The culture of the Mayas as shown by their ruins

Daniel James Stone
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THE CULTURE OF THE MAYAS

AS SHOWN

BY THEIR RUINS

BY

DANIEL JAMES STONE

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Librarian

DATED: June 10, 1931
DEDICATED

To my instructor and friend

Dr. J. William Harris

Dean of the School of Education at the College of the Pacific

who has been a helpful adviser
during my college life

The Author
My obligations in the writing of this paper are many. I wish particularly to thank Professors G. A. Werner, Gertrude Sibley, and Glen R. Pease, of the College of the Pacific, who have read the manuscript and made valuable suggestions as to form and content, and Professor E. E. Robinson, of Stanford University, through whose kindness the use of Stanford University Library was made possible.

D. J. S.
PREFACE

It is the purpose of this paper to deal with the high state of culture attained by the mysterious Mayas of Central America and Yucatan.

How old is their civilization? No one knows.

Where did they come from? Who can say?

What did they wish to tell us in their writings that have come down through those past thousands of years? No one can decipher them.

The controversy over these points, and many others, has caused unlimited debate among scientists, and as yet, the questions remain unanswered.

What, then, is there to write about?

These people have left us beautifully carved stone buildings, palaces, and ruined cities that show careful planning; statues, pottery, etc., that show a remarkably high state of culture. This is to be the field of this paper.

Daniel James Stone.
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CHAPTER I
HISTORY OF THE MAYAS

There are two aspects of chronology, the first of which is a relative one, self-contained, and dissociated with any larger aspect of time relation.

The second variety of chronology, and the one in which this chapter is interested, has to do with definite epochs correlated with our own time system, prehistoric passing over to the historic.

It is a peculiar thing, but man heeds not an ancient civilization, although known to be aged, unless he can establish the chronological relationship with his own times.

In correlating the chronology within the area of the Mayas it was necessary to study the stylistic development of architecture, pottery, statuary, and their stratification. This study gives relative correlations of the Maya civilization, but this relationship must be stated in definite periods of time.

The establishment of this chronology was made possible through the study of the remarkable hieroglyphic remains including; stone inscriptions carved on buildings, stelae, altars, door lintels, and statues; a few painted inscriptions, three codices dating back to pre-Columbian times, and the so-called books of Chilam Balam.

The outstanding intellectual achievement of the Mayas, as shown in their stone hieroglyphics, was the development of an elaborate calendar. The successful deciphering of this
calendar completed the picture of Maya chronology.\(^1\) There now remained the task of correlating this chronology with that of the Christian calendar.

In this important step a number of scientists have taken part. One of them, H. J. Spinden of the Peabody Museum, has shown conclusively that the Mayan calendar began to function in 613 B.C.\(^2\)

This calendar was, of course, not developed in the single year of 613 B.C., but points to a long previous development of trained intellects capable of using mathematic terms and formulas that could only be the results of a long period of culture.

One Dr. Augustus Le Plongeon, placed the date of the beginning of the Maya civilizations as early as 12,000 years ago, or 10,000 and some years B.C. The doctor claims that he has proof with which to substantiate his statements,\(^3\) while other authors agree as to the great antiquity of this civilization, none could be found who would set the date as far back as this and claim any scientific verification for it.


\(^3\) Salisbury, "Dr. Le Plongeon in Yucatan", Am. Antiquarian Society Proceedings, 1877-1990. p. 89
Spinden, after a much more scientific study, set the date of the beginning of the "Maya Era" as November 10, 3,485 B.C., and hastens to add that the "earliest date of a monument, which can be regarded as historical falls a century before Christ."\(^1\)

The earliest dated inscription is on a small jade statuette of 96 B.C.

The First Great Empire of the Mayas began about the first century before Christ and continued until about 650 A.D.\(^2\)

During this period, previous to 176 A.D., the calendar and hieroglyphic systems were being developed.

All the great cities of the South flourished within this period. An early date at Tikal shows that the city "was doing nicely" in 216 A.D. The earliest dates of Copan follow closely on those of Tikal.\(^3\)

An extension of the First Empire began about 390 A.D., following the eastern coast of the Yucatan Peninsula northward. Sites with definite dates have been found at Chetumal (333 A.D.), Tuluum, Coba, (363-412), and Chichen Itza.\(^4\)

The period of the First Empire can properly be divided into three minor periods: the early period from 176 to 373 A.D.; the middle period, 373-472; and the great period

\(^1\) Spinden, *Ancient Civilizations of Mexico*, p. 132.

\(^2\) Tozzer, op. cit., p. 36.

\(^3\) Spinden, op. cit., p. 134.

