Pemphigus vegetans and other forms of pemphigus and herpes in many cases exhibit mouth-symptoms. The mucous membrane of the mouth is then usually raw, red macules representing the floors of bullæ whose roof-wall has been ruptured. In these patients there are pain, exquisite sensitiveness of the mouth, and in bad cases extreme dysphagia; but the presence of bullous lesions elsewhere, the temperature record of the patient, and the relative acuity of symptoms are all significant.

Pathology.—Anatomical study of sections of tissues in most of the complications described above indicates that the inflammatory, hyperplastic, sclerous, gummatous, and degenerative processes in the mucous and submucous tissues are in all respects analogous to those recognized in the skin and in the subcutaneous tissues. Small-celled infiltration, interstitial hyperplasia, epidermal hypertrophy, elongation and thickening of the papillæ of the corium, endarteritis, and increase in the number of rete-cells, often with smaller cells within the limits of the original protoplasmic envelope, are to be recognized in most processes. The presence of giant-cells in numbers, as well as of bacilli, distinguishes tuberculous disorders of the mouth; while nests of cells in the corium are characteristic of the epitheliomatous changes to be recognized as complications of leucoplasic patches.

Syphilis of the Respiratory Tract.

Syphilis of the Nasal Passages.—The frequency of involvement of the nose and the nasal passages in syphilis is due to the exposure of these regions in so many cases to climatic and other influences, as well as to the anatomical peculiarities of the parts.

Chancres within the borders of the nares are exceedingly rare. An indurated lesion following, after a proper interval, the employment of instruments for the treatment or observation of any disorder of this region, if accompanied by enlargement and induration of the neighboring glands, should be regarded as highly suspicious. In the early periods of syphilis the more common affections of the nose are acute and chronic rhinitis, macular and mucous patches, and circumscribed and diffuse gummatous infiltration of tissue. In these cases the chief symptoms are local thickenings, a sero-purulent discharge from the nares, and sensations of pain and fulness of the part. Gummatous changes may occur in any portion of the nasal cavity, beginning with the mucous and submucous tissue, and spreading thence, often with destructive violence, to periosteum and bone. So delicate are the osseous and other structures of this region that their involvement may be followed by degenerative results in an incredibly brief time. A patient complaining of nasal symptoms may even in the course of a few days suffer a perforation of the septum or exhibit bony sequestra exfoliated and thrown off in a fetid discharge. At times the turbinated bodies enlarge and exhibit traces of fibroid degeneration. The term *ozæna* was formerly given to the catarrhal symptoms common to these patients, a disgusting odor being imparted to the breath by the destructive changes going on in periosteum and bone, accompanied by discharge of a purulent, hemorrhagic, or serous fluid often mingled with detritus of bone. The highly offensive odor of this secretion is often as disagreeable to the patient as to those with whom there is personal contact. As a result of the several changes indicated, the bridge of the nose

may be destroyed, producing thus a saddle-shaped flattening, with at times a tilting upward of its tip—a deformity as characteristic of syphilis as the "parrot's-beak" shape and the subsequent destruction of the tip are peculiar to lupus of the same organ. It is by these processes that the arch of the palate is perforated and at times practically destroyed. Other sequelæ of this disorder are the production of bridles and bands stretched from one side to another of the nasal cavity; the obliteration of the passages by cicatricial occlusion; and in grave cases, when severe osseous changes have taken place, the extension of the disease to the meninges of the brain with resulting convulsions and a fatal issue.

Syphilis of the Pharynx.—Chancre of the tonsil has already been described, its erosion being commonly situated on the inner face of the tonsillar mass, which is then enlarged, painful, and apt to be covered with an ashy-looking pultaceous slough, the glands beneath the jaw suggesting the nature of the difficulty. The opposite tonsil often sympathizes with the disorder, being engorged and at times eroded.

