

of syphilis in the second generation. In rickets the bones are thinned, and not enlarged as in syphilis, and do not show the characteristic bosses or nodes visible in the skulls of many syphilitic infants. In rickets also the fontanelles are open, rather than closed prematurely by osteophytic growths; the ribs are beset with ridges or nodes; and the characteristic symptoms of the "knock-knee" and the protuberant belly are in every well-marked case conspicuous. In tubercular and other bone diseases of children there is, of course, exclusion of a history of syphilis in the progenitors, and of abortions and still-born children; absence of other symptoms of syphilis; a frequent limitation of the disease to a single bone; a tendency to the production of what is known as "cold abscess;" abnormal thermal variations; and, in the instance of tuberculosis, the possibility of the discovery of tubercle bacilli.

The *dactylitis syphilitica* of inherited syphilis scarcely differs from the symptoms of the same affection in acquired disease. One or several digits may be involved, the changes occurring in the early years of life. The fall of the distal phalanges upon the head of the corresponding metacarpal bone is usually highly significant when the proximal phalanx has been removed by absorption of its mass; and the same is true of the oval tumors representing symmetrical involvement of all tissues surrounding a single phalanx, with fistulous sinuses leading to carious bone or cartilage concerned in an adjacent joint. In some cases the disease begins in the joint, with symptoms of subacute inflammation and exudation; or the capsules, the tendinous sheaths, or the fibrous tissues may be involved, with the result of producing a synovitis of more insidious development.

In yet other cases the synovial membrane thickens and becomes the seat of overgrowths simultaneously with the thickening of the periarticular tissues.

The *nasal passages* in inherited syphilis are chiefly affected with a variety of syphilitic rhinitis of purulent type, whose secretion, flowing over the lips, produces



FIG. 11.—Hutchinson's teeth with osteo-periostitis and ulceration in inherited syphilis.

by excoriation a characteristic dermatitis. Infiltration of the mucous membrane lining the passage results, as also the obvious condition of "snuffles" already described. Sucking, respiration, and phonation are seriously impeded, and in late cases destructive effects upon the nasal and palatine bones may result.

The *teeth* in inherited syphilis are characteristically altered, being, when affected, retarded in evolution and imperfectly formed in the first dentition, and in the second distorted. Hutchinson in 1863 described changes in the permanent teeth that are not invariably, but generally, found in syphilitic children reaching an age when the eruption of these teeth has been accomplished. The central upper incisors are chiefly involved, showing semilunar notches at the free or cutting edge, these teeth and others being often also pegged and changed in color to a yellowish hue (Fig. 11). Often minute pits can be detected in the enamel. These changes in the teeth, when associated with parenchymatous keratitis and the scars of former fissures at the angles of the mouth, are justly regarded by most physicians as pathognomonic of inherited syphilis.

The *larynx* in hereditary syphilis may be the seat of mucous patches, erythematous blotches, or circumscribed or diffuse infiltration. In exceptional cases verrucous vegetations form on the membrane; the tonsils become voluminous; ulceration of a superficial or a deep character may involve the submucous tissue; or grave forms of stomatitis supervene, the membrane of the mouth exhibiting on exposure an ashen look. In patients of unusual debility hemorrhagic effusions occur. When the bones are attacked the hard palate may be involved, and, especially in inherited disease which has existed for some years, the oral and nasal cavities are fused by ulcerative and destructive processes into a single formidable chasm. Often the anterior portion of the nares, the upper lip, and the hard palate in front are merged in a common ulcerative fossa. These destructive results may originate in either one of the

two cavities, or in a grave gummatous involvement of the skin of the face followed by severe sloughing.

The *larynx*, the *trachea*, and the *bronchi* may each be the seat of changes in inherited syphilis—infiltrations, circumscribed or diffuse, of the mucous or submucous tissues, followed or not by ulceration which may destroy the perichondrium or the cartilages. Here, as from other of the mucous surfaces affected in the disease, polypiform and verrucous excrescences may spring from the membrane, and when situated in the larynx or the trachea produce severe dyspnoea and disorders of phonation. The ulcers of this region differ but little from those exhibited in acquired disease, being single or multiple, and situated centrally or on one or both sides of the larynx. The lesions of the trachea and the bronchi are rare and are of the same general character as those of the larynx.

Attention has already been directed to the clinical symptoms dependent upon the changes here noted—namely, the husky or stridulous cry of the infant, often progressively hoarse until wellnigh complete aphonia results. The impairment of respiration, the frequent raucous cough, evidently productive of pain and taxing to the utmost the strength of many of these feeble, wailing infants, and the symptoms of dyspnoea, laryngeal spasm, and œdema of the glottis, are all significant.

