralysis, 577**  
   definition, 577  
   symptomatology, 577  
   treatment, 331  
**Glycosuria, 330, 358**  
   diagnosis, 330  
   prognosis, 331  
   treatment, 331  
   synonym, 337  
   irregular, 390  
   rheumatic, 382  
**Granular kidney, 284**  
**Gravel, 303**  
**Graves' disease, 452**  
**Green sickness, 427**  
**Gull's disease, 441**  
  
**Headache, anemic, 421**  
**Heat prostration, 471**  
**Heat stroke, 471**  
   definition, 471  
   diagnosis, 473  
   etiology, 471  
   prognosis, 473  
   symptomatology, 472  
   synonyms, 471  
   treatment, 473  
**Heberden's nodes, 385**  
**Henoch's purpura, 414**  
**Hematochyluria, 521**  
**Hematoma of the dura mater, 579**  
**Hematomyelia, 552**  
**Hematorrhachis, 554**  
**Hematuria, 323**  
   definition, 323  
   diagnosis, 324  
   etiology, 323  
   symptomatology, 323  
   synonym, 323  
   treatment, 324  
**Hemic distomiasis, 507**  
**Hemicrania, 540**  
**Hemoglobinuria, 325**  
   definition, 325  
   diagnosis, 326  
   etiology, 325  
   symptomatology, 326  
   treatment, 326  
**Hemophilia, 416**  
   definition, 416  
   diagnosis, 417  
   etiology, 416  
   prognosis, 417  
   symptomatology, 416  
   synonyms, 416  
   treatment, 417  
**Hemorrhage, cerebral, 583**  
   from the bladder, 348  
   gastric, 115  
   into the brain, 583  
   definition, 583

- embolism, 587
- etiology, 583
- symptomatology, 584
- thrombosis, 588
- treatment, 588
- into the cord tissue, 552
  - diagnosis, 553
  - etiology, 552
  - prognosis, 553
  - symptomatology, 552
  - synonyms, 552
  - treatment, 553
- into the spinal membranes, 554
  - definition, 554
  - diagnosis, 554
  - etiology, 554
  - prognosis, 555
  - symptomatology, 554
  - synonyms, 554
  - treatment, 555
- into the stomach, 115
  - diagnosis, 116
  - etiology, 115
  - hematemesis, 115
  - prognosis, 117
  - symptomatology, 116
  - synonyms, 115
  - treatment, 117
- vesicle, 348
- Hemorrhagic diathesis, 412, 416
- pachymeningitis, 579
- peritonitis, 256
- purpura, 413
- Hemorrhæa petechialis, 412
- Hemostasis, parasitic, 507
- Hepatic abscess, 204
  - distomiasis, 507
  - hyperemia, 199
- Hepatitis, 203
  - acute, 204
    - suppurative, 204
    - interstitial, 207
- Hepatogenous jaundice, 214
- Hereditary ataxia, 574
  - definition, 574
  - symptomatology, 574
  - synonym, 574
  - treatment, 574
- Hereditary ataxic paraplegia, 574
- Hereditary chorea, 612
  - synonym, 612
  - treatment, 612
- Hodgkin's disease, 437
- Huntington's disease, 612
- Hydatid cysts of the spleen, 460
- Hydronephrosis, 301
  - definition, 301
  - diagnosis, 302
  - etiology, 301
  - prognosis, 302
  - symptomatology, 302
  - treatment, 302
- Hydrops peritonei, 258
- Hydruria, 371
- Hyperemia, active hepatic, 199
  - passive, 200
  - renal, 263
  - splenic, 457
- Hyperchlorhydria, 131
  - definition, 131
  - etiology, 131
  - symptomatology, 132
  - treatment, 132
- Hyperistalsis, 135
- Hypertrophic cirrhosis of the liver, 207
  - symptomatology, 209
- Hypertrophy of the tonsils, 59
  - pseudo—muscular, 466
  - splenic, 433
- Hypersecretion, 40
- Icterus, 214
  - catarrhalis, 214
    - neonatorum, 217
    - etiology, 218
    - symptomatology, 218
    - synonyms, 217
    - treatment, 218
- Ichthyotoxismus, 505
- Idiopathic anemia, 420, 423
  - muscular spasm, 623
  - purpura, 412
- Ileitis, 153
- Ileocolitis of childhood, 161
