

**Some observations on the ethnography and archaeology of the American aborigines / By Samuel George Morton.**

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SOME OBSERVATIONS  
ON THE  
ETHNOGRAPHY AND ARCHÆOLOGY  
OF THE  
AMERICAN ABORIGINES.

BY

SAMUEL GEORGE MORTON, M. D.,

Author of the *Crania Americana*, *Crania Ægyptiaca*, &c.

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1846.





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Nothing in the progress of human knowledge is more remarkable than the recent discoveries in American archæology, whether we regard them as monuments of art or as contributions to science. The names of Stephens and Norman will ever stand preëminent for their extraordinary revelations in Mexico and Yucatan ; which, added to those previously made by Del Rio, Humboldt, Waldeck and D'Orbigny in these and other parts of our continent, have thrown a bright, yet almost bewildering light, on the former condition of the western world.

Cities have been explored, replete with columns, bas-reliefs, tombs and temples ; the works of a comparatively civilized people, who were surrounded by barbarous yet affiliated tribes. Of the builders we know little besides what we gather from their monuments, which remain to astonish the mind and stimulate research. They teach us the value of archæological facts in tracing the primitive condition and cognate relations of the several great branches of the human family ; at the same time that they prove to us, with respect to the American race at least, that we have as yet only entered upon the threshold of investigation.

In fact, ethnography and archæology should go hand in hand ; and the principal object I have in view in giving publicity to the following too desultory remarks, is to impress on travellers and others who are favorably situated for making observations, the importance of preserving every relic, organic or artificial, that can throw any light on the past and present condition of our native tribes. Objects of this nature have been too often thrown aside as valueless ; or kept as mere curiosities, until they were finally lost or become so defaced or broken as to be useless. To render such relics available to science and art, their history and characteristics should be recorded in the periodicals of the day ; by which means we shall eventually possess an accumulated mass of facts that will be all-important to future generalization. I grant that this course has been ably pursued by many intelligent writers, and the *American Journal of Science* is a fruitful depository of such observations.\* With every acknowledgment to these praiseworthy efforts, let us urge their active continuance. Time and the progress of civilization are daily effacing the vestiges of our aboriginal race ; and whatever can be done to rescue these vestiges from oblivion, must be done quickly.

We call attention in the first place, to two skulls from a mound about three miles from the mouth of Huron river, Ohio. They were obtained by Mr. Charles W. Atwater, and forwarded to Mr. B. Silliman, Jr., through whose kindness they have been placed in my hands. These remains possess the greater interest, because the many articles found with them present no trace of European art ; thus confirming the opinion expressed in Mr. Atwater's letter :—" There are a great many mounds in the township of Huron," he observes, " all which appear to have been built a long time previous to the intercourse between the Indians and the white men. I have opened a number of these mounds, and have not discovered any articles manufactured by the latter. A piece of copper from a small mound is the only metal I have yet found."

The stone utensils obtained by Mr. Atwater in the present instance, were, as usual, arrow heads, axes, knives for skinning deer, sling-stones, and two spheroidal stones on which I shall offer some

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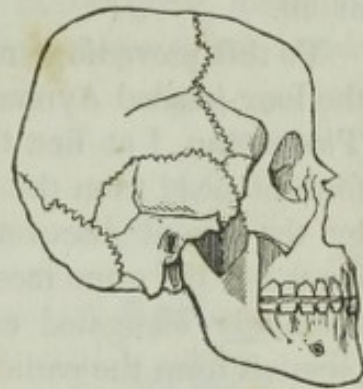
\* See more particularly the communications of Mr. R. C. Taylor, in vol. xxxiv, of Mr. S. Taylor, in vol. xxxiv, and of Prof. Forshey in vol. xlix.



remarks in another place. The materials of which these articles are formed, are jasper, quartz, granite stained by copper, and clay slate, all showing that peculiar time-worn polish which such substances acquire by long inhumation.

