

07-2540

PIEDRAS NEGRAS

PRELIMINARY PAPERS

NUMBER ~~V~~ #2

Not issued

PRELIMINARY NOTES ON BURIALS

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THE UNIVERSITY MUSEUM

PHILADELPHIA

1933

Contents

add page numbers when typed.

7

List of Plates	1
Introductory Remarks	1
The Graves	1
<u>Physical Characteristics</u>	3
Position of the Body	4
Secondary Burials?	4
Multiple Burials - Mortuary Sacrifice?	5
Dedicatory Sacrifice?	6
Low Burial	6
Mortuary Food-offerings?	6
Grave Furniture	7
Tooth Decoration	8
Nature of Objects placed with Burials	9
Appendix 1 -- Brief Summaries of each Burial	13
<i>Str 1</i> Burial No. 1	
" Burial No. 2	
" Burial No. 3	
<i>Str 6?</i> Burial No. 4 (w. group Ball (ant))	no objects
<i>Str 5</i> Burial No. 5 (at side of Str 3)	no objects
<i>Cave</i> Burial No. 6 (objects dest. in fire - find drawings - 4.5)	
<i>Str 2</i> Burial No. 7 (no objects)	
<i>Str 3</i> Burial No. 8 (no objects)	
Appendix 2 -- Report on Beads from Burial No. 5	25

Bur 9?

Str 13. Burial 10 - various objects

~~PIEDRAS NEGRAS, GUATEMALA~~

- Preliminary Notes on Burials -

Introductory Remarks

It is planned to issue in this series detailed descriptions of the burials thus far uncovered, with ^{a full quota of} photographs and drawings. The following notes are merely intended to acquaint fellow workers at once with the general types encountered and to list the recovered material. Our field notes on burials have not as yet been properly worked over, but in the meantime we shall be glad to answer such specific queries as we can.

No. 4 was excavated in 1931 by Dr. J. Alden Mason, Field Director; No. 6 by Miss Mary Butler, and Nos. 7 and 8 by Mr. David Amram during the 1932 season; Nos. 1 to 3 were cleared in 1931 and No. 5 in 1932 by the writer. The notes of the excavator in each case are the basis for the following brief remarks, and appended summaries.

Insert →

- The Graves -

Ten " "

Eight burials have thus far been uncovered. For such a small series they show a considerable variety of features:

a. Burials Nos. 1, ^{and 10} ~~and~~ 5 were in stone ^{chambers, No. 1} vaults. The first was somewhat small, bottle-shaped and simple, built beneath the floor of Structure V-1, a supposed dwelling in the Southeast Group, a region of low mounds; ~~the~~ ^{No. 5} second was very large, rectangular, with a bench at the foot end and two large niches in the side walls near this end, the whole built within a large platform ^(the south west side of) bounding Court 1. of the Acropolis on the southwest. ~~the~~ ^{copstone principal.}

Insert: →

b. Nos. 2 and 3 were in simple slab-covered cists, only about 20 cms. deep. These were also below the floor of the supposed residential mound, Structure V-1.

(below a court floor, No. 10 was even more elaborate in plan, with four niches, this time at floor level, and with stepped endwalls. But there was no roof.)

associated with

No. 4 was ~~also~~ found ~~under and around~~ stone slabs, placed just under the floor and approximately in the center of the alley between the twin structures of the West Group Ball Court, Structures K-6-a and b. The slabs may be the ruins of a cist.

^c ~~d.~~ No. 6 was in a cave far up the hillside behind the pyramidal Structures O-13 and K-5. A slight depression in the rock floor may have been artificially prepared for the body, or it may have been natural. There seems to have been no other artificial preparation of the grave.

^c ~~d.~~ Nos. 7 and 8 were placed a few centimeters below the surfaces of the plaster pavements, and, respectively, along the walls of the pyramidal Structure R-3, and of the ^{low} platform, Structure R-2, immediately to the southeast. They ~~were~~ placed within the floors, ~~not~~ ^{rather than} under them. Only the head of No. 7 was protected by a cist construction, while No. 8 had no protection other than the plaster of the floor itself.

In ^{four} ~~ten~~ of our ^{ten} ~~eight~~ examples - three cists and one vault burial (No. 5) -- it is ~~certain~~ highly probable that no earth was allowed to touch the body. The same remarks apply to the head portion of Burial No. 7, and to the skull burial, No. 9.

The cave burial No. 6 was covered by a shallow deposit of 25 to 30 cms. of cave earth which may have been the result of natural post-burial agencies, or it may have been covered at the time of burial. Contact of the bodies of Nos. 7 and 8 with the floor material was inevitable, granted their position and the failure to provide protecting structures.

It is surprising to find ^{that} the only certain instance^s where the remains were directly and purposely covered with earth ^{are those} ~~is~~ that of No. 1,

Miss Butler believes a higher floor level at the inner end of the cave to be artificial. Cude step separating the levels; and that a window-like fissure above the entrance was artificially walled up.

2
3
4
5
7
9
E. No 9 was originally a cache or "votive offering." The skull was placed in a deep bowl which was covered with another (inverted) pottery vessel, the whole placed in the foundation fill of a substructure.

the forehead was practised; and in one instance there is possible evidence of a disease of the bone.

- Position of the Body -

The ~~principal~~ subject of all burials so far encountered was extended, probably in each case on the back, except in the case of Burial No. 1, discussed under "Secondary Burial?", ~~and~~ the children in Burial No. 5. *and of course the mere skull burials of Nos. 9 and 10.* None was flexed. Orientation varies and seems to have been determined by convenience, except that all three graves under the supposed dwelling (Nos. 1, 2 and 3) headed toward the rear of the house (northeast). No. 5 headed to the northeast, No. 6 to the west, No. 7 to the southwest and No. 8 to the northwest. The skeleton of No. 4 lay approximately northwest and southeast. *These directions conform to the orientation of nearby structures or, in the case of No. 6, with the long axis of the cave.*

- Secondary Burial ? -

Burial No. 1 was in a stone vault. ~~We believe it is that of a female.~~ Pelvis and femora were articulated; tibiae were displaced but below the femora; the skull was in about the correct position with reference to the pelvis for a primary burial, extended, but lying on its left side instead of the right, as indicated by the pelvis. However, most of the other bones were massed above the head, with some general scattering through the grave, from one end to the other. Disturbance after burial is ruled out by the presence of a deep deposit of stiff clayish soil, thrown from above and covering the bones as found. We have here a suggestion at least of a type of burial in which disarticulated major bones are laid out roughly in their true relations, *or in which the bones were brutally disarticulated.* Contributory evidence is the absence of all but seven teeth, the latter being perfectly

preserved and belonging to a person of no great age. The observed facts could also be explained if we postulate the burial of a partly ^{or the secondary burial of fleshed bones with the ligaments still holding the upper} dismembered corpse, ~~This assumption would not be preposterous, since~~ ^{leg bones to the pelvis.} ~~human sacrifice is apparently portrayed on stelae at the city.~~

The main subject of Burial No. 5, in the large ^(roofed) vault, presented a ^(skeleton) well articulated ^(considering the havoc wrought by the fallen vaulted roof,) skeleton, yet the upper surfaces of nearly all the bones were painted a bright red. Under surfaces were in no instance colored. If this was a primary burial the bones were painted after the decay or removal of the flesh; it ^(could) ~~may~~ have been a secondary one, in which all the bones were carefully re-articulated when placed in the vault, ^(or were held in place by the ligaments.) It is to be compared with the red-painted bones found in the elaborately decorated tomb at Comalcalco, to the northwest, which also contained large numbers of cut and perforated shell plates, of the same ¹ general type as those found here. In both cases there were traces of red paint on the plates, but here the plates were not near the skeleton, but in one corner of the vault, and could have had nothing to do with the coloring of the bones. Red paint appeared in irregular patches and spots on many of the jade ornaments actually on the skeleton, but the painting of the bones was even and relatively complete, and not confined to the vicinity of the ornaments. ^{There was no color in the soil or on the many stones on which the skeleton lay.}

- Multiple Burials - Mortuary Sacrifice ? -

A small ^{cist} ~~chamber~~ opened into the main unit of cist-burial No. 3, giving the whole the shape of the letter "T". The larger chamber

¹ Frans Blom: Tribes and Temples, Vol. I, p. 116. The Tulane University of Louisiana, New Orleans, 1926.

contained the remains of an adult, the smaller those of a child.

Fragmentary human bones and teeth of an adult were encountered just behind and among the stones of the vault of Burial No. 1; ^(but their significance is not clear) the partial remains of two children were found with Burial No. 5 in such positions as to indicate that either the mere bones, or the mangled and incomplete bodies were thrown or placed at the feet and across the abdomen of the principal subject of the burial. The latter was obviously of high rank.

- Dedicatory Sacrifice ? -

Finding Burials Nos. 7 and 8 within plaster floors and against the outer walls of substructures ^(and the skull of No 9 as part of a foundation cache) raises the interesting question of the possible existence of human sacrifice in connection with dedication of buildings. In neither ^{complete burials} case were any objects found with the bodies; the teeth were not inlaid; in one, little, and in the other, no, effort was made to protect the bodies from the plaster laid over them nor was there any other indication that this may have been a place of honor.

Unfortunately we cannot say with certainty whether or not the floors were broken into for burial purposes after they were laid. The floor containing Burial No. 7 was a secondary one laid over that originally pertaining to the platform along which the body was placed. Other examples must be sought before the significance of this type of burial can be understood.

Insert 3 figs
on "bone Burial"

- Mortuary Food-Offerings — Pottery.