The *lungs*, when involved in inherited disease, exhibit changes in the line of either definitely formed gummatous deposits or of "syphilitic pneumonia," the process then diffusely involving a large area of a single lobe or an entire lobe of one lung. The tissue is firm on section, sinks in water, is grayish in hue, and its alveoli are distended with swollen epithelium. Gummata of the

lungs are commonly miliary or lenticular in size, with central necrosis proceeding to fatty degeneration. These nodules have a grayish hue, and they are set in dense pulmonary infiltrations of inflammatory type.

*Syphilis of the œsophagus, the stomach, and the intestinal tract* is rather less rare than in acquired disease. In the intestines, especially, both definitely circumscribed and diffuse gummatous infiltrations have been recognized, large and single or numerous small ulcers resulting. The peritoneum may in some cases participate in the inflammatory processes present. Whether the symptoms be recognized before death (by palpation of the abdominal walls or by a catarrhal condition of the bowel) or post-mortem, agglutination of the intestinal coils usually has occurred.

The *liver*, when involved in inherited syphilis, may be the seat of circumscribed or diffuse gummata set in a dense hepatic mass, with obliteration of many, if not all, of the hepatic capillaries as a result of arteritis. There is commonly an odd-looking marbling or mottling of the hepatic surface. At times the portal vein exhibits enormous overgrowth of its connective tissue, choking its lumen; at other times the liver-cells seem to be compressed by a small-celled infiltrate squeezing the parenchyma. The gummata may be miliary in size or as large as filberts, both types having a characteristic grayish hue. This color is not to be confounded with that of the minute, semi-transparent granules supposed to represent unaltered hepatic tissue. The surface of the organ is either perfectly smooth or dotted with punctiform depressions, probable sites of localized hepatitis induced by the presence of gummata. A portion only or the whole of the liver may be affected, and the

changes in its volume, the degree of its scirrhus hardness, and its shade of color are due to differences in the stages of its involvement.

The *spleen* is enlarged in from one-fifth to one-fourth of all cases of inherited disease, being in cases many times more voluminous than in health. There is commonly a hyperplasia productive of a densely indurated mass, or circumscribed or diffuse gummata, these changes often coexisting with hepatic lesions of the disease.

The *rectum* and the *anus* of infants affected with hereditary syphilis are involved as in acquired disease, stricture of the rectum, however, rarely resulting. In infants not properly cleansed the production of condylomata, moist papules, and secreting tubercles about the anus and the vulva is greatly favored by the accumulation of feces and urine on the napkins of the child.

The *kidneys*, when involved in syphilis of the second generation, may present evidences of interstitial inflammation, lardaceous degeneration, and alterations in the epithelium of the convoluted tubes not characteristic of this special malady.

The *nervous system* in hereditary syphilis may suffer from changes in the brain, the cord, or the peripheral nerves, in their membranous or osseous envelopes, and in the tissues with which the latter are in intimate relation.

The *cranial bones* are in cases characteristically changed by circumscribed or diffuse atrophic osteitis of gelatiniform type (the bones becoming softened to the consistency of jelly, or presenting a "worm-eaten" appearance), or by osteophytic osteitis, as a consequence of which bosses (nodes, exostoses, hyperostoses) form in

special regions, producing in the skull of the infant a highly characteristic deformity. In one type the cranial bones are merely symmetrically changed and fixed or floating; in another they bulge as in hydrocephalus; in another the forehead pushes forward above, producing the effect of massiveness; in another each frontal protuberance is symmetrically studded with circumscribed rounded bosses or prominences; in yet another the brow edges forward in the mesian line, producing a keel-like aspect. Microcephalus may result either from formative osteitis making a cruciform or other shaped bridge over the fontanelles, thus interfering with the development of the skull, or from simple failure of evolution, the stunting being dependent upon general rather than upon local causes. Whether or not this condition and that of rachitis be due in some cases to syphilis indirectly, and in others to different morbid states not well understood, is not fully determined. The general belief among experts is that these and other evidences of failure of development are symptoms of cachectic states which may be induced by syphilis and other affections.