The two skeletons were of a man and a woman. "They had been buried on the surface of the ground and the earth raised over them. They lay on their backs with their feet to the west." The male cranium presents, in every particular, the characteristics of the American race. The forehead recedes less than usual in these people, but the large size of the jaws, the quadrangular orbits, and the width between the cheek bones, are all remarkably developed; while the rounded head, elevated vertex, vertical occiput and great inter-parietal diameter, (which is no less than 5·7 inches,) render this skull a type of national conformation. (Fig. 1.)

Fig. 1.



The female head possesses the same general character, but is more elongated in the occipital region, and of more delicate proportions throughout.\*

Similar in general conformation to these are all the mound and other skulls I have received since the publication of my work on American Crania, viz. five from the country of the Araucos, in Chili, from Dr. Thomas S. Page of Valparaiso; six of ancient Otomies, Tlascalans and Chechemecans, from Don J. Gomez de la Cortina of the city of Mexico; three from near Tampa, in Florida, from Dr. R. S. Holmes, U. S. A.; one from a mound on Blue river, Illinois, from Dr. Brown of St. Louis; and four sent me by Lieut. Meigs, U. S. A., who obtained them from the immediate vicinity of Detroit, in Michigan. To these may be added two others taken from ancient graves near Fort Chartres, in Illinois, by Dr. Wistlizenus of St. Louis; a single cranium from the cemetery of Santiago de Tlatelolco, near the city of Mexico, which I have received through the kindness of the Baron von Gerolt, Prussian minister at Washington; and another very

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\* We take this occasion to observe, that skulls taken from the mounds, should at once be saturated with a solution of glue or gum, or with any kind of varnish, by which precaution further decomposition is effectually prevented.



old skull from the Indian burying grounds at Guamay, in Northern Peru, for which I am indebted to Dr. Paul Swift. Last but not least, I may add the skull obtained by Mr. Stephens\* from a vault at Ticul, a ruined aboriginal city of Yucatan, and some mutilated but interesting fragments brought me from the latter country, by my friend Mr. Norman.†

These crania, together with upwards of four hundred others of nearly sixty tribes and nations, derived from the repositories of the dead in different localities over the whole length and breadth of both Americas, present a conformable and national type of organization, showing the origin of one to be equally the origin of all.

To this prevailing cranial type I have already adverted. Even the long-headed Aymaras of Peru, whom, in common with Prof. Tiedemann, I at first thought to present a congenitally different form of head from the nations who surrounded them, are proved, by the recent discoveries of M. Alcide D'Orbigny, to have belonged to the same race as the other Americans, and to owe their singularly elongated crania to a peculiar mode of artificial compression from the earliest infancy.‡

But there is evidence to the same effect, but of more ancient date than any we have yet mentioned. The recent explorations of Dr. Lund in the district of Minas Geraes, in Brazil, have brought to light human bones which he regards as fossil, because they accompany the remains of extinct genera and species of quadrupeds, and have undergone the same mineral changes with the latter. He has found several crania, all of which correspond in form to the present aboriginal type.§

Even the head of the celebrated *Guadaloupe skeleton* forms no exception to the rule. The skeleton itself is well known to be in the British Museum, but wants the cranium, which however is supposed to have been recovered in the one more recently found in Guadaloupe by Mr. L'Hérminier, and brought by him

\* Incidents of Travel in Yucatan, I, p. 281.

† Rambles in Yucatan, p. 217.

‡ L'Homme Americain, Tome I, p. 306. I corrected my error before I had the pleasure of seeing M. D'Orbigny's very interesting work. Amer. Jour. of Science, vol. xxxviii, No. 2. Jour. Acad. Nat. Sciences of Philadelphia, vol. viii; and again in my Distinctive Characteristics of the Aboriginal Race of America, p. 6.