\(^4\) Tozzer, ibid., and the footnote.
from 472 to 650 A.D.

The carving throughout the early period is crude and angular. The profile presentation of the human figure is better handled by the artists of this time than is the front view.

The middle period gave rise to some of the most beautiful works of art. The sculptors introduced a straightforwardness and purity of style. The best series of monuments from this period are found at Piedras Negras and Naranjo.

The third period of the First Empire was a short brilliant period in which many cities flourished. In addition to the cities already mentioned there were Quirigüa, Ixkun, Seibal, Holmul, Nakum, Cancuen, Yaxchilan, and Palenque. The art of this period passes through some interesting changes, becoming more complex in certain features and less complex in others. Architecture makes great advances. Rooms become wider, walls thinner, and forms more refined and pleasing. The calculations in the inscriptions deal more and more with complicated astronomical subjects and historical dates. This brilliant epoch seems to have come to an end through civil war, social decadence, or perhaps an overwhelming epidemic. There is evidence that yellow fever swept over Central America before the coming of the Europeans. The references in the chronicles to this period are very brief.¹

¹ Spinden, Mexico and Central America, pp. 133-134.
Following the period of the First Empire came the period of Transition from about 650 A.D. to 960 A.D.

In the first half of this seventh century the southern cities seem to have been abandoned, as no late dates occur there. The ancient chronicles in the Chilam Balam books state that the inhabitants left their homes and moved northward, not to return until 960. The cities of Chompoton, Tabasqueno, Hochob, and Dzibilnocac are believed to belong to this period. The architectural styles form the only evidence of artistic sequence available in this period.¹

The Second Empire of the Mayas may be listed as the third period of their civilization extending from 960 to 1200. This period is characterized by a noteworthy revival of architecture occurring in northern Yucatan. According to the chronicles the land of Chakanputun² was abandoned by a tribe of the Mayas known as the Itzas and Chichen Itza was re-established. About the same time Uxmal and Mayapan were founded and a league between these three principal cities was instituted. Many other cities such as Kabah, Labna, Sayil and Izamal seemed to have flourished at this time, but no traditions except of Izamal exist. The architectural styles of decoration during this period are more formal than those of earlier times. The mask panel, a face


² This land is most likely the central portion of Yucatan.
reduced to a rectangular area and built up mosaic-like oft of separately carved blocks, is the most important motive but there is also a great use of geometric figures such as fret meanders, banded columns, and imitation diagonal lattice work.

The Toltec Period (1200-1450) was ushered in as a result of a civil war within the Mayan Empire. Hunac Ceel, one of the Mayan leaders, asked aid of the Toltecs of Mexico (the Toltecs are often referred to as Mexicans). This event brought a figure into Mayan history whose marvelous exploits and accomplishments placed him in a somewhat mythical role. This figure was Quetzalcoatl the great Toltec chieftain who created much of the pomp and ceremony later used by the Aztec rulers and described with such vividness by the Spanish. Spinden speaks of him as "one of the greatest characters of history, a compound of warrior, priest, administrator, and scientist".¹

With his force of Mexicans he put down the Mayan civil war in 1191 and then seems to have subdued Chichen Itza, and made it into a Toltec city.

The Toltecs brought with them a new religion and new art forms and the period from 1191-1450 was marked, especially at Chichen Itza, by a very strong Mexican influence. It has been possible to identify, in the frescoes and bas-reliefs at this site, the battles of the victorious Toltecs.

¹ Spinden, op. cit., p. 133
and the subsequent making of peace. The portrayal of Maya and Mexican types is distinctive in all carvings. Chichen Itza has the longest recorded history of any city in the New World, ancient or modern, of over 800 years. The Toltecs in Mexico proper had long since ceased to be a leading nation because of civil wars.

It is interesting to note here that the early Toltecs had been strongly influenced by offshoots of the early Maya culture at the time of the break up of the First Mayan Empire, and now arrive upon the scene a second time as conquerors and introducers of new art forms. The arrival of the Toltecs in Yucatan with definite dates on the Maya side makes it possible to supply them with an historical background for the latter part of their history, thus supplanting, to some extent, their mythological dates of origins and migrations.

The calendar of the Toltecs and later of the Aztecs undoubtedly was derived from that of the Mayas. The constantly increasing sphere of influence of this people was centered in the important site of San Juan Teotihuacan, which had its greatest period from about 1000 to 1200 A.D. The most extensive expansion of the Toltec power came after 1200 and included practically all of the non-Mayan-speaking peoples of central and southern Mexico, Guatemala, and as far south as Honduras and Salvador in addition to the successful conquest of Chichen Itza and all the other Maya cities on the east coast of Yucatan. Thus the Toltecs,
receiving the seeds of culture and the calendar from the early southern Mayas, later played an important part in shaping the destinies of the later northern Mayas in their last great period of history.

