

PART VI. CONSTITUTIONAL DISEASES.

DIABETES MELLITUS.

Synonyms.—Saccharine Diabetes; Glycosuria.

Definition.—A constitutional disorder of nutrition, characterized by the persistent presence of grape sugar in the urine, by polyuria, and progressive loss of flesh and strength.

Etiology.—Predisposing Causes.

Geographical Location.—While diabetes is found in every country it is more prevalent in certain localities, though the reason has not been satisfactorily explained. It is quite common in Southern Italy, India, Sweden, and Germany, and may depend to some extent upon diet, habit, custom, and environments.

Race.—The racial peculiarities of the Hebrews may figure somewhat in their susceptibility to diabetes, though the cause is obscure. We only know that it occurs more frequently among the Jews than any other race.

Sex.—Of thirteen hundred cases reported by Frerichs and Seegen, nine hundred and eighty-eight occurred among males, and three hundred and fifty among females, showing a strong sexual predisposition in favor of males.

Age.—While it has been observed from infancy to old age, its occurrence before puberty is quite rare, and after the age of sixty-five, the most susceptible period being from the age of forty-five to sixty. In women it is apt to occur about the “change of life.”

Heredity.—The frequency with which diabetes occurs in certain families makes it apparent that heredity plays some part as an etiological factor, thus “Seegen found it in fourteen per cent of his cases, Schmitz in twenty per cent, and Bouchard in twenty-five per cent.” (Von Noorden.)

Social Position and Occupation.—That diabetes occurs far more

frequently among the wealthy and cultured, and those who lead a luxurious life, than among the poor and hard-working class, is the observation of all practitioners of experience. That occupation favors the disease is shown by the frequency with which it is seen in those whose work is largely intellectual, as teachers, scientists, poets, statesmen, and those of the learned profession.

Exciting Cause.—The specific cause or causes have not yet been determined and a variety of theories have been advanced as to its origin. Extirpation of the pancreas or loss of function of this organ by disease or morbid growths, results in diabetes, and hence it seems probable that this organ plays some important part as a causal factor.

Whenever the glycogenic function of the liver is disturbed, either by organic disease of the organ or by a disturbance of its innervation by puncturing the floor of the ventricle or section of the pneumogastric, diabetes follows. Tumors of the brain, concussion, hemorrhage, shock, grief, severe mental exertion, or, in fact, whatever produces a disturbance of that portion of the medulla that presides over the glycogenic function, gives rise to diabetes.

Certain drugs produce glycosuria, notably phloridzin, chloroform, and potassium bromide. Obesity and diabetes are so often found in the same person as to suggest a close relation as to cause and effect. An effort has been made to associate the infectious fevers with diabetes, but in all probability such cases are coincidences rather than causes, and the infectious disease, by weakening the system, revealed the diabetic condition that was present previous to the attack. More recently the microbic theory has obtained some support.

Pathology.—Various lesions and degenerations are found in the various organs of the body, but how many are causal and how many the consequence of disordered nutrition would be hard to say. The pancreas is affected in more than half the cases. There may be atrophy, interstitial pancreatitis, and obstruction of the duct, cysts following obstruction from calculi or growths.

The liver is usually enlarged, showing fatty degeneration; sometimes interstitial hepatitis prevails, and again abscesses are observed. The spleen is usually atrophied. The heart is pale, flabby, and there may be fatty degeneration. Pericarditis and endocarditis have been noted, and

arterio-sclerosis is not a rare condition in diabetes. The lungs share in the general breakdown, and gangrene frequently follows pneumonia. Tuberculosis of the lung is not uncommon. Pleural effusions are sometimes found.

The kidneys are enlarged and show fatty or hyaline degeneration. Interstitial nephritis is frequently present.

Various changes are seen in the brain and cord. There may be softening or thickening of the membranes, but the most constant lesions present are those affecting the medulla or fourth ventricle. The blood contains a larger per cent of sugar than during health. There is generally extreme emaciation, although in some cases the subcutaneous fat is found in considerable quantities. A bronzed condition of the skin is not uncommon.

The eye is usually involved in the advanced stages; cataract attacking by preference young subjects. Of retinal changes, Von Noorden, in "The Twentieth-Century Practice," says: "Those which are dependent upon diabetes occur under three forms: (a) Albuminuric retinitis, accompanying contracted kidney, present as a complication or sequel of diabetes; (b) Retinitis centralis punctata, with characteristic ophthalmoscopic changes (small, shining central spots, usually with hemorrhagic puncta, always bilateral, without involvement of the optic nerves—Leber, Hirshberg); (c) Retinitis hemorrhagica of the ordinary type.

Symptoms.—Two varieties are seen, the acute and the chronic. The general symptoms are very much the same in the two forms, the principal points of difference being in the age of the subject and the method of onset of the disease; the acute, usually occurring in children and young adults, while the chronic form occurs most frequently after the age of fifty. The acute form comes on more rapidly than the chronic form; the latter comes on so slowly and insidiously that the disease is well advanced before the patient is aware that he is its victim. Among the first symptoms that attract the attention of the patient is that he is losing flesh and strength, and that he has frequent calls to void water, and in the morning he is surprised to find so large a quantity in the vessel. There is no pain save a weight in the loins, and the appetite is good; indeed, in many cases, it is voracious. Digestion seems unimpaired, yet the patient continues to grow thin, and prostration is

marked; muscular weakness is characteristic.

Thirst is a characteristic symptom, the patient drinking large quantities of water during both day and night. The large quantity of water seems to be necessary to hold the sugar in solution for excretion, the demand for water beginning an hour or two after a meal. The quantity of water consumed has a direct ratio to the quantity eliminated.

The skin may be doughy and relaxed, although usually it is dry, harsh, and constricted. Pruritus is a distressing symptom, and is especially aggravated about the genitals, when the diabetic urine comes in contact with the parts. Boils, carbuncles, and eczematous eruptions are common. The hair becomes dry, and loses its gloss, and the nails become brittle and easily broken.

The tongue is dry, red, and glazed, or covered with dark sordes. The mouth is dry and sticky and the secretion of saliva is diminished.

The urine varies in quantity from four to twenty pints, although in rare cases it may be normal in quantity. It is pale, almost as clear as water, and has a specific gravity, ranging from 1,025 to 1,050, although in rare cases it may go as low as 1,013. It has a peculiar sweet odor and taste, and an acid reaction. Albumin is sometimes present before sugar appears in the urine, and uric acid is found in excessive quantities.

Tests for Urine.—See Glycosuria.

Pulmonary Complications.—These are not uncommon in the advanced stages, pulmonary tuberculosis being quite frequent, and pneumonia is often seen. The special senses may become impaired; thus the vision becomes disordered, not only by a weakening of the muscles of accommodation, but also in some cases by cataract formation. Otagia, otitis media, and mastoid affections occur. The senses of taste and smell are also affected in some cases.

Diabetic coma occurs in about half of the fatal cases. It may come on suddenly but a few hours before death, or it may be announced by a peculiar fruity odor of the breath, gastric disturbance, and headache. Emaciation is quite rapid after these symptoms, and death soon follows.

Peripheral neuritis, characterized by. neuralgia and a numb, tingling

sensation is not uncommon, while diabetic tabes may occur, and is characterized by darting pains, absence of the knee-jerks, and loss of power in the extension of the feet, giving the peculiar tabetic gait—steppage.

The course of the disease varies according to the age of the patient and the form of the disease. Thus in the young, and in the acute form, the disease lasts from a few weeks to two years, while in those past middle life and where the patient is obese, the disease may last for years.

Diagnosis.—The diagnosis is very readily made; muscular weakness without apparent cause, the passage of large quantities of water, itching of the genitalia, loss of flesh and strength, great thirst, hunger, and loss of sexual power, are so characteristic of diabetes that an analysis of the urine will scarcely be necessary for a positive diagnosis.

Prognosis.—Diabetes is a very grave disease, and although some cases recover, a large per cent will terminate fatally. A complication that frequently carries off the patient is pulmonary phthisis.

Treatment.—The treatment may be divided into three parts: Dietetic, hygienic, and medicinal.

Dietetic.—Since the greater portion of glucose that enters the blood is derived from the carbohydrates, sugar and starch, such articles of food as are rich in these substances should be excluded from the patient's diet. Saccharin and glycerin have been recommended as a substitute for sugar, but the taste is so disagreeable to most persons, that it can not be substituted to any great extent. The following articles are to be prohibited: Such fruits and vegetables as are rich in starch and sugar should be restricted, and include the following:

Vegetables—Potatoes, rice, beans, peas, carrots, beets, onions, lentils, turnips, squash, tomatoes, asparagus, parsnips, artichokes, corn, hominy, sago, arrow-root, oatmeal, and cracked wheat.

Fruits—Bananas, pears, grapes, apricots, apples, plums, strawberries, raspberries, gooseberries, sweet cherries, figs, and chestnuts.

Meats—Livers of animals, mollusks (oysters, clams, etc.), and the inside meat of clams and lobsters.

Fluids—Sweet wines, chocolate, and cocoa, if sweetened, lemonade, beer, cider, champagne, and aerated drinks, such as ginger-ale, root-beer, etc., and alcohol.

Foods Permissible.—Vegetables—Cucumbers, water-cresses, lettuce, cabbage, sorrel, mushrooms, spinach, celery, chicory, and various pickles, unless sweet.

Fruits—Lemons, oranges, currants, grape-fruit, and nuts (chestnuts excepted).

Meats—All kinds of fresh meats, poultry, fish, game, bacon, ham, and large quantities of fat, butter, eggs, and cheese.

Bread—The crust, thoroughly toasted, of a French roll and gluten biscuit.

Beverages—Coffee and tea, if not sweetened, sweet milk, buttermilk, plenty of pure water, and the alkaline mineral waters.

By observing a diet of this kind, the sugar is reduced to the minimum and often disappears. We are to remember, however, that the strength of the patient must be maintained, and many times we will have to modify our diet and permit, in moderate quantities, articles on the above-mentioned restricted list. We are not to sacrifice the strength of the patient by a too rigid diet.

Hygienic.—The patient should take light exercise in the open air, and, when too weak to do this, should be well massaged; daily baths, hot or cold, according to the strength and age of the patient should be taken. The sleeping apartment should be well ventilated and flannels worn the entire year. All mental worry and excitement should be avoided, and, where possible, the patient should live in an equable climate.

Medicinal.—The medicinal treatment of this disease has not been very successful. Von Noorden says, “The number of drugs which have been recommended in the treatment of diabetes is legion; the evidence of the small benefit of any individual, one.” Of *syzygium jambolanum* (the bark and seeds of the Java plum) which have been so highly extolled, he says, “I have never seen any results worth mentioning from the use

of this drug." The agents most frequently employed are iron, opium, arsenic, nitrate of uranium, creosote, and the bromides.

Lycopus.—In 1873, Dr. D. Ray read a paper before the Yolo County (California) Medical Society, on Diabetes, recommending lycopus. He says of a case, "For weeks I had given her iron, opium, bitter tonics, and astringents, with a host of the remedies recommended by authors, from Dr. Prout down to Flint, and without any benefit, when my attention was called to bugle weed as an agent for diabetes. The administration of fluid extract of bugle weed, a teaspoonful five times a day, soon effected a cure." Since then others have reported favorably upon its use.

Rhus Aromatica.—Dr. Goss in his "Practice of Medicine," speaks highly of this agent in the treatment of diabetes.

Chionanthus.—Dr. Hauss read a paper at the National Association in 1901, extolling the virtues of chionanthus in this stubborn disease. A study of Eclectic remedies promises more in this affection than those so long recommended.

DIABETES INSIPIDUS.