  - definition, 161
  - diagnosis, 163
  - etiology, 161
  - prognosis, 163
  - symptomatology, 162
  - synonyms, 161
  - treatment, 163
- Ileus, 190
  - paralytic, 192
- Infantile convulsions, 597
  - eclampsia, 597
    - definition, 597
    - diagnosis, 599
    - etiology, 598
    - prognosis, 599
    - symptomatology, 598
    - synonyms, 597
    - treatment, 600
  - jaundice, 217
  - paralysis, 560
  - scorbutis, 411
- Inflammation of the bladder, 337
  - chronic, 343
- Inflammatory diarrhea, 161
- Insulation, 471
- Insular sclerosis, 591
- Interacinar pancreatitis, 243
- Intercostal neuralgia, 524
- Interstitial hepatitis, 207
  - nephritis, chronic, 276, 284
  - neuritis, 531
- Intestinal distomiasis, 507
  - intussusception, 190
  - obstruction, 190
    - definition, 190
    - diagnosis, 192
    - etiology, 190
    - from foreign bodies, 192
    - paralytic ileus, 192
    - prognosis, 192
    - symptomatology, 190
    - synonyms, 190
    - treatment, 193
  - strangulation, 191
- Intralobular pancreatitis, 242
- Irregular gout, 390
- Irritability of the bladder, 349
  - definition, 349
  - etiology, 349

- pathology, 349  
 symptomatology, 350  
 treatment, 350
- Jacksonian epilepsy, 603
- Jaundice, 214  
   definition, 214  
   etiology, 214  
   synonyms, 214  
   catarrhal, 214  
   hepatogenous, 214  
   malignant, 219
- Jejunitis, 153
- Kreotoxismus, 505
- Landouzy-Dejerine dystrophy, 466
- Landry's paralysis, 575
- Lardaceous liver, 220
- Large white kidney, 276, 277
- Lateral sclerosis, 565  
   definition, 565  
   diagnosis, 565  
   etiology, 565  
   prognosis, 566  
   symptomatology, 565  
   synonyms, 565  
   treatment, 566
- Lead poisoning, 497
- Leptomeningitis, 578, 580  
   definition, 580  
   etiology, 580  
   symptomatology, 580  
   treatment, 580  
   acute spinal, 547  
   chronic spinal, 551  
   spinal, 547  
     definition, 547
- Leucocythemia, 432
- Leukemia, 432  
   definition, 432  
   diagnosis, 435  
   etiology, 432  
   history, 432  
   prognosis, 436  
   symptomatology, 433  
   synonyms, 432  
   treatment, 436
- Leukemia, chronic, 432  
   lymphatic, 432  
   myelogenous, 432  
   pseudo, 437  
   splenomedullary, 432
- Lipomatosis universalis, 476
- Lithemia, 355  
   etiology, 355  
   general symptomatology, 356  
   local symptomatology, 356  
   synonyms, 355  
   treatment, 357
- Lithuria, 355
- Localized neuritis, 531
- Locomotor ataxia, 568  
   definition, 568  
   diagnosis, 570  
   etiology, 568  
   prognosis, 571  
   symptomatology, 568  
   synonyms, 568  
   treatment, 571
- crises,  
   gastric, 570
- intestinal, 570  
   laryngeal, 570  
   rectal, 570  
   renal, 570  
   vesical, 570
- Lumbago, 380
- Lymphadenoma, 437
- Lymphatic leukemia, 432
- Lymphosarcoma, 437
- Malignant Jaundice, 219
- Marie's ataxia, 575  
   definition, 575  
   synonym, 575  
   treatment, 575
- Marie's cerebellar hereditary ataxia, 575
- Mania a potu, 483, 489
- Megrim, 540
- Melasma suprarenale, 445
- Membranous enteritis, 158
- Membranous pharyngitis, 50
- Membranous stomatitis, 25  
   definition, 25  
   diagnosis, 26  
   etiology, 25  
   symptomatology, 26  
   synonym, 25  
   treatment, 26
- Meningeal apoplexy, 554
- Meningitis, 544  
   definition, 544  
   cerebral, 578  
   simple, 578  
   spinal, 546
- Mercurialism, 502
- Mercurial poisoning, 502  
   etiology, 502  
