

THE JADE OF THE TUXTLA STATUETTE.

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Introduction.—One of the most interesting of the small objects that have come down to us from the ancient Maya civilization is the so-called Tuxtla¹ statuette, which has been described by W. H. Holmes.² This object was ploughed up in 1902 “in the district of San Andrés de Tuxtla on the Gulf coast of Mexico, about 100 miles southwest of Vera Cruz,” and was later acquired by the United States National Museum (No. 222,579).

The statuette is of special importance because, according to Morley,³ it is the oldest known dated object in American art. The date assigned by Morley to the statuette, from study of the central front row of glyphs, and assuming the contemporaneity of the inscription and the statuette, is 8. 6. 2. 17. 8 Caban 0 Kankin, in Mayan chronology, which corresponds to 96 B. C., according to Morley's recently published correlation of the Mayan and Christian chronologies.⁴ It thus antedates the coming of Columbus by about sixteen hundred years.

The material of which the statuette is composed is obviously a “jade.” It was examined years ago by Wirt Tassin, then an assistant curator in the United States National Museum, who reported it as nephrite, by which name both Holmes and Morley speak of the material. There appears to be no report extant of the results of Tassin's examination, nor record of any analysis by him. The present study, by optical and chemical methods, shows that the material is not nephrite but a variety of jadeite.⁵

¹ Pronounced *Tushla*. In Maya x represents sh.

² W. H. Holmes, *Amer. Anthr.*, vol. 9, p. 691, 1907. See S. G. Morley, *Carnegie Publication No. 219*, p. 402, 1920.

³ S. G. Morley, *Bur. Amer. Ethnol.*, Bull. 57, p. 196, 1915.

⁴ S. G. Morley, *The Inscriptions at Copan*, *Carnegie Publication No. 219*, pp. 465-555, 1920.

⁵ As is well known, the term “jade” is used for two different minerals, both of which have much the same properties so far as their employment in glyptic art is concerned; namely, *nephrite*, a lime-magnesia amphibole, and *jadeite*, a soda-alumina pyroxene, both silicates. Typical jadeite is purely sodic, but it often contains other isomorphous constituents giving rise to varieties. We shall distinguish here between *soda jadeite* and the mixture *diopside jadeite*, the latter containing lime and magnesia in addition to soda.

Through the great kindness and courtesy of Dr. W. H. Holmes, to whom I would express my sincere thanks, I was privileged to examine the figure in the Geophysical Laboratory, and to remove enough material for chemical and optical study. I have also to thank Dr. S. G. Morley for his assistance and interest in the matter. I would also express my thanks to Drs. H. E. Merwin and L. H. Adams, of the Geophysical Laboratory, the former of whom undertook the optical examination, while the latter determined the density. I am under obligations to Dr. Charles W. Richmond, of the United States National Museum, for his identification of the species of bird.

Description.—It is not necessary here to describe the statuette at length, or even to discuss the glyphs and other archaeological features. Photographs of it are given in plates 1 and 2, the glyphs having been rendered more clearly visible by rubbing with chalk. The four excellent colored plates published by Holmes give a very faithful rendering of the form and color, and even a suggestion of the texture and luster of the statuette.

The rounded, conical image (flattened on the back) represents an oldish man, bald-headed, with the beak of a duck-like bird masking the lower part of the face, and mustache-like features connecting with the nostrils and folding down over the cheeks. If the carving represents a god, he must have been a beneficent one, for there is a merry twinkle in the eyes and a suspicion of a smile behind the beak that are facial characteristics widely different from the usually repellent features of gods as they are frequently depicted on the Mayan monuments.

