

HYDE, PRE-COLUMBIAN SYPHILIS IN AMERICA. 117

A CONTRIBUTION TO THE STUDY OF PRE-COLUMBIAN
SYPHILIS IN AMERICA.

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THE question whether syphilis prevailed upon the American continent previous to the close of the fifteenth century has a larger measure than the interest of the antiquarian. It is one not without significance for the present, and proposes a problem to modern pathology.

The historical facts upon which it has been sought to rest both the affirmative and negative answers to the question are so well known that the briefest summary of them must suffice for the present purpose.

The ancient literatures of China, India, Greece, and Italy contain unmistakable proofs of the fact that at an early period of the world's history, certain genital lesions were recognized as resulting from sexual contamination. Many of the systemic results of syphilis, not merely in these writings but in those of the Middle Ages, are more or less graphically described. These descriptions are, however, for the most part fragmentary and disconnected; and the conditions they represent are often assigned to other and various disorders; rarely, if ever, are they identified as the results of a previous infection of some particular part of the body. Between, however, the years 1492 and 1494 an epidemic of syphilis spread over France, Spain, Italy, Switzerland, the countries bordering on the Rhine, and other parts of Europe, which eventually became as formidable in its effects as it was general of diffusion. Its prevalence was greatly aided by the campaigns of Charles VIII. of France, who, in his expedition to Naples, led an army of between eight and ten thousand men into the plains of Italy. He crossed into Piedmont on the 8th of December, 1494. His army was officered by young men of aristocratic connections, leading the loosest lives. The rank and file, following the example of their dissolute commanders, were successively quartered in most of the larger Italian cities, and, in the license of unrestraint, did not hesitate to pillage Rome. As a consequence, syphilis was offered to the study of physicians on a broader scale than ever before. Its phenomena were now carefully noted and its earliest and later symptoms recognized as phases of the evolution of a single specific disorder. Fracastor wrote his poem; Isla, his treatise; Sydenham, his letters. The affection soon passed from beneath the uncertain shadows of the mysterious into the calm scrutiny of science.

On the 4th of January, 1493, the Admiral Christobal Colon, better known to us as Columbus, sailed with his company from the West Indies in the *Pinta* and *Nina*. They reached the shores of Europe by the fol-

lowing March. Ruy Diaz de Isla, a physician of Andalusia, stated that he had treated some of this company for syphilis, the symptoms of which had first appeared on shipboard before the landing. On the 14th of June of the next year Nicholas Scyllatius reported syphilis as prevalent in epidemic form. The great captain, Gonzales Fernandez de Cordova, soon after left Spain, and in a second Italian campaign against the arms of Louis XII., brought his Spanish troops in contact with the French. Oviedo not only stated that the disease was introduced into Europe from the West Indies by the fleets of Columbus, but added that he was personally acquainted with some of the navigators who had acquired the disease from this source; and gives the name of one of these sufferers, personally known to himself as also to their majesties of Castile. He is also authority for the statement that Cordova, when he was sent to Italy, had in his army persons who were known to be infected.

Six years after Columbus sailed from Hispaniola the devout Las Casas writes of his Indian converts that they freely admitted the prevalence of the disease amongst themselves long before the advent of the Christians; and that the latter were far greater sufferers from the pestilence than the natives themselves. Sir Hans Sloane, who visited the West Indies in 1687, Robertson, the historian, and others whose names are as well known, have, after careful research, expressed their belief in the American origin of the malady. In our own country, Professor Joseph Jones, of New Orleans, may be cited as a classical writer on this theme. His explorations in Kentucky, Tennessee, and elsewhere have led him to conclude that syphilis existed in this hemisphere at a remote period of the past; but even if prevalent in the crowded West Indian Islands at the time of their first visitation by Europeans, did not for that reason necessarily exist upon the Northern and Southern continents. He cites, on the contrary, John D. Hunter, who, after a long captivity among the Indians, declared that they suffered from the disease, but that they had contracted it after communication with the white race.