§ See Proceedings of the Acad. of Nat. Sciences of Philadelphia for Dec. 1844.



to Charleston, South Carolina. Dr. Moultrie, who has described this very interesting relic, makes the following observations:—"Compared with the cranium of a Peruvian presented to Prof. Holbrook by Dr. Morton, in the museum of the state of South Carolina, the craniological similarity manifested between them is too striking to permit us to question their national identity. There is in both the same coronal elevation, occipital compression, and lateral protuberance accompanied with frontal depression, which mark the American variety in general."\*

There is additional proof of identity, not only of original conformation, but of conventional modification of the form of the head, which I may be excused from reverting to in this place, inasmuch as the materials I shall use have but recently come to my hands. The first of these subjects is represented by the subjoined wood-cut, (fig. 2.) It was politely sent me by Dr. John Houstoun, an intelligent surgeon of the British Navy, with the following memorandum: "From an ancient town called Chiuhiu, or Atacama Baja, on the river Loa, and on the western edge of the desert of Atacama. The bodies are nearly all buried *in the sitting posture*, [the conventional usage of most of the American nations from Patagonia to Canada,] with the hands either placed on each side of the head, or crossed over the breast."†

Fig. 2.



\* Amer. Jour. of Science, xxxii, p. 364.

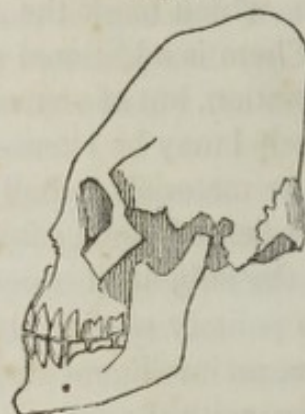
† See Proceedings of the Acad. of Nat. Sciences of Phila., vol. ii, p. 274. If I mistake not, I was the first to bring forward this *mode of interment* practiced by our aboriginal nations, as a strong evidence of the unity of the American race. "Thus it is that notwithstanding the diversity of language, customs and intellectual character, we trace this usage throughout both Americas, affording, as we have already stated, collateral evidence of the affiliation of all the American tribes."—*Crania Americana*, p. 246, and pl. 69. Mr. Bradford in his valuable work, *American Antiquities*, has added some examples of the same kind; and the Chevalier D'Eichthal has also adduced this custom, in connexion with some traces of it in Polynesia, to prove an exotic origin for a part at least of the American race. See *Mémoires de la Société Ethnologique de Paris*, Tome II, p. 236. Whence arose this conventional position of the body in death? This question has been often asked and variously answered. It is obviously an imitation of the attitude which the living Indian habitually assumes when sitting at perfect ease, and which has been naturally transferred to his lifeless remains as a fit emblem of repose.



This cranium (and another received with it) has that remarkable sugar-loaf form which renders them high and broad in front, with a short antero-posterior diameter, both the forehead and occiput bearing evidence of long continued compression. They correspond precisely with the descriptions given by Cieza, Torquemada and others among the earliest travellers in Peru, who saw the natives in various parts of the country with heads rounded precisely in this manner.\*

Fig. 3.

The second head figured, (fig. 3,) is that of a Natchez Indian,† obtained from a mound not far from that city by the late Mr. James Tooley, Jr., and by him presented to me. The face in this, as in the former instance, has all the characteristics of the native Indian; and the cranium has undergone precisely the same process of artificial compression, although these tribes were separated from each other by the vast geographical distance of four thousand miles!



Could we discover the cranial remains of the older Mexican nations, we should doubtless find many of them to possess the same fanciful type of conformation;‡ for if either of the skulls figured above could be again clothed in flesh and blood, would we not have restored to us the very heads that are so abundantly sculptured on the monuments of Central America, and so graphically described by Herrera, when he tells us that the people of Yucatan *flattened their heads and foreheads*?

The following diagrams are copied, on an enlarged scale, from Mr. Stephens's Travels,§ and will serve in further illustration of this interesting subject. They are taken from bas-reliefs in the

\* *Crania Americana*, p. 116.

† I have been looking to Dr. Dickerson, of Natchez, for more complete details derived from the tumuli of that ancient tribe which formed a link between the Mexican nations on the one hand, and the savage hordes on the other. Dr. Dickerson is amply provided with interesting and important materials for this inquiry, which we trust he will soon make public.

‡ The skull brought me from Ticul by Mr. Stephens, is that of a young female. It presents the natural rounded form; which accords with the observation of M. D'Orbigny, (*L'Homme Americain*), that the artificial moulding of the head among some tribes of Peruvians was chiefly confined to the men.