The rendering of the beak indicates a faculty for observation that, perhaps, might scarcely be expected in an artist who is supposed to have worked at about the dawn of the Mayan historic period. The lamellirostral beak is anserine, but the feet are not webbed, and the original is thus probably the boatbill, (*Cochlearius cochlearius*) of the coast of southern Mexico and Central America, or *Cochlearius seledoni*, a Central American species. These are nocturnal, heron-like birds living along water coves on the coast. The beak is characteristic (more ducklike than that of the true herons). The grooves along each edge, the central ridge, and the oblique elongate, peculiarly shaped nostrils are all clearly and realistically shown. The details of the eyes and nose of the man and of the beak and the front edges of the wings of the bird are carved very sharply, in contrast to the rest of the figure, especially at the back. The statuette was apparently intended to be seen only from the front. This may indicate a later date for the glyphs on the back than for those on the front.

Below the head, the shape of the body is determined somewhat by the shape of the boulder out of which the statuette was carved. There are no arms but, as Holmes says, "The idea of the bird suggested by the beak is further carried out by wings covering the sides of the figure, the lower margins of which are engraved with alternating lines and rectangles to represent feathers." Legs and feet are indicated by incised lines below the wings.

The statuette has been made from a small boulder, of approximately the general shape of the figure, but with one end roughly sawed across, leaving a smoothish surface, which serves as the base.

Physical characters.—That the material is not of the usual extreme toughness, characteristic of most jade, is indicated by two rough gouges on the front and some spall scars on the front and back (at the bottom edge), the latter possibly the result of the figure having been set down too violently on a hard (stone) surface. It is also shown by the readiness with which the pieces that had been partly sawed out were pried off with a knife blade; as well as by the ease with which the fragments were reduced to fine powder for analysis. A similar brittleness has been found to be a character of other Middle American jades.

So far as I could see, there are no indications of the action of fire, and the fracture surfaces mentioned seem to have been the results of accidental percussion. At the lower left-hand corner of the back a thin slice was sawed out parallel to the bottom surface to furnish material for the examination by Tassin, and the space is now filled with plaster of Paris, in which is embedded a small piece of thin sheet iron. This is shown in figures 1, 2, and 3.

The height of the statuette is 15 cm., the extreme width across the base is 10 cm., and the depth across the base is 8.2 cm. The width across the shoulders is 6 cm., the length of the beak is 4 cm., and the distance between the eye pupils is 1.7 cm. The present weight is 2,259.48 grams, about 3 grams having been removed by me in obtaining material for the present study.

The surface is polished, especially on the front, but not highly so. The general color is a light, slightly yellowish and grayish green (Ridgway's⁶ "pea green," 29 ' ' ' b), but it is somewhat mottled.

The hardness is 6.5, so that quartz tools could be used on the material. The density was taken twice by Doctor Adams, who has had much experience in determining the densities of rather large masses in his studies of glass and the compressibility of rocks. The first value found was 3.270 at 22°, and a second determination (made after the removal of the portion for analysis) gave the value 3.269 at 25.35°. Both values are probably slightly in error because of the

⁶Ridgway, Color Standards, Washington, 1912, pl. 47.

presence of the small amount of plaster of Paris and the bit of sheet iron, but the weight of these is so small relative to that of the stone that the value 3.270 may be accepted as that of the density of the Tuxtla jade, with a possible maximum error of ± 0.001 or 0.002. This density proves at once that we have to do, not with nephrite (the density of which is about 3), but with jadeite, though of a density slightly lower than that of the purely sodic mineral (3.3), and therefore presumably of abnormal composition.

Microtexture.—In thin section the jade is seen to be composed entirely of grains of clear, perfectly colorless jadeite, not a single particle of any other mineral having been detected in the thin section that was made. No zonal structure is seen in any of the grains. The texture is decidedly granular, but with some tendency to porphyroblastic texture. Some of the larger phenocrystic grains show an approach to automorphic outlines, and reach lengths of 1–3 mm. But the great majority of the grains are quite anhedral, and much smaller, from 0.1 to 0.5 mm. in diameter. Between these, here and there, are still smaller grains and granular fragments. All the grains are much cracked.⁷ The rock has evidently undergone considerable crushing and possibly some slight recrystallization; but the grains are oriented quite at random, and there is no indication of schistosity or a fibrous texture. In short, the rock has the granular texture that is characteristic of jadeite, and not the fibrous texture of nephrite, a distinction that was pointed out many years ago by Clarke and Merrill.⁸

