the meatus, at the junction of cartilage and bone. These ulcers greatly resemble the ill-conditioned ulcers often visible at the same time and in the same patient just within the nares. Condylomata are not rare within the meatus, where they may often be recognized as circumscribed, scaling elevations of the surface, furnishing an admixture of pus and cerumen, in extreme cases eventually inducing by their presence a typical otitis externa. Blocking of the canal may ensue, and in severe cases ulceration with scarring. Rarely there results permanent contraction of the meatus.

The *membrana tympani* is rarely the seat of syphilitic lesions. Luetic changes have, however, been recognized in this situation, and ulceration has at times resulted from degeneration of minute gummata situated upon the drum.

The diseases of the tympanum due to syphilis are obscured by reason of the difficulty experienced in precisely locating any lesions capable of producing the symptoms exhibited in any given case, and by the further fact that the symptoms presented are so nearly alike in the victims of both syphilitic and non-syphilitic aural disease.

Catarrhal inflammatory affections of the middle ear occur, resulting in hypersecretion, pus-formation, or the formation of plastic products, the distinction between these affections being established by symptoms rather than by any recognized lesions. Most of these troubles are associated with or spring directly from disorders of the naso-pharynx, which is so frequently involved in systemic syphilis; others arise from changes in the osseous walls of the Eustachian tube or from periostitis of the tympanum. The symptoms of these diseases of

the middle ear are chiefly deafness in varying degrees, pain, serous or purulent discharges, tumefaction to the point of obstruction of the Eustachian tube, and râles on its insufflation.

The changes in the *labyrinth* due to syphilis are as yet little understood. The ossicles may be ankylosed, and all the tissues composing the labyrinth may be thickened either primarily or as a result of extension of disease from the tympanum. The symptoms are found in a series of widely differing subjective sensations of a morbid character, associated with imperfect audition, diminution of bone-conduction, and vertigo often resembling that occurring *ab aure læso.*

HEREDITARY SYPHILIS.

Syphilis may be transmitted from progenitor to offspring as a strictly inherited disease. The term "congenital" has been somewhat loosely applied by different writers either to inherited syphilis or to syphilis acquired at birth of an infant and due to infection from recently developed chancres of the maternal passages. In these pages the term "hereditary syphilis" is employed to designate exclusively the disease acquired by inheritance. The term "congenital," as liable to beget confusion, should be dropped from the nomenclature.

A vast amount of discussion has been elicited by questions concerning the etiology of inherited syphilis. It is sufficient here merely to state that, for most cases, the fact of a syphilitic child points to inheritance from the mother. When the father is without question syphilitic, and children are born syphilitic, the mother, free from all evidences of the disease, has probably been infected. She betrays no evidences of this infection

either because at the date of observation syphilitic symptoms previously exhibited have disappeared, or because the proofs of her morbid state are to be sought exclusively in the fruit of her several pregnancies and in the striking fact that she is incapable of infection by her syphilitic offspring, according to the law of Colles, given on page 207.

The apparently healthy mothers who give a history of a succession of abortions, miscarriages, and birth of infected children due to syphilis can to-day be grouped in a class well recognized by every expert. It cannot always be determined whether such women have been infected with syphilis directly from the husband, as has been claimed, or indirectly from the syphilitic contents of the uterus. These mothers may even be in generally poor health, anæmic, weak, and debilitated, or they may exhibit every evidence of sound health, being vigorous, brawny, red-cheeked, and with all their functions duly performed. In these instances, without question, the syphilitic symptoms consist of the fruit of a series of conceptions. Just as syphilis of the healthy adult in some of its stages limits itself definitely to a persistent or recurrent patch of tubercles on the buttock or on a hand, so in these apparently healthy women the disease limits itself absolutely to the symptoms exhibited —a diseased ovum, fœtus, or infant, frequently several of each in a single history. When, however, the mother is without question exempt from the suspicion of syphilis, and the father is as surely syphilitic, the child invariably escapes. Cases of such absolute exemption on the part of the mother are those where, the father being assuredly the subject of the disease, the mother has never had an abortion, a miscarriage, a diseased child,

or any other symptom of the disease, and exhibits all the evidences of sound health.