Fragmentary bones of a small rodent (species not identifiable) spread out on a flat surface within the clayish soil covering Burial No. 1;

and a dark-on-light orange bowl in No. 10

and an orange-ware plate below the feet of Burial No. 5, suggest food-offerings,

Being the only pottery found in burials thus far, apart from No. 9 which is essentially a cache, the existence of large pottery offerings as in the Peten appears doubtful. ^{here} Only these ~~two~~ ^{three} ~~tombs~~ ^{tombs}
Smith, R. C. ^{Group I} ~~Group II~~ ^{Balland} Grave Furniture -

It is apparent that roughly contemporaneous burials were made both with and without the inclusion of valuable objects of an imperishable nature. The distinction probably rested, in part at least, on the wealth or rank of the deceased, but other factors, such as age and sex, sacrifice and so forth, must of course be considered before the complete story of burial customs is worked out.

No objects of any kind, useful or ornamental, were found in the vault of No. 1, while that of No. 5 was extremely rich in jadeite, shell, bone, iron pyrite and other jewelry, amulets, mirrors, and objects of ceremonial value, such as sting-ray spines, which here, like some of the jadeite and shell, were inscribed with hieroglyphs.* The cist-burial No. 3 was entirely devoid of objects, while the body in the nearby cist of Burial No. 2 had been decorated with a modest number of unpretentious jadeite and shell beads, and two shell ornaments, probably labrets. With the cave burial No. 6 were found little besides the two carved bone tubes mentioned above. No objects were encountered in the Ball Court or floor burials (Nos. 4, 7, and 8).

It is apparent that no correlation between the mere careful preparation of stone grave structures, whether vault or cist, and the placing of objects therein is to be expected, though we may still expect valuable objects, both from the aboriginal and the modern scientific point of view, in large and elaborate vaulted tombs, when found. The protection afforded by the tomb makes it one of the best sources for

* As at Holmul

well-preserved objects as a basis for studies of the minor arts. The range in materials, types and probable functions of the objects found in the vault of No. 5 is large. A maximum of information may be expected from other tombs of this type at Piedras Negras.

- Tooth Decoration -

Finding filed teeth, and teeth inlaid with circular disks of jadeite and pyrite, increases the known early and wide distribution of both practices.

In the case of Burial No. 5 no less than fifteen teeth from the same pair of jaws had been drilled for the inlay. We believe this is the largest number of decorated teeth yet reported as having belonged to one individual. We were fortunate in finding all possible teeth except two molars and one lower cuspid; eight jadeite and one pyrite disk were in place; an additional jadeite disk had fallen out after burial. The sides of the ^{disk} ~~latter~~ retreat slightly from the ^{rounded} exposed face to the flat back ^{like a cork,} and may afford a clue to the process of making the inlay.

Jadeite and pyrite inlays were found together in both burials Nos. 2 and 5. In the latter case we know that both materials were used in the same jaw, though not in positions to yield a symmetrical pattern. In the case of the right side of the upper jaw the decoration extended over the five teeth from the right first incisor to and including the second bicuspid, that is, clear back to the molars. If this decoration had been carried to the same extent on the left upper and on both sides of the lower jaw, not a visible tooth would have been undecorated. The deceased was ^{apparently} young. Had he lived to a more advanced age, possibly he would eventually have carried inlays in every one of these twenty teeth which he could readily show to an admiring world.

In two cases (Burials 1 and 5) the upper incisors were filed in the "Sun-God" style frequently found on the monuments, and we have examples of other types of filing. It is hoped that further study of our finds may be correlated with existing studies respecting filing and inlay of teeth.

- Nature of Objects placed with Burials -

Not a single example of "eccentric" flint or obsidian objects was encountered in any of the burials, though they ^{are} were a nearly constant feature - and in large quantities - in caches under floors of temples, under table altars, ^(and elsewhere.) and in stela cists. It seems probable that, here at least, the manufacture of these curious objects was not ~~especially~~ connected with the burial of the dead, as has been suggested ² on the evidence of similar finds in British Honduras.

The spines of the sting-ray, of marine origin, are both common ⁱⁿ to caches and ^{are found in} to two of the burials. That this product of the sea was of especial importance is proved by finding not only the spines themselves, but a jadeite representation of one in Burial 5, and a bone or shell representation in one of the caches. Jadeite is very hard to work and was the Mayan's most precious material. Many of the natural ^{ray spines} examples in Burial 5 are inscribed with glyphs.

Further evidence of contact with the sea is furnished by the presence of sea-shell in Burial 5, not only worked into ornaments, but as complete shells apparently of independent value; and the presence of

² Thomas Gann, Bulletin No. 64, Bureau of American Ethnology, p.103, Washington, 1918.

four clay representations of bivalve shells. Complete natural shells were found in nearly all caches.

This early contact with the sea proves nothing more than trade or other relations extending to the coast³, but the ceremonial flavor which is added by the artificial sting-ray spines and shells is a little harder to explain. Jadeite representations of shells have been reported from other parts of the Maya area. ³ Possibly here as in the codices they symbolize zero, twenty, or the concept of completion.

No pottery figurine was found with any burial, *except in me probably intrusive instance (resulting from collapse of the roof).*

Burial 5 shows an extensive use of baked clay, slipped and probably painted, in making large beads and other ornaments. Forms hitherto unreported, so far as we know, of jadeite, pyrite and shell, furnish material which will become increasingly valuable for comparative studies as Maya burials become better known. Most of these belong in the category of personal ornament. One jadeite bead shows the natural form of cylindrical beads cut from marine univalve shells, with a groove on one side. Two objects, a jadeite figurine and a bone image of the Moan bird, were presumably amulets.

Not an object of common use was discovered in this (or any other) grave except an orange-ware dish or plate, ^{and} a small flint knife, ^{and} two small jadeite objects ^(from Burial No. 5) which ^{possibly be} may be ~~provisionally considered as~~ knives or

³ Thomas Gam: "The Maya Indians of South Yucatan and Northern British Honduras", Plate 16, C and page 91.

Oliver G. Ricketson; "Burials in the Maya Area," American Anthropologist, N.S., Vol. 27, p. 394, quoting H. W. Price, "Excavations on the Sittee River", Proceedings of the Society of Antiquaries, February 16, 1899.

which were found with Burial 5.
 scraping tools. Each has a sharp curved edge and a concave back which fits the thumb. ~~Being~~ ^{As}ymmetrical, they are complementary, as if one was fashioned to fit the left, the other the right hand, *or belonged to right and left sides of some ornamental construction.*
~~Even they may have only a symbolic significance. Possibly they are stylized representations of animal or bird claws. They are very well made.~~

with some personal ornaments, worn on the chest of the body.
 We were very fortunate in finding with Burial 5 no less than three separate sets of inscriptions: those upon the sting-ray spines (only partly legible), one on the flat back of a jadeite jaguar head, and another spread over four units of perforated plates cut from the bivalve shells of *Spondylus limbatus* ^d Bros, from the Pacific coast.

d ?
~~There were over two hundred of these, spread out in one corner of the vault, apart from the skeleton. The last two inscriptions are perfectly legible.~~

That on shell has already yielded a secondary series date and we hope when fully deciphered will furnish a date fixable in the Long Count and so establish a probable maximum date for the burial.
 Two of these four units have been sent to Guatemala.

re write.

The shell inscription comprises 34 glyph-blocks, many with two glyphs each.) Finding calendric inscriptions of respectable length on grave furnishings of these relatively imperisable materials opens the possibility that graves, in this region at least, may ~~greatly~~ augment our texts from the stone monuments.

So far as we know, shell plates of this description, though not inscribed, have been encountered only in the two corners of a depression in a floor at far-distant Chichen Itza and in the tomb at

⁴ Karl Ruppert: "Temple of the Wall Panels, Chichen Itza," Carnegie Institution/ Contributions to American Archaeology, Vol. 1, No. 3, Plate 17, d and page 137, Washington, 1931.

Comalcalco above cited, on the western periphery of the Maya area.

Their wide and general distribution may be suspected.

The perforations are usually on one long side, but occasionally on one long and an adjacent short side. Though somewhat disturbed, they lay in a broad sheet covering an area of about a half meter, in the northeasterly corner of the vault. Blom suggests that the Comalcalco examples belonged to a necklace. It seems more likely that ^{ours} these were sewed to textiles, perhaps to form a sort of mail. The shell is a beautiful pink, except for a few special decorative forms which are white. These, plus the inscribed pieces, suggest that, if we are here dealing with a garment, it was intended for state occasions.

Pyrite objects, all from Burial 5, consist of a single-piece round mirror about 1 cm. thick and 7.6 cms. in diameter; a round mosaic mirror made up of ^{thin} well-fitted polygonal units on a shale base, 24.3 cms. in diameter; and two puzzling bands, presumably set on or in wood, fabric or other base of perishable material which had entirely disappeared. We were able to ascertain the arrangement with reasonable certainty. Each consisted of two parallel lines of rectangular pieces, the pieces set end to end. Decorative effect was enhanced by disks, most of which were set between the lines. In the least disturbed case, those between the lines were set in groups of 2, 3, 3, 3, and 1. If we postulate that the base was flexible, and the two ends were joined to form a fillet or the base of a headdress, the two end groups would merge, giving four groups of three each, with equal spacing between. The length is about 42 cms. The band of a size seven modern hat is about 56 cms.

The bone tubes found in the cave with burial 6 are of an unusual character, not hitherto reported, to our knowledge, in Maya burials. But the University Museum possesses a similar fragmentary specimen from a burial in a mound at KIXPEC, Guatemala.

APPENDIX I

BRIEF SUMMARIES OF EACH BURIAL

BURIAL NO. 1

Grave Structure. Crude slab-roofed half vault below floor of Structure V-1 (dwelling?), long axis northeast and southwest at right angles to front and rear of substructure; slightly bottle-shaped.

Length 1.95 m., width 70 to 80 cms., height 35 to 40 cms. Earth and stone floor. *Bones covered with stiff clay. Disturbance by animals: apparently impossible*

Skeletal Remains. Single burial probably of woman, leg bones and pelvis in semi-position, head in approximate expected position to northeast, other bones scattered throughout grave. All bones except leg bones badly broken, all bones covered with artificially deposited stiff clayish earth, and in excellent state of preservation. Frontal bone of skull markedly flattened. Only six teeth recovered. *Post-burial disturbance apparently impossible.*

Fragments of head and long bones, and of lower jaw with teeth of heavier and larger individual were found among vault and cap stones.

