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Da Costa

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Modern Surgery - Chapter 16. Syphilis

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XVI. SYPHILIS.

Definition.—Syphilis is a chronic contagious, and sometimes hereditary, constitutional disease. Its first lesion is an infecting area or chancre, which is followed by lymphatic enlargements, eruptions upon the skin and mucous membranes, affections of the appendages of the skin (hair and nails), “chronic inflammation and infiltration of the cellulovascular tissue, bones, and periosteum” (White), and, later, often by gummata. This disease is probably due to a microbe, but Lustgarten’s bacillus has not been proved to be the cause. One fact against its being the cause is its presence in the non-contagious late gummata. White quotes Fenger in his assumption that syphilitic fever is due to absorption of toxins; that the eruptions of skin and mucous membranes in the secondary stage arise from local deposit and multiplication of the virus; that many secondary symptoms result from nutritive derangement caused by tissue-products passing into the circulation; that the virus exists in the body after the cessation of secondary symptoms; and that it may die out or may awaken into activity, producing “reminders.”

During the primary and secondary stages fresh poison cannot infect, and this is true for a time after the disappearance of secondary symptoms. Immunity in the primary stage is due to products absorbed from the infected area. Colles’s immunity is that acquired by mothers who have borne syphilitic children, but who themselves show no sign of the disease. Profeta’s immunity is the immunity against infection possessed by many healthy children born of syphilitic parents. Tertiary syphilitic lesions are not due to the poison of syphilis, but to tissue-products resulting from the action of that poison, or to nutritive failure as a consequence of the disease. Tertiary syphilis is not transmissible, but it secures immunity.

Transmission of Syphilis.—This disease can be transmitted—(1) by contact with the tissue-elements or virus—*acquired* syphilis; and (2) by hereditary transmission—*hereditary* syphilis. The poison cannot enter through an intact epidermis or epithelial layer, and abrasion or solution of continuity is requisite for infection. Syphilis is usually, but not always, a venereal disease. It may be caught by infection of the genitals during coition, by infection of the tongue or lips in kissing, by smoking poisoned pipes, by drinking out of infected vessels, or by beastly practices. The initial lesion of syphilis may be found on the finger, penis, eyelid, lip, tongue, cheek, palate, anus, nipple, etc. A person may be a host for syphilis, carry it, give it to another, and yet escape it himself (a surgeon may carry it under his nails, and a woman may have it lodged in her vagina). Syphilis can be transmitted by vaccination with human lymph which contains the pus of a syphilitic eruption or the blood of a syphilitic person. Vaccine lymph, even after passage through a person with pox, will not convey syphilis if it is free from blood and the pus of specific lesions; it is not the lymph that poisons, but some other substance which the lymph may carry.

Syphilitic Stages.—Syphilis was divided by Ricord into three stages: (1) the *primary* stage—chancre and indolent bubo; (2) the *secondary* stage—disease of the upper layer of the skin and mucous membranes; and (3) the *tertiary* stage—affections of connective tissues, bones, fibrous and serous

membranes, and parenchymatous organs. This division, which is useful clinically, is still largely employed, but it is not so sharp and distinct as was believed by Ricord; it is only artificial. For instance, ozena may develop during a secondary eruption, and bone disease may appear early in the case.

Syphilitic Periods.—White divides the pox into the following periods: (1) period of *primary incubation*—the time between exposure and the appearance of the chancre; from ten to ninety days, the average being three weeks; (2) period of *primary symptoms*—chancre and bubo of adjacent lymph-glands; (3) period of *secondary incubation*—the time between the appearance of the chancre and the advent of secondary symptoms: about six weeks as a rule; (4) period of *secondary symptoms*—lasting from one to three years; (5) *intermediate* period—there may be no symptoms or there may be light symptoms which are less symmetrical and more general than those of the secondary period: it lasts from two to four years, and ends in recovery or tertiary syphilis; (6) period of *tertiary symptoms*—indefinite in duration. The fifth and sixth periods may never occur, the disease having been cured.

Primary Syphilis.—The primary stage comprises the chancre or infecting sore and bubo. A chancre or initial lesion is an infective granuloma resulting from the poison of syphilis. A chancre may be derived from the discharges of another chancre, from the secretion of mucous patches and moist papules, from syphilitic blood, or from the pus or secretion of any secondary lesion. Tertiary lesions cannot cause chancre. It appears at the point of inoculation, and is the first lesion of the disease. During the three weeks or more requisite to develop a chancre the poison is continuously entering the system, and when the chancre develops the system already contains a large amount of poison. A chancre is not a local lesion from which syphilis springs, but is a local manifestation of an existing constitutional disease, hence excision is entirely useless. If we take the discharge of a chancre and insert it at some indifferent point, into the person from whom we took it, a new indurated chancre will not be formed, because the individual already has syphilis, but auto-inoculation with the discharge of an *irritated* chancre can cause a *non-indurated* sore. If we take the discharge of a chancre and insert it into a healthy person, an indurated chancre follows. Hence we say that primary syphilis is not auto-inoculable, but is hetero-inoculable. A soft sore can be produced in the lower animals by inoculation with the virus of a chancre, but a hard sore cannot. Some observers, notably Kaposi, of Vienna, advocate the unity theory. This theory maintains that both hard and soft sores are due to the same virus, the infective power of the soft chancre simply being less than that of the hard sore, the possibility of constitutional infection depending, not upon differences in the poison, but rather upon differences in the soil and in the local processes. The unicists advocate excision of chancres, soft or hard, to prevent, if possible, constitutional involvement. Most syphilographers believe in the duality theory, which we have previously set forth. This theory took origin from the classical investigations of Bassereau and Rollet. The duality theory maintains that the soft sore is caused by a poison different from that which originates the hard sore, and that a true soft sore never infects the system.*

* For a full discussion of these points see the writings of Fournier, Alfred Cooper, and von Zeissl, and especially the great work of Taylor.

Initial Lesions.—An initial lesion, hard chancre, or infecting sore never appears until at least ten days after exposure; it may not appear for many weeks, but it usually arises in about twenty-five days. There are three chief forms of initial lesion: (1) a purple patch exposed by peeling epidermis, without induration and ulceration—a rare form; (2) an indurated area under the epidermis, without ulceration—a very common form; and (3) a round, indurated, cartilaginous area with an elevated edge, which ulcerates, exposing a velvety surface looking like raw ham; it bleeds easily, rarely suppurates, does not spread, and the discharge is thin and watery. This is the “Hunterian chancre,” which is rarer than the second variety, but commoner than the first, and which ulcerates because of dirt, caustic applications, or friction.

A chancre is rarely multiple; but if it is so, all the sores appear together as a result of the primary inoculation; they do not follow one another because of auto-infection. A hard sore does not suppurate unless irritated by caustics, friction, or dirt, or unless there be mixed infection with chancroid; its nature is not to suppurate. The hardness may affect only the base and margins of an ulcer or it may affect considerable areas, but it has well-defined margins and feels like cartilage encapsuled, so that it can be picked up between the fingers. This hardness or sclerosis is due to gradual inflammatory exudation into “the tissues at the base of the ulcer and to growth of the nodule” (von Zeissl). It feels distinct from the surrounding tissues, like a foreign body lying in the part. A chancre untreated may last many months. The induration usually disappears soon after the appearance of secondary symptoms. A copper-colored spot remains, and does not disappear until the disease is cured. Induration may again appear before the outbreak of some distant lesion.

Mixed Infection of Chancre and Chancroid.—Von Zeissl says: “If syphilitic contagion is mixed with pus, a chancre begins as a circumscribed area of hyperemia and swelling, which undergoes ulceration, and does not develop hardness for a period of from ten days to several weeks, and may develop a nodule after the first ulcer has entirely healed.” This condition is seen when mixed infection occurs, the chancroid poison being quick, and the syphilitic poison being slow, to act. If chancroid poison is deposited some time after the syphilitic poison has been absorbed, the induration may appear in a few days after the chancroid begins. A soft chancre may appear upon an existing syphilitic nodule and may eat out the induration.