Optical characters.—Doctor Merwin reports as follows regarding the optical characters of the material: "Several measurements of the refractive index β indicated the crystals to be exceptionally homogeneous and uniform. Because of excessive crushing the optic axial angle was not sharply defined; it was estimated at 70° to 80° , and was found to be positive. Measurements of $\alpha \wedge c$ varied between 43° and 47° , with the optic plane in the plane of symmetry. The observed refractive indices were: $\alpha = 1.666$, $\beta = 1.674$, $\gamma = 1.688$, $\gamma - \alpha = .022$. The optical properties of the mineral, as well as the chemical composition, agree with a pyroxene intermediate between diopside and jadeite."

Chemical composition.—Material for the chemical analysis, for the thin section, and for the optical determinations, was obtained by sawing two inclined cuts, about 1 inch long and one-third of an inch apart, in the bottom of the figure, giving what seemed to be average material. About 3 grams in all were removed, much of which was lost as dust, and two pieces were used for the section and for

⁷ The granularity and the cracked condition of the grains would account for the lack of toughness.

⁸ F. W. Clarke and G. P. Merrill, Proc. U. S. Nat. Mus., vol. 11, pp. 115–130, 1888.

optical study. After pulverization the amount of material that was available for chemical analyses was 0.8367 gram. The results of the analysis are as follows, some analyses of other jadeites being given in the Table 1 for comparison:

Table 1.—Analyses of jadeites.

	1	2	3	4	5	6 ^o	1a
SiO ₂	55.50	57.14	56.63	58.33	58.18	58.80	.925
TiO ₂	none.	n. d.	n. d.	n. d.	n. d.	n. d.
Al ₂ O ₃	12.3	8.97	17.33	21.63	23.53	25.37	.121
Fe ₂ O ₃	1.41	5.49	1.74	1.71	n. d.	0.33	.009
Cr ₂ O ₃	none.	0.42	Trace.	n. d.	n. d.	n. d.
FeO.....	1.33	n. d.	0.22	0.73	1.67	n. d.	.018
MnO.....	0.05	n. d.	n. d.	n. d.	n. d.	n. d.
MgO.....	8.72	8.62	4.36	3.09	1.72	0.25	.218
CaO.....	12.76	14.57	13.35	4.92	2.35	0.58	.228
Na ₂ O.....	6.94	5.35	6.80	8.13	11.81	14.65	.112
K ₂ O.....	0.25	n. d.	n. d.	0.22	0.77	0.05	.003
H ₂ O+.....	0.10	n. d.	} 0.10	0.93	0.53	0.14	
H ₂ O-.....	0.20	n. d.					
Density.....	99.59 3.270	100.56 3.27	100.53 3.34	99.69 3.27	100.56 3.19	100.17 3.336	

1. Tuxtla Statuette. H. S. Washington, analyst.
 2. China. A. Damour, analyst. Bull. Soc. Min. France, vol. 4, p. 158, 1881.
 3. Val Susa, Piedmont. G. Aichino, analyst. S. Franchi, Boll. Com. Geol. Ital., 1900, No. 2.
 4. Culebra, Costa Rica. F. W. Clarke, analyst. Clarke and Merrill, Proc. U. S. Nat. Mus., vol. 11, p. 125, 1888.
 5. Zaachita, Mexico. Clarke, analyst. Clarke and Merrill, Proc. U. S. Nat. Mus., vol. 11, p. 122, 1888.
 6. Tibet (?). H. W. Foote, analyst. S. L. Penfield in H. R. Bishop, Investigations and Studies in Jade, vol. 1, p. 126, 1906.
- 1a. Molecular numbers of 1.