   symptomatology, 502  
   synonyms, 502  
   treatment, 503
- Mercurial ptyalism, 32
- Mercurial stomatitis, 32  
   definition, 32  
   synonym, 32  
   treatment, 32
- Merycism, 138
- Metatarsalgia, 524
- Migraine, 540  
   definition, 540  
   diagnosis, 541  
   etiology, 540  
   prognosis, 541  
   symptomatology, 540  
   synonyms, 540  
   treatment, 541
- Mind blindness, 597
- Morphinism, 493
- Morton's disease, 524
- Morvan's disease, 564
- Movable kidney, 312  
   definition, 312  
   diagnosis, 314  
   etiology, 312  
   symptomatology, 313  
   synonyms, 312  
   treatment, 314  
   spleen, 460
- Mucous colic, 158  
   colitis, 158  
   definition, 158  
   diagnosis, 159  
   etiology, 158

- prognosis, 159  
 symptomatology, 159  
 synonyms, 158  
 treatment, 159
- Multiple neuritis, 533**  
 definition, 533  
 diagnosis, 536  
 etiology, 534  
 mental symptoms, 535  
 motor symptoms, 535  
 prognosis, 537  
 sensory symptoms, 535  
 symptomatology, 534  
 synonyms, 533  
 treatment, 537  
 trophic symptoms, 535
- Multiple sclerosis, 591**
- Muscular dystrophies, 465**  
 prognosis, 465  
 treatment, 467
- Muscular rheumatism, 378**  
 definition, 378  
 diagnosis, 380  
 etiology, 378  
 symptomatology, 379  
 synonym, 378  
 treatment, 380
- Myalgia, 378, 391**
- Myelitis, 556**  
 definition, 556  
 diagnosis, 558  
 etiology, 556  
 motor symptoms, 557  
 prognosis, 559  
 reflex symptoms, 558  
 symptomatology, 557  
 sensory symptoms, 557  
 treatment, 559  
 trophic symptoms, 558
- ascending, 556  
 descending, 556  
 disseminated, 556  
 pressure, 556  
 transverse, 556
- Myelogenous leukemia, 432**
- Myositis, 462**  
 acute, 462  
 definition, 462  
 etiology, 462  
 symptomatology, 462  
 synonym, 462  
 treatment, 463  
 ossifying, 463
- Myotonia, 468**  
 definition, 468  
 symptomatology, 469  
 synonym, 468
- Myotonia congenita, 468**
- Mytilotoxismus, 503**
- Myxedema, 441**  
 definition, 441  
 diagnosis, 443  
 etiology, 441  
 prognosis, 443  
 symptomatology, 442  
 synonym, 441  
 treatment, 443
- Nematodes, 516**
- Nephritis, 267**  
 acute, 267  
 catarrhal, 267  
 definition, 267  
 diagnosis, 271  
 etiology, 267  
 prognosis, 272  
 symptomatology, 268  
 synonyms, 267  
 treatment, 272
- diffused, 267
- parenchymatous, acute, 267**  
 chronic, 276  
 desquamative, 277  
 diffused (exudative), 277  
 interstitial, 276, 284  
 non-exudative, 276, 277  
**parenchymatous, chronic, 277**  
 definition, 277  
 diagnosis, 280  
 etiology, 277  
 prognosis, 280  
 symptomatology, 278  
 synonyms, 277  
 treatment, 280
- tubular, 277  
 tubal, 267
- Nervous dyspepsia, 124**  
 definition, 124  
 diagnosis, 126  
 etiology, 125  
 prognosis, 126  
 symptomatology, 125  
 synonyms, 124  
 treatment, 126
- exhaustion, 615  
 prostration, 615  
 vomiting, 135
- Neuralgia, 522**  
 definition, 522  
 diagnosis, 523  
 etiology, 522  
 symptomatology, 522  
 treatment, 524  
 varieties, 523
- gastric, 128  
 intercostal, 524  
 of the stomach, 128  
 tri-facial, 523
- Neurasthenia, 615**  
 definition, 615  
 diagnosis, 619  
 etiology, 615  
 prognosis, 620  
 symptomatology, 617  
 synonyms, 615  
 treatment, 620
- gastric, 124
- Neuritis, 531, 533**  
 definition, 531  
 etiology, 531  
 disseminated, 533  
 interstitial, 531  
 localized, 531  
 multiple, 533  
 parenchymatous, 531  
 peripheral, 533  