Two interesting papers have also been contributed to this subject by Dr. Gustavus Brühl, of Cincinnati, Ohio, which embody the fruits of considerable historic research. They contain several interesting arguments having an etymological basis in favor of the existence of pre-Columbian syphilis in the Western Hemisphere. The writings of Sahagun, Torquemada, Roman, Mendieta, Pane and others show as to New Spain—first, that the bodies of those affected with syphilis were interred, as distinguished from those dead of other disorders, which were cremated; second, that the infected were not deemed fit for religious sacrifices; third, that they were represented at the festivals; and fourth, that the disease was counted a punishment sent from the gods for the non-performance of religious rites and other offences. The author also shows that the Mexicans not only recognized the connection between

the earliest and later manifestations of the disorder, but distinguished between several types of the former, understanding also its remedial treatment far better than the Spaniards, even seeking thermal resorts for the purpose of securing relief. He quotes from seventeen Indian dialects, each of which has a primitive and native term for designating the disease, none of the terms thus employed suggesting their confrontation with a new malady, although soon after contact with the whites they were compelled to apply new names for many novel objects with which they were to become familiar. These new names either bear witness to the impression on their ears made by the speech of the Castilians, or describe some prominent feature of the object to be newly named, a rule distinctly observed by them in the case of diseases known to have been imported from Europe to America, as for example, measles and smallpox. The singular confusion existing in the Mexican language of the sixteenth century, of the terms employed to indicate ideas of power, divinity, and the special disease here under discussion, possesses an interest in view of the fact that this is recognized in the dialects of Quechua and Aymerás three hundred years before Pizarro conquered the capital of the Incas.

But to the inhabitants of the Northern part of the Western Hemisphere, the chief interest which to-day attaches to this question rests upon the discovery of bones which have been disinterred in different parts of the country, many of them of great age, presumed to be prehistoric, some of which exhibit traces of disease thought to be syphilis. Such are those exhumed by Professor Jones, who claims that some of those taken by him from the Indian cemeteries are the "oldest syphilitic bones in existence." Others have been disinterred in California, Colorado, and elsewhere within the boundaries of the United States. Only one who has had the singular opportunity of examining all these specimens can speak with authority upon the conclusions which their study justifies. In the pages which follow reference is had only to those either examined by myself or to those represented by portraits in my collection. The following list of photographs may be regarded as fairly representative of these collections:

No. 1. Two incomplete human tibiae from a mound in Alameda County, California, furnished me by the kindness of Dr. Billings, from the collection in the Surgeon-General's Office of the War Department, U. S. A.

No. 2. A group of tibiae and fibulae from a burial mound near St. Francis River, Arkansas, furnished me by the kindness of Professor F. W. Putnam, of the Peabody Museum of American Archaeology and Ethnology in Cambridge, Mass. Figs. 2 and 3.

No. 3. A skull with other diseased and healthy bones, all from the same skeleton, from a burial mound in Colorado, furnished me from same collection. Figs. 4 and 5.

No. 4. Two tibiae, selected from other bones of a skeleton in my own collection sent to me by Dr. J. W. Brown, Mr. Thomas M. Trippe, and Mr. Mentzel, exhumed from a prehistoric burial site on the Animas River, Colo-

FIG. 1.

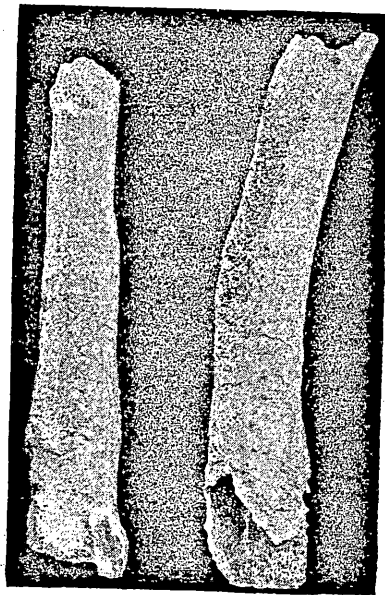


FIG. 2.

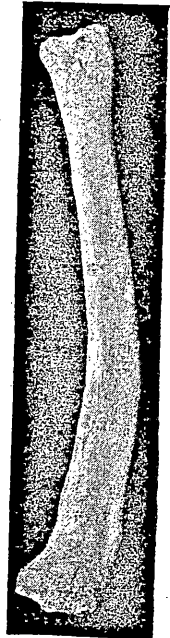


FIG. 3.