Bones were removed and are at Philadelphia, but have not been restored.

Objects. None except remains of small rodent placed close to northeast end wall just ^{above} ~~at~~ level of skeleton.

BURIAL NO. 2

Grave Structure. Crude slab-covered stone cist below floor of Structure V-1, about 2.25 m. northwest of Burial No. 1, long axis northeast and southwest, rectangular at northeast end, tapering to round end at southwest. This end was covered by specially trimmed semicircular stone slab. Length 1.75 m., width 37 to 26 cm., height about 10 cm. Floored with thin layer of plaster directly on earth and stone fill.

Skeletal Remains. Single burial of adult, probably of an articulated body, extended, head to northeast, hands at sides. Bones almost entirely disintegrated. Eight teeth recovered in expected position, 7 molars and a lower cuspid, the latter with circular jade inset.

Another cuspid, with pyrite inset, found near the knees. *Disturbance by rodents possible.*

Objects. 17 jade beads, diameters from 5.5 mm. to 7.5 mm. and 15 shell discoidal beads, diameters from 3.5 to 6 mm., all found just below the jaw (probably from necklace).

2 shell ornaments (labrets?), one among the beads, the other between the tibiae.

Shell "rosette", diameter 12 mm., found near the beads.

Sting-ray spine, found near right hand bones.

BURIAL NO. 3

Grave Structure. Crude T-shaped slab-covered stone cist, below floor of Structure V-1, about 2.2 m. to the northwest of Burial No. 2; but about 1 m. further to the southwest; long axis of main chamber northeast and southwest, short chamber extending from near its center to southeast, chambers apparently rectangular. Length of long chamber about

1.95 m., width 20 cm., length of small chamber about 80 cm., width about 20 cms., height of both chambers about 10 cms. Floor of earth and stone. Part of covering of large chamber was a large well-cut but broken slab, probably a reused plain lintel.

Skeletal Remains. Double burial of adult and child. Bones of adult almost entirely decomposed due to collapse of cover, but apparently an extended burial, head to the northeast (i. e. toward rear of building). Teeth not counted before shipment to Guatemala City. ^{were} They are more plentiful than in Burials Nos. 1 and 2, and one was decorated with circular jade inlay. Bones of the child (except the cranium, which projected into the large chamber) were perfectly preserved, though very soft and much damaged in removal. The child was buried on its back, extended, hands at the side, feet to the southeast. Without question a burial in the flesh, the body jammed into the small chamber hardly wide enough to contain it.

Objects. Five potsherds, undecorated, *probably present by chance.*

BURIAL NO. 4.

Grave Structure. None, unless the flat stones represented a slab-covered stone cist, badly ruined probably by tree roots since disappeared; placed in the center of the alley between the twin structures K-6-a and K-6-b of the West Group Ball Court, just below the floor.

Skeletal Remains. Portions of skull bones, including jaws and teeth, and of humeri, apparently of an adult.

Objects. None recovered.

BURIAL NO. 5.

✓ Grave Structure. Large, somewhat ^dcrue, approximately rectangular stone vault, vaults sloping in from four sides, long axis northeast and southwest. Built below the floor of the high platform terrace J-5, in front of stairway leading from the latter to palace Structure J-8, on the Acropolis. Length 5 m. to 5.75 m., width 2.10 to 2.60 m., height, floor to vault-spring 1.35 to 1.60, probable height to cap-stones between 2.50 and 3.00 m. The vertical walls are composite, probably making use of earlier buried construction. Large niche in each side wall, near southwesterly end. Stone bench across southwesterly end, width 40 to 60 cms., height about 20 cms. Floor earth and stone on pure rock fill ^{and, at one side,} ~~held against~~ projecting bedrock. Walls were probably plastered.

✓ Skeletal Remains. The principal subject of the burial was apparently a young adult, placed in center of vault, extended on back, hands at sides, all principal bones present and in position for an articulated burial, but painted a bright red on the upper surface only. The head was to the northeast. Bones fairly soft and very badly smashed by the fallen vault stones. Twenty-nine teeth were recovered, two wisdom teeth and the lower right cuspid being missing. ^{fifteen teeth} The following were drilled for circular inlays: 4 incisors, upper and lower right and lower left lateral incisors, upper and lower left and upper right cuspids (the lower being missing), four first bi-cuspids, and the upper right second bi-cuspid. Eight jade inlays were in place and a ninth loose one was recovered. The lower left lateral incisor has a pyrite inlay in

place. The remaining inlays are missing. Jaws and teeth painted red.

The much disturbed partial remains of a child, including long bones, ribs, and skull, with no sign of the pelvis, lay at an angle below the feet of the first skeleton, the head to the south. Several teeth had not yet erupted.

Very fragmentary and incomplete remains of a second child of about the same age (the humeri ^{almost} are identical in size) were found in position^s indicating that it may have been placed across the lower chest of the first skeleton, the head to the southeast.

Objects:

Jade.

Two jade beads, about 9.5 cm. long, rectangular in cross-section, associated with a scalloped jade ring, ^{maximum} diameter about 8 cms; from the chest.

Jade human figure, carved in relief with flat back, edges cut to roughly outline the figure, and perforated for attachment - found leaning against the lower jaw, possibly from the mouth.

12 small spheroidal and cylindrical beads immediately under jaws and teeth - probably placed in mouth.

10 pairs of small ear-plugs, the design of each pair differing from the others, arranged as a fillet about the head (diameters about 2 cms.).

2 large plain ear-plugs, square with rounded corners, tiny perforation at center, diameters about 4.7 cms. ^{found} in expected positions on either side of head.

Jade model of very thin sting-ray spine, found below the front and above the back elements of the fillet.

Jaguar head, carved in relief with flat back, edges cut to outline the head and perforated for attachment. Found face down, partly under vertebrae of principal subject of burial and under humerus of second child. Max diameter 8.2 cms., max thickness 1.5 cms. Six blocks of glyphs, incised on back, which do not yield a date.

Large bead, rectangular in cross-section, under left hand (length 5.2 cms.).

Large cylindrical bead under right hand (length 5.5 cms.).

3 "Rosettes" (ear-plugs?), one near right knee, two in north-easterly corner of vault, among shell plates.

7 thin flat pieces in cache south of skull of first child, polished on one side, smooth on the other.

2 problematical forms, one a "right", the other a "left", in the above cache.

Small spheroidal and a few small cylindrical beads scattered about the principal body above the knees and above (northeast of) the head, especially plentiful in region of the hips.

Amazonstone

Small spheroidal beads found in same general locations as above.

Shell

Large pink bivalve shell (*Spondylus limbatus*, Sowb., from Pacific Coast) from which the spines had been removed, found just above (northeast of) the head, concave side up. Some of the skull fragments were in it, and the head may have rested in it.

A similar shell, though smaller, placed at the feet of the first child's skeleton.

S/ Shell ornament, similar to but larger than those found with Burial 2 (labrete?), found under, or nearly under, part of the broken lower jaw. The supposedly exposed surface is round, the edge perforated (as are all the others of this type). Diameter of this surface 2 cms.

Shell ornament identical with the above, except that the exposed surface is square. Found in corresponding position on the right side of head, but a few centimeters distant.

S/ (l.c.) 13 Small narrow triangular shell ornaments, from the region of the chest. Not perforated. Length about 3 cms. Cut from the pink *Spondylus limbatus*.

S (cap) w/ (l.c.) (c) 3 Univalve shells cut and perforated for suspension (Morum tuberculatum Sowb, Pacific Coast); and *Pachychilus indiorum*, Morelet, Guatemalan fresh water species.

M (cap) Small discoidal beads found in abdominal and hip region. Diameters .5 to .9 cm.

q/ (l.c.) S (cap) 2 complete bivalve shells (*Quadrula quadrata*, Simps., fresh-water Guatemalan species) and one complete bivalve shell (*Spondylus limbatus*) in ^(group) ~~case~~ south of head of first child.

S (cap) About 225 shell plates, roughly rectangular, perforated along one or two adjacent sides, cut from the pink shell of *Spondylus limbatus*. With them were several special decorative shapes, some cut from a white shell. Traces of red paint occurred on both types. They were much disturbed, but had apparently been spread in a sheet in the northeasterly corner of the vault, beyond the head of the principal skeleton. Longest

dimensions range from about 2.5 cms. to 7.5 cms.

Three of the plates, together with a trimmed but more or less complete shell, are inscribed with a legible and apparently continuous inscription of 36 glyph-blocks.

Bone

Image of a bird (Moan?) with cross on the top of the head. Carved from proximal end of ulna of the jaguar, taking advantage of the contours of the bone. Found near right elbow.

✓
6 Six phalanges of a large ^{feline} cat, some certainly, probably all, of the jaguar, in ^{the group} ~~cache~~ south of skull of the first child.

✓
S ?
Tooth of ^{feline} ~~cat~~, probably jaguar, found above left hip of principal skeleton, ~~among teeth of second child.~~

Pottery.

About 100 spherical clay beads, solid, with small perforation, traces of white slip and red paint. Found across neck and chest and extending 75 cms. to left. Probably strung when placed. Diameters about 2 cms.

✓
3 hollow clay bead-like ornaments, maximum diameters about 3.5 cms; of holes, about 2 cms.

2/
Two cylindrical ornaments, one end rounded with dead-end longitudinal perforation, the other bell-shaped. One found above left shoulder, the other beyond first child's skeleton at the other end of vault. Length about 6.5 cms.

4/
Four clay representations of bivalve shells, one on chest immediately below jade ring and long beads, two near left shoulder, at side, the fourth a little above right shoulder.

Two broken pottery covers, each with central boss and handle. Unslipped, blue paint at rim. One found to left and above head, the other among the shell plates in nearby corner.