Subacute and chronic types of leptomeningitis, in which the dura mater or the pia mater may be involved primarily or secondarily, are not rare among syphilitic children; they require to be compared closely with the other signs of inherited lues, in order to be differentiated from tubercular affections of the meninges. Hemorrhages are occasional complications of these attacks, provoked by the presence of gummata in the cranial bones or in the pericranium. The cerebrum, the cerebellum, the pons, and the medulla may each be the seat of changes produced by any of the forms of arteritis studied in connection with the brain-syphilis of

acquired disease, the ultimate results being seen in the formation of aneurysmal pouches, irregular distribution of blood to the nervous tissue, thrombosis, embolism, and hemorrhages. Gummata, as in acquired disease, may develop in the nervous substance; and encephalitis, cerebral sclerosis, ependymitis, ecchymosis, and softening may ultimately result.

The clinical symptoms springing from these organic changes, slight or severe, vary from feeble-mindedness and mental states suggestive of complete idiocy to insanity and epileptiform attacks, though the latter are rarer in congenital than in acquired disease. Single or multiple paralyzes of centric origin, hemiplegias and paraplegias, with the usual accompaniment of severe, continued, or recurrent headache, are common results of these intracranial lesions. Recurrence of nervous phenomena of a severe grade, a distorted cranium, and an idiotic mental state point to inherited syphilis of the child even in the absence of any history of infection of one or both parents. The evidences of inherited disease, in the rare instances in which the cord and the peripheral nerves are involved, are obscure. Cases are rare in which opportunity is offered for their investigation. The oculo-motor paralyzes of acquired disease are here occasionally noted.

The *eye* in inherited syphilis is subject to many of the disorders observed in acquired disease. Parenchymatous keratitis (chronic interstitial keratitis) is often found associated with the teeth described by Hutchinson, already noted, the combination of the two affections practically establishing a diagnosis of inherited syphilis. The cornea in these cases first becomes cloudy in punctate lesions recognized on close inspection as seated in

the parenchymatous tissue. Gradually, in the course of a few weeks or less, the entire cornea presents a characteristic "ground-glass" appearance, in consequence of the multiplication and fusion of these points of opacity, with a pericorneal zone of injection, one or both eyes being attacked, and the two organs simultaneously or successively. The issue is either a gradual clearing up of the opaque condition, which at its fullest evolution practically occludes the entrance of light, or a more or less intense injection and vascularization of the corneal surface. Iritis is rarer in inherited than in acquired disease, but it occurs in one or both eyes and before or after birth, plastic effusions in the worst cases gluing the iris to the capsule of the lens. Choroiditis and retinitis also occur in inherited disease, with the iris and the pupil unchanged, and dust-like particles in the vitreous humor originating in patches of infiltration of the choroid. Retinitis and optic neuritis in children have rarely been observed.

*The Ear.*—The persistent deafness of many subjects of inherited syphilis arise from changes in the tympanum and the middle ear. The lesions correspond, for the most part, with those heretofore described in connection with acquired syphilis. The deafness is due, in general, to a labyrinthitis characterized by a cellular infiltration of the membranous labyrinth and to a serous effusion into the endotymph, with eventual increase of connective tissue which may later undergo a species of cicatricial contracture. Prominent subjective symptoms are the usual morbid aberrations of audition (roaring, blowing, ringing, singing, and other sensations), more or less rapidly changing to absolute surdity. There may be, as in adults, coincident vertigo, cephalalgia, and febrile phenomena.

## TREATMENT OF SYPHILIS.

No treatment of syphilis may be regarded as worth the name that excludes early and persistent attention to the general health of the patient. This hygienic care, as contrasted with the medicinal measures employed, by far outweighs the latter in importance, and practically decides for many cases the question of the gravity of the issue or the reverse. The worst errors committed in the management of syphilis are due to trusting exclusively in the efficacy of drugs for relief of the disease.

**Hygienic Considerations.**—The patient affected with syphilis should always be given a sufficiently ample dietary, the food to be simple and digestible. For the gouty the food should not be that allowed the cachectic and the anæmic. Allowance being made for these extremes, it may be said in general that the syphilitic patient requires an ample supply of nutritious and digestible food, seeing that, even in the case of the subject of the disease who is at the outset well fed and well nourished, it cannot always be known when the toxins of his malady so change the systemic condition that at a date not far distant the picture may be altered for the worse.

Alcoholic beverages may be used in the treatment of syphilis with wise discretion. In the case of the enfeebled the weaker stimulants, such as white wines, beer, ale, porter, and the malt extracts, may often be employed with great advantage to the patient; while the use of such articles as spirits, champagne, and Burgundy or Port, if drunk freely and in persons of a gouty state,