 simple, 531
- Neurosis, gastric, 124**
- Nocturnal incontinence, 351**
- Noma, 33**
- Nutmeg liver, 207**
- Nystagmus, 591**
- Obesity, 476**

- definition, 476  
 etiology, 476  
 symptomatology, 477  
 synonyms, 476  
 treatment, 478
- Obliterative appendicitis, 176**  
**Occlusion of the bowel, 190**  
**Oligemia, 419**  
**Oligochromemia, 419**  
**Oligocythemia, 419**  
**Opium habit, 493**  
   definition, 493  
   diagnosis, 495  
   etiology, 493  
   prognosis, 495  
   symptomatology, 494  
   synonyms, 493  
   treatment, 495
- Opium inebriety, 493**  
**Ossifying myositis, 463**  
**Osteoarthritis, 382**  
**Oxaluria, 332**  
   definition, 332  
   diagnosis, 333  
   etiology, 332  
   prognosis, 333  
   symptomatology, 333  
   treatment, 333
- Oxyuris vermicularis, 518**
- Pachymeningitis, 544, 578**  
   definition, 544, 578  
   symptomatology, 578  
   synonyms, 578  
   treatment, 578
- externa: spinal, 544  
     diagnosis, 545  
     etiology, 544  
     prognosis, 545  
     symptomatology, 545
- hemorrhagic, 579
- interna: cerebral, 578, 579  
     definition, 579  
     symptomatology, 579  
     synonyms, 579  
     treatment, 579
- interna: spinal, 546  
     definition, 546  
     diagnosis, 547  
     etiology, 546  
     prognosis, 547  
     symptomatology, 546
- Pancreatitis, 239**  
   definition, 239  
   diagnosis, 241  
   etiology, 239  
   symptomatology, 240  
   treatment, 241
- chronic, 242  
     diagnosis, 243  
     etiology, 242  
     prognosis, 243  
     symptomatology, 243  
     treatment, 244
- interacinar, 243  
   intralobular, 242  
   sub-acute, 240
- Paralysis, acute ascending, 575**  
   acute atrophic spinal, 560  
   acute progressive, 575  
   agitans, 613  
   definition, 613
- etiology, 613  
   symptomatology, 613  
   synonyms, 613  
   treatment, 615
- bulbar, 577  
   glossolabiolaryngeal, 577  
   infantile, 560  
   infantile cerebral, 593  
   progressive, 564  
   spastic spinal, 565  
   hereditary ataxic, 574  
   vaso-motor, 558
- Paralytic ileus, 192**  
**Paraplegia, spastic, 565**  
**Parasitic hemoptysis, 507**  
   stomatitis, 27  
     definition, 27  
     diagnosis, 28  
     etiology, 27  
     prognosis, 28  
     symptomatology, 28  
     synonyms, 27  
     treatment, 28
- Parenchymatous nephritis, 267**  
   neuritis, 531  
   tonsillitis, 55
- Parkinson's disease, 613**  
**Parotid bubo, 42**  
**Parotitis, symptomatic, 42**  
**Parry's disease, 452**  
**Passive renal hyperemia, 265**  
   definition, 265  
   diagnosis, 266  
   etiology, 265  
   prognosis, 266  
   symptomatology, 265  
   treatment, 266
- Pediculosis, 519**  
   definition, 519
- Pediculus capitus, 519**  
   diagnosis, 519  
   treatment, 519
- corporis, 520  
   treatment, 520
- Peptic ulcer, 97**  
**Perforative appendicitis, 176**  
**Pericholecystitis, 236, 237**  
**Perihepatitis, 212**  
   diagnosis, 212  
   prognosis, 213  
   symptomatology, 212  
   treatment, 213
- Perinephritic abscess, 309**  
   definition, 309  
   diagnosis, 310  
   etiology, 309  
   prognosis, 310  
   symptomatology, 310  
   synonym, 309  
   treatment, 311
- Perineuritis, 531**  
**Peripheral neuritis, 538**  
**Peritonitis, 237**  
   acute, 245  
     definition, 245  
     diagnosis, 249  
     etiology, 245  
     prognosis, 249  
     symptomatology, 247  