It will be well to digress for a paragraph or so for the purpose of rectifying a prevalent misunderstanding.

The Aztecs who have received most of the credit, in the popular mind, for the cultural achievements in Mexico were late arrivals on the scene. They did not reach the shores of Lake Tezcuco, on an island of which they were to later build their capital, until 1325. They came as a wild hunting tribe from the north, remaining undisturbed until 1351 when they suffered defeat and enslavement at the hands of the Toltecs. Their period of pre-eminence and expansion did not begin until 1367, and even in 1519 under Montezuma, they held only a fraction of the territory that was included in the Toltec empire of 1200. Every feature of their life was borrowed from the Toltecs and several of the Toltec cities in the valley of Mexico never were completely subjugated by the Mexicans.

What caused the civilization of the Mayas to fall, about 1450, is not known. Civil war, exhaustion of cultivable land, or epidemics or yellow fever may have been contributory factors.1

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The Modern Period from 1450 to the present day was one of decline. Stone construction was still prevalent as we know from early Spanish descriptions of towns on the coast. Learning was still maintained by the priests and nobles, but there was not the centralized authority necessary for maintaining of such luxurious capitals as had existed "in the good old days". The Itzas, in part at least, returned to one of their ancient seats in the south, founding the island town of Tayasal in Lake Peten. Here Mayan culture was preserved until 1697 when, after years of stubborn resistance, it was finally destroyed by the Spaniards.

At the present some of the old Mayan myths and religious practices still persist among the Lacandone Indians. Upon the western highlands there are preserved traditions which concern the Quiches, Cakchiquels, and other Maya tribes, but the history does not go back more than 200 years before the Spanish conquest.\(^1\)

The golden days of Mayan civilization had already passed before the coming of the white man.

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\(^1\) Spinden, *Ancient Civilizations of Central America*, p. 137
CHAPTER II
THE WRITING AND LITERATURE OF THE MAYAS

Having written a brief history outlining the various chronological and cultural periods into which the civilization of the Mayas might be more or less logically divided, it is now difficult to determine whether the next topic dealt with shall be their writing and literature, or buildings and architecture. Both are very much in evidence, and so inextricably interwoven as to be almost inseparable.

A great deal of the beauty of the Mayan architectural embellishment was produced by the use of their complicated hieroglyphic system of writing as the chief ornamentation for the many buildings dotting the areas of land once occupied by these highly cultured people.

Inasmuch as a people's innermost thoughts and aspirations, as well as the actualities of everyday life, are expressed in their literature, it will be well to study Maya writing; hoping that some insight into their life may be gained that will aid in studying the topics which will be dealt with in the succeeding chapters of this paper.

They engraved their peculiar hieroglyphics on stone tablets, on great sculptured monoliths, and on the walls and lintels of their buildings, painted them on plastered surfaces and on pottery, and wrote them in books. As most of these hieroglyphs have rounded outlines, early authors imagined they resembled somewhat a section of a pebble, and the term "calculiform" characters, from the Latin calculus,
"a pebble", was for a time applied to them, but this is no longer in use; the term "hieroglyph", or simply "glyph", having replaced it. Where carved on stone or wood they stand out in low relief, but occasionally they were scratched or incised on pottery and shells, in which instances the glyphs are quite rude.

Inscriptions composed of these peculiar hieroglyphs have been found in all the ruins of temples and other buildings that once were under the control of the Mayas. They are found in various situations, some of them on stone slabs set on the inner walls of temples; an example of this type of inscription is in the possession of the Smithsonian Institute. This tablet comes from Palenque.1 Stephens found such an extensive inscription on the walls of one of the Palenque buildings that he named it the "Temple of Inscriptions". At Copan and Quirigua the more important carvings are on the sides and backs of great stone statues that previously stood in long rows, and, in some instances, are still standing, in what the native priests consider sacred precincts. The lintels of temple doors and even the steps leading to them were sometimes utilized as a display place for some of these hieroglyphic inscriptions.