FIG. 4.



rado, about forty-five miles distant from Durango. In the process of exhumation of this skeleton the skull was found so far disintegrated that on exposure it at once crumbled to fragments. Fig. 6.

Comparing the general features of the bones shown in these photographs with those elsewhere collected, figured, and described, as probably the seat of syphilitic lesions, I believe that they may be regarded as fairly representative of the entire group. For the purpose of readier comparison, I have also studied photographs of

No. 5. A left tibia, showing hyperostosis of the entire shaft, with some shallow depressions where it is supposed suppuration had occurred. The upper half shows abundant exostosis over all its surfaces, the joint being involved. Weight of bone thirty ounces. From a negro whose entire skeleton was involved in syphilitic changes. (Surgeon-General's Office.)

FIG. 5.

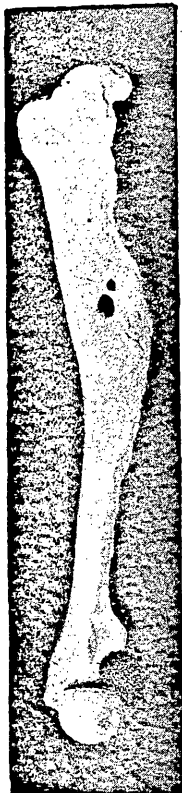


FIG. 6.



No. 6. Calvarium; the outer table showing numerous erosions, some large and deep, others small and superficial, which corresponded in the recent state with small pinkish gummata of the pericranium; a few perforations; many exostoses. The inner table shows many erosions and closely set osteophytes. From a colored man aged forty-two years. (Surgeon-General's Office.)

No. 7. Right tibia, showing marked nodular irregularity, resulting from gummatous tumors. The left tibia less strikingly affected with similar lesions. From a Saladoan. (Surgeon-General's Office.)

No. 8. Lower ends of femora with patellæ, tibiæ, and fibulæ, showing results of inflammation, probably syphilitic; surface of bones, especially of front of tibiæ, very irregular, with marked depressions and new growth of bone; general osteoporosis. Osteomyelitis; ossifying periostitis. Removed from a mulatto woman aged forty-one years. (Surgeon-General's Office.)

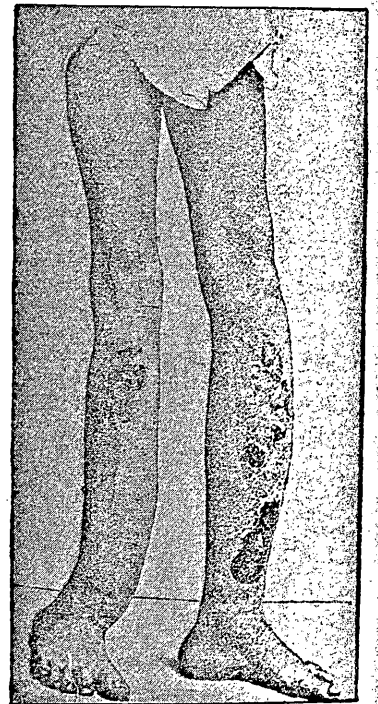
No. 9. Left tibia, the upper third of which presents subperiosteal necrosis and deeper fistulous passages; the middle third of the bone shows the same condition to a less extent; and in addition, especially on its posterior surface, an abundance of spongy osteophytes. From a white man, age unknown; disease supposed to be result of exposure; leg amputated above knee; patient recovered. (Surgeon-General's Office.)

No. 10. Right tibia; tibia osteoporotic throughout and ankylosed to astragalus. From a white man aged forty-five years; had his right foot hurt while jumping, when fourteen years of age; hurt again in 1866 by being

FIG. 7.



FIG. 8.



struck by a falling bar of iron. Inflammation ensued; amputation in lower third of thigh. Patient recovered. (Surgeon-General's Office.)

No. 11. The lower extremities of a clinical patient, lately applying for relief at the clinic in Chicago, affected with inherited syphilis in the right tibia, exhibiting marked deformity, produced by enlargement and antero-posterior curve. Fig. 7.