The posterior wall of the pharynx is often the seat of circumscribed and diffuse inflammatory thickening (due to syphilis) and of mucous patches and gummata. There is in these cases a very characteristic smearing of the fauces with a tenacious mucus, frequent efforts being made by the patient in hawking to rid himself of the resulting discomfort. Fibroid thickening and gummatous ulceration are not rarely encountered, a characteristic ulcer resulting from these changes being recognized as a circular, well-defined excavation, with clean-cut edges and sloughy floor, visible chiefly on depression

of the base of the tongue. Grave destructive results in extreme cases extend to the bone and to the large vessels lying near the pharynx on either side. Vegetations and verrucous growths are rare in this region.

Syphilis of the Larynx.—The morbid changes in the larynx due to syphilis occur in early and late periods of the disease, and in both circumscribed and diffuse manifestations. These changes may result from others occurring in the upper portion of the respiratory tract (nares and pharynx), or they may develop primarily in the larynx itself.

Macular lesions with transient or persistent erythema are not rarely encountered on the mucous surface; as a result, the submucous tissues may be involved in deep-seated infiltration. The complications are erosions and superficial ulcers seated on an engorged base, or more rarely on a surface not changed in hue from the normal, visible, on laryngoscopic examination, over the epiglottis, the vocal cords, the ventricular bands, and other parts. Symmetrical, multiple, shallow ulcerations, involving with relative acuity several portions of the larynx at one time, are peculiar to syphilis. In some cases the plane macular surface changes to one that is decidedly elevated, exhibiting a grayish and reddish tint suggestive of mucous patches in the mouth, though it is to be observed that typically developed mucous patches are rarely seen in the larynx, on account of its relative protection from many of the effective causes of these lesions in the mouth and the nose.

Later, deeper and more serious accidents to the larynx result from gummatous changes. The deposit is in the form of single or multiple, milium-sized nodules or diffuse infiltrations involving the submucous tissues of

either the epiglottis, the interarytenoid space, the vocal cords (particularly their free border), or the subglottic folds, these growths being sufficient in extreme cases seriously to interfere with the functions of the larynx. The mucous envelope of the gummata may at first be intensely hyperæmic and even covered with a vascularized membrane of a vivid red color, or the hue may be yellowish, grayish, or even scarcely altered from that of the surrounding part. The result may be complete involution without further change—an occurrence by no means rare in healthy subjects under proper treatment; or, exceptionally, ulceration may ensue, and that to a degree of gravity inducing partial destruction of perichondrium, cartilage, or bone. At times fibroid tumors resembling gummata in external form spring from irritated patches where macular lesions or erosions have existed, inducing as much suffering and exposing the patient to as much danger as other new growths of this region. Again, membranoid bridges, bridles, and bands stretch from one side to another of the laryngeal cavity, occluding its lumen and producing subjective symptoms not differing from those resulting from the presence of tumors. Verrucous growths also develop about the ventricular folds, proving formidable by their interference with the movements of the organ. There may result from any of these changes characteristic ulcers, single or multiple, usually the latter in late syphilis, with defined elevated and hyperæmic margins, often surrounded by a zone of inflammation, covered with a pultaceous slough. These ulcers when healed leave cicatrices which, as they contract, may either prove harmless or may draw together the walls or folds of the larynx, or fasten the epiglottis to the tongue or to the pharyngeal wall. Suppuration

of one or more recesses of the organ, deep-seated abscess, ankylosis, paralysis, hemorrhage, sudden and dangerous œdema, and the presence of a necrotic cartilage in the larynx acting as a foreign body, are all complications of severe types of the disease.

The chief symptoms recognized without laryngoscopic examination of the patient are a characteristically hoarse and raucous voice, cough, dyspnœa, and cephalic symptoms due to imperfect aëration of the blood. These symptoms vary from the mildest to the severest distress, the dyspnœa in extreme cases requiring tracheotomy. A middle-aged man with a voice reduced to a faint whisper, full inflation of the lungs being effected by deep inspirations at long intervals, should invariably be studied with a view at least, before all else, to setting aside the diagnosis of syphilis.