Diagnosis of Chancre.—It is necessary to distinguish a chancre from a chancroid and from ulcerated herpes. A chancroid appears in from two to five days after contagion (always less than ten days); it may be multiple from the start, but, even if beginning as one sore, other sores appear by auto-inoculation; it begins as a pustule, which bursts and exposes an ulcer; the ulcer is circular, has thin, sharp-cut, or undermined edges, a sloughy, non-granulating base, and gives origin to a thin, purulent, offensive discharge which is both auto- and hetero-inoculable. These soft sores have no true sclerotic area, do not bleed, produce no constitutional symptoms, and are apt to be followed by acute inflammatory buboes which tend to suppurate. A chancroid causes pain, and the original ulcer enlarges greatly. A chancre appears in about twenty-five days after inoculation (never before ten days); it is generally single, but if multiple sores exist, they all appear together, for their dis-

charge is not auto-inoculable if the sore is not irritated; an auto-inoculation of the products of an irritated chancre can at most produce only a soft purulent ulcer. A chancre begins as an excoriation or as a nodule; if an ulcer forms, its floor is covered with granulations and it is red and smooth; the discharge is thin and scanty and not offensive; the edges are thick and sloping; it is surrounded by an area of induration, and bleeds when touched, there appear about the same time with it indolent multiple enlargements of the adjacent glands, which rarely suppurate, and it is followed by secondary symptoms. A chancre causes little pain, and after it has existed for a few days rarely shows any tendency to spread. A urethral chancre appears after the usual period of incubation; it is situated near the meatus, one lip of which is usually indurated; the discharge is slight, often bloody, never purulent; indurated multiple buboes arise; the sore can be seen, and constitutional symptoms follow.

Herpetic ulceration has no period of incubation; it may follow fever, but usually arises from friction or irritation due to dirt or acrid discharges. It appears as a group of vesicles, all of which may dry up, or some may dry up and others ulcerate, or they may run together and ulcerate. The edges of an herpetic ulcer are in "segments of small circles" (White); the ulcer is superficial, has but little discharge, and does not have much tendency to spread; it has no induration; it is painful; it is not accompanied by bubo unless sup-puration is extensive. Herpes is not followed by constitutional involvement.

A chancre may be mistaken for cancer of the tongue. "A chancre of this region is brownish-red, a cancer being bright red. A chancre is soft in the center; a cancer presents uniformity of induration. A chancre gives origin to a thin, purulent discharge, free from blood; a cancer furnishes a non-purulent, bloody discharge. A chancre is followed by indolent lymphatic enlargements under the jaw; a cancer is followed by painful enlargements." A cancer is slower in evolution, is not followed by constitutional symptoms, and the lymphatic enlargements are much later in appearing than in chancre.

Phagedena.—A chancre or a chancroid may be attacked by phagedena, a destructive form of ulceration which was once common, but at present is rare. The ulceration often spreads on all sides and also deeply into the tissues. In some cases it spreads in only one direction (serpiginous ulceration), in some cases sloughing occurs. Phagedena occurs only in the debilitated (anemic, drunkards, strumous subjects, sufferers from diabetes, Bright's disease, etc.; salivation can cause it). The phagedenic ulcer is irregular, with congested and edematous edges, and a foul, sloughy floor.

Chancre Redux.—Some observers believe that reinfection with syphilis is not very unusual (Hutchinson). Most authorities maintain that it is very rare (Taylor). The latter school maintains that the region once occupied by a chancre may, after many years, become indurated anew. Fournier pointed out this fact thirty years ago. Such a reinduration is called chancre redux, or relapsing chancre.

If syphilitic manifestations follow such an induration, we must conclude that reinfection has truly occurred. If they do not follow, and this is the rule, the lesion is not really a chancre, but is probably a gumma in an early stage of development. Mauriac pointed out this last fact.*

* Mracek, in *Wien. klin. Rundschau*, 1896. H. G. Antony, in *Chicago Medical Recorder*, April, 1899.

Syphilitic Bubo.—In syphilitic bubo anatomically related lymphatic glands enlarge about the same time as induration of the initial lesion begins. In the very beginning these glands may be a little painful, but the pain is slight and of temporary duration. These enlargements are called "indolent buboes"; they may be as small as peas or as large as walnuts, are freely movable, and very rarely suppurate. The lesion of the glands is hyperplasia of all the gland-elements and of their capsules, due to absorption of the virus. If the patient is tuberculous, the bubo is apt to become enormous, lobulated, and persistent. If the chancre appears on the penis, the superficial inguinal and femoral glands enlarge, usually on the same side of the body as the sore. If the sore is on the frenum, both groins are involved. If a chancre appears on the lip or tongue, the bubo is beneath the jaw. These buboes may remain for many months; they do not suppurate unless the sore suppurates or unless the patient is of the tuberculous type; and they finally disappear by absorption or fatty degeneration. About six weeks after buboes have formed in the glands related to the lesion all the lymphatics of the body enlarge. General lymphatic involvement arises about the same time as the secondary eruption. The enlargement of the post-cervical and epitrochlear glands is diagnostically important. Glandular enlargements persist until after the eruptions have disappeared.

Glandular enlargement always occurs in syphilis, but the bubo exists in only one-third of the chancroid cases. The bubo of syphilis is multiple, consisting of a chain of movable glands (the glandulæ Pleiades of Ricord); the bubo of chancroid is one inflamed and immovable mass. The bubo of syphilis is indurated, painless, small, and slow in growth; the bubo of chancroid shows inflammatory hardness, is painful, large, and rapid in growth; the first rarely suppurates, the second often does. The skin over a syphilitic bubo is normal; that over a chancroidal bubo may become red and adherent. A syphilitic bubo is not cured by local treatment, but is cured by the internal use of mercury and is followed by secondary symptoms. A chancroidal bubo requires local treatment, is not cured by mercury, and is not followed by secondaries. Herpes, balanitis, and gonorrhœa rarely cause bubo, but when they do the bubo in each case is similar to that caused by chancroid. A positive diagnosis of syphilis can be made when an indurated sore is followed by multiple indolent buboes in the groin and by enlargement of distant glands.

General Syphilis.—As the general lymphatic enlargement becomes manifest a group of symptoms known as "syphilitic fever" may appear. In many mild cases, however, fever is absent and the eruption is the first sign of constitutional involvement. The patient usually thinks he has a severe cold, is feverish and restless; complains of headache, lassitude, sleeplessness, and anorexia; his face is pale; he has intermitting rheumatoid pains in the joints and muscles, especially of the shoulders, arms, chest, and back, which pains change their location constantly and prevent sleep; night-sweats occur, and the pulse is quite frequent. The fever usually reaches its height in forty-eight hours, and falls as the eruption develops. The eruption develops usually in from forty-eight to seventy-two hours after the onset of the fever, but may not do so for one week or even more. The fever and the discomfort are worse at night. In type the fever may be intermittent, remittent, or continued. Prolonged syphilitic fever with delay in the appearance of the erup-

tion gives rise sometimes to great errors in diagnosis. In syphilitic fever there are anemia, trivial leukocytosis, and a marked fall in hemoglobin. Syphilitic fever may reappear during the progress of the disease.

Secondary Syphilis.—The phenomena of secondary syphilis are due to poisoned blood. Fenger states that the poison is present in the blood during outbreaks, but not during the quiescent periods between outbreaks. Secondary syphilis is characterized by plastic inflammation, by the formation of fibrous tissue, and by thickening of tissue. Superficial ulcerations may occur. Structural overgrowths appear (for instance, warts).