No. 12. A reproduction of the cuts employed by Fournier to illustrate the bone disease of inherited syphilis described by him as the sabre-blade deformity. (*Lame-de-sabre*.) Fig. 8.

Viewing as a whole the group of exhumed bones whose photographs have been studied, it is clear that the morbid changes they represent are due to forms of inflammation described by Professor Jones as "periostitis, osteitis, endosteitis, caries, sclerosis, and exostosis." "They are," using again the descriptive terms he employs, "thoroughly diseased,

enlarged, and thickened, with the medullary canal more or less completely obliterated by the effect of inflammatory action, with the surfaces eroded in many places." Again: "In many the medullary canals are equally involved with the periosteum." Some of these changes are bilateral, involving—if not equally, to some extent—bones of like name on the two sides of the body. In other cases several different bones of one skeleton are diseased.

The most conspicuous of the features common to the greater number, are the diffuseness, uniformity, and lack of sharp definition of the lesions, represented chiefly by hypertrophy rather than atrophy. The first question then at issue does not concern the existence of these tangible metamorphoses. It is reduced to the inquiry, Are these metamorphoses due wholly or in part to syphilis?

The distorted femur of the skeleton obtained from Colorado seems to have been the seat of an abscess. I have suggested to Professor Putnam that it may have resulted from traumatism by one of the triangular flints employed by the Indians as arrow-heads, wounding bone, periosteum, or adjacent tissues. I am under the impression that he is disposed to entertain the same view. In a sacrum and dorsal vertebra to be found in a collection of bones taken from a prehistoric cemetery in Madisonville, Ohio, the implements named are seen to have penetrated the osseous substance to the extent of about half an inch.

As to the other modifications of shape and tissue exhibited in this group of bones, there is a conspicuous absence of certain features which are to be expected in bone syphilis, and which are seen, however imperfectly, in the group of photographs of bones known to be syphilitic. Here are not the single or multiple, conical, roundish, or flattened, smooth, hard, pea- to nut-sized and even larger nodules which may be found in both the laminated and eburnated conditions. Here are not the circumscribed swellings, well or ill-defined, found at the distal extremities of syphilitic bones, as, for example, near the wrist when involving the radius and ulna. Here are not the atrophic areas whose definition is scarcely less remarkable than that of the tumefaction which preceded. Here is no suggestion of a poorly united fracture, no hint of a super-added "splint," no trace of a circumscribed or even diffuse gummatous involvement, leaving after degeneration, circinate, single, or multiple relics of the process. We search in vain for bone-cicatrices; for smooth or rough mamelonnations of the surface, for localized sclerosis. We discover no centric rarefaction of the osseous tissue with a peripheral overgrowth. In the Madisonville collection, however, there are two tibiae suggesting the gummatous changes in the bones of the syphilitic subject, illustrated in the photographs (already shown) of the skull with numerous erosions, and of the bones of the negro subjects. Professor Jones describes also "rounded ulcerations with glazed surfaces," "tuberculated

ulcerations," "marked eburnifications," and "reticulated ulcerations," in which an ulcer penetrated a network of periosteal deposit with an annular border.

If syphilis actually prevailed among the aborigines of the Northern part of the Western Continent, it is natural to conclude that with only that measure of therapeutic relief which they could command, inherited syphilis must have been proportionately prevalent. It is well known, too, that in the last-named form of the disease bone symptoms are much more frequently encountered than in the acquired form. Yet I have been thus far wholly unable to secure a photograph or a description of any bone in America that can be fully identified as part of a prehistoric skeleton with the lesions of inherited syphilis unmistakably apparent. There is no bone illustrating these conditions, whether historic or prehistoric, in the collection of the Surgeon-General's Office. Professor Putnam informs me that he has many tibiae of children exhibiting the curves to be seen in the condition described by Fournier as the "sabre-blade" deformity, and well illustrated in the photograph of a clinical patient lately shown before the class in Rush Medical College, Chicago. But in these curves the special changes described by Fournier, Taylor, Augagneur, Parrot, Ollier, Poncet, and others, often recognized in a general clinical experience, are not declared. There are no traces of the chronic or subacute, often symmetrical and multiple, simple or gummatous, osteo-periostites, and osteo-myelites, starting at the epiphyso-diaphyseal junction, and producing the smooth or irregularly undulating annular tumors embracing the bone. Even the "massive distortions" described and figured by Fournier in his classical work on *Late Inherited Syphilis* differ to some extent from those here represented, though suggesting a resemblance in the general contour of the deformed bones.