It is to be noted carefully that while experts in laryngoscopy often find in doubtful cases of this category products of simple inflammmation, and even foreign particles, choking the chink of the larynx, the onset of these troubles is generally to be ascribed to localized syphilitic manifestations interfering with the normal action of the glottis. As it is the syphilitic mouth which early and late acknowledges the unfavorable influence of tobacco, so the syphilitic larnyx is exposed to irritation by the unfavorable influences of dust, smoke, and an insalubrious atmosphere.

Diagnosis.—In tuberculosis of the larynx the existence of pulmonary symptoms of disease, the general physical aspect, condition, family history, and age of the patient, and the discovery of bacilli in the sputa, usually suffice to determine the nature of the disorder. With respect to age, it is interesting to note that tuberculosis of the

larynx generally occurs at an earlier period of life than does syphilis of that organ with grave complications. In tuberculosis, as a rule, the affected membrane is lighter in color, the process is slower, the ulceration is more shallow, the damage in extreme cases is far less serious, the dysphagia and the constitutional effect are far more pronounced, and the fatal issue is more probable and imminent than is the case in syphilis. On the whole, it may be said that a striking feature of syphilis of the larynx is that recognized in syphilitic involvement of many other organs—namely, a singular toleration on the part of the patient of even a serious mutilation or destruction.

Carcinomatous, as distinguished from syphilitic, involvement of the larynx is a disease of later life, develops in much slower course, and is often accompanied by hemorrhage, which is relatively rare in syphilis.

The prognosis in the great majority of cases is favorable. After wellnigh complete aphonia for months and even for years, restoration of the voice has been secured.

Syphilis of the Trachea and the Bronchi.—Lesions of the trachea and the bronchi due to syphilis are far rarer than those of the upper air-passages, or, if occurring more frequently than is believed, they for the most part escape observation. In general, it may be said of syphilis of the air-passages that its invasions are from without inward, and in the matter of frequency and multiplicity are conspicuous the shorter the excursion from the lips and the nares. The more deeply, however, syphilitic lesions spread toward the bronchi and the lungs, the greater, as a rule, is the gravity.

The changes noted in the trachea and the bronchi are practically those studied in the larynx, with differences

due to the changed anatomical situation. The lesions may be consecutive to those occurring in the larynx, or they may be developed *d'emblée*. Circumscribed and diffuse patches of inflammation, fibroid changes, gummata, erosions, and ulcerations are the chief lesions in the course of which the perichondrium and cartilages may be involved. Membranoid occlusion of the trachea and of one bronchus, extreme stenosis, cicatricial stricture produced by bridles and bands, and fistulous sinuses connected with abscesses of one or another region, usually the lower, are sequels of different cases. The entire trachea has been converted into a contracted and distorted tube as a result of a slowly spreading serpiginous ulcer.

Syphilis of the Bones.

Periosteum and bone may be involved in both early and late syphilis, these complications occurring from a few months to a score or more of years after infection. The bones most frequently involved are those of the skull and the face, the palate, the tibia, the sternum, the clavicle, the ribs, and the scapula. One or several bones may be simultaneously or successively affected; rarely there is symmetrical involvement, as when both tibiæ or radii are coincidently attacked.

Most of the changes in these organs are due to circumscribed or diffuse gummatous deposits either in the periosteum, between it and the osseous tissue, within the bone-substance, or in the medulla. These gummatous deposits by pressure upon contiguous structures may seriously impair the function of other important organs, as when the deposits spring from the inner tables of the skull.

