and skill not within the reach of the ordinary surgeon. The dental engine affords access to such necrotic processes, and until the surgeon can personally avail himself of the facilities it affords, for removal of carious bones in such situations, it is my opinion, that the best course will be, to relegate cases of this nature, to men who, like Dr. Goodwillie, have the mechanical skill and experience in the use of the dental engine requisite to perform the operations necessary for the complete removal of diseased bone in these localities. Otherwise we must usually follow the old plan of waiting, until the separation occurs, through the tedious process of exfoliation, aided by such internal remedies as have heretofore been relied upon for the care of these cases. This involves the danger of deformity, and delay in cure, which it seems to me few surgeons, aware of what especial skill in the management of the dental engine can accomplish, will feel inclined to accept. My own experience in several cases of syphilitic caries of the bones of the skull, where I had operated for removal of the diseased bone, and found rapid recovery result, has convinced me that, when syphilitic necrosis occurs, it is a purely local matter, and that it is good practice, in all such accidents, to remove the dead bone at the earliest practicable period, and that, as a rule, to which there are few exceptions, such removal will result in as prompt recovery as when the necrosis has occurred from other causes than syphilis.

LESSON XXI.

GUMMY TUMOR OF BONE—PRODUCING BRAIN SYMPTOMS, ETC.

Clinical case in illustration. Such lesions of rare occurrence before the second or third year of syphilis. Insidious in access. Sometimes producing extensive loss of bony tissue. First signs often through occurrence of vertigo, epilepsy, aphasia, or paralysis. Same symptoms may occur from accidents of the acute stage of syphilis. Cases in illustration. Possibility of confounding the brain and nerve disturbances of late syphilis, with those due to processes of the active stage of the disease. Mauriac's views in support of this position. Cornil's views.

CASE VIII. L. G., 35; policeman. In good general health. Had a history of irregularly treated syphilis, twelve years previous. About five years ago, he first noticed a swelling on the top of his head; also soon after, another on the left side: not tender, causing no inconvenience or pain. About a month after, he received a blow on tumor No. 1, after which he had much pain, and it finally suppurated and discharged pus freely. Examination showed an ulcer, about an inch in diameter, perforating the scalp just anterior to the vertex. The probe touched bony material at once, and a loose piece, half an inch square, was readily extracted. The second and more recent swelling was about the size of half a pullet's egg, very hard and insensitive. The man was at once put upon a mixture of biniodide of mercury and iodide of potassium, the latter in increasing doses.

The open lesion, which was at first quite painful, soon became less so, and the iodide, at the end of a month, had been raised to seventy grains three times a day, in a tumbler of milk, and was well borne. Within three months (notwithstanding several intervals of two or three days each, when he was prevented from taking his medicine) the hard tumor had entirely disappeared. His only complaint was of occasional vertigo. This continued after the healing of the necrosed lesion, which occurred a month or two later, leaving a cicatricial de-

pression which indicated loss, through to the inner table of the skull. The vertigo, which appeared to be symptomatic of a bony growth on the inner surface of the cranium, after some four months more of treatment finally disappeared. He was, however, kept on the simple mist. biniodid., a drachm thrice daily for the following year, and he has had immunity from trouble for the past three years.

Remarks.—Tumors of the cranium rarely occur before the second or third year of syphilis, and more often, not before the twentieth or later. Their access is very insidious, and as they are usually without pain, often come to considerable size before discovery. If the patient is temperate, and in good general health, they may remain stationary, at any point, without apparent change, until some irregularity in living or depression of the vital powers, disease, or injury as from a blow, when they inflame and break down, leaving a bony ulcer involving the thickness of the external table and the diploe. Penetration of the internal table is rare. The extent to which the skull may be damaged in this way is scarcely conceivable. The same mode of implication may extend even beyond its parictes to the bones of the face. The first announcement of trouble, in cases of cranial syphilis, may be through the occurrence of some nervous trouble from pressure on the brain; vertigo, as in the case just cited; epilepsy, aphasia, or muscular paralysis. The reasonable suspicion of antecedent syphilis, should be the signal for prompt and efficient treatment, addressed to the removal of syphilitic sequelæ. *Brain and nerve disturbance occurring during active stage of syphilis*, during the early months of syphilis, *i.e.*, in the acute or secondary stage, localized paralysis or acute brain disturbance may occur—not due to the accumulation of the so-called gummy material, which does not exist during the active stage, but from the pressure caused through the formation of an accidental papule, or its equivalent, within the skull, or in the track or sheath of a nerve. Quite recently I have seen a facial paralysis extending to the hand of that side, in the papular stage of syphilis, passing off under treatment, simultaneously with the other lesions of that stage. Within the last three months a young gentleman under my care in the fifth month of syphilis, with papules, though sparse, yet distinct and characteristic, was suddenly attacked with acute mania. Two distinguished alienists of this city who were called in, pronounced the case one of commencing paresis, and sent the young man to Bloomingdale Asylum. In the course of a few weeks he was sufficiently recovered to be able to signify to his medical attendant at the asylum, that he was under treatment for syphilis when attacked with his mania, and showed the stains left by the papules. The result was a resumption of treatment for syphilis and complete recovery, within a very short time, when he voluntarily returned to my care.