     treatment, 249  
   adhesive, 255  
   chronic, 255

- diagnosis, 257  
 etiology, 256  
 symptomatology, 256  
 treatment, 257  
 circumscribed, 245  
 diffused, 255  
 general, 245  
 hemorrhagic, 256  
 local, 245  
 proliferative, 256  
 puerperal, 246  
 tubercular, 256  
 Pes cavus, 574  
 Petit mal, 603  
 Pharyngeal catarrh, 47  
 Pharyngitis, 44  
   acute, 44  
     definition, 44  
     diagnosis, 45  
     etiology, 44  
     prognosis, 45  
     symptomatology, 44  
     synonyms, 44  
     treatment, 45  
   chronic, 47  
     definition, 47  
     diagnosis, 49  
     etiology, 47  
     prognosis, 49  
     symptomatology, 48  
     synonyms, 47  
     treatment, 49  
   croupous, 50  
   membranous, 50  
 Phlegmonous gastritis, 78  
   definition, 78  
   diagnosis, 79  
   etiology, 78  
   prognosis, 79  
   symptomatology, 78  
   synonym, 78  
   treatment, 79  
 Phosphaturia, 334  
   definition, 334  
   diagnosis, 335  
   etiology, 334  
   symptomatology, 334  
   treatment, 335  
 Plumbism, 497  
   definition, 497  
   diagnosis, 500  
   etiology, 497  
   prognosis, 500  
   symptomatology, 498  
   synonyms, 497  
   treatment, 500  
 Podagra, 387  
 Policeman's disease, 524  
 Poliomyelitis, acute anterior, 560  
 Polymyositis, acute, 462  
 Polyneuritis, 533  
 Polyuria, 371  
 Posterior spinal sclerosis, 563  
 Pressure myelitis, 556  
 Primary anemia, 420  
 Primary lateral sclerosis, 565  
 Proctitis, 153  
 Progressive atrophy of Charcot-Marie, 465  
   muscular dystrophy, 466  
   neural atrophy of Hoffman, 465  
   neural muscular atrophy, 465  
   symptomatology, 465  
   synonyms, 465  
 paralysis, 564  
   acute, 575  
 pernicious anemia, 423  
   definition, 423  
   diagnosis, 425  
   etiology, 423  
   prognosis, 425  
   symptomatology, 424  
   synonyms, 423  
   treatment, 425  
 peroneal muscular atrophy of Gowers, 465  
 spinal muscular atrophy, 464  
   symptomatology, 464  
   synonym, 464  
 Proliferative peritonitis, 256  
 Pseudo leukemia, 437  
   definition, 437  
   diagnosis, 440  
   etiology, 437  
   prognosis, 440  
   symptomatology, 438  
   synonyms, 437  
   treatment, 441  
 Pseudo muscular hypertrophy, 466  
 Ptyalism, 40, 502  
   definition, 40  
   etiology, 40  
   synonyms, 40  
   treatment, 40  
 Puerperal convulsions, 601  
   eclampsia, 601  
     definition, 601  
     etiology, 601  
     symptomatology, 601  
     synonym, 601  
     treatment, 602  
   peritonitis, 246  
 Pulmonary distomiasis, 507  
 Purpura, 412  
   definition, 412  
   diagnosis, 415  
   prognosis, 414  
   synonyms, 412  
   treatment, 415  
   arthritic, 413  
   hemorrhagic, 413  
   idiopathic, 412  
   rheumatica, 413  
   simplex, 412  
 Putrid sore mouth, 29  
 Pyelitis, 293  
 Pyelitis and Pyelonephritis, 293  
   definition, 293  
   diagnosis, 296  
   etiology, 294  
   prognosis, 296  
   symptomatology, 294  
   synonyms, 293  
   treatment, 297  
 Pyelonephritis, 293  
 Pyelonephrosis, 293  
 Pyloric stenosis, 113  
   symptomatology, 114  
   treatment, 114  
 Pylorus, congenital hypertrophic stenosis of, 114  
 Pylorospasm, 134  
 Pyonephritis, 293  
 Pyonephrosis, 293

- Pyrosis, 82  
 Pyuria, 327  
   definition, 327  
   diagnosis, 328  
   etiology, 327  
   symptomatology, 327  
   treatment, 329
- Quinsy, 52, 55
- Rachitis, 402  
 Rachitismus, 402  