Synonyms.—Polyuria; Hydruria; Hyperuresis; Diuresis.

Definition.—A constitutional disease characterized by an excessive flow of urine of low specific gravity, and devoid of sugar and albumin, thirst, and loss of flesh and strength.

Etiology.—Age predisposes to diabetes insipidus, it being more frequent during childhood and early maturity, the disease becoming more rare after reaching the age of thirty. Heredity also plays an important part. Weil notes twenty-three cases in a family running back four generations. It has occurred during' convalescence of acute infectious diseases, and is often associated with abdominal tumors, tuberculosis, and syphilis. The ingestion of large quantities of water or malt liquors, is not infrequently followed by polyuria.

Disorders of the nervous system, however, are more largely responsible than all other causes combined. Bernard discovered a spot in the floor of the fourth ventricle of animals, which, when irritated, is followed by

polyuria. Tumors of the brain, blows on the head, great mental excitement, fright, sunstroke, apoplexy, and paralysis of the sixth nerve, have all been followed by diabetes insipidus. Epileptics not infrequently have this lesion.

Pathology.—No characteristic anatomical lesions are found. In some cases the bladder is hypertrophied owing to constant overdistention. The ureters and pelvis of the kidneys have been found dilated, due to backward pressure due to an overdistended bladder. The kidneys are sometimes enlarged and congested. Various lesions of the nervous system have been found, but none peculiar to polyuria.

Symptoms.—Diabetes insipidus may come on gradually or develop suddenly. When due to shock or traumatism, it develops quickly, otherwise it is insidious in its appearance. The patient's attention is first attracted to the disease by the frequent calls to urinate and the large quantity voided, and that he is compelled to micturate several times during the night. The urine is clear, light in color, and of *low* specific gravity, ranging from 1,001 to 1,008, and varying in quantity from three to thirty quarts every twenty-four hours. Thirst is a prominent symptom, and large quantities of water are consumed. The mouth, owing to deficient secretion of saliva, becomes dry, and the skin is dry and constricted. Usually there is but little disturbance of the digestive system, although persistent constipation, due to the excessive quantity of water voided, is a common feature.

The only complaint made by the patient is that of aching in the loins and weariness on slight exertion. Although there is gradual loss of flesh, there is not the emaciation that is seen in diabetes mellitus. The surface and the extremities are inclined to be cool, and a subnormal temperature is not uncommon.

The course of the disease depends to a great extent upon the primary lesion. Where due to tuberculosis or organic disease of the brain or abdomen, the general health fails, the patient becomes much emaciated, and the disease terminates fatally in from a few months to one or two years, while in idiopathic cases, the patient may live for years in comparatively good health.

Diagnosis.—The large quantity of urine voided, the low specific gravity and absence of sugar, enables one to recognize diabetes

insipidus from diabetes mellitus, and the continued polyuria day after day enables one to recognize it from polyuria due to hysteria, which is always more or less transient.

Prognosis.—When due to organic lesions of the brain or abdomen, the prognosis is unfavorable. If idiopathic, the patient may live for years and enjoy comparatively good health, and a good per cent of cases will entirely recover.

Treatment.—The idiopathic form of the disease yields readily to medication, which is simple and positive.

Belladonna.—A belladonna plaster is ordered across the loins, and the specific tincture of belladonna given internally. Ten to fifteen drops of the specific tincture are added to four ounces of water, and a teaspoonful given every three hours. Where there is a feeble capillary circulation, this remedy will not disappoint in its action.

Rhus Aromatica.—This is an excellent remedy in polyuria, but should be given in fifteen to twenty drop doses, four times a day. Ergot in drop doses every hour is also a good agent in many cases. A general tonic treatment is frequently very beneficial in bringing about a cure. In addition to the tonic diuretics, hydrangia, collinsonia, hamamelis, achillea, and like remedies, the administration of the compound tonic mixture (the triple phosphate of iron, quinia, and strychnia), in half teaspoonful doses, will give good results.

The diet should be nourishing, but easily digested, and as little fluid taken as is consistent with good health. Moderate exercise in the open air, and a sponge-bath daily, is to be advised. An equable climate assists materially in effecting a cure.

LITHEMIA.

Synonyms.—Uricacidemia; Uricemia; American Gout.

Definition.—A condition of the blood in which there is an excess of uric acid, due to a disturbance in cellular metabolism, and characterized clinically by various digestive, circulatory, genito-urinary, and nervous phenomena.

Etiology.—Dr. DaCosta tersely defines lithemia when he terms it a condition “in which the increase of nutriment is in excess of the output of waste.” As a result of luxurious living, the consumption of rich foods, and drinking freely of fermented and malt liquors, there is introduced into the system more nitrogenous material than can be oxidized, especially since this class usually lead a sedentary life, and muscular exercise is deficient. As a result, uric acid increases, which for a time may be eliminated by the excretory organs; but sooner or later, the kidneys, lungs, skin, and bowels are unequal to the contest, and disturbances of the stomach, bowels, circulation, and nervous system result.

We may have uric acid in excess, however, in persons of modest living. In such individuals there is feebleness of the digestive apparatus, which gives rise to the same conditions,— imperfect oxidation and disturbed metabolism.

Defective capillary circulation must be considered a cause, the correction of which is so often attended by rapid improvement of the usual phenomena.

Heredity must not be overlooked as a predisposing factor; the patient coming into the world handicapped by enfeeblement of every organ, lithemia naturally results.

Pathology.—Osler has well said that, “In the present imperfect state of knowledge, it is impossible to define with any clearness the pathology of the so-called uric-acid diathesis.”

The disturbed metabolism, if continued for a great length of time, finally leads to arterio-sclerosis, renal diseases, and degenerations, usually fibroid, of the various other tissues.

Symptoms.—The symptoms due to uric acid diathesis are legion, many of them quite vague. The principal ones are related to the digestive, nervous, and circulatory systems, although the skin and genito-urinary organs show more or less characteristic symptoms.

Gastro-Intestinal.—Among the most frequent symptoms are those of dyspepsia. The appetite is variable; at times perverted, again voracious.

The tongue is usually coated; there is an offensive breath, acrid eructations, sense of weight in the epigastrium, flatulency, nausea, and sometimes vomiting. Constipation is the rule, although diarrhea is not uncommon. Hemorrhages are usually present. A troublesome and unpleasant feature is the frequency with which stomatitis attends the disease, usually of an ulcerative character.

Cardio-Vascular Symptoms.—Palpitation is the first symptom to announce disturbance of the vascular system, and although at first due to flatulency, occurring shortly after a meal, it is not long before it disturbs the patient's rest at night. Arterial tension occurs later, followed by contraction of the arteries—arteriosclerosis.

Nervous Symptoms.—Headache is one of the most frequent symptoms of uric acid diathesis. It may be occipital, general, or affect but one side of the head—hemicrania. Insomnia is common, and the patient is often restless and irritable, finally leading to depression and melancholy, and not infrequently to suicide for relief.

Genito-Urinary Symptoms.—The urine is high-colored and generally of high specific gravity, 1,025 to 1,035, and, on cooling, deposits a brick-dust sediment—uric acid. Urea, oxalate of lime, and the phosphates are often present. Albumin and tube-casts are sometimes found. The acrid urine sometimes gives rise to cystitis and urethritis.

Cutaneous Symptoms.—The skin becomes dry and constricted, to be followed by severe pruritus and various cutaneous eruptions.

Diagnosis.—The frequent and persistent headache, gastric disturbances, high-colored urine depositing a brick-dust sediment, uric acid, and rich in the phosphates, render the diagnosis comparatively easy. The absence of joint symptoms enables us to differentiate lithemia from gout.

Prognosis.—When recognized early, judicious treatment should result in complete recovery. Where arterio-sclerosis has developed, or where degeneration of the kidney and liver has taken place, the prognosis is of course unfavorable.

Treatment.—Dietetic and hygienic measures are a very important, if not the most important, part of the treatment.

Any outdoor exercise that will bring into play the greatest number of muscles, should be indulged in regularly and systematically. Well-regulated exercise increases respiration, and the intake of oxygen helps materially in the burning of nitrogenized tissues. In lithemia, oxidation is defective, hence the need of systematic exercise. When the patient is financially able to carry out the prescription, sea-bathing is one of the best forms of exercise, since every part of the body is brought into play. An ocean voyage is beneficial, if systematic exercise is taken daily while on shipboard. For the stay-at-home people, golf, tennis, dumb bells, Indian clubs, rowing, breathing exercises, etc., should not be neglected.

Diet.—As a rule the diet should consist largely of milk, fruit, and vegetables, although no diet will suit all cases. In general, red meats should be excluded, and pork positively forbidden. Broiled or baked fish may occasionally be indulged in, and the white meat of chicken. Shellfish can usually be allowed. Eggs, poached or soft boiled, may be served occasionally. Dried beans and peas contain more nitrogenous matter than beefsteak, and should not be used often. Fruits should be freely eaten, unless of a very acid character, like sour cherries, plums, etc. The cereals may be eaten freely, especially rice.

Plenty of pure or alkaline water should be taken. Londonderry lithia water is especially to be recommended. Alcoholic, fermented, and malt liquors are to be prohibited.

The patient should be relieved of work and severe mental worry as far as possible.

The daily bath should be emphasized; the cold bath with brisk friction for the young, active, and robust. The hot bath for the feeble and elderly patient.

Medicinal; Hydrangea.—This agent has long been used in lithemia, and where there is pain in the loins and irritation of the urethra and bladder, with red sandy deposit in the urine, the agent will give good results. Hydrangea one dram, to water four ounces, a teaspoonful every one, two, or three hours should be given. The wrongs of digestion will usually be corrected by a carefully selected diet, although nux vomica, ipecac, rhus tox., hydrastis, and hydrochloric acid may be needed before the normal condition is attained.

Epigea Repens.—Where there is excess of uric acid as shown by the brick-dust deposit, backache with nausea, and marked congestion of the kidneys, epigea will increase the flow of urine, flush out the detritus, and give marked relief. Of the specific tincture, ten to fifteen drops may be given in an ounce of hot water, to be repeated every two or three or four hours. An infusion usually gives better results than does the tincture.

Polymnia.—Where there is enlargement of the spleen, with engorgement of the portal circulation and mesenteric glands, and but little or no pain, the tissues full and doughy, *uvedalia* one or two drams, to water four ounces, will give good results.

Ceanothus.—Where there is puffiness of the face, doughy and relaxed skin, with pain in the spleen and liver, two to ten drops of ceanothus in a little water every two or three hours will prove beneficial.

Carduus Marianus.—When the patient is despondent bordering on melancholy, feeble capillary circulation, enlarged spleen and liver, carduus is the indicated remedy.

Chionanthus.—Engorgement of the liver with jaundice calls for chionanthus.

Grindelia Squarrosa.—Where there is long-standing dyspepsia with enlargement of the spleen, and the patient sees only the dark side of life, Professor Mundy declares that, for this patient, there is nothing equal to grindelia squarrosa.

Piperazin has been found of marked benefit in some cases.

Lithium Benzoate.—Where the urine is loaded with phosphates, mucus, and pus, with irritation of the bladder and urethra, and where there is tenesmus and burning, benzoate of lithium should be given.

Lithium Salicylate.—If there be rheumatic pains, and the urine is loaded with the brick-dust deposit, the salicylate of lithium will be the better preparation.

Where the capillary circulation is feeble and there is nervous waste, it is

well to examine the rectum for hemorrhoids, pockets, papillae, and other wrongs. Also sound the urethra; for when there are wrongs of these parts, but little benefit can be expected from medicine till they are removed.