In order to investigate this matter more fully, I selected for pathological examination the tibiae of the parts of a skeleton sent me from Colorado, not merely because they fully illustrate the general changes described by most authors as characteristic of prehistoric bones claimed to be syphilitic, but also because it is seriously claimed by the scientific men of special training who superintend the exhumation, that they antedate by a long period of time the relics of the Mound-builders and Cave-dwellers. The mode of their sepulture was different from that prevalent among the races indicated by these names, as also from that which has survived to our own day among the Zuñis.

Upon these bones, submitted to Dr. T. M. Prudden, of the laboratory of the College of Physicians and Surgeons of New York, I receive the following report:

"The bones were two apparently adult tibiae, both lower ends of which were absent, being apparently crumbled off. Both of the bones presented marked abnormalities which may be best described on the sepa-

rate bones. The lesions of the left tibia are more extensive than those of the right.

"The *left tibia*. The shaft of the bone is bowed considerably forward at its middle and lower portions. The shaft, which is nearly cylindrical, is everywhere greatly increased in thickness, measuring from 4 to 4.5 centimetres in diameter in all parts except at the lower end, where it is slightly smaller. The whole bone is very light in weight.

"About the articular end, at the knee-joint, the bone presents erosions, irregular losses of substance and numerous larger and smaller bony outgrowths—the latter being most marked about the front of the joint and especially about the seat of attachment of the ligamentum patellæ. The fibular articular surface is completely destroyed. The entire surface of the shaft is roughened and porous and beset here and there, especially along the lines of tendinous attachment, with larger and smaller rows and masses of the delicate bony outgrowths called osteophytes. These osteophytes are especially prominent along the lateral and posterior aspects of the shaft. Branching grooves in the surface of the bone and delicate projecting bony plates and spiculæ and ridges contribute to the roughness of the shaft.

"Transverse sections of the shaft of this bone at its middle third show that the bone, which from the outside appears to be largely hypertrophied, is a mere fragile cylindrical shell, the peripheral compact bone being almost everywhere thin and uneven, and the bulk of the shaft consisting almost wholly of irregular cancellous or spongy tissue.

"The more delicate central trabeculæ of the cancellous tissue, which apparently nearly or completely filled the narrow cavity have, except in a few places, largely disintegrated and fallen out with the lapse of time.

"Along many parts of the bone the cancellous tissue pierces the shell of compact bone—which though very thin in general encloses the shaft—and becomes continuous with the osteophytic outgrowths on the surface.

"The *right tibia* is smaller but heavier than the left. The shaft is in general irregularly ovoidal, its antero-posterior diameter in the upper and middle third being about 4 centimetres, its transverse diameter about 2.3 centimetres.

"The shaft presents, especially about its upper end, superficial erosions and osteophytic outgrowths similar to, but less extensive than those of its mate. The whole surface of the shaft is rough and porous.

"Transverse section between the upper and middle third shows an irregular inclosing shell of compact bone, from 1 to 5 millimetres in thickness. This superficial compact bone is in places riddled with larger and smaller very irregular Haversian canals; in places is quite dense and solid externally. On the posterior aspect of the bone along the oblique