The possible error of mistaking conditions, like the foregoing, for late accidents of syphilis, will be apparent.*

Syphilitic ostitis and periostitis, osteophytes, exostosis, epiphysial and parenchymatous, enostoses eburnation of bone, etc., of the *active period* of syphilis may be, I think, legitimately claimed to result from one and the same cause, viz., the cell aggregation and proliferation, *in loco*, which when occurring in the integument constitutes the papule.

This view would rationally explain the position of M. Mauriac, recently quoted in the American edition of Cornil on Syphilis, and which thus considered, is so entirely in harmony with my own position, that I shall yield to the temptation to quote some of M. Mauriac's statements bearing on this point. He says: †

(1) "Pericranial periostitis is often among the early manifestations of syphilis . . . even before the secondary lesions.

(*a*) "It is seated exclusively in the periosteum of the

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* An accidental papule sometimes may be seen developing in the anterior chamber of the eye during the active stage of syphilis, which has received the title of *gummy tumor of the iris*. This apparent misnomer is calculated to create the impression that gummy tumors do sometimes occur during the early months of syphilis, I think, which can be satisfactorily proven to be an error.

† Cornil on Syphilis, Am. ed., 1882, page 264.

cranium, and if hyperæmia or inflammatory lesion of the osseous tissue exists it is *secondary* and remains subordinate to the periostitis.

(*b*) "Pericranial periostitis is the result of a true inflammatory process—an irritation or active process, as indicated by its acute symptoms and active course.

(The same may be said of the initial lesion of syphilis, or the papular eruption, both of which have been shown to produce irritation, through mechanical obstruction to the processes of nutrition rather than from the inflammatory nature of the lesions.) He further says:

(*c*) "This variety of cranial tumors, when a result of acquired syphilis in the adult, *has a tendency to resolution, either spontaneously or by appropriate treatment. The* swelling *readily disappears without leaving any trace.*

(Italics my own, to indicate the exact correspondence of these tumors in their behavior with that of the papular eruption.)

(*f*) "The tumors may be discrete or confluent, and usually are located on the anterior half of the cranium. *Their duration varies from four to six weeks when not submitted to treatment. Under proper medication they disappear sooner.*

(2) "Periostitis of the ribs, costal cartilages, and sternum may occur at the beginning of syphilis.

(3) "Periostoses and exostoses may develop at other parts of the osseous system during the early period of constitutional syphilis.

(*a*) "The period of incubation of these osseous lesions, dating from the appearance of the chancre, varies from thirty to one hundred and twenty days.

(*b*) "They may appear several days before eruption of the secondary cutaneous or mucous lesions. They occur spontaneously without the intervention of any exerting cause.

(*c*) "They seem to result from a form of syphilitic infection, in which the virus is unusually active, as compared with the resistant powers of the organism contaminated.

(5—*a*) "They may recover spontaneously, but they

disappear very much more rapidly under mercury and iodine, with local anti-phlogistic treatment.

(*b*) "They complicate the prognosis of syphilis, although they are often associated only with mild lesions in other organs and do not necessarily indicate a malignant local process or serious general constitutional tendency."

It appears to me to require a very moderate degree of perspicacity, to discover a remarkable similarity, in time, mode, and degree of development, in behavior after development, with and without treatment, and in relation to the prognosis of a given case, with that of the papular eruption. Considering, then, the power of penetrating through any and every tissue, occasionally manifested by the amoeboid cell, or syphilitic disease germ, the wonder only appears to be that such accidents as the local proliferation and accumulation of such cells, in various localities, outside their usual channels, are not more frequently observed. The probabilities appear to me that such erratic accumulations do very often occur, in the way just mentioned, but, that, as they are most likely to be located in the softer tissues, the mechanical disturbance is not sufficient to attract attention; but when occurring in the bony structures, or between these and the periosteum, very naturally periostitis of the mild and transient character, described by Mauriac, would be likely to take place. It is also a significant fact that such proliferations are favored by a sluggish circulation, such as may be inferred, in cases as Mauriac says (3) "in which the virus is *unusually active as compared with the resisting power of the organism contaminated.*"

In connection with the statements of Mauriac and with the views just expressed, it will be interesting to recall what M. Cornil says as to the mode of origin of syphilitic osteo-periostitis. "Syphilitic periostitis does not differ materially from ordinary osteo-periostitis, limited to the superficial layer of the bone and the periosteum, it most frequently occurs at the end of the secondary or in the tertiary period, attacking the tibia, clavicle, sternum, bones of the head, etc.