The alkaline mineral springs will be visited by many with much benefit.. Travel, change of climate, and absence from business and the worry of life, will do much towards a cure. In all cases, the individual case needs especial study, and such remedies as may be needed from time to time must be promptly administered.

RHEUMATISM.

Definition.—A constitutional disease, of unknown etiology, characterized by inflammation of the locomotor apparatus, accompanied by great pain and tenderness, with tendency to change from one part to another—metastasis.

Rheumatism is divided into acute, subacute, and chronic. Pseudorheumatism, into gonorrheal and muscular.

Etiology.—Many theories have been advanced from time to time to prove the specific character of the disease, each with a fair show of positive evidence to confirm the particular view held by the advocate. There are *three* principal theories to which the medical world has been generally committed, and each of which has had many supporters:

(1) *The Chemical Theory.*—This for a long time was the generally accepted factor in the production of rheumatism. In the metabolic changes that are constantly taking place, a perversion of the retrograde metamorphosis occurs, giving rise to lactic acid, and possibly other compounds, which so irritate the various tissues of the locomotor apparatus that rheumatism follows. The acid perspiration and urine seemed to confirm this view. This theory, however, is being largely abandoned, as it is now known that some cases of rheumatism show a defect in the acids of the body, and that such patients are benefited by an acid treatment. That, in many cases of this disease, there is an excess of lactic and uric acid, however, is well known.

(2) *The Nervous Theory.*—It is an established fact in pathology that joint

troubles occur as a sequence to lesions of the nerves and nerve centers. Charcot, Brown-Sequard, and others have called the attention of the profession to this point. Dr. J. K. Mitchell, of Philadelphia, as early as 1831, called attention to joint changes following injuries of the spinal cord, and his son, Dr. Weir Mitchell, has written on the same thought.

(3) *The Infectious Theory.*—The belief that the cause is microbic in origin, therefore infectious, is receiving a large following. Various germs have been found in the blood-serum and synovial fluid of the affected parts, though no constant variety has been uniformly present. Recent experiments, in which cultures from organisms taken from rheumatic nodules reproduced polyarthritis and pericarditis in the rabbit, seem quite significant. The fact that it quite often occurs in epidemic form also tends to confirm the view that it is infectious.

Predisposing Causes.—*Sex.*—In young children, girls are more frequently affected than boys, while in later life the male sex is more liable, on account of more frequent exposure.

Age.—The most susceptible age is from fifteen to twenty-five years, though no age is exempt.

Season.—The months of February, March, and April, when there are sudden atmospheric changes, predispose to the disease.

Occupation.—All occupations which are attended by exposure to the weather, such as those of drivers, sailors, soldiers, and outdoor laborers, predispose to rheumatism, and those requiring great exertion, followed by rapid cooling of the body, as ironworkers, boiler-makers, foundrymen, yeast-makers, and brewers.

Heredity.—There is a hereditary tendency to the disease, and it is quite common to find several in a family rheumatic.

Sudden Exposure.—The chilling of the surface by sudden exposure in inclement weather is frequently traced as a causal factor in the disease. One attack of rheumatism predisposes to further attacks.

Pathology.—There are no characteristic changes peculiar to rheumatism, unless we except the lesions of the heart, where this organ becomes complicated. Most patients recover without permanent lesions

of the joints, notwithstanding the great amount of swelling during the progress of the disease. During an attack, there is hyperemia of the joints and synovial membrane, attended by swelling of the joints and ligamentous tissue. There is often an increase of the synovial fluid, which may become turbid owing to the presence of fibrin flakes and leukocytes, though pus and blood are rarely found. There is marked anemia, the red corpuscles rapidly disappearing, while the hemoglobin may be reduced one-half and leukocytosis is quite common. In quite a large per cent of cases the serous membranes of the heart are involved, giving rise to endocarditis, pericarditis, and myocarditis; the left side is more frequently affected. The pleura and lung may also show changes, the result of complications.

ACUTE ARTICULAR RHEUMATISM.

Synonyms.—Inflammatory Rheumatism; Rheumatic Fever; Acute Rheumatism.

Symptoms.—*Incubation.*—The period of incubation is short and not characteristic. There may be prodromal symptoms, consisting of malaise, stiffness, painful condition of the joints, and sore throat, especially tonsillitis. Usually, however, the disease is ushered in with chilly sensations, or even a rigor. The fever rapidly rises to 103° or 104° ; there is not only pain in the head and back, but soreness of the whole body; the skin is hot, though often moist; the tongue is white and furred, the bowels constipated, and the secretion from the kidneys scanty, high-colored, and excessively acid; the pulse is full and frequent, ranging" from 100 to 140 beats per minute.

With the advent of the fever, a joint, usually the knee, ankle, elbow, or wrist, begins to swell and becomes red, hot, and exquisitely painful. If the joint is moved, the patient cries out with pain, and even the presence of the bedclothes may cause suffering. The fever may run quite high for several days, and then gradually decline. The mind remains clear save when the temperature is excessively high.

Some time during the twenty-four hours, usually at night, the patient breaks out in a profuse perspiration, which is of a sour odor, and is often attended by sudamina and miliary vesicles. These daily or nightly sweats leave the patient quite prostrated for a time; after twenty-four or

forty-eight hours of heat and pain in a joint, the swelling begins to subside, the color and pain disappear, and the part, though tender, takes on a normal appearance; but, to the disgust of patient and physician, the swelling, heat, pain, and redness occupy the attention of its opposite fellow, or perhaps another member on the same side. Thus it may go from joint to joint, or alternate with the part first affected. The swelling varies, usually confined to the joint, though often involving the sheaths and tendons.

The blood-changes are very marked, few diseases showing the marked anemia of rheumatism. The duration of the disease is variable, and no one can tell at the beginning of an attack whether it will terminate in six days or six weeks. It is one of the most painful and distressing of all diseases. Day after day the patient may lie with a red, puffy, and tender joint, unable to move it without the greatest pain, and, to add to his discomfort, a profuse, sour sweat occurs, the odor of which adds to his misery. As the days pass, the sweat loses its acidity, and may even become alkaline.

The heart may early feel the force of the infection, and the murmur in the apex region is the note of warning. This organ should be examined daily that we may be prepared with treatment to modify the force of the disease.

“In *subacute rheumatism* there is usually but little fever; the pulse may be increased five or ten beats per minute, and be more full and bounding or hard, the skin harsh and dry, the tongue coated, the appetite somewhat impaired, bowels constipated, and the urine scanty and deeper colored. These symptoms follow instead of preceding the local affection.

“One or more parts may be affected, the larger joints suffering most frequently, the smaller ones next, and the aponeurotic expansions and muscles least. When a part is attacked, it commences to swell, and becomes hot and painful, though in many cases it is not reddened. The pain, as in the preceding cases, is gnawing, tearing, tensive, and contusive, or lancinating, though usually not so severe as in the acute form. It does not change its position so frequently, but still a metastasis is not uncommon. It is full as stubborn as the more acute malady.”

Complications.—The most serious and really the only complications

that need be considered are those affecting the heart, occurring most frequently in the acute form, though found both in the subacute and the chronic. It occurs far more frequently in the young than in those past middle life. Dr. Peacock found that thirty-three and a third per cent occurred under twenty-one years of age, and only sixteen and six-tenths per cent after forty years of age.

The left heart is nearly always the seat of the lesion, for the same reason that the larger joints are almost invariably the seat of the local trouble; viz., greater functional activity.

Formerly it was supposed that the cardiac lesion was the result of a metastasis from some other part, but this idea has given way to the more rational one of similarity of structure to that of the joints; viz., fibrous and serous, and though the structure of the right heart is the same as that of the left, there is much less functional activity of the right. Its walls are thinner, and there is less tendinous material in its valves. The work is not so severe and the strain not so great. It has been determined that the left heart bears three times the strain of the right; hence the greater functional activity and greater susceptibility to inflammation.

Endocarditis.—This is the most frequent as well as the most serious complication, for it involves the mitral segments, and, though rarely dangerous, it is apt to set in motion changes which result in chronic valvular troubles, that influence the heart's action throughout life. With each attack of rheumatism, the liability to this complication increases.

The symptoms are rather vague, and many times are overlooked. An increased frequency of pulse, and an increased temperature without an increase of the local joint affection, should arouse suspicion and turn our attention to the heart.

Pericarditis.—This is rarely found as a primary disease, but follows various infectious lesions, and, in from sixty to eighty per cent, can be traced to rheumatism, and though one of the most common of complications, like endocarditis, is often overlooked during life, and only revealed post-mortem while searching for other lesions. It may occur with endocarditis or independently of that affection.

Myocarditis.—This is not so common a lesion, and when it does occur, is

preceded by the above-mentioned complications.

Diagnosis.— “We have but little trouble in making the diagnosis of rheumatism, the swelling, heat, and peculiar character of the pain being generally sufficient. It is true that, in cases of disease of the bones or of the cartilages or synovial membrane of a joint, it is sometimes almost impossible; yet the character of the pain, the general condition of the system, and the fact that rheumatism is rarely confined to one point, will frequently enable us to decide.

“Rheumatism of the back, or lumbago, is sometimes mistaken for disease of the kidney or spinal cord; but if we recollect that, in disease of the kidney, we will usually have retraction and pain in the testicle, change in the character of the urine secreted, and more or less constitutional disturbance peculiar to suppression of the urine, and that in disease of the spinal cord to this extent, we would have disturbance of all the nerves given off below, we will not readily make the mistake.

“Neuralgia is very frequently confounded with rheumatism, and it is sometimes almost impossible to distinguish them; but in a majority of cases, the pain, being exquisitely sharp, tearing or lancinating, and in the course of a nerve, will enable us to see that it is neuralgia.”

Gout usually occurs in the smaller joints, preferably the great toe; then the age, habits, and history of onset will help us in recognizing the one from the other. We can distinguish rheumatism from arthritis, by the history of pyemia, and the inflammation terminating in suppuration, and the more or less destruction of the joint.

Prognosis.—This is nearly always favorable, for though the heart complications are frequent, they rarely cause death. Our prognosis, therefore, is favorable as to life, but uncertain as to length of time the disease will run; for of all diseases that affect the human race, rheumatism is the most uncertain. Some very severe forms will yield in eight or ten days, while others seemingly not so severe will run eight or ten weeks.

Treatment.—Specific medicines yield better results than the so-called rheumatic combinations, and if a careful selection is made according to specific conditions, the majority of cases will yield more speedily than under the old regime.

The patient should be placed between blankets, and wear a flannel night-dress, with the sleeves open from shoulder to wrist, that we may readily get at elbow and wrist. The patient is less apt to take cold after profuse sweating if protected by flannel.

Locally, the part should be wrapt in cotton, or what is better, raw wool. Where the pain is great, chloroform liniment is often of much benefit. A favorite local remedy is camphor and turpentine, of each one ounce, and alcohol two ounces.

If seen early, the old alcohol sweat is of great benefit. Have the patient disrobed and placed on a wooden bottom chair, with a blanket covering him from the neck to the floor. Place four ounces of alcohol in a cup, which should be set in a pan of water, and this placed under the chair; have the patient's feet in a deep bucket of hot water; light the alcohol, and the patient will soon reach the sweating stage. Allow the patient to drink freely of cold water; the perspiration will soon start from every pore, and after ten or twenty minutes of this treatment, place the patient in bed with hot-water bottles to feet, and in a few minutes the patient falls into a quiet sleep. Where this is carefully followed, I know of no treatment which will so successfully cut short the disease.

Internally, for the full, strong pulse, I use veratrum in full doses, say thirty or forty drops to half a glass of water, to which I add sulphate of morphia, a half grain. This overcomes the nausea occasioned by the veratrum, and also assists in relieving pain. To the sedative may be added bryonia, five to ten drops, especially where the pain is lancinating in character.