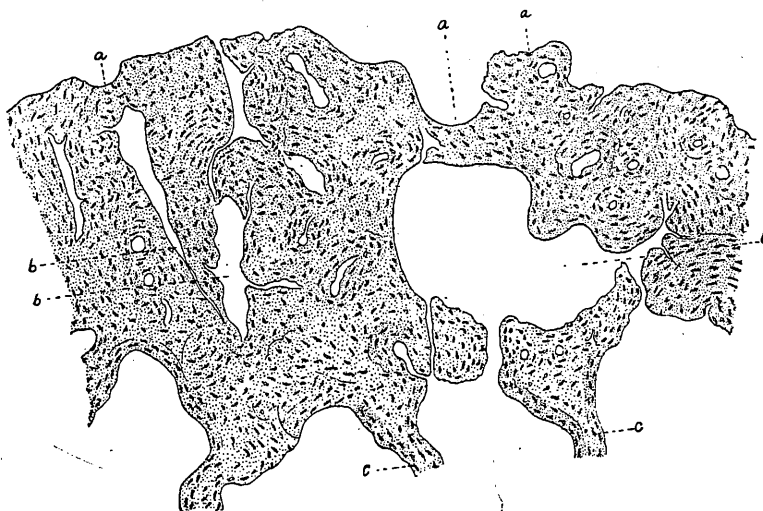
line, the compact substance is pierced by the cancellous tissue, which becomes continuous with the projecting osteophytes.

“Along the middle of the shaft, where it is most perfectly preserved, the cancellous tissue completely fills the narrow cavity.

“The *microscopical examination* of the trabeculæ of the cancellous tissue in both bones shows the usual appearances of such tissue, but the irregularity and apparent aimlessness of their grouping and arrangement indicate their formation under the influence of a chronic inflammatory process. Microscopical examination of the osteophytes shows the irregular grouping and relative positions of the bone cells and bone lamellæ, which is usually associated with such inflammatory structures. The microscopical examination of the more compact bone tissue from various places in the shafts of both bones shows the utmost irregularity in the arrangement, size, and direction of the Haversian canals and their surrounding lamellæ.

“The porous surfaces of the shafts show the eroded depressions, the irregular entrances for bloodvessels, and in places the closely grouped

FIG. 9.



Howship's lacunæ which indicate the formation and absorption of the superficial layers of bone under the influence of chronic periostitis. The appearance of a considerably magnified transverse section of the more compact bone of the right tibia, near its surface, is shown in Fig. 9.

“The articular surfaces of the knee-joint do not seem to have been the seat of chronic inflammatory-changes. But, judging from the large osteophytic outgrowths about the upper end of the left tibia, it seems not unlikely that this joint was stiff.

"Although there is no doubt that a certain amount of alteration in the external appearance of these bones has been produced by weathering or disintegration, yet the examination of their surfaces, even with a low magnifying power, shows most conclusively that they have been remarkably well preserved. The delicate sharp-edged openings through which the new-formed bloodvessels from the inflamed periosteum entered the bone; the sharp-cut grooves along the surfaces in which the superficial bloodvessels lay as the new-formed bone spiculæ and lamellæ were built up about them, as well as the still finely preserved delicate projecting osteophytic masses, all show that to the vital processes of disease and not to disintegration or weathering are these various superficial changes due.

"If, then, we sum up the various departures from the normal which these bones present, in the form of an *anatomical diagnosis*, we find that they prove the existence of *chronic rarefying and formative osteitis, with osteomyelitis and chronic formative periostitis*.

"REMARKS ON MORPHOLOGICAL CHARACTERS AND CAUSATION.—It is evident that these are the bones of an adult who for a long time had been the victim of an extensive chronic bone disease in both legs, with a probable involvement of the left knee. This disease was so extensive and prolonged that it had led to the nearly complete making over of the shafts of both tibiæ.

"Under the influence of the inflammatory process the old bone was bit by bit absorbed, new bone being in greater or less degree formed near by to take its place. The new-formed bone, however, as is usually the case in chronic formative osteitis, has been only here and there developed in the proper amounts, situations, and relationships, so that it furnishes but a poor makeshift for and imitation of the original structure. Thus, while the right tibia, although the seat of profound disease, has fairly maintained its shape and functions, the left, although about twice as large as it should be, is a mere shell-covered spongy cylinder, which, yielding to the weight of the individual, has been bowed strongly forward.

"It seems probable that the disease was in progress at the time of the individual's death, because the evidences of repair are only such as are apt to go hand-in-hand with the destructive process in the chronic bone disease of this kind, as we know it to-day.