§ Travels in Central America, vol. ii, p. 311.

*Palace at Palenque.* The personage fig. 4, (whose head-dress we have partly omitted,) appears to be a king or chieftain, at whose feet are two suppliants, naked and cross-legged, of whom we copy the one that preserves the most perfect outline, (fig. 5.)

Fig. 4.



Fig. 5.



The principal figure has better features and expression than the other, but their heads are formed on the same model; whence we may infer that if the suppliant is a servant or a slave of the same race with his master, the artificial moulding of the cranium was common to all classes. If, on the other hand, we assume that he is an enemy imploring mercy, we come to the conclusion that the singular custom of which we are speaking, was in use among other and surrounding nations; which latter inference is confirmed by other evidence, that, for example, derived from the Natchez tribe, and the clay effigies so abundantly found at the ruined temples of the sun and moon at Teotihuacan, near the city of Mexico.\*

I can aver that sixteen years of almost daily comparisons have only confirmed me in the conclusions announced in my *Crania Americana*, that all the American nations, excepting the Eskimaux, are of one race, and that this race is peculiar and distinct from all others. The first of these propositions may be regarded as an axiom in ethnography; the second still gives rise to a diversity of opinions, of which the most prevalent is that which would merge the American race in the Mongolian.

It has been objected to a common origin for all the American nations, and even for those of Mexico, that their *monuments*

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\* *Crania Americana*, p. 146.



should present so great a variety in the configuration of the head and face; a fact which forcibly impresses every one who examines the numerous effigies in baked clay in the collection of the American Philosophical Society; yet they are all made of the same material and by the same national artists. The varieties are indeed endless; and Mr. Norman in his first work, has arrived at a reasonable conclusion, in which we entirely agree with him, "that the people prepared these *penates* according to their respective tastes, and with little reference to any standard or canon."\*

They appear to have exercised much ingenuity in this way, blending almost every conceivable type of the human countenance, and associating this again with those of beasts, birds, and various fanciful animals, which last are equal in uncouthness to any productions of the Gothic artists of the middle ages.

Mr. Norman in his late and interesting volume of travels in Cuba and Mexico, discovered in the latter country some remarkable ruins near the town of Panuco, and among them a curious sepulchral effigy. "It was a handsome block or slab of stone, (wider at one end than the other,) measuring seven feet in length, with an average of nearly two and a half feet in width and one foot in thickness. Upon its face was beautifully wrought, in bold relief, the full length figure of a man, in a loose robe with a girdle about his loins, his arms crossed on his breast, his head encased in a close cap or casque, resembling the Roman helmet (as represented in the etchings of Pinelli) without the crest, and his feet and ankles bound with the ties of sandals. The figure is that of a tall muscular man of the finest proportions. The face, in all its features, is of the noblest class of the European or Caucasian race."†

Mr. Norman was himself struck "with the resemblance between this, and the stones that cover the tombs of the Knights Templar in some of the ancient churches of the old world," but he thinks that neither this nor any other circumstance proves this effigy to have been of European origin or of modern date. "The material," he adds, "is the same as that of all the buildings and works of art in this vicinity, and the style and workmanship are those of the great unknown artists of the western hemisphere;"

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\* Rambles in Yucatan, p. 216.

† Rambles by Land and Water, p. 145.



and he arrives at the conclusion, as many ingenuous minds have done before him, that these and the other archæological remains of Mexico and Yucatan, "are the works of a people who have long since passed away ; and not of the races, *or the progenitors of the races*, who inhabited the country at the epoch of the discovery."\*

With the highest respect for this intelligent traveller, I am not able to agree with him in his conclusion ; but I should not now revive my published opinions or contest his, were it not that some new light appears to me to have dawned on this very question.

In the first place, then, we regard the effigy found near Panuco as probably Caucasian ; so does Mr. Norman ; but instead of referring it to a very remote antiquity, or to some European occupancy of Mexico long before the Spanish conquest, we will venture to suggest, that even if the town of Panuco was itself older than that event, (of which indeed we have no doubt,) it is consistent with collateral facts to infer, that the Spaniards may have occupied this very town, in common with, or subsequent to, the native inhabitants, and have left this sepulchral monument. That the Spaniards did sometimes practice this joint occupancy, is well known ; and that they have, in some instances, left their monuments in places wherein even tradition had almost lost sight of their former sojourn, is susceptible of proof.