Syphilitic Skin Diseases.—*Syphilodermata* (syphilides) are due to circumscribed inflammation, and may be dry or purulent. There is no one eruption characteristic of syphilis. This disease may counterfeit any skin disease, but it is an imitation which is not perfect and is never a counterpart. Syphilitic eruptions are often circumscribed; they terminate suddenly at their edges, and do not gradually shade into the sound skin. In color they are apt to be brownish-red, like tarnished copper; especially is this the case in late syphilides. Hutchinson cautions us to remember that an ordinary non-specific eruption may be copper-colored, especially in people with dark complexion and when it occurs on the legs. Eruptions are apt to leave a brownish stain. Early syphilitic eruptions are symmetrical. Syphilitic eruptions have an affection for particular regions, such as the forehead, the abdomen and chest, the neck and scalp, about the lips and the alæ of the nose, the navel, anus, groins, between the toes, and upon the palms and soles. Early secondary eruptions rarely appear on the face or hands. Specific eruptions are polymorphous, various forms of eruption being often present at the same time, so that roseola is seen here, papules there, etc. These syphilides do not cause as much itching as do non-specific eruptions, except when they occur upon the scalp, about the anus, or between the toes. The late secondary eruptions tend to an arrangement in curved lines.

Forms of Eruption.—The chief forms of eruption are: (1) erythema, (2) papular syphilides, (3) pustular syphilides, and (4) tubercular syphilides. Besides these eruptions pigmentation may occur (pigmentary syphilide), and blood may extravasate (purpuric syphilide).

Prince A. Morrow does not believe in erecting the vesicular syphilides into a special group. He tells us that vesicles sometimes form on erythemato-papular lesions, but their presence is an accident and not a regular phenomenon. So, too, the bullous syphilide is a rare accident in a case, and even when it occurs soon becomes pustular. The pemphigoid syphilide is found almost exclusively in hereditary disease.*

1. **Erythema** (*maculae, roseola, or spots*). This eruption usually comes on gradually, crop after crop of spots appearing, and many days passing before an extensive area is covered. Occasionally, however, it arises suddenly (after a hot bath, after taking violent exercise, or after eating an indigestible meal). This eruption consists of circumscribed, irregularly round, hyperemic spots, about one-eighth of an inch in diameter, whose color does not entirely disappear on pressure in an old eruption but does in a recent one. The color is at first light pink, but it becomes red, purple, or even brown. In the papular form of erythema the spots are slightly elevated. Erythema is rare upon

* Morrow's "System of Genito-urinary Diseases, Syphilology, and Dermatology."

the face and the dorsum of the hands and feet. It attacks especially the chest and belly, but appears often on the forehead, the bend of the elbow, and the inner portion of the thigh, the neck, and the flexor surface of the forearms and arms. It appears first on the abdomen and last on the legs. Usually erythema follows syphilitic fever, about six weeks after the chancre appears, and the number and distinctness of the spots are in proportion to the violence of the fever. No fever or slight fever means there will be but few spots and they will soon disappear. In rare cases the eruption is very transitory, lasting but a few hours, but it usually continues for several weeks if untreated. It may pass away or may be converted into a papular eruption. Mercury will cause it to disappear in a couple of weeks. In examining for this form of eruption in a doubtful case, let cold air blow upon the chest and belly (Hearn); this blanches the sound skin and makes clear any discoloration. No desquamation attends the macular eruption, but a brownish stain remains for a variable time after the eruption fades. Erythema means, as a rule, a mild and curable attack. Maculæ may be combined with the next form, constituting a maculopapular eruption.

The maculopapular syphilides are evolved from the macular syphilides. They are slightly elevated, are situated upon hyperemic bases, and the summits of some of them may undergo slight desquamation. A roseolar area may show one or several of these macular papules. They are apt to arrange themselves in segments of a circle, and are symmetrically distributed. This eruption usually appears early, but may appear late. It may fade and reappear several times in the same patient. The eruption lasts a few weeks.

2. **Papular syphilides**, which are papules or elevations covered with dry skin, may or may not desquamate. If they do desquamate, the process begins over the center. They usually appear from the third to the sixth month of the disease. They may be preceded by fever, and often reappear again and again. They are at first red, but become brownish. They are firm in feel and vary in size from the head of a pin to a five-cent piece or larger. They may be present as miliary papules, lenticular papules, papules which scale off (papullosquamous eruption), and moist papules. Papules on fading leave coppery-looking stains. Papules upon the palms and soles constitute the so-called "palmar and plantar psoriasis," which appears from three months to one year after the appearance of the chancre. Papules just below the line of the hair on the forehead constitute the *corona venerea*. Papular syphilides appear especially upon the forehead, the neck, the abdomen, and the extremities. The papular or squamous syphilide of the palms and soles begins as a red spot which becomes elevated and brownish; the epidermis thickens and is cast off, and there then remains a central red spot surrounded by undermined skin. If papules are in regions where they are kept moist (as about the anus), they become covered with a sodden gray film which after a time is cast off and leaves the papule without epidermis. The sodden papules are called *flat condylomata*, moist or humid papules or plates. Papules which are at first small may become large. The small or miliary papules constitute *syphilitic lichen*. The lenticular papules are most common, and strongly tend to scale off. The papular syphilides give a worse prognosis for the constitutional disease than do spots.

3. **Pustular syphilides** arise from papules. The condition is known as *acne* when the apex of the papule softens, *impetigo* when the whole papule suppurates, and *ecthyma* or *rupia* when the corium is also deeply involved. Vesicles occasionally precede pustules. The pustular eruption appears a number of months after infection and later than the papular. The pustular eruption gives a very bad prognosis for the constitutional disease. *Rupia* is formed by a pustule rupturing or a papule ulcerating, the secretion drying and forming a conical crust which continually increases in height and diameter, while the ulceration extends at the edges. When the crust is pulled off there is seen a foul ulcer with congested, jagged, and undermined edges. *Rupia* may be secondary or tertiary, and it invariably leaves scars. It appears only after at least six months have passed since the chancre began. Secondary *rupia* is symmetrical. Tertiary *rupia* is asymmetrical.

4. **Tubercular syphilides** are greatly enlarged papules intermediate between ordinary papules and gummata.

Diagnosis between Secondary and Tertiary Syphilides.—A secondary eruption is distinguished from a tertiary eruption by the following: the first tends to disappear, the second tends to persist and to spread; the first is general and symmetrical, the second is local and asymmetrical; the first does not spread at its edge, the second tends to spread at its edge, and this tendency, which is designated "serpiginous," produces an ulcer shaped like a horseshoe (Jonathan Hutchinson). Secondary lesions appear within certain limits of time, develop regularly, and are dispersed by mercurial treatment. Tertiary lesions appear at no fixed time, develop irregularly, and are not cleared up by mercury.

Affections of the Mucous Membranes.—The chief lesions in syphilitic affections of the mucous membranes are mucous patches, warts, and condylomata. The first phenomena of secondary syphilis are, as a rule, symmetrical ulcers of the tonsils, painless, of temporary duration, and superficial (Hutchinson). The borders of the ulcers are gray, and the areas are reniform in shape. Catarrhal inflammations often occur. Eruptions appear on the mucous membranes as upon the skin. *Mucous patches* are papules deprived of epithelium; they are gray in color, are moist, and give off an offensive and virulent discharge. They usually appear as areas of congestion, swelling, and abrasion of the epidermis upon the lips, palate, gums, tongue, cheeks, vagina, labia, vulva, scrotum, anus, and under the prepuce. A moist papule of the skin is really a mucous patch. These patches, which are always circular or oval, are among the most constant lesions of the secondary stage, appearing from time to time during many months. If a patch has the papillæ destroyed, it is called a "bald patch." If the papules present hypertrophied papillæ fused together, there appear enlargements with flat tops, termed *condylomata*; if the papillæ of the papules hypertrophy and do not fuse, the growths are called *warts* (Fig. 91). Mucous lesions of the mouth are commonest in smokers and in those with bad or neglected teeth. Hutchinson says that persistence in smoking during syphilis may cause leukomata, or persistent white patches. The vagina and lips of the vulva during the secondary stage are often covered with mucous patches. The uterus may contain mucous lesions which poison the uterine discharge. The larynx may suffer from inflammation, eruptions, and ulceration (hence the hoarse voice which is so usual). The nasal mucous mem-

brane may also suffer. The rectal mucous membrane may be attacked with patches, and so may the glans penis, the inner surface of the prepuce, and the urethra. Early in the secondary stage in some cases there is a slight muco-purulent urethral discharge, and examination with an endoscope shows redness of the mucous membrane of the anterior urethra. The discharge is contagious. The condition may be followed by constriction of the urethral caliber. Distinct ulceration may take place.