 Rectocolitis, 144  
 Regurgitation, 69, 138  
 Retention of urine, 353  
   symptomatology, 353  
   treatment, 354
- Renal calculus, 303  
 Renal colic, 303  
 Renal cyst, 311  
   prognosis, 311  
   symptomatology, 311  
   treatment, 312
- Renal hyperemia, 263  
   active, 263  
     definition, 263  
     diagnosis, 264  
     etiology, 263  
     prognosis, 264  
     symptomatology, 264  
     synonyms, 263  
     treatment, 264  
   passive, 265
- Renal sclerosis, 284, 288
- Rheumatism, 375  
   articular chronic, 375  
     definition, 375  
     diagnosis, 376  
     etiology, 375  
     prognosis, 377  
     symptomatology, 375  
     treatment, 377  
     synonym, 375  
   muscular, 378
- Rhemuatic gout, 382
- Rheumatic purpura, 413
- Rickets, 402  
   definition, 402  
   diagnosis, 404  
   etiology, 402  
   prognosis, 404  
   symptomatology, 403  
   synonyms, 402  
   treatment, 404
- Rodent gastric ulcer, 97  
 Round gastric ulcer, 97  
 Rumination, 138
- Saccharine diabetes, 358  
 Salivation, 40  
 Sarcoma of the liver, 227  
 Saturnism, 497  
 Sciatica, 527  
   definition, 527  
   diagnosis, 528  
   etiology, 527  
   symptomatology, 527  
   treatment, 529
- Sclerosis, amyotrophic lateral, 566  
   disseminated, 591  
   insular, 591  
   lateral, 565  
   of the liver, 207  
   multiple, 591  
   posterior spinal, 568  
   primary lateral, 565
- Sclerotic kidney, 284
- Scorbutus, 407  
   definition, 407  
   diagnosis, 409  
   etiology, 407  
   prognosis, 409  
   symptomatology, 408  
   synonym, 407  
   treatment, 410
- Scorbutus of infancy, 411
- Scurvy, 407
- Secondary anemia, 421  
   diagnosis, 422  
   etiology, 420  
   prognosis, 422  
   symptomatology, 421  
   synonym, 420  
   treatment, 422
- Sensory aphasia, 597
- Serous diarrhea, 141  
   definition, 141  
   diagnosis, 142  
   etiology, 141  
   symptomatology, 142  
   treatment, 142
- Shaking palsy, 613
- Sick headache, 85, 540
- Simple gastric ulcer, 97
- Simple meningitis, 578  
   neuritis, 531  
     diagnosis, 532  
     etiology, 531  
     prognosis, 532  
     symptomatology, 531  
     synonym, 531  
     treatment, 532  
   purpura, 412, 413
- Sitotoxismus, 505
- Small red kidney, 276, 284
- Sore throat, 44
- Spasms, 597
- Spastic diplegia, 593  
   paraplegia, 565  
   spinal paralysis, 565
- Spinal apoplexy, 552  
   leptomeningitis, 547  
     acute, 547  
       diagnosis, 549  
       etiology, 547  
       prognosis, 549  
       symptomatology, 548  
       treatment, 549  
     chronic, 551  
       diagnosis, 551  
       etiology, 551  
       prognosis, 551  
       symptomatology, 551  
       treatment, 551
- Splanchnoptosis, 195
- Splenic carcinoma, 460  
   granulomata, 460  
   hyperemia, 457  
     acute, 457  
     passive, 457  
   symptoms, 457  
   treatment, 458
- hypertrophy, 433  
 lymphadenoma, 460

- Spleen, melanotic sarcoma of, 460
- Splenitis, 458  
 definition, 458  
 diagnosis, 459  
 etiology, 458  
 prognosis, 459  
 symptomatology, 458  
 treatment, 459
- Splenomedullary leukemia, 432
- Sporadic cretinism, 441
- St. Anthony's dance, 608
- Stenosis of the esophagus, 66  
 definition, 66  
 diagnosis, 67  
 etiology, 66  
 prognosis, 68  
 symptomatology, 66  
 synonyms, 66  
 treatment, 68
- Stenosis of the pylorus, 113
- Stomatitis, acute catarrhal, 41  
 aphthous, 23  
 catarrhal, 21  