Mr. Gregg, in a recent and instructive work on the "Commerce of the Prairies," states the following particulars, which are the more valuable since he had no opinions of his own in reference to the American aborigines, and merely gives the facts as he found them.

Mr. Gregg describes the ruins called *La Gran Quivira*, about 100 miles south of Santa Fé, as larger than the present capital of New Mexico. The architecture of this deserted city is of hewn stone, and there are the remains of aqueducts eight or ten miles in length leading from the neighboring mountains. These ruins "have been supposed to be the remains of a *pueblo* or aboriginal city ;" but he adds that the occurrence of the Spanish coat of arms in more than one instance sculptured and painted upon the houses, prevents the adoption of such an opinion ; and that traditional report (and tradition only) mentions this as a city that

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\* Rambles by Land and Water, p. 203.



was sacked and desolated in the Indian insurrection of 1680.\* Now had it not been for the occurrence of the heraldic paintings, this city might have been still regarded as of purely Indian origin and occupancy; as might also the analogous ruins of Abo, Tagique and Chilili in the same vicinity; for although these may have been originally constructed by the natives, yet as they are supposed to be near the ancient mines, it is not improbable that the conquerors in these, as in many other instances, drove out the rightful owners, and took possession for themselves;† for that they did possess and inhabit the towns above enumerated is a fact beyond question.

Why may not events of an analogous character have taken place at Panuco? Was it not probably an Indian city into which the Spaniards had intruded themselves, and having left traces of their sojourn, as at *La Gran Quivira*, subsequently, owing to some dire catastrophe, or some new impulse, abandoned it for another and preferable location? This, we suggest, is a reasonable explanation of the presence of the Caucasian effigy found by Mr. Norman among the deserted ruins of Panuco.

Mr. Stephens has, I think, conclusively proved that the past and present Indian races of Mexico were cognate tribes. I had previously arrived at the same conclusion from a different kind of evidence. What was manifest in the physical man is corroborated by his archæological remains. The reiterated testimony of some of the early Spanish travellers, and especially of Bernal Diaz and Herrera, is of the utmost importance to this question; and all that is necessary in the chain of evidence, is some link to connect the demi-civilized nations with the present uncultivated and barbarous tribes. These links have been supplied by Mr. Gregg. Those peculiar dwellings and other structures, with inclined or parapet walls,‡ and with or without windows, which are common to all epochs of Peruvian and Mexican architecture, are constructed and occupied by the Indians of Mexico even at the present day. After describing the general character of these

\* Commerce of the Prairies, I, p. 165.

† Ibid. I, 270.

‡ I am aware that the walls of the ancient Mexican and Peruvian edifices are often vertical; but where this is the case the pyramidal form is attained by piling, one on the other, successive tiers of masonry, each receding from the other and leaving a parapet or platform at its base.



modern domicils, Mr. Gregg goes on to observe, that "a very curious feature in these buildings, is that there is most generally no direct communication between the street and the lower rooms, into which they descended from a trap-door from the upper story, the latter being accessible by means of a ladder. Even the entrance at the upper stories is frequently at the roof. This style of building appears to have been adopted for security against their marauding neighbors of the wilder tribes, with whom they were often at war.

"Though this was their most usual style of architecture, there still exists a Pueblo of Taos, composed, for the most part, of but two edifices of very singular structure—one on each side of a creek, and formerly communicating by a bridge. The base story is a mass of near four hundred feet long, a hundred and fifty wide, and divided into numerous apartments, upon which other tiers of rooms are built, one above another, drawn in by regular grades, forming a *pyramidal pile* of fifty or sixty feet high, and comprising some six or eight stories. The outer rooms only seem to be used for dwellings, and are lighted by little windows at the sides, but are entered through trap-doors in the *azoteas* or roofs. Most of the inner apartments are employed as granaries and store-rooms, but a spacious hall in the centre of the mass, known as the *estufa*, is reserved for their secret councils. These two buildings afford habitation, as is said, for over six hundred souls. There is likewise an edifice in the Pueblo of Picuris of the same class, and some of those of Moqui are also said to be similar."\*