The glyphs of the inscriptions are somewhat square in shape, varying from 3½ to 4½ or 5 inches square. Each of these squares, which are in a straight line or column as

1 See photo, p. 706, Annual Report of the Smithsonian Institution, 1903.
Fig. 1—Inscription on Stela F. Quirigua. Typical Mayan Glyphs.
a rule, constitutes a hieroglyph (glyph), but they are usually composed of several parts. This characteristic can not be explained in words, but will be readily understood by reference to figure (1). Some of these elements, it will be observed, consist of lines and dots, usually placed at the left side of, or above, the glyphs. Some of the glyphs consist chiefly of an oval figure surrounded by a rim; in this manner:

![Glyph](image)

These inclosed characters, with a single exception, are symbols of Mayan days. It is by these day symbols and month symbols, which also occur in inscriptions, that students ascertain that the Mayan people were the authors. Bishop Diego de Landa, who went to Yucatan as a missionary in 1540 and was bishop of Merida from 1573 to 1579, found people still living who could read the symbolic writing of the codices, and has preserved the forms of the month and day symbols, with their names attached, in his work *Relacion de las cosas de Yucatan*. This manuscript was found in Madrid in 1863 by the Abbe Brasseur de Bourbourg and published in 1864. In addition to the twenty

---

day signs and eighteen month signs were found the glyphs for the numbers from 1 to 19. As these glyphs and signs occur throughout the area once occupied by the Mayas and are undoubtedly of Mayan origin, these people are given credit for the inscriptions and numerous, now ruined, buildings. This manuscript is also the initial point of all later investigations.  

The Maya scribes did not limit themselves to stone or wood carvings, however, but wrote on painted their characters in manuscripts. Four of these manuscripts, or codices, as they are usually termed, remain. These are the Codex Troanus and Codes Cortesianus, thought by some authors to be parts of the same book, which are at Madre. The Codex Peresianus, which is in Paris, and the Codex Dresden, which is in the Royal Library at Dresden are apparently the work of different scribes. The Dresden manuscript is considered to be the most important by many authorities.  

The first two strongly resemble each other, and were probably written in Chiapas or Guatemala.

These inscriptions are on a kind of paper made of the maguey plant. All are quite similar, though the number

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2 Such as E. Forstemann, Thomas Cyrus, A. P. Maudsley, Eduard Seler, P. Schellhas.
pages and the size vary. The Troano codex may be taken as an example. It consists of a strip of maguey paper about 14 feet long and 9 inches wide, both surfaces of which were first covered with a white paint of varnish. The two surfaces were then divided into spaces about six inches wide by black or red lines across the strip, in which space the characters and figures, in black, brown, red, and sometimes blue, were painted. The strip was then folded back and forth, like a pocket map, until it contained 35 folds and had the appearance of an ordinary octavo volume. The glyphs and figures cover both sides of the paper, forming 70 pages, the writing and painting seem to have been done after the folding, for the folds do not mar the continuity of any of the sections.1

The decipherment of these codices has been very slow, and for years the order in which the glyphs should be read was a subject of much discussion among various authors, some contending that the reading should proceed from top to bottom and left to right, and others insisting that the reverse order was correct. The generally accepted method will be developed in the succeeding paragraphs and an attempt made to explain some of the subjects dealt with in the glyphs and some of the reductions that seem to be correct.

The footnotes needed in a discussion of this nature would

be so confusing and difficult to handle that the writer will take the liberty of listing below those authors whose works were of use in this particular piece of work\(^1\) and then develop the subject in a way that seems clear to himself, hoping that the reader will also be enlightened.

In the inscriptions, which usually consist of two, four, or six columns, the columns are to be taken by twos or pairs from left to right and from top to bottom, in the order of the letters in the diagram:

```
  a  b  
c  d  
e  f  
g  h  
```

Where there is a single column the reading is from the top down, and in single horizontal lines from the left to right. The order is substantially the same in carved glyphs and the codices. Usually in the inscriptions there are besides the glyphs, figures of priests, dieties, and symbolic representations. A considerable portion of almost every page in the codices consists of pictographic representations.

An important class of characters consists of those which, as is now known, denote numbers. Some authorities contend that the characters represent numbers exclusively.¹

These number characters are of two distinct types; one, which is the usual form, is found in both inscriptions and codices and consists chiefly of dots and short lines; thus: • (one dot) signifies 1; •• (two dots) signify 2; and so on up to four. Five is indicated by a short straight line, thus: _; ten by two such lines, one over the other; and fifteen by three lines similarly placed. To represent six the Mayan scribes used a straight line and a dot, thus: •_; for seven a line and two dots, thus: ••_; and so on up to nine (••••). Eleven was denoted by two straight lines and one dot (••); and so on to 19 which was represented in this manner: (•••••). In the inscriptions the lines and dots are usually perpendicular to, and on the left hand side of, the glyph, while in the codices the lines and dots are in horizontal position as they are above.

Number 19 appears to have been the greatest figure written with symbols of this type; other characters and relative position being used for the higher numbers.