Affections of the Hair.—In syphilis the hair is usually shed to a great extent. This loss may be widespread (beard, mustache, head, eyebrows, pubic hair, etc.) or it may be limited. Complete baldness sometimes ensues, but it is rarely permanent. The hairs of the head are first noticed to come out on the comb; on pulling them they are found loose in their sheaths—so loose that Ricord has said “a man would drown if a rescuer could pull only upon the hair of the head.” The falling out of the hair, which is known as *alopecia*, usually begins soon after the fever or about the time of the eruption, but it may be postponed until much later. The skin of a syphilitic bald spot is never smooth, but is scaly. The hair may thin generally, baldness may appear in twisting lines, or it may be complete only in limited areas. Alopecia results from shrinking of the hair-pulp, death of the hair, and casting off of the sheath.

Affections of the Nails.—*Paronychia* is inflammation and ulceration of the skin in contact with a nail and extending to the matrix. The nail is cast off partially or entirely. *Onychia* is inflammation of the matrix, and is manifested by white spots, brittleness or extended opacity, twisting, and breaking off of the nail. The parts around are not affected. The damaged nail drops off and another diseased nail appears.

Affections of the Ear.—Temporary impairment of hearing in one or both ears is not uncommon in syphilitic affections of the ear. Rarely, permanent symmetrical deafness is produced. Ménière's disease is sometimes caused by syphilis.

Affections of the Bones and Joints.—In syphilis there may be slight and temporary periostitis. Pain and tenderness arise in various bones, the pain being worse at night (*osteocopic pains*). Osteoperiostitis usually arises with or after the onset of the secondary eruption, but in rare instances precedes the syphilides. The bones usually involved are the tibiæ, clavicles, and skull. Intense headache may be due to periostitis of the inner surface of a cranial bone (Mauriac). Local periostitis may form a *soft node* which by ossification becomes a *hard node*. Pain like that of rheumatism affects the joints. Symmetrical synovitis has been noted. Secondary syphilitic disease of bone, periosteum, and joints lasts only a short time and is never destructive.

Affections of the Eye.—*Iritis* is the commonest eye trouble which may arise during secondary syphilis. It appears from three to six months after the chancre, and begins in one eye, the other eye soon becoming affected. The symptoms are a pink zone in the sclerotic, a congested, red or muddy iris, irregularity of the pupil accentuated by atropin, the existence of pain and photophobia, and sometimes hazy or even clouded pupil. Rheumatic iritis causes much pain and photophobia, syphilitic iritis comparatively little; there is less swelling in the first than in the second; the former tends to recur, the latter does not. Iritis is usually recovered from, good vision being retained. Diffuse

retinitis and disseminated choroiditis never occur until a number of months have passed since the infection. The symptoms are failure of sight, muscae volitantes, and very little photophobia. The diagnosis of retinitis and choroiditis is made by the ophthalmoscope.

Affections of the Testes.—Syphilitic Sarcocoele.—The testicle enlarges because of plastic inflammation. Both glands usually suffer, but not always. Fluid distends the tunica vaginalis. The epididymis escapes. The testicle is not the seat of pain, is troublesome because of its weight, and has very little of the proper sensation on squeezing. The plastic exudate is generally largely absorbed, but it may organize into fibrous tissue, the organ passing into atrophic cirrhosis.

Intermediate Period.—Secondary lesions cease to appear in from eighteen months to three years. In the intermediate period no symptoms may appear, but the disease is still for some time latent and is not cured. Symptoms may arise from time to time. These symptoms, which are called "reminders," are not so severe as tertiary symptoms, are apt to be symmetrical, and do not closely resemble secondary lesions. Among the reminders we may name palmar psoriasis and sarcocoele. Sarcocoele in this stage is bilateral and rarely painful. Bilateral indolent epididymitis occasionally occurs. Sores on the tongue, a papular skin-eruption, and choroiditis may arise. Gummata occasionally occur in this stage, but they are apt to be symmetrical and non-persistent. Arteritis may occur, beginning in the intima or adventitia, and causing, it may be, aneurysm, thrombosis, or embolism. Obliterative endarteritis may cause gangrene. Vascular changes are notably common in the vessels of the brain, and thrombosis may occur, in which case paralysis comes on gradually, preceded by numbness, although sudden paralysis may take place. These paralyzes may be limited, extensive, transitory, or permanent. The nervous system often suffers in this stage (anesthetic areas and retinitis). The viscera are often congested and infiltrated (tonsils, liver, spleen, kidneys, and lungs).

Tertiary Syphilis.—This stage is not often reached, the disease being cured before it has been attained. It is not so much a stage of syphilis as a condition of impaired nutrition which results from the disease. This view finds confirmation in the fact that tertiary lesions do not furnish the contagion. The primary stage disappears without treatment, the secondary stage tends ultimately to spontaneous disappearance, but tertiary lesions tend to persist and to recur. Tertiary lesions may be single or may be widely scattered; when multiple they are not symmetrical except by accident. These lesions may attack any tissue, even after many years of apparent cure; they all tend to spread locally, they all leave permanent atrophy or thickening, they all tend to relapse, and a local influence is often an exciting cause.

Tertiary skin-eruptions are liable to ulcerate. Various eruptions may occur: papular syphilides, pustular syphilides, gummatus syphilides, serpiginous syphilides, and pigmentary syphilides. The characteristic syphilide is *rupia*, which is formed by a pustule rupturing or a papule ulcerating. A brown or black crust forms because of the drying of the discharge, ulceration continues under the crust, new crusts form, and, as the ulcer is constantly increasing peripherally, the new crusts are larger in diameter than the old ones, and the mass assumes the form of a cone. An ulcer which has destroyed

the deeper layers of the skin is exposed by tearing off the crust. On healing a rupial ulcer always leaves a permanent scar.

Serpiginous ulcers are common in tertiary syphilis, and are especially common about the knees, nostrils, forehead, and lips. Serpiginous ulceration is spoken of as syphilitic lupus. It is preceded by a widespread, brown-colored nodular cutaneous infiltration. The nodules suppurate, run together, crust, and produce an ulcer which spreads rapidly and assumes the shape of a horseshoe.