It is evident that the analysis of the jadeite of the Tuxtla statuette differs notably from one of a purely sodic jadeite, such as No. 6.^o The Tuxtla mineral contains much less silica, alumina, and soda, but more magnesia and lime. The absence of titanium, chromium (?), and manganese is to be noted. The density of the Tuxtla material is also markedly lower than that of sodic jadeite.

From the chemical and optical characters, from the density, as well as from the "exceptional homogeneity" of the Tuxtla jade, it is evident that we have to do with a complex pyroxene, composed of sodic jadeite in isomorphous mixture with other members of the pyroxene group. From the amounts of lime and magnesia present it is evident that diopside presumably makes up the greater part of the molecules that accompany the sodic jadeite.

^o This analysis is of the specimen from which Penfield isolated two small crystals, on which he measured the crystallographic angles, and of which Merwin has determined the optical characters, some of which are given on a later page.

The percentage composition, in terms of mineral molecules, is given below. This assumes that all the soda (and potash) go into a jadeite molecule, that there may be present a so-called "babingtonite" ($\text{FeO} \cdot (\text{Fe}, \text{Al})_2\text{O}_3 \cdot 4\text{SiO}_2$) molecule, that the CaO , MgO , and FeO (above that needed for babingtonite) form diopside, and that the extra Fe_2O_3 is present in the pyroxene in solid solution, instead of as the Tschermak molecule, the last assumption being in accordance with the results of as yet unpublished studies by Merwin and me on acmite-aegirite and other pyroxene minerals. The result is calculated to 100 per cent.

Molecular composition of Tuxtla jade.

Molecule.	Per cent.	
Jadeite ($\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2$)	46.49	} Jadeite, 49.34.
Babingtonite ($\text{FeO} \cdot \text{Fe}_2\text{O}_3 \cdot 4\text{SiO}_2$)	2.85	
Wollastonite ($\text{CaO} \cdot \text{SiO}_2$)	26.64	} Diopside, 50.66.
Enstatite ($\text{MgO} \cdot \text{SiO}_2$)	21.95	
Ferrosilite ($\text{FeO} \cdot \text{SiO}_2$)	1.59	
Ferric oxide (Fe_2O_3)48	
	100.00	

The Tuxtla jade is therefore composed of 49.34 per cent of sodic jadeite (with a slight admixture of potassic jadeite and babingtonite molecules), and 50.66 per cent of an almost purely magnesian diopside, containing only a little ferrous metasilicate.

The Tuxtla mineral is, therefore, strictly, a *diopside-jadeite*, with the two molecules present in almost exactly equal amount. For the benefit of archaeologists, who are not concerned with the niceties of mineralogical nomenclature, it may be said that they would be sufficiently correct to call the material jadeite, as it is a variety of this mineral, and by this name it is thus clearly distinguished from the other jade mineral, nephrite—a very important archaeological, as well as mineralogical, distinction.

In his interpretation of the analyses of jadeite in the Bishop collection, Clarke assumed the presence of a molecule $(\text{Ca}, \text{Mg}, \text{Fe})\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2$, which he called pseudojadeite; while Penfield, although assuming that very small amounts of CaO , MgO , or FeO could replace Na_2O in jadeite, calculated the greater part of these RO oxides as forming diopside in the analyses of the Bishop jadeites which he discusses. Merwin and I, as has been said, seem forced to assume the presence of small amounts of the babingtonite molecule, $\text{FeO} \cdot (\text{Al}, \text{Fe})_2\text{O}_3 \cdot 4\text{SiO}_2$, which is analogous to Clarke's pseudojadeite, in some acmites and aegirites. But study of the molecular ratios furnished by analyses of jadeite makes it clear that such a molecule

as Clarke's or ours, may be assumed to be present to account for only a very small percentage of RO; because for jadeites in which the percentages of CaO, MgO, or FeO are high (as in that of the Tuxtla statuette), the formation of such molecules demands more silica to satisfy them than is found to be present. This is because in these molecules the molecular amount of SiO_2 is four times that of RO, while in diopside they are equal. A diopsidic molecule must, of course, be assumed if the molecular amount of R_2O_3 is less than that of $\text{R}_2\text{O} + \text{RO}$. It may be mentioned here, in anticipation of future publication, that a study of jades from a *cenote* at Chichen Itza, in Yucatan, now being prosecuted, shows that the presence of the diopside molecule is a marked characteristic of the jades of Middle America (Mexico and Central America), as contrasted with those of Burma, and that the jade of the Tuxtla statuette is an end member of a series of albite-jadeite rocks.