Where there is great muscular soreness, use *macrotys*, and give in rather large doses, say one or two drams to half a glass of water. Dr. Webster speaks very highly of *Rhamnus californica* in stubborn cases, and from what I have seen of its effects, I like its action very much.,

Where the parts are swollen and there is edema, apocynum is the remedy, and if there arise heart complications, it is the remedy par excellence. I know of no other remedy which can equal it under these conditions; the decoction gives the best results.

Where the tongue is broad and full, and there is puffiness under the

eyes, potassium acetate will give good results. A good combination is salicylic acid one dram, potassium acetate four drams, water four ounces; a teaspoonful every four hours, the patient drinking freely of water after each dose.

Where the tongue has a pasty, dirty fur upon it, a saturated solution of sodium sulphite gives good results; but if the tongue be white, but clean, sodium salicylate in five-grain doses every three hours will replace the sulphite.

Often we have the red tongue and mucous membrane; here muriatic acid takes the place of the alkali; lemon-juice is also grateful and beneficial.

Where the pain is unbearable, a hypodermic of morphia may be necessary to give relief, but this should be avoided, except in extreme cases. Blisters should be discarded, for while they may give temporary relief, the after effects are so painful that the good is counterbalanced by the suffering.

The diet should be light, milk in some form being the best, cow's milk, malted milk, broth, whey, or koumiss. Where the patient can not take milk, broths may be substituted. Avoid meats and starchy and sweet foods till all fever disappears and secretions are fully established.

The treatment for the subacute form will be very much the same, minus the sedatives, and even here there may be indications for the small dose. Gentle massage will often afford' much relief.

CHRONIC ARTICULAR RHEUMATISM.

Synonym.—Chronic Rheumatism.

Definition.—A chronic articular disease of the joints, developing insidiously, or following the acute or subacute forms. It usually affects two or more joints, and is most likely dependent on the same conditions which give rise to the acute forms.

Etiology.—There are several predisposing causes, such as,—

Age.—This is a lesion almost invariably occurring after middle life.

Sex.—Females are more prone to the disease than males.

Environments.—One's surroundings materially predispose to this condition. Where the dwelling is low and damp, the rooms dark and poorly ventilated, and where poverty necessitates poor and illy prepared food and insufficient clothing, exposing the patient to all kinds of weather, there is a tendency to the disease.

Heredity.—Heredity may also operate in favor of bringing about conditions favorable for its development. “In some cases it has its origin in imperfect digestion and assimilation, which we would readily account for, on the theory that an increase of lactic acid was the cause of the disease.

“In others it seems to have arisen from, and is dependent on, deficient action of the excretory organs, and possibly on some changes in the process of retrograde metamorphosis, by which the broken-down tissues are converted into material fit for excretion; and in others, upon some derangement of innervation.” There is but little doubt that the same causes which give rise to the acute and subacute forms are actively at work in producing this form of the disease.

Pathology.— “When the joints have been the seat of the disease, we find them variously altered. In some cases there seems to be nothing but an increase of the synovia; in others the synovial membrane is thickened, especially the false ligaments; in some cases roughened, covered with shreds of false membrane, or adherent, coagulable lymph, and the synovia more or less viscid, shreddy, and in some cases purulent. The articular cartilages are sometimes softened, at others eroded, and in some cases completely destroyed. The articular extremities of the bones are not infrequently enlarged, and the ligaments, tendons, and muscles contracted or relaxed. When affecting other parts, if of long duration, it may so change their structure as to leave little resemblance to their original condition.”

Symptoms.—Dr. Scudder so clearly describes the disease that I will quote him in full: “As regards the general health of the patient, we find that it varies greatly in different cases. In some there is a manifest derangement of the stomach, various unpleasant sensations, as of

fullness, pain, acidity, flatulence, etc., occurring after a meal, and showing that digestion is not well performed. In such cases we find the patient reduced in flesh and strength, and exhibiting evidence of marked general cachexia. In others, the secretions are manifestly at fault, the kidneys acting poorly, or the skin is harsh and dry, or relaxed and flabby, and the bowels irregular. It is true that we find cases of chronic rheumatism in which we can not detect the slightest lesion, except the local rheumatic disease; what loss of flesh and strength there is being attributable to the continued suffering and loss of rest resulting from it; metastasis occurs in the chronic as well as the acute disease.

“It most frequently affects the articulations, they being swollen, tender, and painful; one or more may be affected at the same time, usually not more than two, and the amount of swelling, discoloration, and pain varies in different cases; sometimes the tenderness and pain are exquisite; at others it is not very marked. The articulation is in some cases entirely useless, motion or pressure giving rise to severe suffering; at others, though lame, it may still be used. In some cases it takes the form of synovial dropsy, it being very evident that the enlargement is almost entirely dependent upon effusion into the joint; at others, the enlargement seems to be dependent upon material within the synovial membrane, but it is not nearly so mobile as before. In other cases there is marked enlargement of the articular extremities, or a dull, heavy, gnawing pain, with great tenderness, when the bones are placed so as to give rise to pressure on their extremities. In other cases the deposit is undoubtedly outside, involving ligaments, tendons, and muscles that pass between the two bones, causing relaxation in some cases, contraction in others, thus giving rise to deformity. In some cases this is very marked, bones being dislocated, or tendons so shortened as to produce unnatural flexion or extension, or to change the position of the bones, as in the case of the knee-joint, the articulation of the tibia being so changed as to produce knock-knee, and turn the toes outward ; or, in the case of lumbago, or rheumatism of the dorsal or lumbar portions of the spine, giving rise to spinal curvature and other distortions. If it attacks a group of muscles, we may find them gradually shortening, until a limb is rendered entirely useless, as in the case of contraction of the hamstring muscles, and flexion of the knee, and finally terminating in the almost entire change of the muscular structure.”

Diagnosis.—This is usually not difficult, the history of the case materially assisting in determining the disease. In gout, the pain is

confined to smaller joints, and the pain is not aggravated by a change of weather.

Prognosis.—This is not favorable so far as effecting a cure is concerned; for unless the disease is seen in its incipiency but little can be expected in the way of a radical cure. However, medication mitigates the suffering and improves the general health. Very few die from the disease.

Treatment.—Where the patient has the means, a change of climate will often prove of great benefit. A visit to Southern France or Italy, or our own Southern California, or the dry, warm atmosphere of Arizona, often works changes that can be accomplished in no other way. A sojourn at Hot Springs, Arkansas ; Martinsville, Indiana, or the various mineral springs to be found in the various States, will do more for a patient in a few weeks or months than years of ordinary medication.

Of the various anti-rheumatics, a few deserve especial mention. Apocynum, in the form of a decoction, has been one of the best remedies I have ever used. Where there is edema, slight or aggravated, it has few, if any, equals. Commence with ten-drop doses, gradually increasing the dose to a teaspoonful if the stomach will retain it. The one serious objection to the remedy is its intense bitter quality and the sense of nausea it produces, many patients being unable to retain it. Where there is heart complication, it is one of the best remedies at our disposal.

The alkaline diuretics, potassium acetate, citrate, or nitrate, will be found useful where we desire to stimulate metabolic changes, and thus fit the poison to be better eliminated by way of the kidneys. Dr. Webster speaks highly of rhamnus californica and grindelia squarrosa; of the other many remedies which may be used, I will only add, when the conditions present call for their use, of course administer them. Many cases will need other remedies than the anti-rheumatics.

Wrongs of the stomach need to be corrected, for a rheumatic dyspeptic will not improve so long as digestion is impaired. Wrongs of the kidneys need to be corrected, and so do those of any other organs. Many times, rheumatism continues owing to nerve impingement affecting the capillary circulation, and a removal of the source of irritation results in a rapid recovery.

One of the happiest cures I ever effected was accomplished by correcting a diseased rectum. The patient had been medicated for months, had spent several weeks at Clifton Springs, N. Y., but had failed to receive benefit; the removal of hemorrhoids and papillae with a thorough dilating of the rectum, soon effected a cure. Where remedies fail to give benefit, examine the rectum, urethra, and uterus. If there are sources of irritation in these organs, no improvement will follow till they are corrected.

As to local applications, the old irritating plaster accomplished wonders in the hands of the earlier Eclectics. This rather harsh treatment, however, has fallen into disuse and the various stimulating liniments have taken its place, although I still believe that the old plaster accomplished better results.

The patient should wear flannels at all seasons of the year, and avoid damp, low places. The diet should be largely of vegetables, fruits, and farinaceous foods; he should turn vegetarian, though fish and bivalves may be used in season; Londonderry and Buffalo Lithia waters will do some good. Electricity will give relief in some cases, and will be more frequently used when we learn better the conditions calling for its use.

MUSCULAR RHEUMATISM.

Synonym.—Myalgia.

Definition.—A painful affection of the muscles and their attachments, the fasciae and periosteum. There is most likely some constitutional derangement, and the myalgia is but a local echo of the general condition. The local affection has taken special names according to the seat of the pain; thus torticollis, or wry-neck; lumbago, pain in the lumbar region; pleurodynia, pain in pleura; mastalgia, pain in the breast, etc.

Etiology.—The predisposing causes are various, the most common arising from sudden cooling after severe exertion, or by exposure to a draft of air, as sitting by an open window, by getting chilled by exposure in inclement weather. A severe strain or twist may be followed by a crick in the back, or lumbago.

The rheumatic or gouty diseases also predispose to the trouble. The primary cause is unknown, and some contend that it is neuralgic in character, affecting the sensory nerves of the muscles, while some contend that it is infectious.

Pathology.—The pathology is not constant. In some cases there is little if any muscular change, while in others there is slight granular degeneration of muscular fibril, or, again, atrophy of the muscular tissue. Nodes are sometimes found. There may be inflammation of the sheaths or periosteum, and in some cases thickening and degeneration of the neurilemma of the nerves supplying the part.

Symptoms.—These depend somewhat upon the form or location of pain. It is nearly always local in its effect, there rarely being any fever; usually the pain is intermittent, any motion or sudden jar causing excruciating pain; at times the pain is constant. Deep, firm pressure affords some relief. The attack comes on suddenly, and often as suddenly takes its departure; it may last for a few hours, or persist for several days.

Lumbago.—In this form the muscles of the loins are the ones affected, and it more often occurs among laboring men. The attack is sudden, and the patient imagines that he has strained his back; or he may be in a stooping position, and on attempting to straighten up is seized with a sharp, lancinating pain that may bring him to his knees. When sitting, the patient gets up with great difficulty and much pain; if lying down, he is unable to rise or turn over; in fact, any motion on the part of the patient causes him to cry out with pain.

Torticollis, or Stiff Neck.—In this form the pain is confined to the muscles of the neck, and any motion of the head causes intense pain; as a consequence, when the patient wants to turn his head, he turns the whole body. This form occurs more frequently in the young. Generally the patient's head is inclined to the affected side, thus relaxing the muscles and securing relief.

Pleurodynia.—The pain is in the intercostal muscles, and is often referred to as a stitch in the side; the pain is sharp and lancinating, and intense on full inspiration or on coughing. This is often called pleurisy, but the difference is readily distinguished when we note the absence of fever and the adventitious sound on auscultation.

Abdominal Rheumatism.—There are a number of other forms though less common, which will be recognized by the location of the pain; thus, cephalodynia, pain in muscles of the scalp; mas-todynia, pain in muscles of chest; scapulodynia, pain in scapular region; abdominal rheumatism, pain affecting the abdominal region.

Diagnosis.—This is usually quite readily made. In the various forms considered, the sharp pain, the absence of fever, increased suffering of the part affected, will distinguish the lesion as muscular rheumatism.