The Gumma.—The gumma is the typical tertiary lesion. In some cases there is a solitary gumma; in others, two or three or even many gummata. A gumma is a mass of granulation tissue, grayish-yellow in color, containing many cells and few fibers. Organization of the gumma fails to take place because of a want of sufficient blood-supply, the cellular mass is apt to undergo caseation, and when this occurs an ulcer forms. One portion of the mass may caseate, another portion may become fibrous. In some cases the entire gumma becomes fibrous. A gumma varies in diameter from one-eighth of an inch to two or three inches, presents a center of gummy degeneration, a surrounding area of immature fibrous tissue, and an outer zone of embryonic tissue and leukocytes. A gumma, when it is spontaneously evacuated, exhibits a small opening or many openings with very thin red and undermined edges; the ulcer is slow to heal, and forms a thin scar, white in the center, but pigmented at the margins and usually depressed (Jonathan Hutchinson, Jr.). The gummatous ulcer is deep, circular in outline, with undermined edges and an uneven floor covered with a thick, white, adherent slough. Sometimes there is no slough, but an extensive area is infiltrated. A gummatous ulcer may coalesce with one or more adjacent ulcers. The discharge is scanty and tenacious. These ulcers are often seen upon the legs, and when once healed rarely recur. A gumma in the internal organs may become a fibrous mass. Gummata form in the skin, subcutaneous tissues, muscles, tongue, joints, bursæ, testes, spinal cord, brain, and internal organs. In tertiary syphilis an inflammation may not form a circumscribed gumma, but, instead, may produce a diffuse degenerating mass. This type of inflammation, which is seen in bones, is called "gummatous." A healing gumma in a mucous canal such as the rectum or larynx causes thickening and stricture. Tertiary syphilis is a common cause of amyloid degeneration and the most frequent cause of arterial and nervous sclerosis.

Various Lesions.—Hutchinson enumerates the lesions of tertiary syphilis as follows: *Periostitis*, forming nodes or causing sclerotic hypertrophy, or suppuration, or necrosis; gummata in various parts; disease of the skin of the type of rupia or lupus; gumma or inflammation of the tongue, causing sclerosis; structural changes in the nervous system, causing ataxia, ophthalmoplegia externa and interna, general paresis, optic atrophy, and paralysis of cerebral nerves; amyloid degenerations; and chronic inflammation of certain mucous membranes (of the mouth, pharynx, vagina, rectum, etc.), with thickening and ulceration. Gummatous osteoperiostitis of the vertebræ may arise, and this may be associated with disease of the membranes or cord. Syphilitic inflammation of vertebræ is called syphilitic spondylitis. Unilateral enlargement of the epididymis is sometimes noted, the mass feeling heavy, aching a little, but not being very tender. Unilateral sarcocele may be met.

Visceral Syphilis.—Amyloid changes may occur in any of the viscera of an individual with tertiary syphilis, and such changes may be found in people in whom suppuration never occurred. The lungs may undergo fibroid induration (syphilitic phthisis). Syphilitic phthisis is a non-febrile malady. Gummata may form in the heart, liver, spleen, or kidneys. The capsule and fibrous septa of the liver may thicken, the organ being puckered by contraction. Albuminuria may occur in tertiary syphilis. It may be caused by fibroid changes in the kidneys, by the formation of gummata, or by amyloid degeneration. Its occurrence should be watched for. Mercury and iodid of potassium have been regarded as causative of albuminuria in some cases.

Syphilis may cause disease of the stomach, and probably does so more frequently than was formerly supposed, because it is difficult to distinguish from more common diseases. The condition may be gummatus infiltration of the walls of the stomach, multiple and minute gummata, ulcerations resulting from breaking down of gummata, or syphilitic endarteritis of the gastric vessels. When ulcers heal cicatricial contraction results. Syphilitic ulcers and gummata of the stomach may be cured by efficient antisyphilitic treatment. Like lesions may form in the intestines.

Flexner, Mracek, Fränkel, Fournier, and others have discussed this subject.*

Nervous syphilis may be manifested by disorders of the brain, cord, or nerves. It is rare after severe secondaries, and is most common when secondaries were light or so trivial as to have escaped observation. Severe secondaries seem to cast off, mitigate, or exhaust the poison. Nervous syphilis may result directly from the specific disease, and such lesions are truly syphilitic. It may result indirectly from the specific disease, and such lesions are called parasymphilitic. For instance, a gumma of the brain is a true syphilitic lesion, but locomotor ataxia following syphilis is a parasymphilitic lesion. Syphilitic lesions are improved or cured by antisyphilitic treatment, parasymphilitic conditions are not. Brain syphilis is usually a late phenomenon (from one to thirty years after infection). The lesion may be gumma of the membranes (tumor), gummatus meningitis, arterial atheroma, or obliterative endarteritis. A gumma may eventuate in a scar, a cyst, or a calcareous mass. The symptoms of brain syphilis depend on the nature, seat, and rate of development of the lesions. It is to be noted that syphilitic palsy is apt to be limited, progressive, and incomplete. Epilepsy appearing after the thirtieth year is very probably specific if alcohol as a cause can be ruled out. Persistent headache, tremor, insomnia or somnolence, transitory, limited, and erratic palsies, unnatural slowness of utterance, amnesia, vertigo, and epilepsy are very suggestive of syphilis. Sudden ptosis is very significant; so is sudden palsy of one or more of the extrinsic eye-muscles. In syphilitic insomnia the patient cannot get to sleep at night for a long while, but when he once gets to sleep he reposes well. The type of insanity which is most apt to arise is a likeness or counterpart of general paralysis, and, like ordinary paresis, it is not curable. Spinal syphilis may cause sclerosis, a condition like Landry's paralysis, softening, and tumor. Neuritis is not uncommon in syphilis. Many of the diseases which follow syphilis are due to it only indirectly, and are not benefited by specific treatment. Among them are paresis and locomotor ataxia.

*See editorial in Jour. Amer. Med. Assoc., March 24, 1900.

Justus's Test for Syphilis.—The test consists in first estimating the amount of hemoglobin present, then making a single mercurial inunction, and again estimating the hemoglobin. It is claimed that the corpuscles of an untreated syphilitic are unduly sensitive, and if the disease is present a mercurial inunction will cause a loss of 10 to 20 per cent. of hemoglobin within twenty-four hours, which fall persists for a few hours and is then followed by a rise to a level above that which existed when the test was applied. The absolute value of this test is doubtful. It is often demonstrable in secondary, tertiary, or congenital syphilis. It usually fails in latent cases and in early secondary syphilis, and in some diseases other than syphilis the reaction can be obtained.

Treatment of the Primary Stage.—A chancre should not be excised. The disease is constitutional when the chancre appears, and excision and cauterization inflict needless pain and do no good. The initial lesion should never be cauterized unless it is phagedenic or becoming so. Order the patient to soak the penis for five minutes twice daily in warm salt water (a teaspoonful of salt to a cupful of water), and then to spray the sore with peroxid of hydrogen diluted with an equal bulk of water. The ulcer is then dried with absorbent cotton and on it is dusted a powder composed of equal parts of bismuth and calomel. The buboes in the groin require no local treatment unless they tend to suppurate. If they persist or become large, paint them with iodine or rub ichthyol ointment or mercurial ointment into them, and apply a spica bandage to the groin. Some authorities give mercury in this stage, in order to prevent secondaries. The younger Gross opposed this strongly, and affirmed a wish to see the secondary eruption—first, because it proves the diagnosis; and, second, because it affords valuable prognostic indications (an erythematous eruption means a light case, an early pustular eruption means a grave case with serious complications); I have always followed the plan of Gross, and do not order mercury until constitutional symptoms develop. If phagedena arises, place the patient at once upon stimulants and nutritious diet, secure sleep, and destroy the ulcer by the use of nitric acid or the cautery while the patient is anesthetized. After cauterization dust the sore with iodoform and dress with wet antiseptic gauze. Several times a day change the dressings, and at each change spray the sore with peroxid of hydrogen, irrigate with bichlorid of mercury solution, and dust with iodoform. It may be necessary to cauterize several times. In some cases it will be necessary to employ continuous irrigation with an antiseptic fluid. These cases are sometimes fatal and usually produce great destruction of tissue. In chancre redux watch carefully for the development of symptoms, in order to determine if the condition is really one of reinfection or if we are dealing with a gumma which resembles a chancre in appearance.