That diopside-jadeites chemically similar to that described here are not uncommon is evident from a survey of the published jadeite analyses, only a few of which are given in Table 1. Many jadeite analyses that show high lime and magnesia, such as those by Damour, are of rather early date and hence may not be altogether satisfactory, but it can not be supposed that analytical errors have been committed of such magnitude as to cause serious incorrectness in the large amounts of lime and magnesia shown by them. It is also noticeable that among analyses of jadeite, (especially from Middle America), there is a definite serial progression from pure soda jadeite to diopside-jadeite, shown by gradually increasing amounts of lime and magnesia and diminution in silica and soda, as well as by concomitant changes in density. A serial progression beyond, from diopside-jadeite to diopside, is scarcely evident.

Examination of the analyses of jadeites published in Doelter's *Mineralchemie*¹⁰ (which include those in Bishop's *Jade Book*), indicates that there is a very decided difference between many of the jadeites of southeast Asia and those of Mexico and Central America. Most of the former are composed almost wholly of the purely sodic jadeite molecule, while many of the latter contain very considerable amounts of lime and magnesia, indicating the presence of the diopside molecule. It would appear that comparatively few of the American jadeites are almost purely sodic. To illustrate, the following table shows the averages of 15 analyses of jadeite from Burma (including Tibet) (1) and of 11 from Mexico and Central America (2) (taken from Doelter), the figures for only SiO_2 , CaO, MgO, and Na_2O being given. The analysis of the Tuxtla statuette is included in the average of No. 2.

¹⁰ C. Doelter, *Handbuch der Mineralchemie*, vol. 2, pp. 652—658, 1914.

Comparison of Jadeites from Burma and America.

	1	2
SiO ₂	58.83	58.23
MgO.....	0.78	2.65
CaO.....	1.08	4.02
Na ₂ O.....	14.40	10.06

The difference is obvious. Of the American jadeites only 4, or about 33 per cent, show compositions that are closely similar to those of Burma. This is a subject which it is hoped to study soon in connection with some large collections of jades from Middle America.

Consideration of the densities of jadeites leads also to the suggestion of the possibility of the existence of a definite, equimolecular mixture of jadeite and diopside, possibly much as dolomite is related to calcite and magnesite. In a discussion of the densities of the jadeites of the Bishop collection, Hallock¹¹ shows that the average of 107 jadeites (including a few chloromelanites) is 3.3202. He then gives the following table of grouped averages, from which the chloromelanites are omitted:

43 jadeites average	3.3351
27 jadeites average	3.3252
8 jadeites average	3.3182
4 jadeites average	3.3041
19 jadeites average	3.2517

The average densities are clustered at either end. Using the figures given, if weights are assigned to the two heaviest and most numerous average densities according to the number of determinations, combining them we arrive at the result:

70 jadeites of average density	3.331
19 jadeites of average density	3.252

Between these there occur only 12 jadeites, with a wide interval between them and those of lowest density. These figures, so far as they go, would seem to indicate that archæological "jadeite" is mostly the pure soda jadeite, and that a fairly definite diopside-jadeite also occurs quite abundantly, but that there are comparatively few intermediate members of the series.