"Beneath the periosteum, between it and the bone, *there collect numerous round cells, analogous to those of embryonal marrow.* At the same time the deep layers of the periosteum are inflamed and *contain cells interposed between the fasceculi of fibres.* The neighboring connective tissue of the periosteum, generally presents a slight inflammatory œdema, so that the tumor, situated between the skin and bone, is due both to the swelling of the periosteum and to the inflammatory œdema of the subcutaneous connective tissue. The surface of the bone beneath the periosteum, has the openings of the Haversian canals enlarged and filled with marrow, which is either red and embryonal, or is gray and gelatinous, *consisting of the round cells of the medulla.* The fat has disappeared from these changed canals. This form of mild periostitis *may disappear and leave no trace,* even when it is quite deep, and in a flat bone, as the sternum ribs or cranium. It is accompanied with an embryonal condition of the marrow of the whole bone." (Cornil on Syphilis, Am. Ed., Henry C. Lea's Son & Co., Phila., 1882, pages 247, 248.

LESSON XXII.

LATE BRAIN LESIONS OF SYPHILIS—GUMMOUS INFILTRATION OF.

Clinical case in illustration. Prompt beneficial effects of specific treatment. Large doses of iodide of potassium evidently beneficial. Prompt retrogression in patient's condition through their discontinuance. Renewed improvement through resumption of remedies in mild form, and subsequent deterioration. Resumption of large doses of iodide of potassium objected to, and final relapse of the patient resulting in confirmed dementia. Remarks. Mr. Hutchinson's views of the diseases of the brain due to syphilis. Correspondence of the same with conditions in foregoing case. Suggestions of treatment for similar cases. Iodide of potassium in large doses claimed to be essential in treatment of the sequelæ of syphilis. This confirmed by experience of accepted authorities.

W. S. S., 37; civil engineer. History of a mild form of syphilis at 24; indurated initial lesion; sparse papular; syphilide; partial alopecia; mucous patches in throat. Desultory treatment by mercurials for three or four months. No appreciable evidence of disease after the sixth month.

Eleven years after, while in South America, engaged in very engrossing mercantile business, while in robust general health, he gradually became conscious of a failing and uncertain memory. His partners had observed this previously. He became also unusually emotional; tears coming without due occasion. He would drop asleep over his ordinary work, omit words in his business letters, recognizing this himself, on reperusal. He continued for two or three months to transact business, but was no longer trusted to do so without supervision. His physicians pronounced his trouble acute-softening of the brain, and he was sent home. He came under my care in March, 1878. He was still in excellent health. In addition to the foregoing symptoms, he had some aphasia and slowness of utterance; he was no longer able to correct his written mistakes as before, but was able to give a connected account of his trouble and also of his previous syphilis. He had

up to this time been treated, chiefly, by use of the bromides and strychnia, but had slowly, but steadily, deteriorated mentally, while his general health was yet perfect. He was an excessive smoker, and drank alcoholic beverages two or three times a day.

Mr. J. was at once put on the mist. biniodid. hydrarg. a teaspoonful thrice daily, with the addition of one drop of a saturated solution of the iodide of potass. with each dose, in half a small tumbler of milk thrice daily. Smoking and spirituous liquors wholly interdicted—plain wholesome food, regular hours, took the place of ill-selected food and late hours. The solution of the iodide was increased by one drop for each dose of the mixture, and given separately from it in a half tumbler of milk, and this continued up to the tenth day, when he was taking 30 drops or 30 grains of the iodide of potass., besides the 8 grains in his biniodide mixture in which he got also $\frac{1}{16}$ of a grain of the biniodide of mercury. Already there appeared some signs of amendment. The iodide was now increased more slowly: only one drop per day instead of one at each dose, as he complained of a little sense of nausea at times after taking the medicine. The milk was increased so that at the end of the third week from this he was taking 52 grains in a tumbler of milk, besides his mixture, containing 8 grains more, making one full drachm of the iodide of potassium, and $\frac{1}{16}$ of a grain of the biniodid. of mercury three times daily, and bearing it perfectly; smoking but one cigar daily and drinking but claret with his dinner. He had now improved so much that his friends remarked it on meeting in the street. He was less somnolent, and his difficulty of utterance was scarcely noticeable, as he was naturally slow of speech. This treatment was continued without change in any particular for three months, with gradual improvement, when, notwithstanding several lapses in his abstinence—on one occasion dissipating for several days—he had so far recovered that he considered himself, and his friends considered him, quite well. His medicines were given, however, with the distinct understanding that unless some especial contra-indication occurred, they should be