Treatment of the Secondary Stage.—The chance of cure in most cases is excellent if the patient follows advice. The prognosis is much worse if the patient is a hard drinker or is the victim of Bright's disease, diabetes, tuberculosis, or any other chronic exhausting malady. In the secondary stage the aim is to cure the disease. That it can be cured is known from the fact that reinfection occurs in some persons. The old axiom, "Syphilis once, syphilis ever," is not true.

Diet and General Care.—In the beginning of treatment the patient must see his physician every day or two until the proper dose of mercury has been ascertained. For the following six months he should see his physician once a week, and during the next six months once every other week. During the second year he needs to see him once every month. Of course, if complications arise at any period the visits must be more frequent. At the beginning of the attack he must have his teeth put in perfect order. Tobacco is absolutely forbidden because its use favors the development of mucous patches in the mouth. Alcohol as a beverage is prohibited. It is used only as a medicine. The teeth should be gently scrubbed with a soft brush in the morning, in the evening, and after each meal, and a mild astringent or antiseptic mouth-wash is to be used several times a day. The patient should wear flannel in winter. The author believes Guiteras's rules are sound, and in accordance with them directs the patient to refrain from kissing any one on the lips and from using a common towel, wash-rag, cup or glass, pipe or razor. He is told to sleep alone in bed, to wash his hands often, to wear gloves, and to keep his fingers out of his mouth. Every morning he should take a warm bath, being especially careful to cleanse the anus, perineum, axillæ, groins, and between the toes; and after the bath these parts should be dusted with borated talc powder. A Turkish bath once a week is ordered by Guiteras when no skin-eruption exists. The patient must avoid drafts, cold and wet; must take a moderate amount of gentle outdoor exercise, and must sleep eight hours out of the twenty-four. The diet is of importance, and in this, too, the author follows Guiteras and orders the patient to avoid eating anything fried, or any meat or fish which has been canned, salted, or preserved. Fruits, pickles, tea, condiments, alcoholic beverages, clams, pork, veal, and pastry are not to be taken. (See article by Luke Begg in "Phila. Med. Jour.," June 7, 1901.)

Medical Treatment.—Mercury must be used, the form being a matter of choice. Fournier advocated intermittent treatment. In this plan give gr. $\frac{1}{3}$ of protiodid of mercury daily for six months, then stop for a month; then give mercury for three months, then stop two months. During the first year the patient is under treatment nine months, and during the second year eight months. Some prefer the intermittent and others the continuous plan of treatment. The author prefers the continuous plan. In following the continuous plan find the patient's tolerance to mercury, and keep him for two years on daily doses below the amount he will tolerate. Gross's rule for continuous treatment is to order pills of green iodid of mercury, each pill containing gr. $\frac{1}{5}$. The patient is ordered one pill after each meal to begin with; the next day the after-breakfast dose is increased to two pills; the following day the after-dinner dose is two pills, and so on, one pill being added every day. This advance is continued until there is slight diarrhea, griping, a metallic taste, or tenderness on snapping the teeth together, whereupon one pill is taken off each day until all unfavorable symptoms disappear. Then the dose is reduced one-half and this amount is called the tonic dose. This experimentation finds a dose on which the patient can be kept with entire safety for a long time; but if it is found that colic or diarrhea is apt to recur, there must be added to each pill gr. $\frac{1}{12}$ of opium. The patient is given mercury in this way for two years. Every time new symptoms appear the dose

is raised, and as soon as they disappear it is lowered to the standard. If the protiodid is not tolerated, give the bichlorid:

<p>R Hydrarg. chlor. corros., Syr. sarsaparillæ comp., Sig.—f ʒ, in water, after meals.</p>	<p>gr. j; f ʒ ij.—M.</p>
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Mercury with chalk in 1- or 2-grain doses four times a day, with or without Dover's powder in 1-grain doses, may be used. Mercurial inunctions produce a rapid effect, but irritate the skin. The drug should be rubbed in with a gloved hand. There can be used once a day $\frac{1}{2}$ dram of oleate of mercury (10 per cent.) or 1 dram of mercurial ointment, rubbed into the skin. The first day it is rubbed into the inside of one thigh, the second day into the inside of the other thigh; the third day into the inside of one arm; the fourth day into the other arm; next, into one groin and then into the other groin, and then inunction is again made at the point of original application, and so on. After the rubbing the patient puts on underclothes and goes to bed, and in the morning takes a bath. The ointment may be smeared on a rag, which is then worn between the stocking and sole of the foot during the day.

Fumigation is performed by volatilizing each night ʒj of calomel. The patient sits naked on a cane-seat chair, and is wrapped up to the neck in a blanket which drops tent-like to the floor; the calomel is put upon an iron plate under the chair, and is heated by an alcohol lamp beneath the plate. The skin becomes coated with calomel, and the subject, after putting on woolen drawers and an undershirt, gets into bed. Hypodermatic injections of mercury are used by some physicians. They cause an eruption to disappear rapidly, but may produce abscesses, and relapses are prone to occur. I agree with Dr. Orville Horwitz that the hypodermatic method will not abort the disease; should never be a routine treatment; in suitable cases it is very valuable for symptomatic use, as when lesions on the face or in important structures make a rapid impression desirable or necessary; in cases which obstinately relapse under other treatment, and in syphilis of the nervous system. J. William White, after a large experience with this method, says that hypodermatic injections of corrosive sublimate are painful and are strongly objected to by many patients; that this method of treatment is occasionally dangerous and even fatal; that it is liable to be followed by local complications (erythema, nodosities, cellulitis, abscess, sloughing); that it cannot be carried out by the patient, but requires the surgeon's constant intervention. This syphilographer concludes that hypodermatic medication does not offer advantages justifying its use as a systematic method of treatment, and that it encourages insufficient treatment—those "short heroic courses" which Hutchinson shows are followed by the gravest tertiary lesions. "The claim that by a few injections the time of treatment can be measured by months or even by weeks, instead of by years, would seem, as Mauriac has said, to involve the idea that mercury given hypodermatically acquires some new and powerful curative property which, given in other ways, it does not possess."* The usual plan is to give daily a hypodermatic injection of corrosive sublimate deep into the back or buttock, the dose being gr. $\frac{1}{4}$ of the drug. Thirty such injections are used unless some contraindication demands their discontinuance sooner. The

* J. William White, in Morrow's "System of Genito-urinary Diseases, Syphilology, and Dermatology."

treatment is then stopped. If the symptoms recur, however, the patient is given another course, the daily dosage being gr. $\frac{1}{8}$, the treatment being again stopped after thirty injections, but being continued anew in $\frac{1}{8}$ -grain doses if the symptoms recur. The following preparation is used by some syphilographers: 0.5 of a part of corrosive sublimate, 3 parts of guaiacol, and 97 parts of sterile olive oil. Thirty minims contains gr. $\frac{1}{16}$ of corrosive sublimate. This mixture should be thrown deeply into the buttock and it causes no pain. The use of gray oil hypodermatically has warm advocates. It is claimed that it provokes but little pain and irritation, and that it is a very efficient remedy. The oil must be warmed and shaken before being used. Lang injects gr. $\frac{3}{4}$ to gr. $1\frac{1}{2}$ of the 50 per cent. gray oil, or twice this quantity of the 30 per cent. oil, twice during the first week, once during the second week, and after this once a week or once every other week for an indefinite period of time. It may be given oftener if symptoms arise or persist.