Colles's law, first formulated in 1837 by Abraham Colles of Dublin, embodies the well-known fact that, although it is admitted that the mouth of a syphilitic infant is infectious for every other person, no mother of such a child was ever given syphilis by her own offspring. No woman ever had a chancre of the nipple result from frequent contacts with the infectious secretions of her child's mouth. This law, the reported exceptions to which are so few and so poorly established as to be worth nothing in the way of refutation, points conclusively to the fact above stated, that syphilis of the child always points to syphilis of the mother, either present or past, revealed by unquestioned symptoms or by a series of syphilitic conceptions betrayed as such by the occurrence of abortions, miscarriages, stillbirths, and infected offspring.

The period of pregnancy beyond which the mother cannot, even if infected, transmit her disease to her unborn child is not fixed. It is probable that with different patients the period changes, the differences being due to the general health of the mother and to her aptitude or inaptitude for furnishing favorable ground for the action of the toxines of the disease. After the sixth month the child probably escapes; but even so late as the seventh or eighth month, if the mother be infected, there is risk to the fœtus.

There have arisen in connection with this subject a few unimportant questions, the responses to which are by no means trustworthy. No man, in fact, can study the literature of the etiology of inherited syphilis, and have had experience of the disease in both public and private

practice, without realizing the possibilities of error, in any given case, respecting the fact of parental disease and of error arising from the infective accidents common in the modern social life of large towns. Especially is this the case since the date of recognition of the practically innumerable opportunities for accidental infection afforded by the medium of utensils, instruments, and the contacts of professional and domestic service. Thus, a child (born of a syphilitic woman) reported to be after birth the victim of an initial sclerosis, followed by signs of acquired disease, has almost certainly been infected by some accident after birth, and was free from inherited disease when born. The question also whether inherited syphilis can be transmitted to a third generation can for the immense majority of all cases be answered in the negative, the exceptions reported being not always thoroughly purged of the suspicion of accidental infection. No expert fails to observe at intervals cases of supposed "inherited disease" where a rigid and carefully conducted examination demonstrates that the disease was, as a matter of fact, acquired; and the children of such parents, really suffering from acquired syphilis, and not from an inherited malady, would readily be assumed to represent a transmission of hereditary lues to a second generation. The question respecting acquisition of syphilis later in life by the subject of inherited disease is to be answered with the same caution and reserve. Certain it is that syphilis in a few cases, after it is acquired, does not wholly protect its victim from a second attack of the same disease. We have already seen that these subjects of infection will occasionally, after exposure to initial scleroses, suffer from singular and occasionally severe local ulcerations, simulat-

ing new initial scleroses, even at times with adenopathy of the neighboring glands, the prior infection, though preventing a new syphilis, being apparently insufficient to protect against local reinfection. The cases here considered are not, of course, of the class where gummatous deposits occur in the genital region of the infected at the site of merely local irritation. This reasoning applies with special force to the rare cases reported in which a syphilis derived from progenitors whose virus has been attenuated, presumably, in a score or more of years, loses at last, in the second generation, its power to furnish immunity against reinfection.

Syphilis of the Placenta.—The placenta may exhibit signs of syphilis after the fœtus has become the subject of unmistakable symptoms of the same disease. Many of the placental changes recorded by authors are undoubtedly confused with those occurring in non-syphilitic processes, and there is no basis for assuming of this viscus that it differs from others in that its lesions in the subject of syphilis are wholly due to the infectious disease present.