Polished orange plate or dish, diameter about 25 cms. Below (southwest of) feet of principal skeleton and ^{beyond} first child's skeleton.

Pyrite.

Circular mosaic mirror, diameter 24.5 cms. Shale back. Found just southwest of plate, inclined at angle of about 30 degrees (probably disturbed by falling debris).

Circular one-piece mirror, diameter 7.6 cms., thickness .8 to 1 cm., edge beveled. Found in "child's ~~cache~~ group."

2/ ✓
Two problematical objects, ^{Each} consisting of two parallel bands of rectangular pieces, with circular pieces between and on one or both sides. All traces of the base to which they were attached had disappeared. Possibly they were fillets. Length of each, about 42 cms. From niche in northwesterly wall. ✓

Flint.

Small flint knife in "child's ~~cache~~ group."

94 flint chips scattered about the central portion of the vault.

Sting-Ray Spines.

A large number of these were arranged fan-wise near the right elbow. Nine fragments, representing at least six spines, are inscribed with badly eroded glyphs.

✓ Six others, not inscribed, were found in the "child's ~~cache~~ group."

BURIAL NO. 6

Grave Structure: Natural dry cave in hillside, behind and between Structures O-13 and K-5, height estimated as 50 meters above East Group Plaza; floor apparently divided into two levels by line of stones forming step. Skeleton lay in pocket in bedrock, possibly artificial.

Skeletal Remains. Fairly well preserved bones of an articulated adult, extended on back, arms at sides, lying just below ^(surface) floor of lower level, against side wall and extending partially under upper level, head more or less to east. One long bone appeared to be diseased. Right radius and ulna were missing. All recovered bones were destroyed by an accidental fire.

Objects. Two bone tubes about 13 cms. long, decorated in each case on the front with a wide band formed by two parallel lines enclosing a conventionalized snake head, shown in profile with simplicity and restraint. The backs were plain except for bands of rosettes encircling each end. The designs were carved in low relief. The serpent band in one case slanted from left to right, in the other from right to left, so that the tubes formed a complementary pair, probably worn end to end on the breast. Three holes were bored in one tube in front of the snake head, arranged as at the points of a triangle. On the other tube, two of the corresponding holes were present, the third being begun, but not carried through the bone. On these tubes were traces of red paint. They were found beside the skull, about 240 cms. away from it, and about on a line with the nose.

Two potsherds, fine brown ware probably from same vessel,

one in soil above legs of skeleton, the other on bedrock in a depression near the entrance.

Small animal skull and bones, found on or near surface of upper level, near step to lower level.

2/ (l.c.)
Armadillo Scales (probably).

Two fragments of stalactites, one found near lower sherd.

3 (copy)
(Stalactites do not occur naturally in this cave.)

BURIAL NO. 7.

Grave Structure. A small slab cist, open at one end, protected the skull. Apart from this the burial was in the concrete pavement, upper and latest level, beside the northwesterly side of Platform R-2, near the northerly corner. (The substructure of Structure)

?
Skeletal Remains. Apparently an extended burial, head to the southwest. Bones badly destroyed except the cist-protected skull. Possibly a secondary burial. teeth were recovered.

Objects. None.

BURIAL NO. 8.

Grave Structure. None.

✓
Skeletal Remains. Apparently an extended burial, head to the northwest, along the northeasterly (front) lowest terrace wall of Pyramid R-3, the head close to the southeasterly side wall of the stairway. Placed in concrete pavement, like Burial No. 7, and possibly a secondary burial.

Seventeen teeth recovered, incisors filed.

Objects. None.

Burial No. 9 (Cached skull)

Grave Structure None. ~~Remains exposed~~

Skeletal remains Thin fragments of bone, probably from skull;
a few teeth, probably of child.

Objects Two pieces unworked jade, one formless by polished piece
of jade.

Two identical deep tripod bowls, legs removed, one ~~empty~~
containing skeletal remains and jade, the other inverted over
first as cover. Dia. at rim 26.5 cm, height without feet 15.9 cm.
Basal flange, sides nearly straight, flaring slightly at top.
Monochrome, mottled brown.

Burial No. 10

Grave Structure: Large ~~/masonry~~ walled roofless ~~chamber~~ ^{approximately} ~~rectangular~~ ^{somewhat crude} below floor of court, in front of Structure U-3, long axis northeast - southwest. ~~Length x 4.70 m to 5.30 m;~~ width 2.45 m to 2.60 m; height, floor to top of walls, 1.35 to 1.70 m; floor about 2.35 below plaza level. Two niches in each side wall near each end, niches capped with stone lintels. ~~End walls stepped.~~ End walls stepped. Floor bedrock, probably artificially ~~leveled.~~ leveled.

Skeletal Remains: Badly weathered skull and teeth, probably ^{part of one long bone,} of child, placed beside tripod bowl on floor of northerly niche; ^{of chamber;} human teeth found in fill; bone fragments (human?) in westerly niche. No bones in main chamber.

Objects:

Jade

18 very small, 12 small, 12 medium sized, 3 large jade beads, all spheroidal

5 ~~flat~~ thin flat ornaments, perforated at center: 2 rectangular, two round in outline, one of each with design on face; ^{one of irregular outline,} flat

1 thin/jade ornament (?), ~~xxx~~ cruciform.

1 jade ornament, 45 mm by 33 mm by 10 mm thick. Flat back, perforated twice on each side once at bottom for attachment.

Relief carving of human head on front.

Shell

6 very small discoidal shell beads.

2 small shell pendants, cut from Olivella shells
fragments of other shell ornaments

Pottery

Pottery

1 tripod bowl, conoidal solid feet, flaring sides, dia. at rim 28 cms. Remains of dark on light orange stripe decoration on outside. On floor of/niche next to skull.

(late
form
design
w/ PR)

Flint

Flint knife and blank for another, buried in drum of flint flakes on floor of easterly niche.

1367 flint flakes ~~XXXXXXXXXX~~ arranged to form a solid drum-shaped mass on niche floor, with knife and blank inside. Forty per cent show ~~XXXXXXXXXX~~ patinated surface of original nodule; a few show secondary flaking.

1 Retouched thin flake, triangular in outline, in flint "drum".
A few scattered flakes.

Stone

Metate, in plaza fill above grave structure. Flat, three bosses or feet; transverse groove at one end of face; signs of an incised line around sides and other end. Imported hard stone.

Bone

Remains of several claws (of birds?).

Note: All objects except skull, long bone, bowl, metate and flint "drum" were scattered, often in groups, in the ^{soft lime} fill of main chamber, 20 to 30 cms above floor level.

Hon Juan Bartolomé.

Pottery

I tripod bowl, conoidal solid feet, flaring sides, dia. at rim 28 cms. Remains of dark on light orange stripe decoration on outside. On floor of niche next to skull.

Flint

Flint knife and blank for another, buried in drum of flint flakes on floor of easterly niche. 1987 flint flakes arranged to form a solid drum-shaped mass on nichelfloor, with knife and blank inside. Forty per cent show xxxxxxxx pitted surface of original nodules; a few show secondary flaking.

I Retouched flint flake, triangular in outline, in flint "drum". A few scattered flakes.

Stone

Metate, in plaza fill above grave structure. Flat, three bosses or feet; transverse groove at one end of face; signs of an incised line around sides and other end.

Bone

Remains of several claws (of birds?).

Note: All objects except skull, long bone, metate and flint "drum" were scattered, ^{often} in the fill of main chamber, 20 to 30 cms above floor level.

Burial No. 1D

*11 (2)
(7010 in (and
of Str U-3)*

Grave Structure None.

Skeletal Remains Parts of brain case and other head bones, no sign of jaws or teeth; in the semi-pure rock fill of third (top) terrace of Str. R-3-6, just below hard ~~remnant~~ concrete floor. Almost certainly and isolated skull.

*Place with "Chit
Behind" on Benials
(P. Hayes)*

APPENDIX 2

REPORT ON BEADS FROM BURIAL NO. 5 SUBMITTED TO
THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA, FOR IDENTIFICATION.

Two kinds of beads made up the lot:

- (1) Feldspar variety microcline; also known as AMAZONSTONE. Green beads with white, intersecting lines visible under a lens.
- (2) JADE beads, which are mineralogically JADEITE-DIOPSIDE.

2
An analysis by Horace J. Hallowell on a single bead, showed it to be composed of the Jadeite and Diopside molecules in the proportion 2 : 1. His results follow:

SiO ₂	53.98
TiO ₂	0.01
Al ₂ O ₃	18.13
Fe ₂ O ₃	0.69
Cr ₂ O ₃	0.04
FeO	0.90
MnO	0.04
MgO	5.18
CaO	6.33
Na ₂ O	9.75
K ₂ O	0.03
H ₂ O ⁺	0.33
H ₂ O ⁻	0.28

A physical examination by Samuel G. Gordon of a granular, emerald green bead resulted as follows:

Specific gravity.....	^{20°} _{19°} C	equals 3.23
Indices of refraction..		equals 1.660 equals 1.671 equals 1.683
Extinction angle.....a:c		equals 40°.

3
A thin section made from a bead by Mr. Frank J. Keeley, showed a granular texture with wavy extinction over the grains. Very little albite was visible.

NOTE: The term JADE includes three different minerals:

- (1) The mineral Jadeite, (a pyroxene), more or less admixed with Albite; the Asiatic Jades, in part.
- (2) The mineral JADEITE-DIOPSIDE, which is a molecular solution of the jadeite and diopside molecules in varying proportions: the Central American Jades.
- (3) NEPHRITE, a fibrous compact amphibole; some of the Asiatic Jades, and those from New Zealand, and Europe.

Samuel G. Gordon.

Cave Burial.