Taylor believes that gray oil may give rise to unpleasant and sometimes even to dangerous symptoms, and that it should be used with extreme care and only in selected cases in which other remedies are contraindicated. He says that in reading about the hypodermatic method he has been struck with the fact that "the most serious results have almost invariably followed injections in which fatty matters have been the vehicle of suspension."*

Some surgeons employ intravenous injections of mercury. Lane injects, at first every other day and later daily, 20 μ of a 1 per cent. solution of cyanid of mercury. The skin in front of the elbow is rendered aseptic, a fillet is tied around the arm, the needle is inserted into a vein, the fillet is loosened, the fluid is injected, and the needle is withdrawn. This method of using mercury is painless and produces a rapid effect. It may be used in nervous syphilis, but should not be used as a routine. In whatever way mercury is given, do not allow it to produce salivation (hydrargyrisms or ptyalism). Always remember that mercury may cause albuminuria and examine the urine at regular intervals during a course of the drug. If albumin appears in the urine, cut down the dose of mercury or stop the drug for a time. In the beginning of a case of syphilis, if the kidneys are found to be diseased, give the mercury cautiously, and never fail to examine the urine at regular intervals. An individual can take more mercury in summer than in winter because during the warm weather perspiration favors elimination.

Throughout the mercurial course the patient should be weighed once a week, and if it is at any time found that the weight is decreasing, tonics, concentrated food, and cod-liver oil are ordered. If the weight continues to grow less and the health begins obviously to fail, stop the mercury for a time, continue the cod-liver oil, tonics, and nourishing food, and order hot baths, fresh air, iron, and chlorid of gold and sodium. In order to cure syphilis mercury should be given for two years, and the mercurial course must be followed by at least a six months' course of iodid of potash. Reminders require both iodid of potash and mercury (mixed treatment).

Acute Ptyalism, or Salivation.—In acute ptyalism the saliva becomes thick and excessive in amount; the gums become spongy and tender and liable to bleed. Tenderness is detected early by snapping the teeth. A metallic taste is complained of; the breath becomes fetid; the oral structures

* "Venereal Diseases," by Robert W. Taylor.

swell; the teeth loosen; the saliva is produced in great quantity; and there are purging, colic, and exhaustion. Sometimes there are fever and a diffuse scarlatiniform eruption upon the skin. A chronic hydrargyrisms may be shown by salivation, gastro-intestinal disorder, emaciation, mental depression, weakness, albuminuria, and tremor. To avoid salivation, advance the dose with great caution and instruct the patient as to the first signs of the trouble. He should use a soft toothbrush and an astringent mouth-wash (gr. xlvij of boric acid to $\bar{3}$ iv each of Listerine and water). When ptyalism is noted, discontinue the administration of the drug. Employ the above mouth-wash or one composed of a saturated solution of chlorate of potassium. Order gr. $\frac{1}{120}$ of atropin twice a day, and in bad cases spray the mouth with peroxid of hydrogen and use silver nitrate locally (gr. xx to $\bar{3}$ j). Give stimulants (iron, quinin, and strychnin) and nutritious food. A weekly Turkish bath is of great service. In chronic hydrargyrisms stop the administration of the drug, use tonics, stimulants, open-air exercise, Turkish baths, and nutritious food. The chlorid of gold and sodium forms a substitute for mercury. The use of iodid of potassium is of questionable value in ptyalism.

Treatment of Complications in the Secondary Stage.—The complications of the secondary stage usually require local applications in addition to general remedies. Mucous patches in the mouth should be touched with bluestone every day, an astringent mouth-wash being employed several times daily. If the patches ulcerate, they should be touched once a day with lunar caustic; if these areas proliferate, they should be excised and cauterized. Vegetations or growing papules on the skin must, if calomel powder fails to remove them, be cut away with scissors and be cauterized with chromic acid or with the Paquelin cautery. Condylomata demand washing with ethereal soap several times daily, thorough drying, dusting with equal parts of calomel and subnitrate of bismuth or with borated talcum, and covering with dry bichlorid gauze. If these simple procedures fail, excise and cauterize.

For psoriasis of the palms and soles diachylon ointment, mercurial plaster, or painting with tincture of iodine should be employed. Ulcers of paronychia are dressed with iodoform and corrosive sublimate gauze. Deep cutaneous ulcers are cleaned once a day with ethereal soap, sprayed with peroxid of hydrogen, dressed with iodoform and corrosive sublimate gauze and bandaged. When the process of granulation is well established dress with 1 part of unguent. hydrarg. nitratis to 7 parts of cosmolin. In sarcocele mercurial ointment should be rubbed into the skin of the scrotum or the testicle be strapped. In alopecia the hair should be kept short, and every night the scalp should be cleaned with equal parts of green soap and alcohol rubbed into a lather with water. After the soap has been washed out some hair tonic should be rubbed into the scalp with a sponge. A favorite preparation of Erasmus Wilson's consisted of the following ingredients:

R.	Ol. amygd. dil.,	
	Liq. ammoniac,	$\bar{a}\bar{a}$ \bar{f} $\bar{3}$ j;
	Sp. rosemarini,	
	Aquæ mellis,	$\bar{a}\bar{a}$ \bar{f} $\bar{3}$ iij.—M.
	Ft. lotio.	

One part of tincture of cantharides to 8 parts of castor oil may be rubbed into the scalp. Solutions of quinin are esteemed by some. A useful wash for the

scalp is the following: $\mathfrak{3j}$ of borate of sodium, $\mathfrak{3j}$ of spirits of camphor, $\mathfrak{3ij}$ of glycerin, and sufficient orange-flower water to make $\mathfrak{f\mathfrak{3}iv}$.

In treating persistent skin-lesions, inunctions, injections, fumigations, or mercurial baths may be used. Baths are suited to patients with delicate skins, to those whose digestion fails when mercury is given by the mouth, and to those whose lungs will not tolerate fumigations. Half an ounce of corrosive sublimate with 4 scruples of sal ammoniac are mixed in about 4 ounces of water; this is added to a bath at a temperature of 95° F. The patient gets into this bath, covers the tub with a blanket, leaving only his head exposed, and remains in the bath an hour or so. Mercurial baths may rapidly cause salivation.

Tertiary Stage.—If at any time during the case there appear tertiary symptoms, the patient should be put on mixed treatment. In any case, after two years of mercury add iodid of potassium to the treatment. White's rule is to use mixed treatment for at least six months (if any symptoms appear), the six months' course dating from their disappearance. This emphasizes the fact that the iodids alone will not cure tertiary syphilis. In obstinate tertiary lesions and in nervous syphilis the iodids should be run up to an enormous amount (from 30 to 250 grains per day). Sometimes people can take large doses of iodid when small doses produce iodism. Cyon explains this curious fact as follows: small doses combine with some products of the thyroid gland and form toxic iodo-thyrin. Large doses are diuretic, form soluble salts, and are rapidly eliminated. An easy way to give iodid is to order a saturated solution each drop of which equals about one grain of the drug. Each dose of the iodid is given one hour after meals and in at least half a glass of water. If the iodid disagrees, it may be given in water containing one dram of aromatic spirit of ammonia or in milk. The iodid of sodium may be tolerated better than the potassium salt, or the iodids of sodium, potassium, and ammonium may be combined. In giving the iodids begin with a small dose. During a course of the iodid always give tonics and insist on plenty of fresh air. Arsenic given daily tends to prevent skin-eruptions. The iodids when they disagree produce *iodism*—a condition which is made manifest by a flow of mucus from the nose, conjunctival irritation, a bad taste in the mouth, exhaustion, anorexia, nausea, and tremor. In some subjects there are out-breaks of acne, vesicular eruptions, or even bullæ or hemorrhages. Iodism calls for the abandonment of the drug, and the administration of increasing doses of Fowler's solution, of arsenic, of laxatives, of diuretic waters, or, if there is great exhaustion, of stimulants. In some cases belladonna is of service. Some patients who cannot take the alkaline iodids may take syrup of hydriodic acid. After the patient has been for six months under mixed treatment without a symptom, stop all treatment and await developments. If during one year no symptoms recur, the patient is probably cured; if symptoms do recur, there must be six months more of treatment and another year of watching.