Prognosis.—This is favorable, rarely, if ever, a patient dying, unless there be severe heart complication. If seen early, the painful conditions are usually relieved in a few hours, or at most a few days. If neglected, however, it may assume a chronic form.

Treatment.—One of the best agents for this form is macrotys given in quite large doses; of the specific tincture one drain, to water four ounces, a teaspoonful every hour; or if the decoction is used, give in teaspoonful doses every hour. Bryonia will combine nicely in pleurodynia.

In all these cases, dry heat is one of the best local applications. Where the pain is excruciating, a few drops of chloroform on flannel, held against the painful part, gives quick relief. For stiff neck, galvanism will sometimes give great relief. For lumbago, I know of no better treatment than dry cupping; I have seen patients straighten up and walk off comfortably, after removing one or two large cups from the lumbar regions.

In those acute cases where the pain is unbearable, a hypodermic injection of morphia, one-fourth grain, gives speedy relief. This, however, should only be given in extreme cases. After an attack, any wrong of the general health should be corrected, and thus prevent a speedy return of this painful though not dangerous affection.

GONORRHEAL ARTHRITIS.

Synonym.—Gonorrhoeal Rheumatism.

Definition.—A specific septic arthritis, or synovitis, due to the poison of

gonorrhoeal virus, and resembling rheumatism, though the latter term is a misnomer. While it may occur during the acute stage, it usually follows or accompanies the gleet.

Etiology.—This disease is entirely distinct from rheumatism, therefore to designate it as gonorrhoeal rheumatism is a misnomer. It is due to the virus or toxins developed from gonorrhoeal infection, poisoning the articulations, giving rise to a septic synovitis or arthritis.

Pathology.—The evidence of synovitis is not different from that of ordinary inflammation of the joints. In some cases there is but little if any effusion, and the membrane presents a dry appearance, and the inflammation extends along the sheaths of the tendons for quite a distance. There may be effusion into the joints, and in rare cases this may become purulent. In the more chronic form the effusion is quite marked.

One peculiarity of the arthritis is in the virus selecting, for a display of its power, joints not usually involved in rheumatic arthritis, such as the sterno-clavicular, sacro-iliac, inter-vertebral and the temporo-maxillary. There is more apt to be stiffness of the joint following this lesion than in rheumatic arthritis, due to fibrous adhesions and a thickening of the membrane. Endocarditis is not an uncommon complication, which may assume an ulcerative form.

Symptoms.—Usually the joint symptoms develop upon the subsidence of the flow from the urethra. The symptoms vary, usually being of a milder type in the acute than in the chronic. In the acute form, there may be but little swelling of the joint, though the pain is severe and more persistent than in ordinary arthritis. There may be, however, all the symptoms of an acute fibrous inflammation of a joint, with swelling and great pain on motion; the pain is often aggravated at night; the inflammation, extending along the sheaths of the tendon, may pass to the periosteum, giving rise to edema, which persists for weeks or months.

In the chronic form, there is more effusion into the joint, consequently more swelling, and less tendency on the part of the patient to move the injured member. Pain is the chief feature in both the acute and chronic forms.

Diagnosis.—The history will greatly aid in the diagnosis, and should the patient deny a venereal infection, the persistent pain and absence of a general or systemic trouble, and the unusual selection of joints, will render the diagnosis easy.

Prognosis.—This is favorable, though the course of the disease is slow, and more or less stiffness remains for a long time after recovery.

Treatment.—*Berberis aquifolium* promises some relief, and should be used freely. In the use of local measures fixation will give the best results. Where the pain is very severe, the patient had better undergo anesthesia and the injured member firmly bandaged or even placed in a plaster pans cast. In the chronic form, free incision and thorough irrigation is highly extolled, and no doubt good results attend this procedure.

ARTHRITIS DEFORMANS.

Synonyms.—Rheumatoid Arthritis; Rheumatic Gout.

Definition.—A chronic inflammatory disease of the articulations, characterized by progressive changes in the joint structures, and with periarticular formation of bone, causing marked deformity and greatly impairing their function.

Etiology.—There appears to be a wealth of theory, and a dearth of facts, as to the etiology of this disease. For years it was regarded by many as a phase of rheumatism, or a near relative, while others were equally positive that its similarity to gout 'was a sufficient proof that they were of one and the same family. More recent observers have declared their belief that the disease is entirely distinct from either; in fact, Heberden, in 1804, declared his belief in a distinct lesion, and insisted that there should be a divorce from gout and rheumatism. He first described the "small nodular outgrowths upon the terminal joints of the fingers," and which are now universally referred to as Heberden's nodes.

Fuller and Garrod, early converts to this belief, called attention to the fact that in arthritis deformans there were not the blood changes nor visceral manifestations that there were in rheumatism, nor could there

be detected a trace of urates in this disease, while in gout it was ever present.

The neurotrophic origin of the disease has many followers, the profession's attention having been directed to this theory by the writings of the Mitchells, father and son, in America; Weichman, in Germany; and Ord and Duckworth, in England.

Hutchinson believes that it is neither a distinct disease from rheumatism, nor a variety, but a blending of the two, or a hybrid. The latest theory is that of infection, and that the cause is microbic. The etiology of the disease is thus seen to be doubtful, to say the least.

Predisposing Causes.—Dr. Garrod's contribution to the "Twentieth-Century Practice" contains a very interesting and instructive article on this disease, and from a tabulated report of five hundred cases the following factors figure as predisposing causes:

Age.—The greatest number of cases occur between the ages of forty and fifty-five, though no age enjoys immunity, three cases occurring before the age of ten, and one between the ages of eighty and ninety; there were less than fifty cases occurring under twenty-five years of age.

Sex.—Of the five hundred cases, four hundred and eleven were women, leaving only eighty-nine cases among the men.

Hereditary Predisposition.—In two hundred and sixteen cases the family history revealed lesions of the articulations. One woman's history revealed the fact that her father and mother had joint affections, and that of six living children, her three brothers and two sisters suffered from enlargement of the joints; thus the entire family of eight were victims of articular deformity.

Rheumatism and Gout.—In one-third of all the cases reported, gout held a prominent place, while rheumatism occurred in but sixty-four cases.

Exposure, dietetic errors, worry, care, and injuries have all been regarded as predisposing causes to the disease, though a reference to his tabulated report would not suggest them as playing an important part.

Pathology.—In the pathological changes that take place we notice, first, that there are no deposits of urate of soda as in gout, and the extensive structural changes that take place in the joints are not found in rheumatism. There may be effusion in the early stages, but as progressive changes take place, this disappears, and the first effects seem to be felt in the cartilage.

Proliferation of cells takes place, fibrillation follows, which results in softening of the cartilage, especially in the center where the circulation is feeble, and the friction great, from the opposing ends of the bones; this results in the center of the cartilage disappearing, and the exposed ends of the bones, from friction, become polished like ivory, and are termed eburnated. The outer portion of cartilage does not share in the destruction which takes place in the center, owing to absence of pressure, and instead of thinning we find enlargement; finally, ossification takes place, forming the so-called osteophytes, which often cause a locking of the joints.

In addition, nodes may develop from the periosteum along the shaft of the bone. Following these changes, inflammation of the synovial membrane takes place, exudation results, which may become organized, and, in rare cases, ossification takes place. Finally the capsule and ligaments become thickened, resulting in ankylosis. After this, atrophy of the muscles may follow, and, still more rarely, neuritis. The joint turns outward to the ulnar side: the same changes sometimes take place in the toes, they likewise turning outward.



FIG. 36. HEBERDEN'S NODES. (Tyson.)

Symptoms.—The dividing line between the acute, subacute, and chronic, or “Heberden's nodes,” and the “general progressive form,” requires greater skill than most practitioners possess; for the division is more technical than real, all cases being more or less chronic.

Heberden's Nodes.—In this form the chief characteristics are the nodosities that are formed, osteophytes, at the sides of the distal phalanges, and occur far more frequently in women than in men, usually between the age of thirty and forty. It is more apt to follow rapid child-bearing or undue lactation. The menopause is also a fruitful time for their development. They are apt to be preceded by rheumatism or gout, though not necessarily, for the disease is entirely distinct.

The patient notices that the joints are swollen, slightly reddened and tender on motion, or, if struck, sometimes they are quite painful, though this is exceptional. There may come a period of intermission, and the disease appears to have subsided, but only to reappear, the enlargement gradually increasing, till the knotty excrescences prevent the motion of the joints, and they become locked.

In time the cartilage gives way, and crepitus can be distinguished, which is followed by eburnation. The general health is but little affected in many cases, though some are attended by gastric disturbances and anemia.

General Progressive Form.—This may occur in the acute and chronic form; when acute, it may simulate acute articular rheumatism, the patient having slight fever, with swelling of the joints, the synovial sheaths, and bursae. There is little redness, however, and usually not a great deal of pain. After a time the disease is stayed, sometimes for years, when some aggravation, such as child-bearing, starts anew the fires that were supposed to be extinct, and the joints take on the usual characteristics.

The Chronic Form is the one usually found. It comes on slowly and insidiously, first in one or two joints, then in the corresponding ones on the opposite member, until the entire articulations are involved; the articulation of the hands being affected more frequently than any other joint, though none are exempt.

The first symptom is a slight swelling of the joint, attended with some

stiffness and pain. There may be effusion into the joint, with swelling of the sheaths and bursæ. There is often but little pain, sometimes none, but in very rare cases the pain is excruciating. As in the other forms, there are times when the disease seems to be stayed, and then is renewed, each time resulting in greater joint changes, till finally the articulation, from osteophytes, thickening of sheaths, and atrophy of muscles, is greatly deformed.

In the hands, the joints are turned outwards or to the ulnar side, and the same may be said when the toes are affected, sometimes the phalanges overlapping. The disease may be confined to the hands, or be followed by the knees, ankles, hips, and vertabræ, continuing till every articulation becomes involved, and the patient, drawn and weak with suffering, becomes perfectly helpless.

Diagnosis.—In the advanced stage there is but little difficulty in making a diagnosis; the great deformity, with but little pain, the turning outward of the fingers and toes, and the immobile condition of the joints, certify to the trouble. In the earlier stages, however, it may be mistaken for chronic rheumatism; but even here the history, with the more gradual invasion, will help to distinguish the one from the other.

Prognosis.—This is unfavorable if the disease is well established, especially where the joints are locked from bony deposits. In the earlier stages it may be arrested, if not completely cured. The disease is rarely ever fatal.

Treatment.—The physician usually sees these cases in the advanced stage, after two or more joints are affected and after ankylosis is partially established; hence the treatment is not satisfactory, but little, if any, benefit resulting from medication; gradually the deformity increases until the patient is a helpless cripple.

If seen early, we may hope to benefit our patients. It is very important to correct any uterine or rectal troubles that may exist, before administering remedies internally. All sources of nerve impingement, whereby capillary circulation is impaired, must be removed, and any systemic wrongs corrected. *Berberis aquifolium*, *stillingia*, *bryonia*, potassium iodide, and the salicylates will be followed by improvement in the earlier stages. Massage is of greater importance, and should be used faithfully and continuously. Where the patient has means, a course at

Hot Springs, Virginia, or Arkansas, will be of benefit.

The diet should be generous, but of such foods as will give increased nourishment. Exercise in the open air should be taken; in fact, hygienic measures will form a very important part of the treatment. Where the patient is unable to visit the famous Springs, some benefit will result from the hot vapor-bath. As a last resort the surgeon may have to be called to our assistance to remove deformities.

GOUT.

Synonym.—Podagra.

Definition.—An abnormal metabolism, attended by an excessive formation of uric acid, and characterized clinically by polyarthritis, affecting mostly the small articulations, and by the gradual deposit of sodium urate in and about the joints, and attended by various systemic disturbances.