For numbers of 20 and above a glyphic form of presentation was used. In some of the inscriptions the glyphs

¹ Maudslay, Biologia Centrali-Americana, Vol. 63, p. 3.
were used for numbers below 19 also. In figure 1, p.12, an excellent example of the double-faced system of number writing is shown. The top row is a quadruple glyph which will be omitted from the present discussion. In the next line below the glyph on the left side (number 1) represents the figure 9 and the glyph on the right (number 2) stands for the sixth order of units. The six glyphs in the right hand column of characters show the type of figure used to present numbers greater than 20. The face on the left side of glyph 2 stands for nought, as does the left face in glyph five.

It is interesting to note the use of characters representing zeros for it shows that the Maya scribes had learned strict adherence to a fundamental mathematical step, no blanks being allowed in the representation of numbers.

The numeration was carried to high numbers, not by the use of new symbols, but rather by their relative position. Just as we denote numbers greater than those of the Arabic digits by the position of these digits, as in the decimal system we increase the value of a number ten-fold at each step to the left, i.e. 1, 10, 100; so in the vigesimal system, used by the Mayan scribes, the numbers increased twenty-fold at each step, to indicate this they placed their "digits" in a column increasing in value from the bottom upward. A line and dot, mentioned above as denoting 6, if placed at the bottom would denote six; but if placed one step upward would equal 120, or 6x20; and if
placed one step higher, according to their regular vigesimal system, would equal 2,400 or 6x20x20; but in their time counts, which are the only numeral series in the third place, of third order of units, would be 6x20x18, or 2,160.

would equal 2,160

would equal 120

would equal 6

The other steps upward increase uniformly twenty-fold. As they rise as high as the sixth step the value of the unit in several steps would be as shown in the column in figure:

<table>
<thead>
<tr>
<th>Order</th>
<th>Value</th>
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<tbody>
<tr>
<td>6th</td>
<td>2,880,000</td>
</tr>
<tr>
<td>5th</td>
<td>144,000</td>
</tr>
<tr>
<td>4th</td>
<td>7,200</td>
</tr>
<tr>
<td>3rd</td>
<td>360</td>
</tr>
<tr>
<td>2nd</td>
<td>20</td>
</tr>
<tr>
<td>1st</td>
<td>1</td>
</tr>
</tbody>
</table>

As the day was the primary unit a single dot in the sixth step would denote 144,000 days, and two dots would equal twice that amount; three dots three times that amount, and so on up to 19. This applies to each of these orders except the second, where 18 is the multiplier. These series of units of the various orders, can be reduced to the lowest denomination—which is days—just in the same way that we can reduce dollars, quarters, and dimes to cents. Some of the numeral series in the Dresden Codex amount, when reduced, to over 12,000,000 days.

As an example of their use of large numbers, one numeral series from plate LXIX of the Dresden Codex is presented here, the numbers indicated by the numeral characters being placed at the left in parentheses, and the equivalents in days at the right. The names placed at the extreme left (great cycle, cycle, etc.) are those adopted by Mr. Goodman for the respective orders:
(great cycles) (4) .... equal 11,520,000
cycles) (5) .... equal 720,000
(katuns) (19) .... equal 136,800
(ahuas) (13) .... equal 4,680
(chuens) (12) .... equal 240
(days) (8) .... equal 8
Total 12,381,728 days

That is to say, 4 great cycles (or 4 units of the sixth order or position) equal 11,520,000 days; 5 cycles (or 5 units of the fifth order) equal 720,000 days; 19 units of the fourth order known as katuns equal 136,000 days; 13 ahuas (or units of the third order) equal 4,680 days, and so on. The total amount expressed by this series is over 12,000,000 days. This is a large number to be handled by a pre-Columbian native, yet it can be demonstrated by actual count that the Maya scribe used this number correctly in a calculation.1

Having determined the numerical values of certain glyphs and characteristics it then remained for the authorities to determine how this numeration applied to the inscriptions found in the various temples and on the numerous stelae. Study along this line has led to the conclusion that the Mayas had a very complete and complicated system of recording dates.

Some students of the subject go so far as to say that all, or the greater part, of the inscriptions on the

ruins and stelae are chronological records.¹ This necessitates a study of the Mayan calendar systems.