The Question of Marriage.—Fournier has insisted that it is a great wrong to tell a syphilitic that he can never marry. He must not marry until he is cured, and he is not cured until, after the cessation of the use of iodid, he goes one year without treatment and without symptoms.

Hereditary Syphilis.—Transmitted congenital syphilis is hereditary syphilis manifest at birth. Acquired syphilis (except in the case of a woman who obtains the disease from a fetus) always presents the chancre as an initial lesion; hereditary syphilis never does. Hereditary syphilis may present itself at birth, and usually shows itself within, at most, the first six months of extra-uterine life. In rare cases (tardy hereditary syphilis) the disease does not become manifest until puberty.

Rules of Inheritance.—According to von Zeissl,* the rules of inheritance are as follows:

1. If one parent is syphilitic at the time of procreation, the child may be syphilitic.

2. Syphilitic parents may bring forth healthy children.

3. If a mother, healthy at procreation, bears a child syphilitic from the father, the mother must have latent pox or must be immune, having become infected through the placental circulation. She often shows no symptoms, having received the poison gradually in the blood, and having thus received, it may be said, preventive inoculations. Certain it is that mothers are almost never infected by suckling their syphilitic children (Colles's law).

4. If both parents were healthy at the time of procreation, and the mother afterward contracts syphilis, the child may become syphilitic, and the earlier in the pregnancy the mother is diseased, the more certain is the child to be tainted. This is known as "infection *in utero*."

5. The more recent the parental syphilis, the more certain is infection of the offspring. The children are often stillborn.

6. When the disease is latent in the parents it is apt to be tardy in the children.

7. The longer the time which has passed since the disappearance of parental symptoms, the more improbable is infection of the children.

8. In most instances parental syphilis grows weaker, and after the parents beget some tainted children they bring forth healthy ones.

Syphilis in the mother is more dangerous to the offspring than syphilis in the father. The frequent immunity of the mother is due to the fact that her tissues produce antitoxins under the influence of the slowly absorbed virus.

Many women affected with hereditary syphilis are sterile. Many syphilitic women abort before the eighth month, most commonly in the fifth month. The fetus very often dies at an early period of gestation. This may be due to a gummatous placenta or to a degeneration of placental follicles.

Evidences of Hereditary Syphilis (manifest at, or oftener soon after, birth).—Hutchinson says that at birth the skin is almost invariably clear. In from six to eight weeks "snuffles" begin, which are soon followed by a skin-eruption, by body-wasting, and by a chain of secondary symptoms (iritis, mucous patches, pains, condylomata, etc.). The child looks like a withered-up old man. Eruptions are met with on the palms and soles. Intertrigo is usual. Cracks occur at the angles of the mouth, and leave permanent radiating scars. The abdomen is tumid, and there is apt to be exhausting diarrhea. The secreting and absorbing glands of the intestinal tract atrophy.† It is doubtful if distinct gummatous tumors form in hereditary syphilis. The type of dis-

* "Pathology and Treatment of Syphilis."

† Couetts, in *Brit. Med. Jour.*, 1894, No. 1643.

ease induced is a diffuse interstitial cellular change in the viscera, and the viscera are much more apt to suffer than in acquired syphilis. The liver, spleen, and pancreas often enlarge from interstitial changes, and the lungs sometimes are attacked in the same manner. Sometimes synovitis or arthritis arises. Atrophic lesions may appear in the bones. In the skull the bone may be softened by removal of its salts or be thinned by the pressure of the brain. In the long bones the epiphyseal lines suffer, the attachment of the epiphyses to the shafts is weak, and separation is easily induced. Epiphysitis is common, rarely causes pain, and rarely leads to suppuration, except in children who are old enough to walk (Coutts). Osteophytic lesions of the skull are shown by symmetrical spots of thickening upon the parietal and frontal bones (natiform skulls). In the long bones osteophytes are frequently formed. A child with precocious hereditary syphilis is apt to die, but if it lives from six months to one year the symptoms for a time disappear, and for years the disease may be latent. Diagnosis is difficult after the third or fourth year, especially if the disease be associated with rickets or tuberculosis. When later symptoms arise they may be various, namely: noises in the ears, often followed by deafness; interstitial keratitis; dactylitis (specific inflammation of all the structures of a finger); synovitis in any joint; ossifying nodes; developmental osseous defects; suppurative periostitis; ulcerations; death of bone; falling in of the nose; nervous maladies; occasionally sarcocele, etc. In hereditary syphilis the eye-symptoms are of great diagnostic importance. In 212 cases of congenital syphilis Fournier found eye-trouble in 101. Keratitis and choroiditis are the most usual forms (Silex). Bone-trouble occurs in almost half of the cases, but is not often severe enough to cause symptoms. The tongue often shows a smooth base (Virchow's sign). Hirschberg believed choroiditis to be pathognomonic. The descendants of syphilitic parents may exhibit certain pathological conditions which are not directly syphilitic. Fournier calls such phenomena parasymphilitic. Among these phenomena are arrest of development of the body at large or of special structures, weakness of constitution, and stigmata of degeneration.

Diagnosis.—In the diagnosis of hereditary syphilis the condition of the teeth is of considerable importance: the temporary teeth decay soon, but present no characteristic defect. If the upper permanent central incisors are examined, they are often, but by no means always, found defective. Other teeth may show defects, but in these alone are characteristic defects likely to appear. In hereditary syphilis they may present an appearance of marked deviation from health, and are then called "Hutchinson teeth" (Fig. 83). If they are dwarfed, too short and too narrow, and if they display a single central



Fig. 83.—Hutchinson teeth.

cleft in their free edge, then the diagnosis of syphilis is probable. If the cleft is present and the dwarfing absent, or if the peculiar form of dwarfing be present without any conspicuous cleft, the diagnosis may still be made. The view that teeth of this nature prove the existence of hereditary syphilis and that they occur only in syphilis has been abandoned by Hutchinson himself. In fact, only one-fifth of congenital syphilitics have these teeth, and one-third of the cases of Hutchinson teeth are in individuals free from syphilis.

In early infancy the diagnosis of syphilis is made by the snuffles, the broad nose, the skin-eruptions, the wasted appearance, the sores at the mouth-angles, the tenderness over bones, condylomata, and the history of the parents. The diagnosis at a later period is made by the existence of symmetrical interstitial keratitis, choroiditis, the smooth base of the tongue, deafness which comes on without pain or running from the ear, ossifying nodes, white radiating scars about the mouth-angles, sunken nose, natiform skull, deformity of long bones, painless inflammation of epiphyses, and Hutchinson teeth. It must be remembered that a child born apparently healthy and presenting no secondary symptoms may show bone-disease, keratitis, or syphilitic deafness at puberty.

Treatment.—In infants mercurial inunctions are to be used until the symptoms disappear, but mercury must not be forced or be continued too long after the symptoms are gone. There must be rubbed into the sole of each foot or the palm of each hand 5 grains of mercurial ointment every morning and night. Brodie advised spreading the ointment (in the strength of $\mathfrak{z}j$ to the ounce) upon flannel and fastening it around the child's belly. If the skin is so tender that mercury must be administered by the mouth, order that gr. $\frac{1}{2}$ to gr. $\frac{1}{4}$ of mercury with chalk, with 1 grain of sugar, be taken three times a day after nursing. If tertiary symptoms appear, and in any case when the secondaries disappear, give gr. ss to gr. j or more of iodid of potassium several times a day in syrup. White advocates the continuance of the mixed treatment intermittently until puberty. Local lesions require local treatment, as in the adult. A syphilitic child must be nursed by its mother, as it will poison a healthy nurse. If the baby has a sore mouth, it must be fed from a bottle; and if the mother cannot nurse the child, it must be brought up on the bottle. For the cachexia use cod-liver oil, iodid of iron, arsenic, and the phosphates.