Etiology.—Various theories have been advanced as to the cause and nature of gout. Among the predisposing or contributing causes may be mentioned:

1. *Heredity.*—Statistics show that in more than fifty per cent of all cases reported, the disease existed in the parents or grandparents.
2. *Age.*—Gout is mostly found between the ages of thirty and fifty, though, when the hereditary taint is very strong, it may occur before puberty, and in very rare cases it is found in infancy.
3. *Sex.*—Males are more often affected than females, no doubt on account of males being addicted to the drink habit.
4. *Diet and Social Condition.*—Indulging the appetite in rich foods, sweet wines, and malt liquors, with defective muscular exercise, is a prolific source of the disease, and occurs more frequently among the wealthy classes. It is not rare, however, to find gout among the poorer classes, who drink large quantities of malt liquors, and whose food is insufficient in quantity and quality. This is known as “poor man's” gout. The consumption of a large quantity of malt liquors by either rich or

poor is a contributing cause.

Chronic lead-poisoning also predisposes to the disease.

These various contributing causes result in a disordered metabolism, in which uric acid is found in excess, but the exact nature of the disease has not yet been proven.

Pathology.—The characteristic anatomical changes consist in the deposit of urate of sodium in and about the joints, the ligaments, and the synovial membrane. In rare cases the deposits are found in the cartilages of the ear, nose, eyelids, and larynx.

The kidneys are the most frequently involved of the internal organs.

In the early stage the acid and sodium salts are in a fluid state, but soon “small, chalky-white dots or lines beneath the surface of the articular cartilage appear, and progressively increase in size, coalesce into larger coherent surfaces, and give rise to destruction and deformity of the articular surfaces.” These white, chalky deposits are known as chalk-stones or tophi.

The joint first attacked is usually the great toe, the articulation farthest from the center of circulation; then the ankles, knees, and small joints of the hands and wrists follow in the order mentioned. Not infrequently the skin covering these chalky masses gives way, and the deposits appear externally through the ulcerated opening.

These chalky deposits excite secondary inflammatory changes, which result in fibrous overgrowths, leaving marked deformities of the joints and ankylosis.

In the kidneys the uratic deposits are principally in the papillae, though to some extent throughout the organ.

Arteriosclerosis is always present in the blood-vessels of advanced cases, and this in turn gives rise to cardiac hypertrophy, especially of the left ventricle. Uratic deposits have been noted on the valves.

Symptoms.—Gout is generally a chronic disease, coming on insidiously after months of disturbed metabolism, though it frequently begins as an

acute articular gout, gradually assuming the chronic form.

Acute Form.—This form is usually preceded by prodromal symptoms for several days. The patient complains of a bad taste, coated tongue, acrid eructations, pain in the head, vomiting and diarrhea; or asthmatic seizures may disturb the patient's rest. Again there are mental disturbances, the patient being restless and irritable; his sleep is disturbed, followed by great depression of spirits.

Muscular pains and cramps, with fugitive pains in the articulations, are not uncommon. The urine is scanty, high-colored, and there may be albumin present, while traces of sugar may be found—gouty glycosuria. In rare cases the patient feels better than usual the day preceding the attack.

The attack usually begins after midnight, the patient being awakened by intense pain in the metatarso-phalangeal articulation of the great toe. The pain is excruciating, and is described as burning, boring, or crushing in character, as though the toe was in a vise. The toe rapidly becomes swollen, red, and shiny, and the least motion causes exquisite pain. With these local symptoms the temperature rises to 101°, 102°, or 103°. The paroxysm lasts two, three, or four hours, when the temperature falls, the pain subsides, the patient freely perspires, and the suffering is temporarily at an end. The toe remains puffy and swollen, and is somewhat edematous.

During the early hours of the following morning there is a recurrence of the symptoms of the preceding night. Sometimes other joints are involved at the same time, notably the opposite toe and the small joints of the hand or wrist. These attacks occur nightly for from three to eight days, gradually becoming less severe after the second night. The swelling slowly subsides, desquamation of the skin follows, and during the quiet that follows the storm, the health seems improved.

The patient, now truly penitent, observes better habits, and is more careful of his diet, eschews fermented drinks, and for a time there is really an improvement in the general health. After several months, however, the patient grows careless, there is a return to the same conditions that brought about the first attack, and in from a few months to a year or more he again suffers an attack, to be repeated at more frequent intervals, while more joints become affected. One characteristic

feature of the tense, swollen joint is that suppuration never takes place.

Retrocedent Gout.—These paroxysms sometimes terminate differently, the pain being transferred to some internal organ, when it is termed *retrocedent gout*. The pain quickly subsides from the affected joint, to appear with great intensity in some internal viscus. When the stomach is the seat of the metastasis, there is intense pain in the epigastrium, vomiting, diarrhea, and great prostration, sometimes terminating in death.

When the heart is the organ attacked, there is intense pain, dyspnea, irregular pulse, anxious countenance, with great mental distress, the patient fearing early dissolution. Acute pericarditis has followed such metastasis, terminating fatally.

At other times the head receives the force of the attack, and cerebral disturbances are most marked, as shown by delirium, coma, and apoplexy.

Chronic Gout.—As the attacks become more frequent, more joints are affected and the paroxysms last longer, though not of such a severe character. The deposits progressively increase, first in the cartilages, to be followed by deposits in the ligaments and capsular tissues. This is followed by unsightly deformities and loss "of articular motion.

Where the chalky deposits are near the surface, as in the knuckles, the skin sometimes gives way, the chalk-stones being exposed. The fingers are deflected to the ulnar side, the one overlapping, as may be seen so often in arthritis deformans.

Although the patient may display great mental and bodily vigor, there is usually more or less disturbance of the stomach and bowels, while the stiffened blood-vessels, hypertrophied heart, and tensive character of the pulse, proclaim arterio-sclerosis.

The urine, plentiful, but of low specific gravity and containing traces of albumin and tube-casts, proclaims degenerative changes in the kidney.

Irregular Gout.—Whenever gout manifests itself in other parts than the articulations, it has been termed irregular gout. The subjects of this form are usually the offspring of gouty parents, though the condition may be

acquired. The uratic deposits occur in the various tissues in sufficient quantities to give rise to a multitude of unpleasant symptoms.

Myalgia.—It is not uncommon to find patients of a gouty diathesis to suffer with muscular soreness in the cervical and lumbar regions. A favorite location for the pain is also in the abductors of the leg. These pains are more severe on waking in the morning, and disappear as the day progresses.

Nervous Manifestations.—Headache is one of the common heritages of the gouty subject, while neuralgias are often found, especially of the sciatic nerve. The itching, tingling, and burning sensation so often experienced in the palms of the hand, soles of the feet, and eyeballs, are always suggestive of gout.

Gastro-Intestinal Disorders.—Disturbance of the digestive apparatus is quite common, and is manifested by frequent attacks of vomiting, cramps, diarrhea, and abdominal pain.

Cardio-Vascular Symptoms.—The increased amount of uric acid always makes more or less impression on the vascular system. This may be shown by increased arterial tension, by renal degeneration, or cardiac disturbance. Albuminuria and dropsical effusion would point to lesion of the kidneys, while an irregular pulse, dyspnea, and palpitation would show cardiac disturbance.

Cutaneous Eruptions.—The various forms of eczema are quite often associated with the gouty habit, and are more intractable than when appearing at other times.

Urinary Disorders.—Among the more frequent complications are renal disorders. The urine is excessively acid, and not infrequently contains albumin and tube-casts, while glycosuria is not rare. Renal colic frequently occurs, while disturbances of the bladder and urethra are found, and calculi, both renal and vesical, are common.

Pulmonary Affections.—Chronic bronchitis, asthma, and emphysema are frequent complications of a gouty constitution.

Eye Affections.—Conjunctivitis, iritis, keratitis, hemorrhagic retinitis, and glaucoma, are lesions of the eye, found in gout.

Diagnosis.—When we get a family history of gout in a patient who is addicted to high living, who consumes large quantities of fermented liquors, who leads a sedentary life, and who is attacked after midnight with excruciating pain in the great toe, which rapidly becomes red and swollen, and which, after two to four hours of pain, subsides, to be repeated again the following midnight, the diagnosis is very readily made.

When, however, other joints than the toe are affected, especially before the chalky deposits can be recognized, the diagnosis is not so easily made; even here, however, the family history and habits of the patient will be of assistance in the diagnosis. If we remember that acute rheumatism, the only disease that could be mistaken for gout, attacks the young, is usually attended by active fever, and does not come on so suddenly nor select the early hours of the morning for its invasion, we will not often be mistaken in our diagnosis. In old cases, the marked deformity and chalk-stones render the disease unmistakable.

Prognosis.—This depends upon several conditions,—the stage of the disease, the complications existing, and the ability of the physician to change the habits and environments of the patient. When albumin and tube-casts are found in the urine, the prognosis is decidedly unfavorable. While gout does not rapidly prove fatal, the life is shortened by some of the more serious visceral complications.

Treatment.—This may be divided into hygienic, dietetic, and medicinal.

Hygienic.—A temperate and dry climate is desirable, and residence in the country or suburbs preferable. The sleeping-room should be large, well ventilated, free from draughts, and with a sunny exposure. Flannels should be worn with the first chilly weather.

Since oxidation of the nitrogenized tissues can be greatly increased by appropriate exercise, the patient should be instructed to take, though not severe, daily well-regulated exercise. Not only is oxidation increased, but the excretory organs are stimulated and the detritus is eliminated in this way. The daily bath is quite essential, but should be suited to each individual case. Thus a young and vigorous patient would be benefited by a cold bath, with brisk friction, while a feeble or elderly patient

would need a warm bath, after which he should remain in bed for several hours. The Turkish bath should only be taken by robust patients.

Dietetic.—Since gout is a lesion of nutrition, we can readily appreciate the value of a restricted diet. We are to remember that much care and attention must be paid to this subject, for the same diet will not do for every gouty patient; and while there are some general rules and restrictions to all patients, we are not to forget that one patient may eat with impunity what would be very harmful to another. As a rule, the amount of food should be lessened, and should be taken at regular intervals. Nearly every one eats more than is necessary after the age of forty.

Red meats in particular should be restricted, and malt liquors and sweet wines absolutely prohibited. A vegetable and fruit diet, with the free use of milk, is to be recommended. Sugar, unless in very small quantities, should also be forbidden. Vegetables of an acid character, and fruits rich in sugar, are to be taken sparingly, or not at all. While many would restrict fat, Ebstein strongly advocates good fresh butter to the amount of two and a half to three and a half ounces per day. Roberts would have gouty patients use as little salt as possible, since the sodium biurate crystallizes in the tissues with an excess of sodium salts. Most patients, however, may have a mixed diet, if taken in small quantities, slowly and thoroughly masticated, and followed by well-regulated exercise. A diet largely of milk, however, is preferable.

The patient should take freely of pure water, and where the habit is to take but little fluid, he should be instructed to cultivate taking water freely and often. Although customary to recommend some alkaline mineral springs, and though thousands yearly pay visits to some of these famous resorts, as much, if not more, benefit will be derived from a pure water devoid of any alkali.

Medicinal.—During an attack, either the tincture or wine of colchicum should be given in from ten to twenty drop doses every three hours, which will favorably influence the inflammation, and also tend to relieve the pain. When the pain is excruciating, a hypodermic of morphia is permissible. The foot should be elevated and wrapped in cotton-wool.