Because of the intermediate position of the Tuxtla diopside-jadeite it will be of interest to state succinctly the correlation of some of the properties of it and of the end members of the series. The data for soda jadeite were determined by Merwin on the two small crystals isolated by Penfield from the material the analysis of which is given

¹¹ W. Hallock. In H. R. Bishop's *Jade Book*, vol. 1, p. 116, 1906.

in Table 1, the crystals from the Brush collection¹² having been kindly loaned by Dr. W. E. Ford. Those for diopside were determined by Wright and Larsen¹³ on the artificial mineral.

	α	β	γ	2V	a : c	d
Soda jadeite (Tibet).....	1.655	1.659	1.667	Ca 70°	34½°	3.336
Diopside-jadeite (Tuxtla).....	1.666	1.674	1.688	Ca 75°	45°	3.270
Diopside (artificial).....	1.664	1.671	1.694	59°	38½°	3.275

The refractive indices of the Tuxtla diopside-jadeite approach closer to those of diopside than to those of soda jadeite; this may be attributed to the presence of a small amount of babingtonite molecules, which would tend to raise the values for these constants. It is difficult to account for the anomalous extinction angle.

Provenance.—The question of the provenance of the jadeite (and chloromelanite) that was used by the ancient inhabitants of Mexico and Central America is one of great interest, and one that is as yet unanswered. It was suggested years ago by Pirsson¹⁴ that jadeite may be formed through the metamorphism of highly sodic igneous rocks, such as nephelite syenite or phonolite. Bearing this possibility in mind, and taking into consideration the distribution through North America of igneous rocks of different general chemical compositions, I have for long had a suspicion that the original localities of the Mexican and Central American jadeites are along the Pacific coast, rather than in the interior or near the Gulf. The establishment of the occurrence among Mexican and Central American artifacts of two distinct kinds of jadeite—a soda jadeite and a diopside jadeite—might aid in throwing some light on the interesting problem of the provenance of the material, which has not yet been found *in situ*.

Some archaeological considerations.—Although not a student of American archaeology, I venture to add a few remarks on certain stylistic and archaeological features of the Tuxtla statuette; these may be of interest, though they are foreign to the subject of this paper. They are offered only because they are based on some general archaeological principles, applicable to Mayan as well as to

¹²In view of the difficult accessibility of the Bishop Jade Book it may be of interest to state the principal crystallographic results of Penfield, which do not seem to have become a part of the general literature of mineralogy. He found that jadeite is monoclinic, with a : b : c = 1.103 : 1 : 0.613; angle $\beta = 72^\circ 44\frac{1}{2}'$. The planes present were: a(100), m(110), n(130), and s($\bar{1}11$); with the fundamental angles, $a \wedge m = 46^\circ 29'$, $m \wedge c = 58^\circ 23'$, and $s \wedge s = 61^\circ 12'$, also $a \wedge n = 72^\circ 25'$. The extinction angle on b (010) was 34° , and 2V = about 70° .

¹³Wright and Larsen, Amer. Journ. Sci., vol. 37, p. 33, 1900.

¹⁴L. V. Pirsson, Amer. Journ. Sci., ser. 4, vol. 1, p. 401, 1896; and in Bishop's Jade Book, vol. 1, p. 162, 1906.

Greek art, and because the ideas do not seem, as yet, to have been applied to the object of our present study.

1. The realistic treatment of the details of the bird's beak and the rendering of the wing plumage would appear to be an example of what is observed in the history of art among many diverse peoples: that is, primitive man and the earliest artists were close observers of animal life, and they were often able to depict animal forms very successfully, generally more so than they could the human. This is well known and is exemplified in Egyptian, Chaldean, Babylonian, Assyrian, Cretan, Greek, and even in Paleolithic art. It would appear that the early artist of the Tuxtla figure was no exception to the rule.