The Indian city of Santo Domingo, which has an exclusive aboriginal population, is built in the same manner, the material being, as usual, sun-burnt bricks; and my friend Dr. Wm. Gambel informs me, that in a late journey from Santa Fé across the continent to California, he constantly observed an analogous style of building, as well in the dwellings of the present native inhabitants, as in those older and abandoned structures of whose date little or nothing is known.

Who does not see in the builders of these humbler dwellings, the descendants of the architects of Palenque, and Yucatan? The style is the same in both. The same objects have been arrived at by similar modes of construction. The older structures

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\* Commerce of the Prairies, I, p. 277.



are formed of a better material, generally of hewn stone, and often elaborately ornamented with sculpture. But the absence of all decoration in the modern buildings, is no proof that they have not been erected by people of the same race with those who have left such profusely ornamented monuments in other parts of Mexico; for the ruins of Pueblo Bonito, in the direction of Navajo, and those of the celebrated Casas Grandes on the western Colorado, which were regarded by Clavigero as among the oldest Toltecan remains in Mexico, are destitute of sculpture or other decoration. In fact, these last named ruins appear to date with the primitive wanderings of the cultivated tribes, before they established their seats in Yucatan and Guatimala, and erected those more finished monuments which could only result from the combined efforts of populous communities, acting under the favorable influence of peace and prosperity. Every race has had its center or centers of comparative civilization. The American aborigines had theirs in Peru, Bogota and Mexico. The people, the institutions and the architecture were essentially the same in each, though modified by local wants and conventional usages. Humboldt was forcibly impressed by this archæological identity, for he himself had traced it, with occasional interruptions, over an extent of a thousand leagues; and we now find that it gradually merges itself into the ruder dwellings of the more barbarous tribes; showing, as I have often remarked, that there is, in every respect, a gradual ethnographic transition from these into the temple-builders of every American epoch.\*

I shall close this communication by a notice of certain *discoidal stones* occasionally found in the mounds of the United States. Of these relics I possess sixteen, of which all but two were found by my friend Dr. Wm. Blanding, during his long residence in Camden, South Carolina. These disks were accompanied, as usual, by earthen vessels, pipes of baked clay, arrow-heads and other articles, respecting which Dr. Blanding has given me the following locality:—"All the Indian relics, save three or four, which I have sent you, were collected on or near the banks of the Wateree river, Kershaw district, South Carolina; the greater part from the mounds or near the foot of them. All the mounds

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\* See my Inquiry into the Distinctive Characteristics of the Aboriginal Race of America, 2d edit., Philad. 1844.



that I have observed in this state, excepting these, do not amount to as many as are found on the Wateree within the distance of twenty four miles up and down the river, between Lancaster and Sumpter districts. The lowest down is called Nixon's mound, the highest up, Harrison's."

"The discoidal stones," adds Dr. Blanding, "were found at the foot of the different mounds, not in them. They seemed to be left, where they were no doubt used, on the play grounds."

The disks are from an inch and a half to six inches in diameter, and present some varieties in other respects.