During the early years of study in the field of Mayan chronology the scholars were at an absolute loss even after some considerable time had been expended in study for they would develop a theory that would seem possible and logical, yet when put to actual test would not work out, for a careful count of Mayan glyphs showed that the Mayas observed a solar year of 365 days, but when one of the longer series of dates, common to the stelae of Copan or Quiriguia, were reduced the theory would not hold at all. Certain outstanding events mentioned by the last of the Mayan priests and also by the early Spanish invaders, although given definite dates, could not be made to coincide with either the Christian or ancient Mayan calendars. Such an incident is the fall of Mayapan, one of the later cities told of by Landa, who declares that a family of Mexican extraction by the name of Cocam practiced such constantly growing oppressions that the various village chieftans at last rose against them and under the leadership of a powerful family, the Tutul Xiu, were overthrown. The central power thus being destroyed, the various chieftans fell to fighting among themselves and soon left the vicinity in chaos. This was

¹ See Maudsley, Biologia Centrali Americana, p. 16 and footnote number 1; Seler, E., Bureau of American Ethnology, Bull. 28, 1903, p. 337.
certainly an important event in the pre-Spanish history of Mayas for it represents the national reaction against a government supported by strangers. Important as this event was very little agreement as to when it actually happened could be found in the chronicles of native writers. According to Landa it took place about one hundred and twenty years before he wrote his Relaciones, or in the year 1436. Some of the native chroniclers support this date, while others place the fall of Mayapan as early as 1377 and 1397. Eduard Seler, through his reckonings, casts his lot with Landa. 1

The apparent confusion in dates remained a mystery until such men as Forstemann, Brinton, Seler, and Maudslay worked upon the belief that the Mayas came to use two calendars. 2

Maudslay terms these calendars the annual calendar, and the chronological calendar.

The division and purpose of the annual calendar will be dealt with first.

The early Spanish writers state that the Mayas divided the days in twenty-four shorter periods, but the day appears to be the shortest period of time reckoning made use of in

1 Ibid, p. 336.

Fig. 2-The Twenty Glyphs of the Days of the Months
the inscriptions. The Mayan years consisted uniformly of 365 days. They were divided regularly into 18 months of 20 days each, but as this would give only 360 days to the year (20 x 18 equals 360) it was necessary to add a supplemental month of five days following each eighteenth month in order to make the year coincide with the solar year.

The twenty days of the month are denoted by twenty glyphs, (figure 2). These signs are not constant however, but often have slight variations to suit the fancy of the particular scribe. Ahuah, the last day of the month, is to be noted particularly in this respect, for it is represented by a number of really different glyphs. The day glyphs do have one constant feature though, and that is that they are always surrounded by a border, or frame, when used to represent a day in a time-count series; they also have other significations, and are then used without the border. Another fairly constant feature is that these day symbols are placed on sort of a pedestal, consisting of two scrolls coiling outward from the sides of an indented centerpiece:¹

![Pedestal Diagram]

When a day meaning merely a period of twenty-four hours and not a particular day is indicated, none of the above

¹ Maudslay, *Biologia Centrali-Americana*, vol. 63, p. 16.
signs are used without some distinct variation. Kan seems to be a favorite symbol frequently used to denote a day, or days, but when so used it is never surrounded by a border and always has two opposed curves under it.

To each day in the calendar a numeral is attached that gives it an identity which, with the number of the day of the month it falls upon, distinguishes it from every other day of the same name, not only in the year but in fifty-two years, or a round of the calendar. The attached numerals, however, count only to thirteen, so that it takes one full count and seven on the next to enumerate the days in their calendar capacity. Thus, for example, the day of Ik 1 would fall in the month of Pop one time, and would be written Ik 1 Pop, or 1 Ik Pop; the next time that the day of Ik would occur in the month of Pop it would be distinguished from Ik 1 Pop by the numeral 4, which would replace the numeral 1 and we would have the day Ik 4 Pop, or 4 Ik Pop. Either manner of expression is used.  

The months of the Mayas consist of eighteen regular months totaling 360 days, thus leaving the Maya year five days short of the solar year. To take care of this difference there were five days added after the eighteenth month that were said to belong to no month at all and were called nameless days, or Uayeb. These days were held in superstitious awe because they are supposed to bring bad luck. No business

1 Maudslay, op. cit., p. 17.
Fig. 3-The Nineteen Glyphs of the Months of the Year
was transacted on any of these five days. If a child happened to be born on one of these days it was certain that bad luck and misfortune should attend him "all the days of his life". Anyone born on such an unfortunate day had only one consolation, and that was that the Mayan calendar was quite generously sprinkled, even throughout the regular months, with other unlucky days and so others were likely to be born under the same handicap.¹ (Fig. 3)

The year of the Mayas was 365 days long, and the actual solar year is 365 days, 5 hours, 48 minutes and 46 seconds so that it would seem that the excess would soon cause the Mayan time counts to be quite inaccurate in some of their longer time reckonings, but Landa assures us that they knew of this difference and added one day in every four years to take care of this variation.² Maudslay assures us that these extra days do not appear in the annual calendar or the chronological time counts.³

