early, and there is a tendency of the fingers to be drawn to the ulnar side of the hand and to be flexed and extended at various angles. Dactylitis syphilitica may be confounded with enchondroma or exostosis, but in each of the latter the swelling is more localized, being limited to a portion of the circumference of the bone.

The prognosis depends in a measure upon the period at which the lesion is recognized. When the swelling is developed quickly, rapid involution follows the use of energetic treatment. The longer it has persisted the less amenable to treatment it becomes.

The treatment is that of late syphilis, a combination of the iodide of potash with a mercurial; locally, mercurial ointment or plaster applied with pressure is beneficial. Sometimes an incision is required.

CHAPTER XXIII.

AFFECTIONS OF THE BONES, CARTILAGES, AND THE JOINTS.

Precocious Osseous Affections.

The bones may be attacked in the early months of syphilis, although osseous lesions are generally quite late. The bones most liable to early affection are those of the cranium, the ribs, the sternum, the clavicle, and the tibia. According to Mauriac[1] these lesions may occur even before the cutaneous manifestations of syphilis. I have observed localized pain in the bones at the period of invasion, but never distinct swellings much before the sixth month of syphilis. The swellings appear quickly and with fixed pain, which is worse at night, and may be accompanied by radiating neuralgic pains.

Of the skull bones, the frontal and parietal are most commonly attacked. The swellings vary in diameter from half an inch to an inch and a half, and reach a height of half an inch. They are round and smooth, and if slowly developed are quite hard. They may be single or multiple, unilateral or symmetrical. I have now under observation a patient infected six months ago, upon whose skull there are thirteen of these nodes. They may occur at the angle of junction of the frontal bone with the orbital plates, or on the occipital bone, but they are usually on the sides of the skull. Mauriac states that they are sometimes confluent. In some cases cerebral symptoms indicate that similar lesions exist on the internal surface of the cranium.

The clavicle is usually affected at its sternal extremity, the articulation sometimes being involved. The upper third of the sternum is more commonly involved than the lower third. Occasionally its borders are attacked with portions of the costal cartilages, when the patient may complain of severe dyspnœa and pain on deep inspiration. In such a case a localized pleurisy has probably been excited. In severe cases the ribs themselves may be invaded, especially their anterior portions. Its subcutaneous surface is the portion of the tibia most frequently the seat of these tumors. They vary in size and number, but are usually not as salient as similar swellings of other bones. The radius and the ulna are also sometimes attacked. The swellings are usually near the joint, the wrist more commonly than the elbow.

These tumors often attain a large size in one or two weeks. The pain which is always present, is aggravated by pressure, and is worse at night.

[1] Mauriac, Mémoire sur les affections syphilitiques précoces du système osseux. Paris, 1872.

The lesion is undoubtly due to hyperæmia of the periosteum and the formation of new fibrous tissue. Gummy infiltration probably does not occur. The tumors have a tendency to spontaneous involution, and very rarely break down and form ulcers. If left to themselves they become converted into bony nodes, but they yield readily to proper treatment. In but one case, a tumor of the sternum, have we seen necrosis take place. The ulcer, which resembled a gummatous ulcer, had the eroded bone for its base and healed slowly, leaving a depressed cicatrix. Early treatment prevents deformity, but delay may result in superficial atrophy of the bone.

These lesions are generally accompanied by others of the secondary stage; they may occur even before the disappearance of the primary sore. A mild form of hydrarthrosis is sometimes induced by their proximity to a joint.

Treatment should be both local and internal. Mercurial ointment well rubbed in twice daily and kept constantly applied to the parts, is the best. If it cause irritation it may be mixed with an equal quantity of oxide of zinc ointment. Internally the mixed treatment is required.

Late Osseous Affections.

These, like other tertiary lesions, do not necessarily occur in every case of syphilis, even if left to itself without treatment; experience shows that in the great majority of cases the disease wears itself out or disappears under treatment during the secondary stage. The causes which give rise to their evolution in the few, while the many escape, are but little understood. In some cases we feel justified in ascribing their development to a strumous diathesis, to dissipated habits, to unfavorable hygienic influences, or to absence of or improper treatment; but the cases are so numerous in which none of these causes can be legitimately evoked, that we are often obliged to find a refuge for our ignorance in "individual idiosyncrasy."