The fact that one man alone is buried in the only cave where burials have been found at Piedras Negras suggests that he may have been a person of note. The lack of funeral furniture other than two handsome and unusual bone tubes permits the suggestion that these are the insignia of a holy man of some sort, perhaps a hermit who was buried where he had lived. A religious association for the place is borne out by the final disposition of the cave, resembling a shrine, with the fissure in front walled up to give the ^{desired} requisite gloom. There is no definite evidence of how the place was used, since any idols or objects that may have been in the cave were undoubtedly taken by the chicleros who found it. When visited by the Eldridge R. Johnson Expedition, it was empty, with the wall in the window-like fissure partly broken down.

There are relatively few instances of cave burials in the Maya area.¹ In Yucatan, Mercer found five or six disintegrated skeletons on a cave floor, and human bones, some split, among rubbish in other caves.²

¹ Mercer. H. C. The Hill Caves of Yucatan. Philadelphia, 1896. pp. 36, 49, 131.

 Thompson found bones in and on the floor in a cave near Oxkutzcab.³

³ Thompson, E. H. Archaeological Researches in Yucatan. Memoirs of the Peabody Museum of American Archaeology and Ethnology, III, 1. Cambridge, 1904. p. 6

1 ~~Ricketson~~ Ricketson, O. Burials in the Maya Area. American Anthropologist, n. s. XXVII, 3. Washington, 1925. pp. 381-401.

In the Old Empire, Gordon, in exploring caves near Copan, found one to contain a skeleton seated with chin on knees, another to hold an extended skeleton, and another to have a floor two feet deep in bones, most of them charred or calcined. ⁴⁴ Gordon suggests that

⁴⁴ Gordon, G. B. Caverns of Copan. Memoirs of the Peabody Museum of American Archaeology and Ethnology, I, 5. Cambridge, 1898.

this is a deposit of partly cremated bodies. He says that we know, from early Spanish writers, of the Maya cave cult, with a cave god, and suggests a possible connection with the Nagualist cult described by Brinton. ⁴⁵

⁴⁵ Brinton, D. G. Nagualism. Philadelphia, 1894.

The fact that the cave remains have been assumed by those who found them to be contemporary with Maya occupation of the adjacent sites, rather than indicative of an earlier or later population, warrants a careful consideration of a possible connection between them and Nagualism.

Such a study shows that there can be no such connection. The burials are ipse facto pre-Columbian. Nagualism, as described by Colonial writers, was the powerful, secret, reorganization, ^{after the Conquest,} in the Mexican-Mayan area, of ~~pre-Columbian~~ Indian religion. It was presumably dominated by the nanahualtin, the sorcerers and soothsayers of the native religion. These men had, before the Conquest, been associated with the cult of the nagual or tonalli, an animal double concept fundamental to the religion of this area. ~~We do not know~~

The nagual cult was only one phase of pre-Columbian religion, but due to social and political factors, it became the determining feature of post-Conquest Indian religion, to which it lent its name. Meeting-places of the Nagualists were abandoned buildings, woods, and caves, of which the latter are the most satisfactory spots for forbidden practices; the objects worshipped in caves after the Conquest, whether carved idols or decorated skeletons, were undoubtedly associated with this cult. The cult may therefore have come to be under the protection of the Cave God, Votan among the Tzentals, Teppeyollotl or Ozoteotl among the Aztecs; a deity, typifying the Earth, common Father of all, according to Brinton, and considered by Seler to have been introduced into Mexico proper from the Zapotec, Mixtec or Maya areas to the south. But there is nothing to connect the pre-Columbian nagual cult with whatever contemporary cave cult there may have been, nor the pre-Columbian cave burials with any cult of which we have definite knowledge.

M. B.

Notes for Burial Highlights.

Notes

Stairways, antechambers etc absent.

Red Paint (#5) -

Description (#5) } left from h. 5.

Shell Plates #5

Skull Burial - of Uaxochucan.

Good burials under house - of Wanchupo and Uaxochucan.

Murders - Thompson.

Pub. to ch. 4

↳ San. th - Polley finds

↳ Wanchupo.

Thompson

↳ Kidder

Ricketson

- S. Cunningham

- Mt. Carr.

↳ Blom - Tr. & Bunker

↳ Robert & Cannel

Jann. Guzman (Shell)

Graves

Caches

Cave

Cists

Floors

Tombs

Open Tombs

Multichambered. (#2 only)

N. ches - 4 box level

- above floor level

Stepped ends

Benches

Covered skeletons.

Skeletons

Shovel shovled skeletons.

Intact teeth

Filed teeth

Flattened foreheads

Skull burials

Position

Extended.

Skull in shell (cp. dist. Wanchupo).

Secondary.

Articulated Secondary.

Sacrificed victims?

Under House (Wanchupo)

Red Painted Bones

... .. objects

Rubber-wool Panels

Objects

Pottery

Animal food

Food

Absence of objects

String ray.

Inscriptions

Shell.

Clay jewelry.

Murder.

Fillet

Shell Plates

Absence of objects

Absence of sub temple tombs

" of Eccentrics (Jann)

" of near stairways

" " antechambers

" "

Preliminary Notes on Burials

It is planned to issue in this series ^(thus far)

Detailed descriptions of the burials ^{uncovered}, with photographs and drawings, ~~it is intended,~~ ^{at once} will be issued in the near future. The following notes are merely intended to acquaint fellow workers with ~~the general~~ ^{general} high spots, and to acquaint them with ~~the~~ ^{and to list the recovered material} types encountered. Our notes on burials have not as yet been properly worked over, but in the meantime we shall be glad to answer ^{such} specific queries as we can.

No. 4 was excavated ^{in 1931} by Dr. J. Alden Mason, Field Director; No. 6 by Miss Mary Butler, ~~and~~ and Nos. 7 and 8 by Mr. David Aronson during the 1932 season; Nos. 1 to 3 were cleared ~~by the writer~~ in 1931 and No. 5 in 1932 by the writer. The notes of the excavator in each case are the basis for the following brief ~~remarks~~ ^{remarks}, and appended summaries.

Preliminary Note on
BURIALS ^{and} MORTUARY CUSTOMS

The Graves

Eight burials have thus far been uncovered. For such a small series they show ^(a considerable) ~~an astonishing~~ variety of features:

a. Burials Nos. 1 and 5 were in stone vaults. ^{was} The first ^{and} small, bottle-shaped, simple, built beneath the floor ^{(of Structure V-1,} of the supposed residence in Group 63; ^{a supposed dwelling in the Southeast Group, a region of low mounds.} the second ^{was very} large, rectangular, with a bench at the foot end and two large niches in the side walls near this end, the whole built within a large ^{platform} ~~terrace~~ bounding ~~one side of~~ Court 1 of the Acropolis ^{on the southwest.}

b. Nos. 2 and 3 were in simple slab-covered cists, only about 20 cms ^{supposed} deep. These were also below the floor of the residential mound, ~~in Group 63.~~ ^{Structure V-1.}

c. No. ⁴ ~~5~~ was also found under ^{and around} stone slabs, ~~probably the cover of a similar stone cist,~~ but placed just under the floor ^(and approximately) in the center of the alley between the twin structures of the West Group Ball Court, ^{Structures K-6-a and b.}

d. No. 6 was in a cave far up the hill-side behind ^{the pyramidal} ~~Structures O-13 and K-5.~~ ^{Pyramids 27 and 42.} A slight depression in the rock floor may have been artificially prepared for the body, or it may have been natural. ^(seems to have been) There ~~was~~ no other artificial preparation of the grave.

e. Nos. 7 and 8 were placed a few centimeters below the surfaces of the plaster pavements and ^{respectively} along the walls ^(the pyramidal Structure R-3, Structure R-2 immediately to the southeast.) of ~~Pyramid 4~~ and ~~the platform adjoining on the east.~~ They

were placed within the floors, not under them. The head
 Only of No. 7 was protected by a cist construction, while
 No. 8 had no protection other than the plaster of the floor
 itself.

In four ^{of} our eight examples, ~~three~~ ^(one) cists and ^{Burial} vault No.
 5) it is certain or highly probable that no earth was
 allowed to touch the body, and this was ~~presumably the~~
~~primary function of stone grave structures.~~ The same
 remarks apply to the head portion of Burial No. 7.

The cave burial No. 6 ~~may have been~~ ^{was} covered by ~~the~~ ^a
 shallow deposit of ^{25 to 30 cm of} cave earth ~~found over it by natural~~
~~post-burial agencies~~, or it may have been covered at the
~~time of burial~~, ^{which is the opinion of the excavator, Miss Butler} Contact of the bodies of Nos. 7 and 8 ~~was~~
 with the floor material was inevitable, granted their
 position and the failure to provide protecting structures.

It is surprising to find the ^{certain} only instance where
 the remains were directly and purposefully covered with
 earth is that of No. 1, for which the second largest and
 most elaborate stone grave structure yet encountered was
 built.

The cave burial cannot be considered ^{pre-Maya,} especially early,
 as with ^{it} were found two bone tubes beautifully carved with
 the serpent motive in ^{Maya} an advanced style. All the other
 burials are directly associated with buildings of the city,
 and all, as a working hypothesis, must be considered as
 made in accordance with ~~resulting from roughly contemporaneous~~ mortuary customs. ^{in vogue}
~~during a few centuries only.~~

Detailed comparisons with burials at other sites have not
 as yet been made. There is no hint in either vault of the

entrance passages, stairways, or antechambers found at Palenque and other Usumacinta sites; but valid comparisons cannot be finally made until we have more examples at Piedras Negras.

Physical Characteristics

Little can be said on this score as yet, because the skeletal material recovered has not been assembled, nor submitted to physical anthropologists.

We have five adult skulls which when restored should be more or less complete, one of them pertaining to a more or less complete skeleton. A nearly complete child's skeleton, ~~except for cranium and foot-bones~~, was sent to Guatemala. Data on long bones and other bones of two other children and three other adults can be obtained, but none of these skeletons is complete. The state of preservation varies from almost complete decay to complete preservation, depending on the method and position of the burial, and the accidents of time.