As a local application, we may use menthol three parts, camphor two parts, well rubbed together; or menthol dissolved in chloroform. After an attack is over, the patient should be placed on the citrate of lithium or potassium, or potassium acetate may be used. Whichever salt is used, the patient must be instructed to drink large quantities of water. Piperazin is highly recommended, and should be given in five-grain doses four times a day. The salicylates, especially salicylate of sodium, have been highly extolled in the chronic form. Following an attack, the patient should be placed on a milk diet, to which may soon be added eggs, fish, and fruits, bananas excepted. As soon as able, the hygienic measures already mentioned, should be carried out.

RICKETS.

Synonyms.—Rachitis ; Rachitismus.

Definition.—A disease of early infancy and childhood, characterized by an excessive development of the bony tissues, which are deficient in the lime salts, leaving the osseous tissues soft, which leads to deformities.

Etiology.—The specific cause of rickets is unknown, though we are familiar with many conditions that may be classed as predisposing factors in the disease.

It is found much more frequently in the poorer quarters of all large cities in the north temperate zone, where all the conditions are favorable for impairing vitality, while it is seldom found in the cities of the tropics, no doubt exposure to outdoor air and sunlight neutralizing the effects of poverty.

Unfavorable environments, found in the poor classes of all large cities of the North, must certainly contribute much towards this condition. Housed in damp, dark, poorly ventilated quarters, where pure air and sunshine are unknown quantities, the vitality is impaired, and when we add to these conditions that of poor food, we have a combination that gives rise to malnutrition. These same conditions impair the vitality of the mother, rendering her milk of poor quality, or, if the baby be hand-fed, sweetened condensed milk, or starchy artificial foods mixed with water, set up fermentative processes, whereby lactic acid is generated, the alkalinity of the intestines is diminished, and the assimilation of

lime salts prevented.

Race seems to predispose to rickets, the colored and Italian children, especially in the crowded quarters of all large cities, showing a larger per cent of rickets than those of other races.

Tuberculosis and syphilis always impair the vitality of the offspring, and thus favor mal-nutrition; hence it is not uncommon to find rickets in children from tuberculous and syphilitic parents.

Pathology.—The constant and peculiarly characteristic pathological changes are found in the bones, the visceral changes being secondary and generally unimportant.

The long bones and those of the skull are most frequently affected, and give rise to the most common deformities. Thus the bending of the tibia and femur, owing to the weight of the body, is quite common, while the large, square head is characteristic of rickety subjects. Chest deformities also occur, and we have the chicken-breast or pigeon-breast.

The funnel-shaped pelvis is due to enlargement and thickening of the pelvic bones. Distortions of the spinal column also occur, and thickening of the ends of the ribs near the costal cartilages gives rise to a beaded appearance known as the “rachitic rosary.”

A rachitic bone, if examined in a fresh condition, is much softer than one in a normal state, and the actively developing centers, as the epiphyses of the long bones and the centers of ossification in the cranial bones, are found to be larger and very vascular. The periosteum is thickened and adheres tenaciously to the surface, and when separated from the bones, irregular masses of pulpy osseous tissue are adhered to the inner surfaces. A portion of bone thus denuded reveals a soft, vascular, spongy tissue.

From fifty to sixty per cent of the calcium salts are removed; hence the bones are lighter and more fragile, and greenstick fractures are common in rickety children.

The cranial bones may have so little of the lime salts present as to leave them soft and parchment-like and when palpated they give a crepitant sound, known as “craniotabes.”

After the acute stage has passed, the bone may remain soft and spongy, the interstices containing fatty matter, or a rapid bony formation may take place, leaving the bone liard like ivory.

Enlargement of the liver and spleen may occur, due to fibroid degeneration, while catarrhal inflammation of the gastro-intestinal tract is quite common. Anemia is found in all cases.

Symptoms.—For some time before any visible osseous changes or deformities take place, certain prodromal symptoms appear that may be said to be characteristic. These are gastro-intestinal disturbances, irregular fever, night-sweats, diarrhea, debility, and general evidences of malnutrition. The child is peevish, restless at night, and frequently vomits a sour mass of undigested food. Diarrhea, the stools being excessively acid, may alternate with constipation; profuse perspiration, also acid in character, bathes the head at night, the pillow becoming quite damp and ill-smelling.

The child early shows tenderness about the joints, the soreness becoming general, the child crying when handled. The muscles become weak, flabby, and unable to perform their function ; hence what at one time was supposed to be rachitic paralysis, is now known as muscular debility.

The little patient becomes feeble and puny, with prominent abdomen.

Dentition is delayed, and this, together with the symptoms already mentioned, would suggest rickets.

The first evidence of deformities may be seen in the bending of the ribs, with beads or nodules at the junction of the ribs and costal cartilages, or the wrists, ankles, and condyles of the femur may be the first to show evidence of deformity, not infrequently the large fontanel and square-shaped head will be first to attract attention.

The sternum is often thickened and crowded forward, and, the sides of the thorax being compressed, the chest assumes the appearance of a bird's thorax, and is known as pigeon-breasted. As a result of this deformity, the lungs are compressed, are unequal in size and development, and lesions of the respiratory apparatus are quite

common. The heart may be crowded to the right and forward, the pulsation being quite visible.

Not infrequently there is a tendency to spasmodic contraction of the muscles of the larynx, giving rise to spasmodic croup, laryngismus stridulus, and severe forms of whooping-cough.

Pelvic deformities, due to pressure upon the bones, and curvature of the spine, are peculiarly unfortunate in the female, as it renders labor in after life either extremely difficult or impossible.

The lower extremities suffer more frequently than other portions of the body, and club-feet, bow-legs, and knock-knees are not uncommon in rickety children.

The frequency of fractures in the fragile bones, and the tendency to imperfect union of the same, or the partial fracture, greenstick fracture, adds to the deformity.

Diagnosis.—This is readily made after the various deformities appear, and certain characteristic symptoms should excite suspicion very early; these are gastro-intestinal lesions, when the child frequently vomits a sour and ill-smelling, undigested meal; has sour diarrheal stools; profuse sweating about the head; tenderness and soreness on being handled ; is cross, restless, and peevish, with a disposition to remain passive, and delayed dentition,— these should suggest rickets.

Prognosis.—Where favorable hygienic surroundings can be secured early, and the child can live mostly out of doors, in a climate where there is a maximum of sunshine, and where a nutritious diet can be appropriated and the right remedies selected, a favorable cure may be established, and even deformities be corrected or made to disappear entirely.

Where the deformities are marked, they will of course remain. If the chest be pigeon-shaped, there will be danger from respiratory troubles, and when the pelvis is involved in the female, parturition will be attended with danger.

Treatment.—In the treatment of rickets, as much, if not more, depends upon the hygienic care given than upon medication. The child should

not lie upon a feather bed, nor one too hard, a hair mattress being preferred.

If the mother's milk be of a poor quality, the child should be furnished with a wet-nurse, whose milk is of unquestioned quality. Where this is not possible, good cow's milk is preferable to artificial food. The milk should be diluted with barley-water, slightly sweetened with sugar of milk, and only such quantity given as can readily be digested. Later, as much fats and proteids should be furnished as can be appropriated, but a very small amount of carbohydrates are to be allowed.

The child should be sponged daily with salt water, and gently massaged several times each day, to establish a better circulation and relieve painful parts. Olive-oil may be used with benefit in the rubbing. The little patient should be much in the open air and sunshine, even in cold weather, if the air be dry.

Iron, arsenic, and the hypophosphites, in doses suitable to the age of the patient, should be given, and if the stomach will tolerate it, cod-liver oil may be given with advantage.

Such agents as taraxacum, iris, euonymus, phytolacca, stillingia, corydalis, rumex, berberis aquifolium, and such other remedies as influence the blood, will be found useful.

Silica and calcaria carbonica may be given with much benefit. Rickets is a good disease to test the efficacy of the Schussler tissue remedies should the patient fail to improve on the well-known remedies already named.

SCURVY.

Synonym.—Scorbutus.

Definition.—A systemic affection due to lack of variety in the dietary, especially in an absence of vegetables, and characterized by anemia, hemorrhages into the skin, subjacent tissues, and sometimes into the articulations, spongy gums, and marked prostration.

Etiology.—It is still an unsettled question as to the specific cause of

scorbutus. Nearly, if not quite, all writers agree that a prolonged diet on salted meat with an insufficient amount of vegetables, is the chief cause, and attribute the changed condition of the blood, from alkaline to acid, to an absence of the potassium salts, in which fruits and vegetables are rich.

Albertoni has shown, in some studies on the chemistry of the blood and of digestion, “that there is a serious deviation from normal in the free HCl of the gastric juice, that intestinal putrefaction is excessive and that the urine furnishes abundant evidence of the absorption of toxins, while the absorption of fats and carbohydrates is deficient.” (Banks, in “Reference Handbook of the Medical Science.”)

Unhygienic surroundings, overwork, and old age, predispose to the disease, while anemia, chronic intestinal diseases, chronic malaria, and syphilis, also favor it. It rarely appears as an epidemic in modern times, though formerly epidemics were not rare. The improved sanitary measures of army and ship life and a greater variety in the dietary of each, make scurvy a rare disease in this, the beginning of the twentieth century.

Pathology.—The most constant lesions are the soft, spongy, ulcerated condition of the gums and hemorrhages into the various tissues. The teeth become loosened and frequently drop out, while hemorrhage occurs beneath the skin, giving rise to ecchymotic spots. Submucous hemorrhages are common, and subperiosteal hemorrhage constant, with occasional bleeding into the articulations, muscles, serous membranes, and internal organs.

There may be fatty or granular degeneration of the liver, kidneys, and spleen. If we except anemia, the blood shows no characteristic changes. Ulcers are sometimes found in the ileum and colon.

Symptoms.—The onset is rarely acute, but comes on very insidiously. There is usually a history of gradual prostration, loss of appetite, full, thick, moist, dirty tongue, foul breath, and a dry skin of a dirty, muddy color; the face is slightly puffed or swollen, and the gums are soft, spongy, dusky in color, and bleed easily. Not infrequently the gums ulcerate, the teeth are loosened, and occasionally drop out.

With the change in the gums, hemorrhages take place in the various

tissues. In the subcutaneous tissues, the most dependent parts suffer first, and ecchymotic or purpuric spots are first seen about the ankles, then upon the trunk, and finally upon the face. Although these develop spontaneously, they are hastened by blows or external injuries.

Where the hemorrhage is quite extensive and embraces the muscular, fibrous, and subperiosteal tissues, the part becomes indurated and painful. The articulations are frequently swollen and painful, the result of hemorrhages. The hemorrhage may occur from mucous surfaces, and epistaxis, hemoptysis, hema-temesis, hematuria, and enterorrhagia are seen in rare cases.

As the disease progresses, emaciation increases, there is great mental depression, palpitation of the heart, and dyspnea on slight exertion. In the early stage the temperature is normal, but as the blood becomes impaired and anemia develops, a subnormal temperature is frequently found. The pulse, from the increasing debility, is feeble and rapid and the respiration hurried, especially on slight exertion.

The urine is scanty, high-colored, of high specific gravity, and generally albuminous. Diarrhea, dysenteric in character, with bloody mucous stools, is often present.

Diagnosis.—The diagnosis is readily made when we have the history of improper food for a long-continued period. In such cases there are a number of individuals involved, and the attention of the physician is readily turned to scurvy. The presence of soft, spongy gums, readily bleeding when pressed, the occurrence of hemorrhage in the various tissues, and the great prostration, make the diagnosis positive.

In sporadic cases, and to the inexperienced, the disease may be mistaken for anemia or some of the arthritic forms of purpura, but the spongy gums and the previous history will enable one to differentiate the one from the other.

It may be recognized from purpura hemorrhagica, the only other disease that might be mistaken for it, by the absence of the gingival symptoms, the brighter color of the macules, the cleaner color of the skin of the latter, and the greater swelling of the articulations.