The attempt which has repeatedly been made by different authors to attach tertiary lesions, and especially lesions of the bones, to the mercury which was administered during the earlier stages of the disease, is now shown to be groundless, by abundant evidence. The investigations of Mitscherlich, at Idria, the official reports of physicians at Almaden, and the observations of Singer, Pappenheim, and others, among gilders, hatmakers, and men employed in the preparation of rabbit skins, all prove that persons who labor with mercury, and who are constantly exposed to its fumes, are by no means subject to affections of the bones. Virchow, who has been quoted as supporting this error, strongly repudiates it in his recent work on syphilis.

In the time of their development affections of the bones sometimes coincide with late secondary lesions, or follow the latter after a brief interval. In other instances they occur long after every trace of the disease and almost its very recollection has faded out, and they are

then especially dangerous, because many years of health may lead the patient to overlook their cause and to neglect them until such time as irreparable injury has been done.

The division of these lesions adopted by Lancereaux appears to be the best, and is as follows: 1. Inflammatory form. 2. Gummy form. 3. Dry caries, including their sequelæ—exostoses, caries, and necrosis.

Inflammatory Form—Osteo-periostitis.—This form commences with increased vascularity of the periosteum and subjacent layer of bone, and an effusion and infiltration either of fluid or of a yellowish gelatinous substance of more or less consistency. The deeper texture of the bone is sometimes attacked, when the canaliculi are found to be dilated and filled with a similar substance.

The bones most liable to be thus attacked are those which are the most superficial, as the tibia, ulna, clavicle, sternum, and cranium; but no portion of the skeleton can be said to be exempt. The external manifestation of this affection consists in ill-defined doughy tumors of variable size, shading off gradually into the surrounding tissues, adherent to the osseous structure beneath, but independent of the overlying integument, usually very sensitive to pressure, the seat, at certain hours in the twenty-four, of severe pain, and bearing the common name of nodes. A striking peculiarity of the pains produced by nodes is their marked nocturnal character. They are generally absent or are scarcely felt during the day, but return at night with great severity after the patient retires to bed, and only abate towards morning. This nocturnal exacerbation is attributed to the warmth of the bed by Ricord, who states that in bakers and others, who are obliged by their occupation to turn day into night, the pains are chiefly diurnal. This explanation, however, does not appear to hold good in all cases, for in some they return at a certain hour in the evening, whether the patient has or has not retired; and, in a few instances, they are equally as severe during the day as at night. These pains sometimes exist without the appearance of any organic lesion, and in such instances have been regarded as the direct effect of syphilis, but it is extremely probable that they are always dependent upon changes, however slight, in the periosteum or bone. The student should notice the difference between these pains and those attending early secondary symptoms—the former being confined to certain regions, usually the continuity of the long bones and those portions of the skeleton which approach nearest the surface, and nocturnal in their character, while the latter affect by preference the neighborhood of the joints, and rapidly change their locality from one part of the body to another.

In the majority of cases of nodes the serous effusion is absorbed under appropriate treatment, and the tumor undergoes resolution. In other cases the inflammation is more acute; the skin becomes adherent to the tumor, is reddened and thinned; degeneration and softening take place, and an opening is formed; the ulcer shows little or no

tendency to extend, but a superficial portion of the bone to a limited extent usually becomes necrosed and comes away, and an adherent cicatrix is the final result.

Exostosis.—In other cases still, the effusion is more plastic and organizable, and is capable of being transformed into bony tissue, constituting an exostosis.

Such productions are often, for a time at least, movable upon the bone beneath, and are then called *epiphysary exostoses.* In this form, they are due rather to periostitis than ostitis; they are generally of small size, sometimes thin and flat, sometimes hemispherical or pedunculated, and at times annular. "At an early period of their existence, they consist of cellular tissue, containing a well-developed network of vessels. They acquire greater consistency with time, and finally present an eburnated texture. Arrived at this point, resolution is no longer possible; the tumor remains stationary and treatment has no other effect than to quiet the osteocopic pains. If resolution be attained at an earlier period, their surface, which before was smooth, becomes irregular, indicating partial absorption. Sometimes this absorption continues after the whole of the tumor has disappeared, so that local atrophy of the bone succeeds the exostosis."[1] In other instances, syphilitic exostosis is not preceded by periostitis, but is the result of ostitis terminating in hypertrophy of the normal bony tissue, in which case it is denominated *parenchymatous exostosis.*

This new formation assumes two characters: that of cancellated and that of compact tissue. If made up of layers which have interspaces or areolæ between them, they receive the name of cellular or laminated exostosis; if, however, formed of compact tissue, and accompanied by increased volume, weight, and density of osseous material, they are called eburnated.