Gummata of periosteum and bone are circumscribed, commonly multiple, grayish or yellowish-gray nodular masses, occasionally in diffused patches. The periosteum is usually first attacked. In regions accessible to the touch, as over the anterior face of the tibia, a well-defined swelling may then be recognized, covered with normal integument displaying symmetrical tumefaction, though at times beset with irregular and jagged projections. These tumors vary in size from a bean to that of a large egg; they are usually tender and exceedingly painful even when not impressed with the contact of a foreign body, the pain being characteristically heightened at night by the warmth engendered beneath the bed-clothing. The nocturnal pains of periostitis and osteo-periostitis are, indeed, so uniformly aggravated at night that they are generally considered diagnostic, and they are justly regarded with special suspicion in any case where syphilis had not been before suggested if they occur with quotidian regularity. They vary in character, being either boring, hammering, splitting, or crushing. When intense and characteristic, the patient is, as a rule, wholly unable to remain at rest, though he may secure transient relief by constant motion of the affected part, as when the legs are drawn upward and downward in bed—a series of movements highly suggestive of bone-syphilis. The pains are in part, without question, due to compression of inflammatory and other products between the tense and inelastic periosteum and the unyielding mass of the osseous tissue. These symptoms may in some cases be of purely inflammatory type, but, however acute, it is probable that in all cases the gummatous process is chiefly responsible for the result.

When the bony tissue actually participates in this disorder, the result is a node—a firm and more or less sensitive tumor, usually smooth and fairly well defined in outline, either globoid or exhibiting a longitudinal elevation like the "splint" of a horse, its length parallel with the long axis of the limb. The pains are usually of the sort experienced in periostitis. The course of the node may be either complete involution, which usually occurs under treatment, or persistence as a less painful and tender, even wholly insensitive, bony growth, or degeneration by softening, the tumor breaking at the centre and leaving a typical syphilitic tertiary ulcer with exposed bone at the base, eventually healing after exfoliation of the sequestrum, with scar-tissue implicating both bone and integument.

The resulting deformity depends upon the region involved; that occurring after destruction of the bones of the nose has been described in the pages devoted to syphilis of that organ. The deformity resulting when the extremities, the skull, and the spine are attacked is far less significant in acquired than in inherited disease.

Pathology.—Minute gummata of periosteum and bone are small-celled new growths tending to central degeneration by breaking up of their molecular elements in a characteristic atrophy. The cells of the outlying portions are larger, and often are in communication with a new growth of fine vessels. The medullary substance of the bone is at first increased in thickness. The term *rarefying osteitis* has been given to that process in which, while the marrow enlarges and the enlarging Haversian canals are stuffed with new cells, there is thinning and eventual absorption of the osseous trabeculæ, forming thus spaces in which the gum-

matous deposit is made, with the effect of producing a weakening of the actual osseous structure. Either the length or the thickness of a bone may be thus to gross appearances greatly increased, while its substance is actually reduced.

The term *formative osteitis* is given to that condition in which new bone is formed during the metamorphic changes described above, by the production of trabeculæ originating in the embryonal cells in the medullary spaces, these cells commingled with corpuscles from the originally involved bony tissue. The new growths may develop between periosteum and bone or from the surface of bone denuded of its covering. In this way the cavities produced may be filled with new bony tissue. In a more advanced stage the new osseous formation may undergo a sclerotic hardening, the induration becoming as dense as ivory. *Condensing osteitis*, or *eburnation*, produces a new growth which encroaches upon the medullary cavity or, pushing externally, may produce an annular, node-like, or splint-like appendage to the bone involved. These processes of rarefaction, bone-formation, and even bone-degeneration to the point of production of a sequestrum through an ulcerative opening, may occur simultaneously in different parts of one bone or side by side, one lamella thickening while that adjacent softens. This multiformity of processes is a characteristic feature of bone-syphilis.

When the gummatous process involves the medulla, an osteo-myelitis may result, with degeneration and the bursting of an abscess externally, which is rare; or a formative osteitis with encroachment on the lumen of the medulla, the latter condition being the more common sequel.