From field observations we can say that stature was short; incisor teeth were shovel-shaped; extreme deformation (flattening) of the forehead was practiced; and in one instance there is ^{possible} evidence of a disease of the bone. ~~All these characters are in agreement with finds in other parts of the Maya area.~~

Position of the Body

The principal subject of all burials so far encountered was extended, probably in each case on ^{the} its back, except in

the case of Burial No. 1, discussed under "Secondary Burial?" ^{and the children in Burial No. 5.} None were flexed. Orientation varies and seems to have been determined by convenience, except that all three graves under the supposed ^{(dwelling (Nos. 1, 2 and 3))} residence headed toward the rear of the house (north-east). No. 5 headed to the northeast, No. 6 to the west, No. 7 to the southwest and No. 8 to the northwest. The skeleton of No. 4 lay approximately northeast and southeast.

Secondary Burial ?

^(We believe it is that of a female.)

Burial No. 1 was in a stone vault. Pelvis and femora were articulated; tibiae were displaced but below the femora; the skull was in about the correct position with reference to the pelvis for a primary burial, extended, but ^(instead of the right, as indicated by the pelvis.) lying on ^(left) the left side. However, most of the other bones were massed above the head, with some general scattering through the grave, from one end to the other. Disturbance after burial is almost ruled out by the presence of a deep deposit of stiff clayish soil, thrown from above and covering the bones as found. We have here a suggestion at least of a type of burial in which disarticulated major bones are laid out roughly in their true relations. Contributory evidence is the absence of all but seven teeth, the latter being perfectly preserved and belonging to a person of no great age. The observed facts could also be explained if we postulate the burial of a partly ~~remains~~ dismembered corpse. This assumption would not be preposterous, since ~~we know that human sacrifice was practiced at this~~ ^(at least known) ~~city.~~ ^{apparently portrayed on Stelae at the city.}

^{in the large vault,}

The main subject of Burial No. 5, presented a well articulated skeleton, yet the upper surfaces of nearly all the bones were painted a bright red. ^(Under surfaces were in no instance colored.) If this was a

primary burial the bones were painted after the decay or removal of the flesh; it may have been a secondary one, in which all the bones were carefully re-articulated when placed in the vault. It is to be compared with the red-painted bones found in the elaborately decorated tomb at Comalcalco, to the northwest, which also contained large numbers of cut and perforated shell plates, of the same general type as those found here.¹ In both cases there were traces of red

¹ Frans Blom: Tribes and Temples, Vol. 1 p. 116. The Tulane University of Louisiana

paint on the plates, but here the plates were not near the skeleton, (but in one corner of the vault.) and could have had nothing to do with the coloring of the bones. Red paint appeared in irregular patches and spots on many of the jade ornaments actually on the skeleton, but the painting of the bones was even and relatively complete, and not confined to the vicinity of ornaments.

Multiple Burials - Mortuary Sacrifice ?

A small chamber opened into the main unit of cist-burial No. 3, giving the whole the shape of the letter "T". The larger chamber contained the remains of an adult, the smaller those of a child.

Fragmentary human bones and teeth of an adult were encountered just behind and among the stones of the vault of Burial No. 1 ; the partial remains of two children were found with Burial No. 5 in such positions as to indicate that either the mere bones, or ~~more probably~~ the mangled and incomplete bodies were thrown or placed at the feet and across the abdomen of ^{the} principal subject of the burial. The latter was obviously of high rank.

Dedicatory Sacrifice ?

Finding Burials Nos. 7 and 8 within plaster floors

no. New Orleans, 1926.

and against the outer walls of substructures raises the interesting question of the possible existence of human sacrifice in connection with dedication of buildings. In neither case were any objects found with the bodies; the teeth were not inlaid; in one, little, and in the other, no, effort was made to protect the bodies from the plaster laid over them, nor was there any other indication that this may have been a place of honor.

Unfortunately we cannot say with certainty ^hwether or not the floors were broken into for burial purposes after they were laid. The floor containing Burial No. 7 was a secondary one laid over that originally pertaining to the platform along which the body was placed. Other examples must be sought before the significance of this type of burial can be understood. ~~The~~

Mortuary Food-Offerings?

Fragmentary bones of a small rodent (species not identifiable) spread out on a flat surface within the clayish soil covering Burial No. 1, and an orange-ware plate below the feet of Burial No. 5 suggest food-offerings.

Grave Furniture Inclusion of Objects.

It is apparent that roughly contemporaneous burials were made both with and without the inclusion of valuable objects of an imperishable nature. The distinction probably rested, in part at least, on the wealth or rank of the deceased, but other factors, such as age and sex, sacrifice

and so forth, ^(of course) must be considered before the complete story of burial customs is worked out.

No objects of any kind, useful or ornamental, were found in the vault of No. 1, while that of No. 5 was extremely rich, ⁱⁿ ~~in~~ carved and inscribed jadeite, ^{shell, bone,} ~~hematite (possibly iron pyrite)~~ and other jewelry, amulets, mirrors, and objects of ceremonial value, such as ~~the~~ sting-ray spines, which here, like some of the jadeite and shell, were inscribed with hieroglyphs. The cist-burial No. 3 was entirely devoid of objects, while the body in the nearby cist of Burial No. 2 had been decorated with a modest number of unpretentious jadeite and shell beads, and two shell ornaments, probably labrets. With the cave burial No. 6 were found ^(little besides) ~~only~~ the two beautifully carved bone tubes mentioned above. No objects were encountered in the ^Ball Court or floor burials (Nos. 4, 7, and 8).

It is apparent that no correlation between the ~~mere~~ careful preparation of stone grave structures, ^{whether vault or cist,} and the placing of objects therein is to be expected, though we may still expect valuable objects, ^{both} from the aboriginal and the modern scientific point of view, in large and elaborate vaulted tombs, when found. ~~This is important, since we knew it was the practice in this and in the other regions of the Old Empire.~~ The protection afforded by the tomb makes it ^(one of) the ^{best} sources for well-preserved objects as a basis for studies of the minor arts. The range in materials, types and probable functions of the objects found in the vault of No. 5 is ^(large) ~~without much doubt the largest yet reported.~~ ~~Because we must base our advance if knowledge~~

of ~~unwritten history largely by the associations of the elements encountered,~~ A maximum of information may be expected from other tombs of this type at Piedras Negras.

Tooth Decoration.

2 or Finding filed ~~and~~ teeth, and teeth inlaid with circular disks of jadeite ^{and pyrite} ~~or haemetite~~, increases the known early and wide distribution of both practices.

In the case of Burial No. 5 no less than fifteen ^{from the same} teeth ^{from the same pair of jaws} had been drilled for the inlay. We believe this is the largest number of decorated teeth yet reported as having belonged to one individual. We were fortunate in finding all possible teeth except two molars and one lower cuspid; eight jadeite and one ^{pyrite} ~~haemetite~~ disk were in place; an additional jadeite disk had fallen out after burial. The sides of the latter retreat slightly from the exposed face to the flat back and may afford a clue to the exact process of making the inlay. ^{Inlays for the other drilled teeth were not recovered.} ~~Teeth were not recovered.~~ ^(pyrite)

2 or Jadeite and ~~haemetite~~ inlays were found together in both burials Nos. 2 and 5. In the latter case we know that both materials were used in the same jaw, though not in positions to yield a symmetrical pattern. In the case of the right ^{side of the} upper jaw the decoration extended over the five teeth from the right ^{first} incisor to and including the second bi^cuspid, that is, clear back to the molars. If this decoration had been carried to the same extent on the left upper and on both sides of the lower jaw, not a visible tooth would have been undecorated. The deceased was young, ^{very probably} and this may have very likely been intended. ^{intentional} Had he lived to a more advanced age, possibly he would eventually have ^{carried} inlays in every one of the twenty teeth which he could readily show to an admiring world.

In two cases (Burials 1 and 5) the upper incisors were filed in ^{the} "Sun-God" style frequently found on the monuments and we have examples of other types of filing. It is hoped that further study of our finds may be correlated with existing studies respecting filing and inlay of teeth. ~~They may have a bearing on a suggested sex-distinction in the manner of filing.~~

Nature of Objects placed with Burials.

Not a single example of "eccentric" flint or obsidian ^{objects} was encountered in any of the burials, though they were a nearly constant feature ⁺ and in large quantities ⁺ in caches under floors of temples, under table altars, and in stela cists. It seems very probable that, here at least, the manufacture of these curious objects was ^(not especially) ~~in no way~~ connected with the burial of the dead, ^{as has been suggested} ~~and~~ ^{perhaps} ~~the evidence for such association in British Honduras, should be re-examined.~~

2 Thomas Gann, Bulletin 64, Bureau of American Ethnology, p. 103, Washington, 1918.
~~On the other hand,~~ The spines of the sting-ray, ^{both} ~~are~~ ^{to} common to ~~both~~ caches and ^{to} two of the burials. That this product of the sea was of especial importance is proved by finding not only the spines themselves, but a jadeite representation of one in Burial ⁵ ~~five~~, and a bone or shell representation in one of the caches. Jadeite is very hard to work and was the Mayan's most precious material. Many of the natural examples in ^(Burial 5) ~~the grave~~ are inscribed with glyphs.

Further evidence of ^{contact} ~~association~~ with the sea is furnished by the presence of sea-shell in Burial 5,

~~and in most of the caches~~

not only
~~only~~ worked into ornaments, but as complete shells apparently of independent value; and the presence of four clay representations of bi-valve shells. Complete natural shells were found in nearly all caches.

This early contact with the sea proves nothing more than trade or other relations extending to the coast, but the ceremonial flavor which is added by the artificial *sting-ray* spines and shells is a little harder to explain. Jadeite representations of shells have been reported from other parts of the Maya area. Possibly here as in the codices they

3. Thomas Gann: *Op. cit.*, Plate 16, c and p. 91. ~~Bulletin 61, Bureau of American Ethnology, Plate 16, c, and page 91.~~

~~Oliver G. Ricketson, Burials in the Maya Area, American Anthropologist, MS. Vol 27, p 394, quoting H. W. Price, 1899, "Excavations on the Sittee River", proceedings of the Society of Antiquaries, February 16, 1899.~~

symbolize zero, twenty, or the ~~ix~~ concept of completion.