An exostosis situated externally rarely occasions sufficient inconvenience or deformity to necessitate its removal by an operation unless under peculiar circumstances, as was the case with a violinist, from whose metacarpal bone a tumor of this nature, which had interfered with the exercise of his profession, was removed by Ricord.

But exostosis may also spring from the internal surface of the cranial bones and give rise to symptoms of the most serious character, as convulsions and the various forms of paralysis. The frontal bone is by far the most frequently affected in this manner. Lagneau, in his work[2] upon *Syphilitic Affections of the Nervous System,* has been able to collect but three cases of exostosis springing from the parietal and one from the sphenoid bone; he appears to have met with none in the occipital or temporal. These intracranial exostoses vary very much in size. Saltzman[3] reports a case in which the tumor occupied

[1] Nélaton, Pathologique chirurgicale, t. ii., p. 16.
[2] Maladies syphilitiques du système nerveux, par Gustave Lagneau fils. Paris, 1860, p. 45.
[3] Acta Phys. Med. Academiæ Ces.-Leop. Carol. Naturæ Curiosorum Ephemerides, Norimbergæ, 1730, t. ii., p. 222, obs. 99 (as quoted by Lagneau fils, op. cit., p. 361).

the internal surface of one of the parietal bones commencing at two fingers' breadth from the sagittal suture and extending to the coronal suture in front and the temporal below; the patient died with symptoms of apoplexy. Within the cranium[1] of Clermont-Ferrand, deposited in the Dupuytren Museum, are two exostoses, one of which is as large as an orange. In general, however, these tumors are much smaller, and often multiple. They also vary in density, some presenting a hard, eburnated texture, while others are cellular. Most of them spring directly from the surface of the bone (parenchymatous exostoses); indeed, the existence of epiphysary exostoses within the cranium has been denied, but Vidal[2] gives a representation of a specimen in the Dupuytren Museum in which the tumor is separated from the normal tissue by a distinct line of demarcation.

Syphilitic exostosis of the vertebræ, either external or within the spinal canal, is rare; but Lagneau[3] has adduced several instances reported by Cloquet and Bérord, Godelier, Piorry, and Minich.

Syphilitic exostoses may generally be distinguished from similar growths due to other causes by the nocturnal pains attending them, by their usually occupying the continuity of the more superficial bones, by their hemispherical form, and by the fact that they are rarely multiple or symmetrical on opposite sides of the body.

Gummy Form—Osteomyelitis.—The deposit of syphilitic tubercle in the osseous tissues most frequently takes place in the medullary canal of the long bones, although it sometimes occurs in the periosteum and in the substance of the bone itself, giving rise to one of the most painful and obstinate of tertiary lesions. Ricord[4] gives two fine representations of cases of this description. "In one, the two radii which had been the seat of very violent osteocopic pains and of exostoses, were remarkably hypertrophied in their inferior portions. At an inch and a half from the lower extremity of the right radius there was such a considerable enlargement as to lead one to believe in an old fracture which had united badly; but on close examination it was evident that there was only hypertrophy with development of the osseous canaliculi; the bone was here redder and more porous than anywhere else; the medullary substance was hardened and yellowish, and looked like rancid lard. The left radius was hypertrophied in a similar manner and to a much greater extent, the whole of the inferior half being involved." In the other case there was plastic infiltration in the medullary canals of both bones of the leg, at points corresponding to exostoses upon the surface.