2. When we consider that this statuette is the earliest known dated cultural work of a semicivilized people, and that it belongs to probably near the beginning of their historic period, the marked realism and lively expression shown in the man's face are very striking—all the more so when the extreme conventionalism of the later Mayan sculpture is considered. One is inevitably reminded of the realism and expression shown in the sculpture of the early dynasties of the Ancient Empire of Egypt, of which Budge,¹⁵ speaking of the tomb reliefs of the Fourth Dynasty at Gizeh, says: "Their fidelity to nature is surprising, and the skill with which they are executed, and their delicacy of detail, mark them for all time as masterpieces of art and sculpture, which the Egyptians under the later dynasties rarely equaled and never surpassed." Examples in the round that are well known to all are the Sheikh-el-Beled of the Bulaq Museum and the Seated Scribe of the Louvre. In Egypt this early and very successful realism disappeared in later times, and was replaced by a conventional treatment of the human figure and face that was imposed on the artist by the powerful priesthood, except during a brief period of freedom under Ahmenhetep IV. While one can not attribute to the Tuxtla statuette the high artistic qualities of the sculpture of the Fourth Egyptian Dynasty, yet in view of its artistic merits and freedom from formalistic restraint one is tempted to see a development in Mayan sculpture parallel to that in Egypt, both having been brought about by analogous influences.

3. The face of the Tuxtla figure, in its realistic rendering, differs much from most of the faces of Mayan art, which are not only conventionalized, but appear grotesque or caricaturelike to us. But differences that seem to be much more fundamental and due to a quite different cause are manifest; for example, in the breadth of the face, the elongated eyes, the straight and platyrrhine nose, and the peculiar, smilingly human expression of our figure, which are in

¹⁵ E. A. W. Budge, *Short History of the Egyptian People*, p. 43, 1914.

marked contrast with the narrower and ovel face, the generally more rounded eye, the prevailing curved or aquiline nose, and the grim expression of most of the faces of later Mayan art. Some of these peculiarities of the Tuxtla statuette may, it is true, have been determined by the shape of the boulder from which the figure was carved. Most of the Mayan representations of the human face are in profile, except in the large stelae, and this may possibly account for some of the differences. But the differences between the Tuxtla and the usual Mayan sculptural representation of the face are so marked that it would seem to be possible that the Tuxtla statuette represents a racial type distinct from that of the Maya.¹⁶

4. It appears to be generally assumed that the Tuxtla statuette represents a god; but it is suggested here that it represents rather a priest dressed in ceremonial costume, who wears a bird mask and a cloak that simulates the body and wings of the bird.

Masks were commonly worn among Amerindian tribes during various ceremonies, with the object of representing some animal of totemic or other significance. The idea that the bird's beak is part of a mask is suggested by the fact that it is placed below the man's nose, leaving the whole of this and the upper part of the face visible, as well as the ears and ear plugs at the two sides. Some Amerindian masks covered only part of the face, as among the Hopis,¹⁷ and Hodge gives an illustration¹⁸ of a figure in repoussé copper from Etowah Mound, Georgia, who wears a mask that represents a bird's beak, with a strap covering the chin, the man's eyes, nose, and mouth being all very evident. There are examples in Mayan art of masks only partially covering the face, according to an oral communication from Doctors Morley and Spinden.

The legs and feet below the wings seem to me to be those of a man, rather than those of a bird, as the feet are quite thick and are curved at the heel and at the base of the toes; the toes, also, are parallel and are not divergent as are those of a bird. It is true that the feet are sketched in simply, with incised lines, but it is difficult to believe that the artist who could delineate the beak so well that the genus and even the species are recognizable should at the same time represent the flat, wide foot of the *Cochlearius*, with its highly divergent toes, in such an unnatural and uncouth way as we see here.

¹⁶ Doctor Morley was kind enough to read over this manuscript and has given me permission to say that, in his opinion, the stylistic and somatological differences are so marked that, were it not for the undoubtedly Mayan glyphs, the statuette would be incapable of interpretation as belonging to Mayan culture. This independent convergence of opinion lends some weight to the hypothesis that the Tuxtla Statuette is not of Mayan origin.