"Morphologically, the character and extent of the lesion in these bones is perfectly evident. When, however, we come to consider the probable cause of these extensive changes, the difficulties in arriving at a definite conclusion are very great. Whether the alterations are due to a specific cause—that is, to syphilitic infection, or to some other agency, it is, I think, not possible to say with even a measurable degree of positiveness. There is no evidence whatsoever in these bones that there has been either

caries or necrosis. There has been, so far as the bones show, simply such a general rarefying and formative osteitis with formative periostitis as to have produced the condition often described as spongy hyperostosis. There is no evidence whatsoever, so far as I can see, of the presence at any time of the more common and typical circumscribed nodular or gummatous lesions, which are alone characteristic of syphilis of the bones. There are none of those circumscribed local losses of substance, associated with more or less localized sclerosis, which speak for the former presence of gummata. On the other hand, there is, as is well known, a more diffuse and general inflammation of the bone and periosteum which not infrequently occurs in the tibia, and which is believed to be due to syphilitic infection. But even in this form of syphilitic bone lesion, the sclerotic rather than the rarefying character in the inflammation, as is the case here, is, I think, apt to prevail.

"That the individual was not the victim of any phase of hereditary syphilis which induced developmental malformations of these bones, is evident from the sufficiently well formed upper articular extremities.

"Still, again, a simple non-specific general rarefying and formative osteitis with formative periostitis leading to just such bone changes as are present here, and with a predilection for the tibia is of no very uncommon occurrence.

"On the whole, then, while I am disposed to think that there is nothing in the morphological condition of these bones which would forbid the assumption that the lesion might have been induced by the atypical form of syphilitic inflammation, they present, nevertheless, no morphological evidence to justify such a belief."

In the limits of this paper the effort has been made to restrict the discussion to the main point at issue. What other diseases may be represented in these morbid changes, in no way related to syphilis, is a question for the general surgeon, the pathologist, and the practitioner. Whether the septic forms of myelitis and periostitis with their consequent involvement of the bone tissue proper, may here be recognized as due to the influence of the staphylococcus pyogenes albus and aureus; whether tuberculosis, or the exceedingly rare inflammations of bone due to rheumatism, may be here assigned some place; or, what is in this connection of more consequence, whether a special disease of the bones, not syphilitic in character, prevailed among the aborigines, as it is said to prevail to-day among the native tribes of some regions of this country, there is not here space to inquire.

Admitting that among the bones exhumed in the Northern part of the American continent, and found in the various collections of this country, there are some which actually exhibit unmistakable lesions of syphilis, the last problem prescribed for solution is: Are any of these bones not merely syphilitic but unquestionably prehistoric? Are they parts of

the skeletons of North American Indians or of the whites mingled with the latter in the confusion resulting from race admixture in war, captivity, and many common enterprises? Are they, in point of fact, the bones of individuals dead before the first of the Spaniards set foot on the soil of San Salvador—or, in other words, of those dead before the year 1496? When we turn to the archæologists for a response, we are at once impressed with the fact that the romance once attaching to the prehistoric races of America has been dissipated by the researches of science. The conjecture that a people once dwelt on this soil of some pretension to civilization, building temples and cities comparable to those found in what we call the older world, has been removed by a more rigid study of the relics of the dust. The artificial mounds and stone dwellings, numbering thousands, some of very small and some of imposing size, and scattered throughout the country, were once thought to be the work of an ancient race of people commonly called the "Mound-builders" and the "Cliff-dwellers," who were cited as a people showing evidence of an ancient civilization of no mean order and no common condition of culture. The bones which have been found in many of these mounds and in other places of sepulture, with the so-called works of art which these tombs contain, have been regarded as the remains of these primitive peoples.

These views have within a decade been shown to have a broader basis in the imagination than in tangible fact. From about the middle part of the Pleistocene period to the epoch of the first advent of the whites to the American coast, the history of man in America is seen to be the history of his slow and feeble evolution from a lower to a higher advancement in the Stone age. The best product of this process of evolution was reached by the North American Indian when he first looked seaward upon the sails of the Spanish fleet. There had been nothing superior to him before; and it is a question whether anything better has been since produced by this process of evolution from his race. He built no cities; he carved no vases; his work in metals was of the crudest sort. He and his fathers, his inferiors in culture, builded these mounds for sepulture and other purposes, sometimes as the foundation for communal dwellings. In some portions of the southwestern parts of the country where there is little vegetation and the plains are arid, he and his fathers excavated lodgings in the cliffs that hemmed in the canyons, or constructed them of the loose rocks that were easily separated from the walls of stone on either hand. But all the mounds are not prehistoric; and the same may be said of the excavated cliff dwellings. Even of the prehistoric mounds, some have been occupied in our own day, and some have been used for the interment of bones of individuals dead long after the admixture of the white and red races upon