In connection with the year the features that allow the Maya calendar to return to the same day with the same distinguishing numeral once in each 52 years should be noted as the same law governs the chronological calendar, which, according to Maudslay, terminates with the Grand Era that

¹ Maudslay, op. cit.
² See references listed under footnote 2, p. 22.
³ Maudslay, op. cit., p. 19.
comprises 374,400 years, or 136,656,000 days. Maudslay admits that his calculations in these higher spheres are only theories that he entertains "respecting this point"; and that the "instances are not numerous enough or conclusive enough in my estimation to justify a claim of absolute proof for them". ¹ Their logicalness though, and their direct completion of each period to the day, seems to indicate that the Mayan scribes did understand such long sustained time counts, as they certainly had a sound basis for their accurate completion in their period of 52 years, or the calendar round. To use the example previously mentioned, the day Ik 1 Pop would not occur again until a period of 52 years had passed. This was due to their unusual arrangement of 18 months with 20 days being numbered from 1 to 14.

By this arrangement each day appeared four times in each 18 month period, and once in the 5 day month during the same time; therefore, by a matter of simple calculation we have:

18 months x 4 days = 72 times that a particular day would reoccur in the series of regular months, but each time with a different numeral, plus the one time that it would occur in the special 5 day month = 73 days x the 20 day signs = 1,460 days x the 13 numeral variations for each day = 18,980 days, or 52 years for one calendar round. Taking the formula developed above, without any descriptive detail, we have:

\[ 18 \times 4 = 72 + 1 = 73 \times 20 = 1,460 \times 13 = 18,980 \text{ days} \]

¹ Ibid., p. 20.
Fig. 4 - Mayan Chronological Glyphs
or fifty-two years.

The chronological calendar has been the cause of long and heated debates among those who have attempted to deal with the Maya records. It has been known that the Mayas reckoned time by ahuas, katuns, cycles, and great cycles, but the precise length of these periods has been the point of argument. Some of the various attempts at the establishment of the chronological calendar have been based upon a year of 365 days,\(^1\) of 260 days, and of 360 days.\(^2\) After Dr. Forstemann's work and that of Brinton and Maudslay, the 360 day year seems to be most favorably looked upon as the most likely choice upon which the chronological calendar is based. Quite apparently the Mayas left their annual calendar behind when dealing with extended time counts.\(^3\)

In the chronological calendar the first time period that we find is the chuen. It is coequal with the month, embracing 20 days, but these have no names or numbers, and the period has no specific place in the year. It is simply an abstract period. It occurs in nearly all dates and time reckonings of the inscriptions, usually in the following order: cycle, katun, ahua, chuen, and day. In initial dates it is usually by itself and represented by the glyphs in the top row of Fig.4.

\(^1\) Ibid., p. 21.

\(^2\) The latter two are mentioned by Brinton in his Primer of Mayan Hieroglyphics, p. 29.

\(^3\) Maudslay, op. cit., p. 21.
These are not the only glyphs used to represent this period, but they are the ones most common in the inscriptions.¹

The ahua is the 360 day period and is the real basis of the Maya chronological system. Everything proceeds by ahuas, till in succession the Katuns, cycles, great cycles, and grand era are formed from them. The ahua is the sum of the days in the regular 18 months and probably takes its name from the fact that it always begins with the day Ahua. The ahua symbol for this period of time is differentiated from the day sign for ahua in form, and it has no border. Numerous symbols are used; a few are presented in the second row from the top in Fig. 4.

The katun, the next higher position, is composed of 20 ahuas, or \(20 \times 360 = 7,200\) days. Some of the katun signs are presented in the third row of Fig. 4.

The cycle consists of 20 katuns, or 144,000 days, and is denoted by glyphs that have certain similar characteristics, but vary slightly. (See bottom row of Fig. 4)

The great cycle is composed of 13 cycles, or 1,872,000 days, according to Maudslay. The symbol below represents the 53rd great cycle:

¹ Maudslay, op. cit., p. 22.
The culmination of the Maya chronological calendar would be successfully completed in the grand era, composed of 73 great cycles, or 136,656,000 days which is equal to 374,400 years. It is in this period of 73 great cycles that the chronological calendar would complete itself just as the annual calendar goes back to its initial date in 52 years.

The idea of a Grand Era is rather new to the students of Mayan chronology and its existence is sometimes questioned, and further work will be necessary in this field to substantiate the theory which has been kept in harmony with the known facts.