No pottery figurine was found with any burial.

Burial 5 shows an extensive use of baked clay, slipped and probably painted, in making large beads and other ornaments. *(hitherto unreported, so far as we know)* Forms of jadeite, pyrite and shell, ~~so far as we now know hitherto unreported,~~ furnish material which will become increasingly valuable for comparative studies as Maya burials become better known. Most of these belong in the category of personal ornament. One jadeite bead shows the natural form of cylindrical beads cut from marine univalve shells, with a groove on one side. Two objects, a jadeite figurine and a bone image of the Moan bird, were presumably amulets.

Not an object of common use was discovered in this or any other grave except an orange ware dish or plate, a small flint

"The Maya Indians of Southern Yucatan and Northern British Honduras"

40

7

knife and two small jadeite objects which may be provisionally considered as knives or scraping tools. Each has a sharp curved edge and a concave back which fits the thumb. Being asymmetrical, they are complementary, as if one was fashioned to fit the left, the other the right hand. Even they may have only a symbolic significance. Possibly they are stylized representations of animal or bird claws. They are very well made.

We were very fortunate in finding with Burial 5 no less than three separate sets of inscriptions; those upon the sting-ray spines (only partly legible), one on the flat back of a jadeite jaguar head, and another spread over ~~perforated plates cut from the thorny oyster, which~~ four units of ~~what we believe was a cloak richly served to embellish provide embellishment for a cloak.~~ ~~embellished with plates cut from the marine thorny oyster.~~ The last two inscriptions are perfectly legible. That on shell has already yielded ^a secondary series date and we hope when fully deciphered will furnish a date fixable in the Long Count and so establish a probable maximum date for the burial. *Two of these four units have been sent to G. Matheola.*

The shell inscription comprises 34 glyph-blocks, ^(of respectable length) many with two glyphs each. Finding calendric inscriptions on grave furnishings of these relatively imperishable materials opens the possibility that graves, in this region at least, may greatly augment our texts from the stone monuments. ~~And perhaps when fully deciphered they may be found to treat of a different sort of subject matter.~~ Further comparative study in advance of decipherment should ~~determine~~ the latter question.

So far as we know, shell plates of this description,

perforated plates cut from the bivalve shells of *Stomylus limbatulus* Brod., from the Pacific coast. There were over two hundred of these, spread out in one corner of the vault, apart from the skeleton.

the two corners of
though not inscribed, have been encountered only in a depression
in the floor at far-distant Chichen Itza and in the tomb at

4 Karl Ruppert: "Temple of the Wall Panels," Chichen Itza, Contributions
to American Archeology, Vol. 1, No. 3, Plate 17, d and page 37, Washington, 1931
Comalcalco above cited, on the western periphery of the Maya area.

Their wide and general distribution may be suspected.

The perforations are usually on one long side, but occasionally
on one long and an adjacent short side. Though somewhat disturbed,
they lay in a broad sheet covering an area of about a half meter,
in the northeasterly corner of the vault. Blom suggests that the
Comalcalco examples belonged to a necklace. It seems more likely
that these were sewed to textiles, perhaps to form a sort of mail.
The shell is a beautiful pink, except for a few special decorative
forms which are white. These, plus the inscribed pieces, suggest
that, if we are here dealing with a garment, it was intended for
state occasions.

Pyrite objects, all ^{from} Burial 5, consisted of a single-piece/
mirror, ^(about) 1/16 cm thick and 7.6 cms in diameter; a round mosaic mirror
made up of well-fitted polygonal units on a shale base, 24.3 cms
in diameter; and two puzzling bands, presumably set ^(or in) on wood, fabric
or other ^{base of} perishable material, which had entirely disappeared. We
were able to ascertain the ^{arrangement} designs with reasonable certainty. Each
consisted of two parallel lines of rectangular pieces, the pieces
set end to end. Decorative effect was enhanced by disks, most of which
were set between the lines. In the least disturbed case, those between
the lines were set in groups of 2, 3, 3, 3, and 1. If we postulate
that the base was flexible, and the two ends were joined to form a
fillet or the base of a headdress, the two end groups would merge,
giving four groups of three each, with equal spacing between. The
length is ^(about) ~~only~~ 42 cms. The band of a size seven modern hat is ^{about} 56
cms.

BURIAL NO 1.

Grave Structure Crude slab-roofed half-vault below floor of Structure V-1 (dwelling?), long axis northeast and south west at right angles to front and rear of substructure; slightly bottle-shaped. ~~Dimensions~~ Length 1.95 m, width 70 to 80 cms, height 35 to 40 cms. Earth and stone floor.

Skeletal Remains Single burial probably of woman, leg bones and pelvis in semi-position, head in approximate expected position to northeast, other bones scattered throughout grave. All bones except leg bones badly broken, all bones covered with artificially deposited stiff clayish earth, and in excellent state of preservation. Frontal bone of skull markedly flattened. Only six teeth recovered.

Fragments of head and long bones, and of lower jaw with teeth of heavier and larger individual were found among vault and cap stones.

Bones were removed and are at Philadelphia, but have not been restored.

Objects None except remains of small rodent placed close to northeast ~~end~~ end wall just above level of skeleton.

BURIAL NO. 2

Grave Structure Crude slab-covered stone cist below floor of Structure V-1, about 2.25 m northwest of Burial No. 1, long axis northeast and southwest, rectangular at northeast end, tapering to round end at southwest. This end was covered by specially trimmed semicircular stone slab. Length 1.75 m, width 37 to 26 cm, height about 10 cm. Floored with thin layer of plaster directly on earth and stone fill.

Skeletal Remains Single burial of adult, probably of an articulated body, extended, head to northeast, ~~Bones almost~~ ~~entirely disintegrated~~ hands at sides. Bones almost entirely disintegrated. Eight teeth recovered in expected position, 7 molars and a lower cuspid with circular jade inset. Another ~~one~~ cuspid, with pyrite inset, found near the knees.

Objects 17 jade ~~beads~~ beads, diameters from 5.5 mm to 7.5 mm and 15 shell discoidal beads, diameters from 3.5 to 6 mm, all found just below the jaw (~~xxx~~. probably from necklace)

2 shell ornaments (labrets?), one among the beads, the other between the tibiae.

Shell "rossette", diameter 12 mm, found near the beads.

Sting-ray spine, found near right hand bones.

but about 1 m
further to the
southwest,

BURIAL NO # 3

the northwest of and

Grave Structure Crude T-shaped slab-covered stone cist, below floor of Structure V-1, about 2.00 m northwest of to Burial No 2; long axis of main chamber northeast and southwest, short chamber extending from near its center to southeast, chambers apparently rectangular. Length of long chamber about 1.95 m, width 20 cm, length of small chamber about 80 cm, width about 20 cm, height of both chambers about 10 cms. Floor of earth and stone. Part of covering of large chamber was a large well-cut ~~slab~~ but broken slab, probably a reused plain lintel.

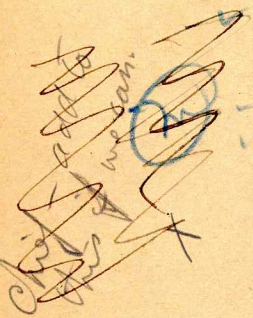
Skeletal Remains Double burial of adult and child. Bones of adult almost entirely decomposed due to collapse of cover, but apparently an extended burial, head to the northeast (i.e. toward rear of building). Teeth not counted before shipment to Guatemala City. They more plentiful than in Burials Nos. 1 and 2, and one was decorated with ~~jade~~ circular jade inlay. Bones of the child (except the cranium, which projected into the large chamber) were perfectly preserved, though ~~and~~ very soft and much damaged in removal. The child was buried on its back, extended, hands at the side, feet to the southeast. Without question a burial in the flesh, the body jammed into the small chamber hardly wide enough to contain it.

Objects Five potsherds, undecorated.

probably

Burial No. 4

~~Probably~~ None, unless the flat stones represented a



Grave Structure ~~Probably a badly~~ slab-covered stone cist, badly ruined by tree roots since disappeared, placed in the center of the alley between the twin structures (K-6-a and K-6-b) of the West Group Ball Court, just below the floor.

Skeletal Remains Portions of skull bones, including jaws and teeth, and of ~~long bones~~ ^{humeri}, apparently of an adult.

Objects None recovered.

Objects

Jade Two jade beads, about 9.5 cm long, rectangular in cross-section, associated with a scalloped jade ring, ~~max. diameter~~ max. diameter about 8 cm, from the chest.

Jade ~~figure~~ human figure, carved in relief with flat back, edges cut to roughly ^{outline} silhouette the figure, and perforated for attachment - found leaning against the lower jaw, possibly from the mouth.

12 small spheroidal and cylindrical beads immediately under jaws and teeth. *probably placed in mouth.*

10 pairs of small ear-plugs, the design of each pair differing from the others, arranged as a fillet about the head (diameters about 2 cm).

2 large plain ear-plugs, square with rounded corners, tiny perforation at center, diameters about 4.7 cm, in ~~correct~~ ^{expected} positions on either side of head.

Jade model of very thin sting-ray spine, found below the front and above the back elements of the fillet.

~~Carved~~ Jaguar head, carved in relief with flat back, edges cut to ~~silhouette~~ ^{outline} the head and perforated for attachment. Found face down, partly under vertebrae of principal subject of burial and under humerus of second child. Max. diameter, 8.2 cm, *max. thickness 1.5 cm.* Six blocks of glyphs incised on back, which do not yield a date.

Large bead, rectangular in cross-section, under left hand (length 5.2 cms.)

Large cylindrical bead under right hand (length 5.6 cms.)