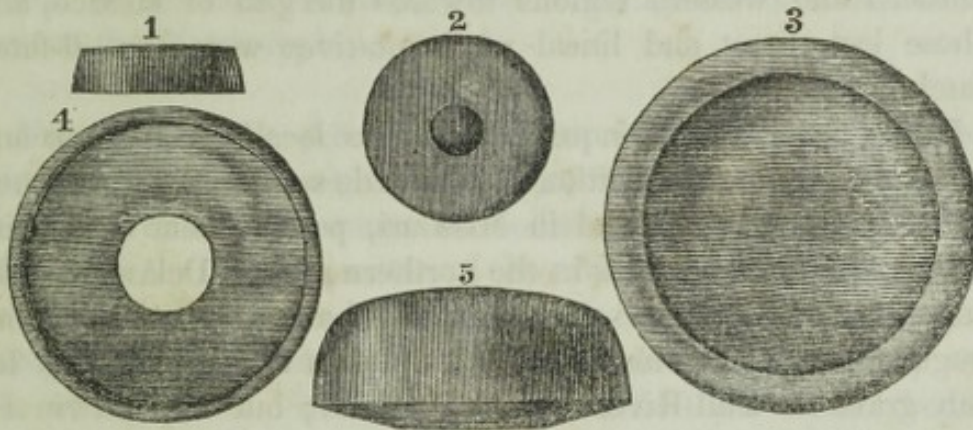


Fig. 1 represents a profile of the simplest form and at the same time the smallest size of these stones, being in diameter about an inch and three quarters. The upper and under surfaces are nearly plane, with angular edges and oblique margin, but without concavity or perforation.

Fig. 2. A similar form, slightly concave on each surface.

Fig. 3. A large disk of white quartz, measuring five inches in diameter and an inch and three fourths in thickness. The margin is rounded, and both surfaces are deeply concave though imperforate.

Fig. 4 is another specimen four inches in diameter, deeply concave from the margin to the center, with a central perforation. The margin itself is slightly convex. The concave surface is marked by two sets of superficial grooved lines, which meet something in the form of a bird-track. This disk is made of a light-brown ferruginous quartz.

Fig. 5 is a profile view of a solid lenticular stone, much more convex on the one side than the other, formed of hard syenitic rock.



Besides these there are other slight modifications of form which it is unnecessary to particularize.

These disks are made of the hardest stones, and wrought with admirable symmetry and polish, surpassing any thing we could readily conceive of in the humbler arts of the present Indian tribes; and the question arises, whether they are not the works of their seemingly extinct progenitors?—of that people of the same race, (but more directly allied to the Toltecans of Mexico,) who appear in former times to have constituted populous and cultivated communities throughout the valley of the Mississippi, and in the southern and western regions towards the gulf of Mexico, and whose last direct and lineal representatives were the ill-fated Natchez?

I have made much inquiry as to the localities of these and analogous remains, but hitherto with little success. I am assured that they have been found in Missouri, perhaps near St. Louis; and in very rare instances in the northern part of Delaware. Dr. Ruggles has sent me the plaster model of a small, perforated, but irregularly formed stone of this kind, taken from an ancient Indian grave at Fall River in Rhode Island; but Dr. Edwin H. Davis, of Chilicothe, in a letter recently received from him, informs me that he had obtained, during his excavations in that vicinity, no less than “two hundred flint disks in a single mound, measuring from three and a half to five inches in diameter, and from half an inch to an inch in thickness, of three different forms, round, oval and triangular.” These appear, however, to be of a different construction and designed for some other use than those I have described; and Dr. Davis himself offers the probable suggestion, that “they were rude darts blocked out at the quarries for easy transportation to the Indian towns.” The same gentleman speaks of having found other disks formed of a micaceous slate, of a dark color and highly polished. These last appear to correspond more nearly to those we have indicated in the above diagrams.

Besides these disks, I have met with a few spheroidal stones, about three inches in diameter. One of these accompanies the disks from South Carolina, and is marked with a groove to receive the thumb in throwing it. A similar but ruder ball is contained among the articles found by Mr. Atwater in the mound near Huron, Ohio.



What was the use of the disks in question? Those who have examined the series in my possession have offered various explanations; but the only one that seems in any degree plausible, is that of my friend Dr. Blanding, who supposes them to have been used in a game analogous to that of the quoits of the Europeans. It is a curious fact that discoidal stones much resembling these have been found in Scandinavia;\* whence I was at first led to suppose it possible, especially in consideration of their apparently circumscribed occurrence in this country, that they might have been introduced here by the Northmen; a conjecture that seems to lose all foundation since these relics have been found as far west as the Mississippi.

*Note.*—Since the preceding remarks were written, I have received from my friend, Mr. William A. Foster, of Lima, ten skulls and two entire mummied bodies from the Peruvian cemetery at Arica. "This cemetery," observes Mr. Foster, "lies on the face of a sandhill sloping towards the sea. The external surface occupied by these tombs, as far as we explored, I should say was five or six acres. In many of the tombs three or four bodies were found clustered together, always *in the sitting posture*, and wrapped in three or four thicknesses of cloth, with a mat thrown over all."