In some cases of undoubted syphilis of the offspring the placenta has been found wholly free from morbid symptoms, while at other times an endometritis placentaris occurs, in which dense nodules are found with a whitish fibrous capsule and a central mass composed either of clusters of spindle-cells or of degenerating softish masses of a yellowish-white hue. With these gummata are masses representing transformed villi—hyperplastic, compressed, thickened, agglutinated, or even wholly destroyed. Atheromatous and other metamorphoses involve the vessels of the umbilical cord, with resulting thickening of the intima, thrombosis, and even

vascular obliteration. A result fatal to the contents of the uterus succeeds an involvement in these changes of the larger portion of the placenta. When handled, the placenta in well-marked cases is in parts firmly indurated, is heavier than usual, and its lobulations disappear. In some cases circumscribed gummata may be detected by palpation of the mass, which, when incised, discloses grayish-yellow nodules with a fattily changed centre. Efforts to diagnosticate syphilis as derived from either the father or the mother by recognition of changes in the placenta are apt to lead to untrustworthy conclusions.

It is a matter of importance to note that the liquor amnii of the woman bearing a syphilitic fœtus is capable of communicating the disease to an accoucheur.

Symptoms of Hereditary Syphilis.—One of the earliest and most frequent symptoms of syphilis in the product of conception is death of the ovum or fœtus; and in a number of consecutive conceptions these symptoms often become conspicuous in a series of accidents of the same character. Thus, a woman infected by her husband soon after marriage may have a series of pregnancies, covering a number of years, in which abortions occur, first at an earlier and later at a more advanced stage of gestation, these succeeded by one or more miscarriages, and the latter by the birth of a mature child surviving but a few hours. Eventually a child may be born apparently healthy at birth, but developing before the fourth month symptoms of inherited syphilis. Even after a series of such pregnancies there may at last be brought into the world a healthy child who never exhibits signs of constitutional disease. The mortality in these cases falls between 60 and 90 per cent.

About seven-eighths of diseased infants exhibit symptoms of the inherited malady before the termination of the third month. Of the remaining eighth a certain proportion have actually exhibited symptoms either ignored or misunderstood. A small but unknown proportion betray evidences of transmitted disease at a date between the fourth month and the close of the first year of life. Cases were once reported of so-called "late" inherited syphilis in which the symptoms of the disease were supposed to be first displayed at or about the puberal epoch; but there are few physicians who do not look with suspicion on such reports. It is believed, not without good reason, that the most of such patients really betrayed evidences of syphilis in infancy, but, as occurs so often in acquired cases, such symptoms were overlooked or were assigned to the indefinite category, often misinterpreted, of "children's disorders." Cases of bone disease in adults known to have syphilitic parents, the osseous lesions first appearing in the second generation after the twenty-fifth, the thirtieth, the fortieth, and even, as reported in one case, after the sixtieth year, are in general to be accepted with great reserve.

Cutaneous Lesions of Hereditary Syphilis.—When miscarriages occur as a result of inherited disease, the fœtus has often perished some days before its expulsion, and its skin is then usually macerated and, in consequence of the feeble union between the epidermis and the corium, raised here and there in bullæ, usually flaccid and filled with an ill-conditioned serum. This condition is often improperly termed "syphilitic pemphigus." In other cases there is born a viable child with a specific exanthem either affecting one region (for example, the palms and the soles) or extensively and

even generally evolved. In yet other cases the new-born infant may present at birth all the evidences of sound health, and at a later date, before the close of the third month, may develop insidiously the symptoms of cutaneous disease. Every practitioner is suspicious of an infant born into the world, even though living, considerably under the average weight, weazened, yellow-tinted, and snuffling, with the appearance of a "little old man" or a "little old woman," and exhibiting one or several "blisters" on the fingers or the toes. The appearance of premature senility in these weazened and speckled infants, with a flaccid skin which may be gathered between the fingers like that of some of the lower animals, with a circlet of papules about the anus or the mouth, with a feeble stridulous cry, and with obvious weakness, is often sufficient to enable one to establish a diagnosis at a glance.