Prognosis.—The prognosis is generally favorable, though much

depends upon the progress of the disease, the complications, and the previous condition of the patient. When fresh vegetables and fruit-juices can be freely furnished, and there are no serious internal hemorrhages or enfeebled heart, and when syphilis is not a marked feature, recovery is the rule.

Treatment.—Scurvy being a preventable disease, a very important part of the treatment will be prophylactic, and consists in supplying vegetables, acid fruits, and fresh meat. Fortunately hygienic and dietary measures are being considered more than ever before, and the cuisine of all eleemosynary institutions are far more liberal than in former times.

The treatment is largely dietetic, and consists of furnishing the patient with green vegetables and fruit-juices. Lemon-juice diluted with water may be taken freely every one or two hours. Grape-fruit, oranges, pie-plant, and acid fruits and vegetables in general may be used. If there is great debility, the patient should be kept quiet in bed till the bodily strength is at least partially restored.

Broths, milk, eggs, cereals with cream, in fact, a rich and nutritious but fluid or semi-fluid diet, should be given.

Nux vomica, hydrastis, strychnia, berberis aquifolium, and like remedies, may be used with much benefit. Locally, as a mouth-wash, potassium chlorate and hydrastin will prove very efficient. To add tone to the spongy and softened gums, tincture of myrrh and glycerin will answer a good purpose.

INFANTILE SCURVY.

Synonym.—Barlow's Disease.

Etiology.—The disease occurs between the ages of nine and fourteen months, and is due to an absence of mother's milk, the child being bottle-fed on some one of the many artificial foods, and which lacks some important essential to nutrition. Even cow's milk, though sterilized, is said to give rise to it. It occurs more frequently among the children of the rich and well-to-do, since the custom among the latter class, of bottle feeding, is becoming greater each year. Barlow says, "The

child that is suckled at the breast never develops scurvy.”

Rickets predisposes to scurvy, and many writers believe that infantile scurvy is but a hemorrhagic fever of rachitis.

Pathology.—The osseous changes are similar to those of rickets. Intra-epiphyseal hemorrhages are responsible for the separation of the epiphysis from the shaft of the bone. These changes take place most frequently in the ribs and femurs, though the bones of the upper extremities and the vertebrae may also be the seat of hemorrhages. The marrow of the bones becomes gelatinous. The spleen, especially when rickets is present, is enlarged. The gums become spongy as in the adult, and subcutaneous hemorrhages may extend into the muscular tissue.

Symptoms.—As the child grows feeble it becomes cross, peevish, and restless, sleeps poorly at night, and worries during the day. The skin shows the muddy color that is seen in the adult, the face is puny and bloated, and ecchymotic spots appear about the eyes. There is tenderness of the joints, and the child cries when handled. The limbs may be flexed in the early stages, and there is swelling- in the course of the shaft or about the ankle or knee joints. As the disease progresses, the limbs are straightened and slightly everted, due to a separation of the epiphysis from the shaft. Where the child has teeth, the gums are swollen, soft, and spongy, as in the adult, and bleed very easily; but if there be no teeth, the gums may appear normal or show a bluish swollen front. Hemorrhages from the mucous surfaces may occur, and extravasation in the subcutaneous tissues is not uncommon. There may be present an irregular fever as in the adult, though generally the temperature is normal. Rickets is frequently associated with the disease. Diarrhea is generally present.

Diagnosis.—This is not usually difficult. The pains in the extremities, the swelling of the shafts of the bones and about the joints, the paralytic condition of the lower limbs, the ecchymoses in the skin, and the history of the infant being bottle-fed, leaves no room for a mistake in the diagnosis.

Prognosis.—If recognized early, the disease in infants and children is seldom fatal. In three hundred and seventy-nine cases collected by the American Pediatric Society, the mortality was eight per cent.

Treatment.—The substitution of a wet-nurse for the bottle, with the addition of beef-juice and a little orange-juice and lemonade during the day, will soon work a wondrous change. Where a wet-nurse can not be secured, cow's milk, properly modified with the fruit-juices above mentioned, will give good results. The hygienic conditions should be of the best, and the child kept much in the open air and sunshine.

PURPURA.

Synonyms.—Hemorrhæa Petechialis; Hemorrhagic Diathesis.

Definition.—A condition characterized by extravasation of blood into the skin and mucous membrane, and sometimes attended by free hemorrhage from mucous surfaces. It may accompany a variety of causes, appearing in many diseases.

The purpuric spots vary greatly as to size. Where small, like a pinpoint, they are termed petechia, while the larger spots are called ecchymoses. Although at first the spots are bright red, they grow dark or dingy with age.

Varieties.—The disease is divided into symptomatic or secondary purpura, and idiopathic purpura.

Symptomatic Purpura.—This may be due to certain diseases, and may be classed as follows:

Infectious, such as small-pox, measles, typhoid fever, septicæmia, pyæmia, scarlet fever, cerebral-spinal meningitis, ulceration, endocarditis, and diphtheria.

Cachectic, where it follows malignant growths, tuberculosis, Bright's disease, and the debility of old age, ecchymotic spots frequently being seen on the back of the hands of elderly people.

Toxic.—Purpura not infrequently follows the ingestion of certain drugs, as the iodids, quinine, copaiba, belladonna, rhus tox., mercury, ergot, phosphorus, chloral, potassium chlorate, and the salicylates. It may occur from the bite of venomous snakes.

Neurotic.—Lesions of the spinal cord are not infrequently attended by purpura; thus acute and transverse myelitis, locomotor ataxia, and hysteria may be cited as examples.

Mechanical.—Purpura. may attend the severe paroxysms of cough in pertussis or asthma, or it may follow severe convulsions.

Idiopathic Purpura.—*Purpura Simplex.*—This is the mildest form of purpura, and most frequently met with in children. The cause has not been determined. The hemorrhages usually occur on the extremities, and more rarely on the trunk and arms. They appear in the form of petechial spots in the hair-follicles, or in long streaks, vibices, or as large ecchymotic spots. There is generally impairment of the appetite and more or less gastro-intestinal disturbance.

Purpura Rheumatica.—Arthritic Purpura; Peliosis Rheumatica; Schönlin's disease. The etiology of this form is unknown, though many regard it as rheumatism occurring between the second and third decade. It occurs more frequently in males than females. It not infrequently is preceded by sore throat, attended by painful swelling of the joints, especially of the lower extremities; accompanying these symptoms, purpuric spots, frequently associated with urticarial wheals and more or less edema, develop.

There is a loss of appetite and slight fever. Epistaxis may occur, though hemorrhages from mucous surfaces are exceptional. The disease seldom proves fatal.

Henoch's Purpura.—This is a form of arthritic purpura occurring in children, and characterized by painful swollen joints, purpura eruptions, hemorrhages from the mucous surfaces, and gastro-intestinal disturbances. The disease rarely terminates fatally.

Purpura Hemorrhagica.—*Morbus Maculosis Werlhofii.*— This form of purpura is most frequently found among young females whose health is impaired, and is the most severe type of the purpuras. The cause has not been determined, though, from its frequent association with infectious diseases, it is regarded as due to an infection.

Symptoms.—The invasion is generally abrupt, though it may be preceded for a day or two by prodromal symptoms, such as headache,

general malaise, loss of appetite, and depression. Beginning with slight fever, purpuric spots quickly appear, the extravasation often occurring quite extensively. At the same time hemorrhages may occur in the internal organs, and bleeding from the nose, stomach, kidney, and lungs, soon gives rise to great prostration and profound anemia.

Diagnosis.—The diagnosis is made by the sudden onset, the rapid appearance of the purpuric spots, the severe hemorrhage from the mucous membranes, and the profound anemia.

Prognosis.—This is the most severe form of purpura, and is always more or less grave; the prognosis should be guarded. Death may occur from the great loss of blood or from hemorrhage into the brain.

Treatment.—In selecting treatment for purpura, each case demands a special study and when possible, the cause should be determined and remedies used for its removal. In all cases the system is below par, there being more or less impoverishment of the blood. A study of such remedies as berberis aquifolium, stillingia, rumex, corydalis, chimaphila, and kalmia will prove profitable.

HEMOPHILIA.

Synonyms.—Bleeder's Disease; Hemorrhagic Diathesis.

Definition.—A hereditary disease characterized by frequent and sometimes uncontrollable hemorrhage, either external or interstitial, and occurring either spontaneously or from slight traumatism.

Etiology.—This constitutional defect is in some unaccountable manner transmitted from mother to son, and while the daughters of such a mother are not bleeders, they in turn transmit the same constitutional defect to their male offspring, though the children of a bleeder escape the disease. The disease is confined almost entirely to the male sex, the proportion being thirteen to one. It is found in all classes, and, strange to say, its victims are frequently large, vigorous, and well developed. It usually appears before the second or third year, though it may be delayed to the tenth year or even later.

Pathology.—The pathology of hemophilia is not well understood. In

some cases the walls of the capillaries are unduly thin. Enlargement of the joints, especially of the knees, is common. Coagulation of the blood is delayed, and this peculiar condition may be due to a perversion of some of its essential constituents. Hemorrhages may occur in and about the capsules of the joints, and inflammation of the synovial surfaces may occur. In one of my cases this was a marked feature.

Symptoms.—The general health is generally remarkably good, with the exception of an occasional attack of synovitis or rheumatism. The essential symptoms, then, are frequent prolonged hemorrhages, either spontaneously or traumatic.

Spontaneous hemorrhages are more apt to occur during the early years of life, and after maturity this tendency may subside and bleedings only occur as the result of a traumatism; thus one of my patients had frequent and alarming hemorrhages, occurring from the gums and nose, up to the age of twenty-five years, since which time (he is now forty-eight) the only severe hemorrhages have been the result of injuries.

The slightest bruise will be attended by severe interstitial hemorrhage; in one instance, the result of a fall, the leg, from the knee to the ankle, became a dark-purple plum-color. In some cases the bleedings only occur as the result of an injury; thus the brother of the case just referred to has had several prolonged and dangerous hemorrhages, the result in one case from the extraction of a tooth, the patient bleeding at short intervals for nearly two weeks, and another severe bleeding from a slight injury to the lip. The two brothers, the only children of the family, have never suffered from anemia, notwithstanding the great loss of blood, owing, I think, to their splendid appetites and digestion.

The bleeding may occur from the nose, mouth, kidney, or urethra, and not infrequently into the joints. The bleeding consists of an oozing from the capillaries, and may last for days. Frequent attacks of rheumatism are the most common affection to disturb the otherwise healthy state of a bleeder.

Diagnosis.—Knowing the history of a hereditary disposition, a persistent capillary oozing would render the diagnosis very easy. Without such a history, our diagnosis would be made by a prolonged and almost uncontrollable hemorrhage, without sufficient cause to

account for it.

Prognosis.—A large per cent of bleeders die young, perhaps fifty per cent before the tenth year, and every year lived after that age favors a gradual change for the better and a final disappearance of the tendency to hemorrhage.

Treatment.—Perfect quiet must be enjoined and all excitement overcome. Internally the first trituration of carbo veg. has served me well in one persistent bleeder. Oil of cinnamon and erigeron in five to ten drop doses will also be found to give good results, while gallic acid in from five to ten grain doses may be tried.

Locally, firm compression may prove successful, and tannin, perchloride of iron, chloraseptic, and adrenalin may be tried in turn, though I prefer the dry tampons of wool or asbestos, since the ferruginous applications are apt to cause such a hard clot that in its removal a fresh hemorrhage is excited. Circumcision should not be performed on a bleeder, nor any other surgical operation, unless absolutely necessary; the extraction of a tooth being attended with danger.