These crania possess an unusual interest, inasmuch as, with two exceptions, they present the horizontally elongated form, in every degree from its incipient stage to its perfect development.

By what contrivance has the rounded head of the Indian been moulded into this fantastic shape? I have elsewhere† offered some explanations of this subject; but the present series of skulls throws yet more light on it, and enables me to indicate the precise manner in which this singular object has been attained.

It is evident that the forehead was pressed downwards and backwards by two compresses, (probably a folded cloth,) one on each side of the frontal suture, which was left free; a fact that explains the cause of the ridge, which, in every instance,

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\* See Journal of the Antiquarian Society of Denmark, published in Copenhagen in the Danish language, vol. i, tab. 2, figs. 52, 53.

† Jour. Acad. Nat. Sciences of Philad., vol. viii.



replaces that suture by extending from the root of the nose to the coronal suture. To keep these compresses in place, a bandage was carried over them from the base of the occiput obliquely forwards; and then, in order to confine the lateral portions of the skull, the same bandage was continued by another turn over the top of the head, immediately behind the coronal suture, and probably with an intervening compress; and the bandaging was repeated over these parts until they were immovably confined in the desired position.

Every one who is acquainted with the pliable condition of the cranial bones at birth, will readily conceive how effectually this apparatus would mould the head in the elongated or cylindrical form; for, while it prevents the forehead from rising, and the sides of the head from expanding, it allows the occipital region an entire freedom of growth; and thus without sensibly diminishing the volume of the brain, merely forces it into a new though unnatural direction, while it preserves, at the same time, a remarkable symmetry of the whole structure.

The following outline of one of these skulls, will further illustrate my meaning; merely premising that the course of the bandages is in every instance distinctly marked by a corresponding cavity of the bony structure, ex-



cepting on the forehead, where the action of a firm compress has left a plane surface.

This conformation, as we have already observed, was prevalent among the old Aymara tribes which inhabited the shores and islands of the Lake of Titicaca, and whose civilization seems evidently to antedate that of the Inca Peruvians. I was in fact at one time led to consider this form of head as peculiar to, and characteristic of, the former people; but Mr. Foster's extensive observations conclusively prove that it was as common among some tribes of the sea coast, as among those of the mountainous region of Bolivia; that it belonged to no particular nation or tribe; and that it was, in every instance, the result of mechanical compression.

In my *Crania Americana* I have given abundant instances of a remarkable vertical flattening of the occiput, and irregularity of its sides, among the Inca Peruvians who were buried in the royal cemetery of Pachacamac, near Lima. These heads present no other deviation from the natural form; and even this irregularity I have thought might be accounted for by a careless mode of binding the infant to the simple board, which, among many Indian tribes of both North and South America, is a customary substitute for a cradle. It is probable, however, that even this configuration was intentional, and may have formed a distinctive badge of some particular *caste* of these singular people, among whom a perfectly natural cranium was of extremely rare occurrence.

We are now acquainted with *four* forms of the head among the old Peruvians which were produced by artificial means, viz :

1. The horizontally elongated, or cylindrical form, above described.

2. The conical or sugar-loaf form, represented in the preceding diagrams.

3. The simple flattening or depression of the forehead, causing the rest of the head to expand, both posteriorly and laterally; a practice yet prevalent among the Chenooks and other tribes at the north of the Columbia river, in Oregon.

4. A simple vertical elevation of the occiput, giving the head in most instances a squared and inequilateral form.

A curious decree of the ecclesiastical court of Lima, dated A. D. 1585, and quoted by the late Prof. Blumenbach, alludes to at least four artificial conformations of the head, even then common among the Peruvians, and forbids the practice of them under certain specified penalties. These forms were called in the language of the natives, "Caito, Oma, Opalla, &c.;" and the continuance of them at that period, affords another instance of the tenacity with which the Peruvians clung to the usages of their forefathers.