A *macular syphiloderm* in these infants has, in general, the shade observed in acquired cases, the difference being chiefly the larger size of the individual spots, their more pronounced shade, varying from a dull red to an empurpled hue, and their tendency to desquamate and secrete in regions of friction, pressure, and moisture. The color in some feeble and weazened children is a characteristically dirty brown, rarely imitated in any non-syphilitic infant. This exanthem may disappear or recur or be followed by others of a graver type.

The *papular syphiloderm* of inherited disease is rarely as generalized, as dry, or constituted of as small-sized individual lesions as the corresponding eruption of acquired disease. In the infant, papules are apt to be grouped about portions of the face, of the trunk, or of the limbs; are often seated upon a hyperæmic base; are

in general distinctly grouped; and usually tend to coalesce and become flattened, scaling, or, in regions of moisture, friction, and pressure (as about the anus and the vulva), to secrete freely. In point of fact, the necessity of constantly applying napkins over the ano-genital region of infants, and the frequency with which (in the case of syphilitic infants especially) the accumulation of fæces and urine on these articles of clothing is permitted, make this region one in which the lesions of the disease are apt to be displayed not only often but in largest evolution. It is always incumbent upon the cautious practitioner to inspect the anal region of infants exhibiting an exanthem about which any suspicion is entertained.

Often the circular outlines of groups of papules in hereditary disease is exceedingly distinct, the central portions of the enclosed area being apparently unaffected. These rings or portions of rings may be seen clustered about one angle of the mouth, where cracks may form in the angle itself, or about the buttock, or over the palmar and plantar regions.

Bullous lesions in inherited syphilis are not rare, and commonly betoken grave conditions of the system. They may exist at the moment of birth of the dead or the living child, or they may afterward develop as pin-head- to bean-sized and larger elevations of the epidermis, filled, as a rule, with an ill-conditioned sero-pus or blood, having an inflammatory areola of dirty hue, and followed, after bursting and release of their contents, with blackish, greenish, and dirty-yellowish crusts. The palms and the soles, as also the digits of either hands or feet or both, may be the seat of these lesions, which may be followed by ill-conditioned ulcers.

Tubercles in inherited syphilis are usually multiple, deeply seated, and grouped, and they soon undergo degeneration. They often precede a condition in which form greenish-black sloughs, ulcers spreading deeply beneath.

The forms of *hemorrhagic syphilis* described by authors include those in which severe umbilical hemorrhage occurs at or soon after birth, as also the cases in which bullous lesions become filled with blood, and those in which distinctly purpuric blotches spread sparsely or in large numbers over the integument. Some of these forms are undoubtedly not to be distinguished from hæmophilia.

The *mucous membranes*, in inherited as in acquired disease, display bullous lesions, papules, tubercles, mucous patches, and even pustules. These several lesions in the profound dyscrasic state of weakly infants often rapidly degenerate into the most formidable ulcerations. By the presence of the secretions which are abundantly furnished in children, and desiccated readily by the currents of air when the mouth is kept open habitually in the weak state of the child, the nares become blocked by an obstructive rhinitis, and the respiratory tract, particularly of the larynx and of the trachea, is greatly encumbered. In this way arise the catarrhal symptoms—the peculiar "snuffles" of the syphilitic baby, its feeble and stridulous voice, the necessity of abandoning its grasp of the mother's nipple in order to breathe and to cry,—all marked characteristics of the disease in the new-born of the second generation. In advanced stages of involvement of the mucous surfaces the respiration becomes seriously impeded when there is unusual effort of any sort. When no special effort is made the child

lies listless in its mother's lap or arms, with pinched, sallow features, its limbs flaccid and extended, and its expression indescribably apathetic. At any time during the evolution of the symptoms here described an intercurrent disorder (pneumonia of a low grade, an incoercible diarrhœa, or a progressive marasmus) may bring on a fatal termination. The respiratory tract as far as the bronchi is much more readily involved in infantile than in acquired disease.

The *nails* are involved in inherited disease both primarily and as a result of changes in the nail-fold, the matrix, or the bed. When primarily affected, any one of the lesions named above may appear and be followed by suppuration or ulceration, with shedding of the nail; or the nail-plate may become dry, fissured, "worm-eaten," yellowish, crumbling, or in various degrees distorted, or it may suddenly be shed.