our soil. Of the glass beads, the tools and ornaments of copper, and other articles found in them suggestive of contemporaneous interment with the human bodies, many were manufactured by the whites and furnished to the Indians in the way of barter for peltries. It is also of importance to note that even within the mounds which are unquestionably of prehistoric structure and which undoubtedly at the first contained only the bones of a prehistoric race, there have been repeated intrusions, and these intrusive interments have resulted in depositing in such mounds, not merely bones of later generations surviving the Columbian advent, but, indeed, large bundles of such bones, some of them apparently collected from the most miscellaneous sources.

The wide door to confusion opened by the complete recognition of facts of this character cannot be ignored. It furnishes a possibility for errors which it would be difficult to number and impossible to overestimate.

In order to demonstrate in the case of bones obtained from any mound or burial-place of the cave-dwellers in North America, some of which exhibit evidences of syphilitic lesions of a suggestive or even unmistakable character, that the latter are proofs of a pre-Columbian prevalence of the disease, it is absolutely necessary to prove beyond question; first, that such mound or burial-place was prehistoric in construction; second, that such contained bones were interred at a prehistoric period; third, and lastly, that after such burial there had been neither intrusive interment of bones nor other disturbance of mortuary relics after their first deposit.

From what precedes it is not difficult to conclude that positive proof of the prevalence of syphilis among the prehistoric races of America, based upon osseous changes, is scarcely yet at hand. With every passing year it may be remarked, the chances of securing such unequivocal demonstration are diminishing. As yet, we cannot say of any bone in our collections, that the demonstration both of its syphilitic character and prehistoric existence is without a flaw. We must, however, do full justice to the fact that an incredible amount of labor and of a praiseworthy American scholarship render it exceedingly probable to the mind of the unprejudiced that syphilis existed among the natives of the crowded West India Islands before the first visit of the whites. Even if some of the latter had been affected with a mild form of the malady, such as is described in the writings of the medical men of Europe before the fifteenth century, we can readily understand that the enormous culture-field offered by a race either virgin of that disorder or suffering from it in a mitigated form, might have been the effective origin of such a virulent epidemic as that which spread over Europe soon after the French invasion of Italy.

The appended titles are those of a few only of the works and papers that might be cited in this connection:

- Brühl, Gustavus*: "On the Pre-Columbian Existence of Syphilis in America," Cincinnati Lancet-Clinic, May 29, 1880.
- "Pre-Columbian Syphilis in the Western Hemisphere," Cincinnati Lancet-Clinic, March 8, 1890.
- Fournier, A.*: "Syphilis Héritaire Tardive," Paris, 1886.
- Jones, Joseph*: "Explorations of the Aboriginal Remains of Tennessee," Smithsonian Institution, Washington, 1876.
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NITROGEN MONOXIDE AND OXYGEN FOR ANÆSTHESIA IN MINOR SURGICAL OPERATIONS.

WITH A REPORT OF FIFTY CASES.¹

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POLYCLINIC.

In some physiological text-books we are told that mixtures of nitrous oxide and oxygen gas may be inhaled with impunity for any length of time, and when thus inhaled produce anæsthesia without unconsciousness. If this were true we would have in such mixtures the ideal anæsthetic that has for so long a time been the dream of many surgeons. A perfectly safe anæsthetic, respirable for hours by the patient, which would never fail to produce complete anæsthesia during any operation, and yet not render the patient unconscious, would be hailed as an advance in surgery.

In a recent paper read before the International Congress at Berlin, Horatio C. Wood spoke of such a "perfect anæsthetic," but added: "If such a drug exists (which has the power of paralyzing the sensory nerve-trunks without affecting other functions of the body) it yet awaits the coming of its discoverer."

¹ Read before the New York Surgical Society, with a demonstration on a patient of the method employed, Dec. 10, 1890.