3 "Rosettes" (ear-plugs?), 1 near right knee, two in northeasterly corner of vault, among shell plates.

7 thin flat pieces in cache south of skull of first child, *polished on one side, smooth on the other.*

2 problematical forms, one a "right" the other a "left" in the above cache.

Small spheroidal and a few small cylindrical beads scattered about the principal body (above the knees) and above (northeast of) the head. *Especially plentiful in region of the hips.*

Amazonstone Small spheroidal beads found in same general locations as above.

(Spondylus limbatus, Sowb, from Pacific coast)

Shell Large ~~xxxx~~ pink bi-valve shell (found from which the spines had been removed, ~~xxxx~~ just above (northeast of) the head, concave side up. Some of the skull fragments were in it, and ~~ixxxxxxxx~~ the head may have rested in it.

here

A ^{similar} shell, though smaller, placed at the feet of the first child's skeleton.

Large ^{but larger than} shell ornament, similar to those found with Burial 2 (labrete?) found under, or nearly under, ~~the~~ part of the broken left lower jaw. The supposedly exposed surface is round, the edge perforated (as are all the others). Diameter of this surface 2 cms. ^{of this type}

9

Shell ornament identical with the above, except that the exposed surface is square, ~~xxxxxxxxxxxxxxxxxxxx~~ Found in corresponding position on the right side of head, but a few centimeters distant.

13 ^{narrow} Small triangular shell ornaments, from the region of the chest. Not perforated. Length about 3 cms. ^{cut from the pink Spondylus limbatus.}

3 univalve shells cut and perforated for suspension. (Morum tuberculatum Sowb (Pacific coast) and Pachychilus ^{indiorum} Morelet, Guatemalan fresh water species.)

Small discoidal beads found in abdominal and hip region. diameters about .5 to .9 cm. ^{fresh water Guatemalan species}

2 complete bivalve shells (Quadrula Quadrata, Simps,) and one complete bi-valve shell (Spondylus limbatus) in cache south of head of first child.

About ²²⁵ 200 shell plates, roughly rectangular, perforated along one or two adjacent sides, cut from the pink Spondylus shell of Spondylus limbatus. With them were several ^{some} decorative shapes, cut from a white shell. Traces of red paint occurred on both. They were much disturbed, but had apparently been spread in a sheet in the northeasterly corner of the vault, beyond the head of the principal skeleton. Longest dimensions range from about 2.5 cm to 7.5 cm. ^{special}

Three of the plates, together with a trimmed but more or less complete shell, are inscribed with a legible and apparently continuous inscription of 36 glyph blocks.

✓ Bone Image of a bird, ~~probably~~ (Muan?) with cross on the top of the head. Carved from ~~proximal~~ end of ulna of the jaguar, taking advantage of the contours of the bone. Found near right elbow.

✓ Six ^{of large cat, some certainly, probably all} phalanges of the jaguar, in cache south of skull of first child. ^{found above}
Tooth of cat, probably jaguar, ^{found above} left hip of principal skeleton.

Pottery About 100 spherical clay beads, solid, with small perforation, ~~with~~ traces of white slip and red paint. Found across neck and chest and extending 75 cms to left. Probably stung when placed. Diameters about 2 cm.
3 hollow clay bead-like ornaments, ^{maximum} diameters about 3.5 cms; of holes, about 2 cms.

Two cylindrical ornaments, one end rounded ~~and~~ with dead-end longitudinal perforation, the other bell-shaped. One found above left shoulder, the other beyond first child's skeleton at the other end of vault. Length about 6.5 cms.

Four clay representations of bivalve shells, one on chest immediately below jade ring and long beads, two near left shoulder, at side, the fourth a little above right shoulder.

Two broken pottery covers, each with central boss and handle, unslipped, blue paint at rim. One found to left and above head, the other among the shell plates in nearby corner.

Polished orange plate or dish, diameter about 25 cms. Below (southwest) of feet of principal skeleton and first child's skeleton.

Pyrite Circular mosaic mirror, ~~diameter diameter~~ diameter 24.5 cms. Shale back. Found just below plate, ~~about center~~ inclined at angle of about 30 degrees (probably disturbed by falling debris). ^{south west of}

add here

Two ^{two} problematical objects, consisting of parallel bands of rectangular pieces, with circular pieces between and on one or both sides. All traces of the ~~object~~ base to which they were attached had disappeared. Possibly they were fillets. Length of each, about 42 cms. From niche in northwesterly wall.

Flint Small flint knife in "child's" cache.

94 flint chips scattered about the central portion of the vault

Circular one-piece mirror, diameter 7.6 cm, thickness .8 to 1 cm, edge beveled. Found in child's cache!

Dada

Shell

7

(representing at least six spines)

Sting Ray Spines

A large number of these were arranged fan-wise near the right elbow. ~~Nine~~ fragments are inscribed with badly eroded glyphs.

~~Several~~ ^{Six} others, not inscribed, were found in the "child's" cache."

Señor Don Francisco Villnueva,
Tenosique, Tabasco, Mexico,

Muy señor mio

Now is the time for all good men to come to
the aid of their countrymen. In paso Petèn " " " " garçon

Burial No. 6

Grave Structure: Natural dry cave in hillside, behind and between Structures O-13 and K-5, height estimated as 50 meters above East Group Plaza; floor apparently divided into two levels by line of stones forming step, Skeleton lay in pocket in bed rock, possibly artificial.

Skeletal Remains: Fairly ^{OVMS AT SIDES} well preserved bones of ^{an} articulated adult, extended on back, lying ~~on the floor~~ just below floor of lower level, against side wall and extending partially under upper ~~level~~ level, head ~~more~~ ^{more} ~~on~~ ^{ness} to east. One long bone appeared to be diseased. All ~~bones except part of this destroyed by~~ accidental fire at camp. Right radius and ulna were missing. All recovered bones were destroyed by ~~fire~~ an accidental fire. Objects. Two ~~xxxxxx~~ bones tubes about 13 cms long, ~~decorated~~ decorated ^{lines} ~~with~~ on the fronts with a wide band formed by two parallel bands enclosing a conventionalized snake head, shown in profile with simplicity and restraint. The backs were plain except for bands of rosettes encircling each end. The designs were carved in low relief. The serpent band in one case ~~started~~ ^{slanted} from left to right, in the other from right to left, so that the tubes formed a complementary pair, probably worn end to end on the breast. Three holes were bored in one tube in front of the snake head, arranged as at the points of a triangle. On the other tube, two of the ~~holes~~ corresponding holes were present, the ~~position of the~~ third being begun, but not carried through the bone.

Two potsherds, fine brown ware probably from same vessel, one in soil above legs of skeleton, the other on bed rock in a depression ~~xxxx~~ near the ^{entrance}.

Small animal skull and bones, ^{found} one or near surface of upper ~~level~~ level, near step to lower level.

Armadillo Scales (probably).

Two fragments of stalactites, one ^{lower} found near ^{lower} sherd ~~xxxxxxx~~ e (stalactites do not occur naturally in this cave).

On these tubes were traces of red paint. They were found beside the skull, about 20 cm away from it, and about on a line with the nose.

Handwritten notes in left margin:
M.B.
1/25/52

Burial No; 7

Grave Structure: A small slab cist, open at one end, protected the skull. Apart from this the ~~whox~~ burial was in the concrete pavement, upper and latest level, beside the northwesterly side of Platform R-2, near the northerly corner. ~~Apparently it extends to the north, though possibly secondary.~~

Skeletal Remains. Apparently an extended burial, head to the southwest. Bones badly destroyed except the cist-protected skull. Possibly a secondary burial. ~~teeth were recovered.~~

Objects None.

Burial No. 8

Grave Structure None.

Skeletal Remains Apparently an extended burial, head to the northwest, along the northeasterly/lowest terrace wall of Pyramid R-3, ~~at the~~ the head close to the southeasterly side wall of the stairway. Placed in concrete pavement, like Burial No. 7, and possibly a secondary burial. Seventeen teeth recovered, incisors filed.

Objects None.

(from Burial 5)

(Philadelphia)

REPORT ON BEADS SUBMITTED BY MRS. WM. S. GODFREY OF THE UNIVERSITY MUSEUM TO THE ACADEMY OF NATURAL SCIENCES FOR IDENTIFICATION

Two kinds of beads made up the lot:

- (1) Feldspar variety microcline; also known as AMAZONSTONE. Green beads with white, intersecting lines visible under a lens.
- (2) JADE beads, which are mineralogically JADEITE-DIOPSIDE.

An analysis by Horace J. Hallowell on a single bead, showed it to be composed of the Jadeite and Diopside molecules in the proportion 2 : 1. His results follow:

SiO ₂	58.98
TiO ₂	0.01
Al ₂ O ₃	18.13
Fe ₂ O ₃	0.69
Cr ₂ O ₃	0.04
FeO	0.90
MnO	0.04
MgO	5.18
CaO	6.33
Na ₂ O	9.75
K ₂ O	0.03
H ₂ O +	0.33
H ₂ O -	0.28

A physical examination by Samuel G. Gordon of a granular, emerald green bead resulted as follows:

Specific gravity	d ⁰⁰ ₁₉₀ C	equals 3.23
Indices of refraction		equals 1.660 equals 1.671 equals 1.683
Extinction angle.....	a:c	equals 40°.

A thin section made from a bead by Mr. Frank J. Keeley, showed a granular texture with wavy extinction over the grains. Very little albite was visible.

NOTE: The tern JADE includes three different minerals:

- (1). The mineral Jadeite, (a pyroxene) more or less admixed with Albite; the Asiatic Jades, in part.
- (2). The mineral JADEITE-DIOPSIDE, which is a molecular solution of the jadeite and diopside molecules in varying proportions: the Central American Jades.
- (3). NEPHRITE, a fibrous compact amphibole; some of the Asiatic Jades, and those from New Zealand, and Europe.

Samuel G. Gordon