continued in same doses, viz., 1 drachm of potass. iodide, and $\frac{1}{16}$ hydrarg. biniodid. thrice daily for at least one year. Continuing apparently well for the next few months, he went to London, where he consulted an expert, who, while approving the previous treatment, thought it had been continued long enough and directed that it be discontinued. At the end of a month the patient went to Paris, and after a short period of dissipation was seized with acute mania and was placed in a Maison de Santé, where he soon became aphasic and somnolent, and his case was accepted as one of acute idiopathic cerebral ramollissement. A history of the case was sent to the physicians then in charge of the case, with suggestion to resume the former specific treatment. Under mercurial inunctions and small doses of potass. iodid. the patient once more improved, and hopes of complete recovery were held out. From being unable to recognize his relations, even requiring aid in all the operations of his excretory functions, and even sitting at times with open mouth and food unmasticated in it, he became able to help himself in all ways, to write legible and coherent sentences and dates, to recognize and converse intelligibly, though with thick and at times somewhat difficult utterance. At this time, being in Europe, I was desired to see him in consultation with the medical officers under whose care he was, and found him in the condition last above described. The former diagnosis of the syphilitic origin of the trouble was concurred in by the resident physician, but great surprise was expressed at the magnitude of the doses of iodid. of potass. which had been used. When their immediate resumption was urged, a deprecating shrug accompanied the consent given, and it seemed scarcely probable, although the recommendation was enforced by cases and authorities, that the patient would get the full measure of what was, evidently, considered heroic treatment. Within a few months he began to retrograde; had frequent epileptiform seizures, and now, after a year, is still under the same care, in a state of hopeless dementia.

Remarks.—Mr. Hutchinson, of London,* in discussing the diseased conditions of the brain due to syphilis, says, "If we say that we recognize three forms of cerebral disease—one in which the symptoms result from arterial occlusion, one from irritation of gummata, and one from periosteal thickening—we may assume that sudden attacks of paralysis denote one, that the second has all the symptoms common to cases of tumor, and that severe pain and headache go with the last. . . . No doubt in some cases all three lesions present together, and in many two of them." The probabilities seemed to me in favor of the accumulation of germinal material (gummy deposits) in the adventitia of arteries, as described by Heubner† and by Edes,‡ sufficient to produce in the first instance symptoms of pressure, then of irritation, finally obstructed circulation and consequent softening. The two causes, viz., arterial occulusion and irritation and pressure from gummata, combining in this case. The prompt benefit from specific treatment in the first instance warrants the belief that its continuance as originally contemplated would have not only prevented the relapse but in all probability have resulted in permanent cure. In any event the fair and full trial of it could not have eventuated more disastrously than its omission. Similar accumulation (gummy deposits) occurring in the spinal cord or at any point throughout the nervous system, producing paralysis in various localities and degrees, even in some instances perfectly simulating locomotor ataxia,§ and general paralysis of the insane, would be treated with equal benefit, through the same means and measures made use of in the early stages of the foregoing case. Inunctions of the mild mercurial ointment, a drachm morning and evening, instead of, or even in cases of urgency, in addition to, the administration of mercurials

* London *Medical Times and Gazette*, Feb. 7, 1877.
† Cornil and Ranvier, Pathological Histology. Am. Ed., p. 331.
‡ Physiological Pathology of Syphilis. Otis. Putnam's Sons, 1881.
§ See Professor Erb's paper "On the Role of Syphilis as a Cause of Locomotor Ataxy," in "Transactions of the International Medical Congress," seventh session. London, 1881. Vol. ii., p. 32.

internally. The iodide of potassium might also in obstinate cases be carried up to its highest point of tolerance, or until the urgent symptoms yielded. As high as 2 ounces of the iodide in the 24 hours have been administered, with final relief of grave destructive late lesions of syphilis.*

The varieties of syphilitic sequelæ, dependent upon locality and tissues involved, it will readily be seen, may be interminable. If such lesions are, as is claimed, dependent upon obstructed lymphatic channels or spaces, it will readily be seen that they may occur at any point in the human organism to which nutritive material is carried. The attempt to classify them in regions, organs, and tissues, while aiding in the study of special symptoms and local disturbances due to their initiation, development and progress, unless suitably guarded by explanation, is open to the objection that from this fact they are liable to be made the subjects of consideration as so many varieties of disease rather than the same variety simply modified in appearance and effects through the influence of locality. It will be recalled as a significant fact that no matter what the locality, appearance, or symptoms of presumably syphilitic origin, one and the same line of treatment is indicated in every lesion occurring throughout that period of syphilis known as the tertiary and quarternary stages of syphilis, or the period of syphilitic sequelæ.

* Genito-Urinary Diseases with Syphilis. Van Buren and Keyes. Appleton & Co., New York, 1874, p. 570.