The *hairs* in hereditary syphilis fall as in acquired disease, and this either before or after the birth of the infant. The loss may be partial or complete, and if partial may consist either of a thinning of the hairs in one region or of their removal *en masse* from definite areas, circular, irregularly shaped, or in ribbon-like stripes. Usually the scalp is chiefly involved.

The *lymphatic vessels and glands* exhibit changes due to inherited syphilis, notably by signs of engorgement, infiltration, and enlargement. The thymus is chiefly involved, but all the thoracic and abdominal glands may be implicated, including the parotid, the inguinal, and the axillary.

The *genital organs* of both sexes may be attacked, the penis and the testicles of male infants (epididymis and testes) especially. In both sexes these organs may be

undeveloped, approaching in appearance the rudimentary type.

The *bones* are more often involved in inherited than in acquired disease, the percentage of cases in which there is osseous change being over one-third. Many lesions of bone in children are unrecognized in consequence of the greater gravity of other symptoms present. The bones most frequently involved are the tibia, the ulna, the radius, and other bones of the extremities, the clavicles, and the bones composing the skull. The special lesions recognized are those described under the title of osseous lesions in acquired disease—namely, circumscribed gummata of outer plates and medullary canal, periostitis, and rarefying or formative osteitis. Caries, necrosis, and the induction of both ulceration and osteophytic growths are not rare. These growths at times induce premature closure of the fontanelles, resulting eventually in microcephalic idiocy. These lesions, with the others named, when affecting bones in contact with important nervous cells or trunks, may induce all the phenomena of nervous syphilis, cephalalgia with nocturnal distress, paralytic symptoms,

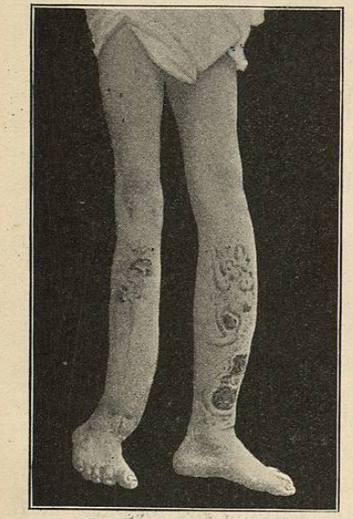

FIG. 10.—Sabre-blade deformity of the tibiæ in hereditary syphilis.

epileptiform seizures, remediless surdity, and even imbecility.

The hyperostoses of the tibia (occasionally of both tibiæ) produce at times a highly characteristic change in the contour of the legs. Marked anterior convexity results from an osteophytic growth along the crest, which has been termed by the French "sabre-blade deformity" (*lame de sabre*) (Fig. 10). Frightful ravages occur also in the face, which may be converted into a wide area of destructive processes, the orbits half distended with shrunken and sightless globes, the upper lip and the maxilla absent and furnishing the orifice of a chasm composed of the oral and nasal cavities studded with partly healed ulcers and fungous masses.

The *pseudo-paralysis* of hereditary syphilis produces helplessness of a single member, due to separation of the epiphysis from the diaphysis of one of the long bones. When unrelieved for some time, the ultimate sequence may be atrophy of the muscles. This epiphyseal separation is usually induced by an osteo-myelitis—a condition to be distinguished from that in which pseudo-ankylosis results from decubitus and posture-fixation in consequence of grave disease of other organs (for example, a lower extremity after long-continued ulceration of a gummatous tumor seated upon the adductor muscles of the thigh).

Fractures in bone-syphilis of infants are not rare, but it is to be noted that in these cases repair commonly ensues as after fractures of the non-infected.

Care should be observed, in the diagnosis of bone disease in hereditary syphilis, not to confound the lesions with those of osteomalacia or rickets, though it has been held that the symptoms of the latter are actually those