Diagnosis.—Bone-syphilis in acquired disease is usually recognized without difficulty, since the history of the patient and the character of the pains produced are suggestive. It is to be noted, however, that temporary swellings along the axes of the tibiæ occur in erythema nodosum, in which event there is usually, with tenderness of the node-like masses, marked redness of the integument covering the swelling. The acuity of symptoms is also suggestively different from the slowness of career of both syphilitic, tuberculous, and rheumatic nodes of the same part.

Secondary infection may occur in both periostitis and osteitis, and in such instances purulent foci result commonly in abscess. In examination of bones with a view to determination of probable cause of death, the existence of "worm-eaten" cavities, of irregular thickenings, and of perforations of entire plates of bone is indicative of syphilis.

Syphilitic Dactylitis (Syphilitic panaris; "Syphilitic finger").—This affection, first described in a classical essay by Dr. Taylor of New York, requires special description on account of its characteristic features.

This disorder is one involving the articular and periarticular tissues of the digits, more particularly of the fingers; it occurs in both inherited and acquired disease. In a first variety the subcutaneous, fibrous, and connective tissues concerned in the formation of the joint are primarily involved, one or more phalanges exhibiting changes, chiefly on the dorsal aspect, slowly or (more rarely) rapidly, and with remissions or continuously. The process is essentially a gummatous infiltration of the structures concerned in the articulation. The digit is either over-flexed or over-extended, swollen, and cov-

ered with an empurpled integument; its motions are impaired; and distinct crepitus is perceptible on palpation, due to erosion of the cartilages composing the joint. Ankylosis, abscess, destruction of the capsule and the entire joint, or simple impairment of the function of the articulation, with repair, may ensue.

In a second form the process is first instituted in the osseous, periosteal, or medullary structures, which become the seat of gummatous changes resulting in thickening of the two involved parts. The process may result, as shown above, in either rarefying, formative, or eburnating osteitis, so that the digit may be increased or decreased in size, or become softish and cheesy when handled, or as firm as ivory. Ulceration and abscess bursting through the stretched and empurpled skin may lead to the formation of fistulous tracts communicating with bone that is either carious or in process of slow repair. An oval, symmetrical tumor limited to a single phalanx of one or more digital or metacarpal bones, crepitating under firm pressure and painful and tender, is wellnigh characteristic of syphilis. The atrophy of a proximal or middle phalanx as a result of the processes here described, whereby a distal is made to fall upon a proximal phalanx, or the distal and middle phalanges upon the adjacent metacarpal bone, is highly suggestive of the same specific process.

Care should be had to recognize the distinction between these deformities and those due to tuberculosis, paronychia, and gouty or rheumatic affections of the digits. Lepra, the "melanotic whitlow" of Hutchinson, and the lesions of syringomyelia are all to be differentiated.

Syphilis of the Larger Joints.

Pains in the joints as well as in the bones and the muscles are not rare in early syphilis. These sensations do not necessarily imply the existence of a localized lesion of these organs, but they often point to neuralgic conditions due to the circulation of intoxicated blood. At times, without doubt, they are due to the action of mercury administered for the relief of that intoxication in persons peculiarly subject to the action of the metal.

Synovitis and arthritis in syphilis may involve one or several of the larger joints simultaneously, in which case the symptoms *per se* are scarcely to be differentiated from the same symptoms in the subjects of other diseases. The articulations are tumid, tender, painful, and hot to the touch, with limitations in flexion and extension, and evident fluctuation when synovium is effused in a fluid form. Patients thus affected may exhibit pyrexic symptoms; rarely have they been in good health prior to the date of syphilitic infection. As a rule, when examined they are pallid and weak. The termination of the arthritic complication may be by resolution without sequelæ, by ankylosis, or by destruction of important structures in and about the articulation affected.

Pathology.—The synovial membrane is usually in these cases the seat of gummatous infiltration, with well-marked tufts springing from its surface; or the subsynovial structures, the ligaments, the capsule of the joint, the cartilage, and the subchondroid tissue may be involved, with the result of producing eventually thickening, degeneration, or the bursting of an abscess externally, and the formation of sinuses connecting with the joint-cavity.