 confluent aphthous, 24  
 crouposa, 25  
 disseminated vesicular, 23  
 erythematosa, 21  
 fetid, 29  
 fibrinous, 23  
 follicular, 23  
 gangrenous, 33  
 membranous, 25  
 mercurial, 32  
 mycosa, 27  
 parasitic, 27  
 ulcerative, 29
- Stone in the kidney, 303
- Stricture of esophagus, 66
- Struma, 448
- St. Vitus dance, 608
- Sub-acute pancreatitis, 240
- Sunstroke, 471
- Superficial or catarrhal tonsillitis, 52
- Suppurative hepatitis, acute, 204  
 definition, 204  
 diagnosis, 206  
 etiology, 204  
 prognosis, 206  
 symptomatology, 205  
 synonyms, 204  
 treatment, 207
- tonsillitis, 52
- Sydenham's chorea, 608
- Symptomatic parotitis, 42  
 definition, 42  
 etiology, 42  
 symptomatology, 43  
 synonym, 42  
 treatment, 43
- Syringomyelia, 563
- Syringomyelitis, 563  
 definition, 563  
 diagnosis, 564  
 etiology, 563  
 prognosis, 564  
 symptomatology, 564  
 synonym, 563  
 treatment, 564
- Tabes dorsalis, 568
- Tæniæ, 508  
 diagnosis, 509  
 prognosis, 509  
 symptomatology, 509  
 synonyms, 508  
 treatment, 509
- Tænia nana, 509
- Tænia solium, 508
- Tapeworm, 508
- Tarsalgia, 524
- Tetanilla, 623
- Tetany, 623  
 definition, 623  
 diagnosis, 625  
 prognosis, 625  
 symptomatology, 624  
 synonyms, 623  
 treatment, 625
- Thermic fever, 471
- Thomsens' disease, 468
- Tic douloureux, 523
- Thrombosis, cerebral, 583  
 of venous sinuses, 590  
 definition, 590  
 symptomatology, 590  
 treatment, 590
- Thrush, 27
- Thyrocele, 448
- Tonsillar abscess, 52
- Tonsillitis, 52  
 acute, 52  
 definition, 52  
 diagnosis, 57  
 etiology, 52  
 prognosis, 57  
 symptomatology, 53  
 treatment, 57
- chronic, 59  
 definition, 59  
 diagnosis, 61  
 etiology, 59  
 prognosis, 61  
 symptomatology, 60  
 synonyms, 59  
 treatment, 62
- hypertrophic, 59  
 follicular, 53  
 parenchymatous, 55  
 superficial or catarrhal, 52  
 suppurative, 52
- Tonsils, amputation of, 62
- Torticollis, 379
- Toxemia, 264
- Transverse myelitis, 550
- Treatment of gastric neuroses, 138
- Trichina spiralis, 516
- Trichiniasis, 512  
 definition, 512  
 diagnosis, 514  
 etiology, 512  
 prognosis, 514  
 symptomatology, 512  
 synonym, 512  
 treatment, 514
- Tri-facial neuralgia, 523
- Tropical abscess, 204  
 dysentery, 147
- Tubal nephritis, 267
- Tubercular adenitis, 441  
 peritonitis, 256
- Tubular diarrhea, 158
- Tumors or malignant growths of the spleen, 460
- Tympany, 190

- Typhoid dysentery, 146  
Typhlitis, 153  
Tyrotoxicus, 505
- Ulceration of esophagus, 69  
  treatment, 70  
Ulcerative appendicitis, 176  
Ulcerative stomatitis, 29  
  definition, 29  
  diagnosis, 30  
  etiology, 29  
  prognosis, 31  
  symptomatology, 30  
  synonyms, 29  
  treatment, 31  
Ulcus ventriculi, 97  
Uncinariasis, 511  
  symptomatology, 511  
  treatment, 512  
Uremia, 396  
  definition, 396  
  diagnosis, 399  
  etiology, 396  
  prognosis, 400  
  symptomatology, 397  
Uremic amaurosis, 288
- Uricemia, 355  
Urinary retention, 353  
Urinary suppression, 353
- Vaso-motor paralyses, 558  
Vesicle hemorrhage, 348  
  etiology, 348  
  symptomatology, 348  
  treatment, 348  
Viceroptosis, 195  
Volvulus, 191
- Wandering kidney, 312  
Water brash, 82  
Waxy kidney, 299  
Waxy liver, 220  
Word blindness, 597  
Word deafness, 597
- Xerostomia, 41  
  definition, 41  
  etiology, 41  
  symptomatology, 41  
  synonyms, 41  
  treatment, 42