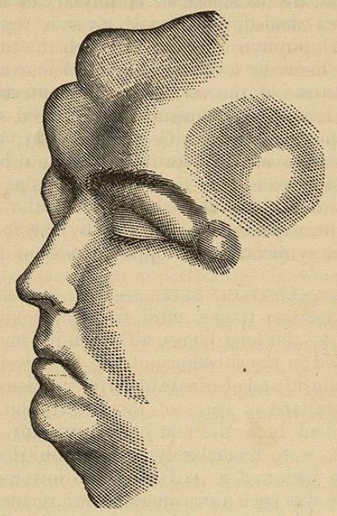
In rarer instances, a similar deposit, of a whitish or yellowish color, and of the consistency of mucilage, or sometimes firmer, occurs in the periosteum external to the bone itself, and gives rise to a soft fluctuating tumor, which, like the gummata of the cellular tissue, finally

[1] Figured by Vidal, Pathologie externe, 2e édition, t. iii., p. 111, 1846.
[2] Op. cit., t. iii., p. 116.
[3] Op. cit., p. 193.
[4] Iconographie, Pl. XXVIII. *bis* et XXXIX. *bis.*

softens and discharges its contents through inflammation and ulceration of the overlying skin; more rarely it undergoes calcareous degeneration and leaves a projecting mass. This degeneration is of more frequent occurrence in this than in any other form of gummata.

This exudation may also affect the bones of the head, where it commonly occupies the diploë, separating in its development the two layers of the skull, and leading to their ultimate caries or necrosis,

Fig. 128.



Gummata of the head and face. (After Jullien.)

and frequently to perforation of the external or internal table. More or less of one of these tables may exfoliate, leaving the diploë and opposite layer intact. In a case observed by Dupuytren,[1] two-thirds of the internal table of the skull were necrosed; and in another, reported by Pétrequin,[2] the whole external table of the frontal bone exfoliated. More frequently, although the external table is involved to the greater extent, the diploë and internal table are perforated at one or more points, laying bare the dura mater, which, when the opening is large, may protrude externally, either preserving its normal character, or assuming a highly vascular and fungous appearance.

[1] Clinique de l'Hôtel Dieu; Transactions médicales, par MM. Foget et Sandras, Paris, 1832. t. x., p. 269 (quoted by Lagneau, op. cit., p. 403).
[2] Gaz. méd. de Paris, 1836, t. iv., p. 643.

In the case of a woman recently under my care at Charity Hospital, Blackwell's Island, I removed nearly the whole of the frontal bone, which was necrosed, including portions of both supra-orbital plates. The exposed surface of the dura mater over this large extent of surface afterwards put on copious granulations, and would from time to time be nearly covered with cicatricial tissue, when the process of repair would seem to flag, and ulceration again set in. This occurred repeatedly, and the patient finally left the hospital without the wound being firmly closed.

When the disease affects chiefly the internal table of the skull, the inflammatory products and portions of necrosed bone sometimes find exit through perforation of the external parts; or, in other instances, they accumulate between the bone and dura mater, cause compression of the brain, or give rise to encephalo-meningitis and disorganization of the cerebral substance. Moreover, in nearly every case of syphilitic disease of the cranial bones, the dura mater, upon its internal or cerebral aspect, presents thin layers of fibrinous or hæmorrhagic deposit, which are easily detached from the surface.[1]

Virchow[2] states that necrosis produced by syphilis may be distinguished from that due to other causes by the following symptoms: "In syphilitic necroses the surface of the sequestrum is pierced with large holes, which unite internally and lead to the suspicion that they have been due to a deposition of gummy material; the surrounding tissue, whether necrosed or not, is often dense and eburnated, presenting a strong contrast to the above."

Follin and Lancereaux both remark that the specimens of syphilitic necrosis of the cranial bones deposited in the Dupuytren Museum of Paris, exhibit an outline similar to the semicircles of certain annular syphilides. This is a curious fact, as showing the tendency of syphilitic symptoms to assume a circular form even in deep lesions, but no great importance can be attached to it in the diagnosis of any individual case.

It is hardly necessary to add that other bones than the cranial are also subject to caries and necrosis under the influence of syphilis; in practice, however, we find these lesions mainly in the bones of the head, the nose, the hard palate, and the alveolar process of the upper jaw, where unfortunately they are most likely to result in deformity of feature or voice, only partially remediable by plastic or dental surgery.

Dry Caries.—Under the head of "dry caries," or "inflammatory atrophy of the bones," Virchow has described an affection which he believes to be peculiar to syphilis, and the chief characteristic of which is the *entire absence of suppuration*. With the exception of a single instance in which the sternum was involved, all his observations relate to the bones of the head, and chiefly to the frontal and

[1] Virchow, Syphilis Constitutionelle, p. 50. [2] Op. cit., p. 49.