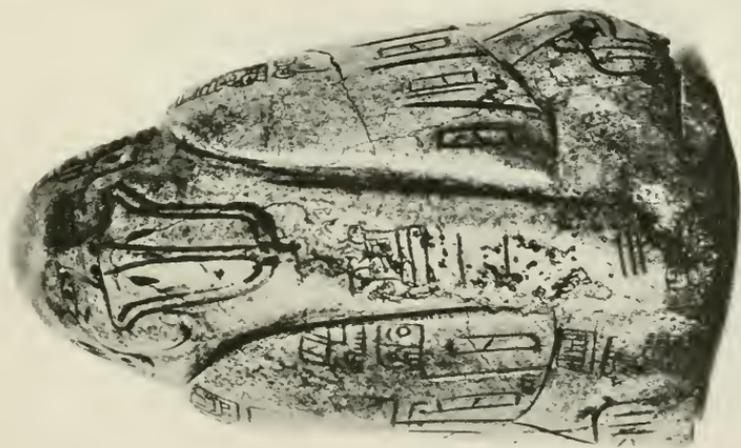
¹⁷ F. W. Hodge, *Handbook of American Indians*, vol. 1, p. 815, 1912.

¹⁸ Hodge, *Idem.*, pp. 346 and 848.

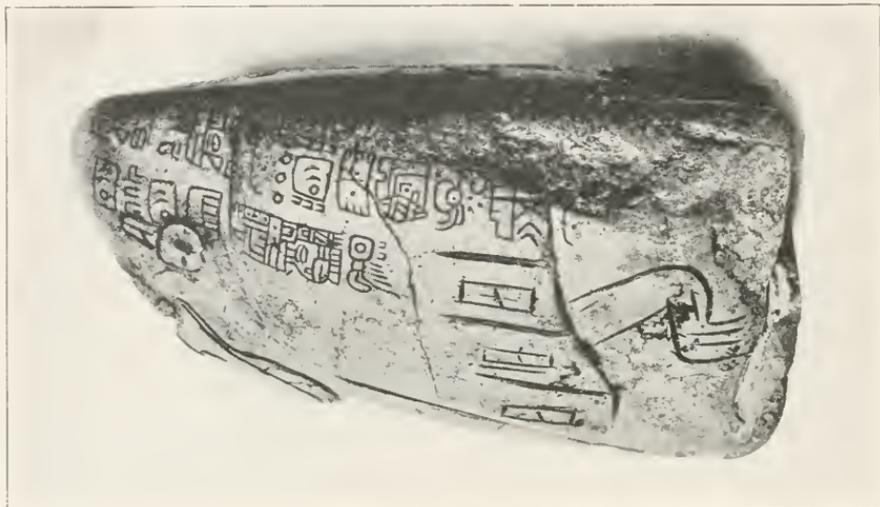
That such a bird cloak as is here suggested was worn by the Amerindians is indicated by the same copper figure cited above from Hodge. Besides the bird mask the man wears an obvious cloak,¹⁹ that is evidently part of his ceremonial costume. This cloak represents very clearly the bird's wings, the coverts and what appear to be the thumb wings being shown, while the long primaries make up the greater part of the cloak, and their tips form a fringe-like bottom, much as is indicated in the Tuxtla figure.

An additional resemblance between the two figures is that the legs of the copper figure are hanging and do not reach the ground, as is also the case with our figure; while the man appears to rest or be seated on a sort of pedestal, much as Apollo is represented on the omphalos in Greek art. The question arises whether the lower part of the Tuxtla statuette, on which the legs and feet are depicted crudely, may not represent a similar pedestal or seat of the "omphalos" form. Attention may also be called to the very similar representation of the ear and ear plug in the two cases.

¹⁹This is seen better in the line-drawn restoration on p. 346, but it is easily visible in the photographic reproduction on p. 848.



TUXTLA STATUETTE. (FRONT AND BACK VIEWS.)
FOR EXPLANATION OF PLATE SEE PAGE 2.



TUXTLA STATUETTE. (RIGHT AND LEFT SIDE VIEWS.)

FOR EXPLANATION OF PLATE SEE PAGE 2.