The newest and most interesting feature in Maudslay's work is his pointing out of two heretofore undiscovered features in the common calendar round system of the Mayas as it is carried into the longer katun and cycle periods of the Mayan time counts. These two features are called the minor round and the grand round, and serve to strengthen the theory that the Mayas did know the plan of the Grand Era, and not just merely used it.

The minor round is based upon the figure 73. After 73 occurrences, and not until then, every period of the chronological calendar begins again with the same day of the same month, but with a different day number. This is the Minor Round. For example the period of twenty days, called the Chuen, once in each 73 years goes its round and again the Chuen count would begin with the same day of the month, but with a different day numeral from its preceding
round's first day. The table below will show the results for the other periods of the chronological calendar:

<table>
<thead>
<tr>
<th>Product of</th>
<th>Product</th>
<th>Value</th>
<th>Product of</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 x 20</td>
<td>Chuen</td>
<td>1,460</td>
<td>Luster</td>
<td>5</td>
</tr>
<tr>
<td>3 x 360</td>
<td>Ahua</td>
<td>26,280</td>
<td>Minor Ahua Round</td>
<td>72</td>
</tr>
<tr>
<td>3 x 7,200</td>
<td>Katun</td>
<td>525,600</td>
<td>Minor Katun Round</td>
<td>1,440</td>
</tr>
<tr>
<td>3 x 144,000</td>
<td>Cycle</td>
<td>10,512,000</td>
<td>Minor Cycle Round</td>
<td>28,800</td>
</tr>
<tr>
<td>3 x 1,872,000</td>
<td>Great Cycle</td>
<td>136,656,000</td>
<td>Great Cycle</td>
<td>374,000</td>
</tr>
</tbody>
</table>

Thirteen of these minor rounds, or 949 occurrences (73 x 13) constitutes a grand round and is based upon the fact that then the periods begin again, not only with the same day of the same month, but with the same day number. Thus explained by the following table.¹

¹ Maudslay, Biologia Centrali-Americana, p. 26027, charts and their explanation on these pages.
<table>
<thead>
<tr>
<th>Periods</th>
<th>Days</th>
<th>Years</th>
<th>Calendars</th>
</tr>
</thead>
<tbody>
<tr>
<td>949 Chuens</td>
<td>18,720</td>
<td>52</td>
<td>1</td>
</tr>
<tr>
<td>949 Ahuas</td>
<td>341,640</td>
<td>936</td>
<td>18</td>
</tr>
<tr>
<td>949 Katuns</td>
<td>6,832,800</td>
<td>18,720</td>
<td>360</td>
</tr>
<tr>
<td>949 Cycles</td>
<td>136,656,000</td>
<td>374,400</td>
<td>7,200</td>
</tr>
</tbody>
</table>

It will be seen, from these tables, that the cycle and great cycle periods could round themselves out in harmony with the law governing all the rest of the scheme only at the expiration of the Grand Era. It was the only period there could possibly be in which every element of both calendars would be an even divisor. The Mayans have been systematic and correct in their mathematical and chronological computations to an almost perfect degree; they laid the foundation of a calendar as accurate as the Julian, and it therefore seems possible to believe that the ancient Maya scribe did understand the magnificent reach of their chronological system even to the Grand Era, although the ruins of their civilization have not yet shown this to be true.¹

Before leaving this interesting subject it might be well to call attention to the perfect correlation between the Mayan system of numeration and their chronological count by comparing column IV of the above table with the figure on page 18.

The study of the Mayan inscriptions has brought to light the great mental capabilities and attainments of these people, for it would be somewhat difficult for even a mathematician of the present day to count back thousands of years and determine the exact month, day of the month, and day of the week, even with his decimal system and pen, ink, and paper. Yet the ancient Mayan scribes were able to accomplish this feat with the aid of their calendar and cumbersome vigesimal system.

Not only did the Mayas regulate their calendar by the sun, but they were able to predict the year periods of such planets as Venus, Jupiter, and the Moon. Venus is carved on temple fronts in conjunction with other constellations and their movements. All the various movements were also made to correlate with certain periods within their regular calendar systems, the priests arranging certain religious festivals at the regular periods when the planets returned.¹

They knew the North Star; measured the passage of time

at night by the Pleiades and Orion; named certain stars of
the Gemini constellation "the Tortise Stars"; spoke of comets
as "Smoking Stars"; and had names for the Milky Way. These
various facts are learned from a study of the ruins, particu-
larly the Round Tower at Chicen Itza, which shall be
mentioned again, and from the stories and fables of the
rather backward Indians still inhabiting the region.¹

The crowning astronomical achievement of the Mayas
was the construction of a zodiac which has been preserved
in one of the codices. This zodiac has thirteen parts,
instead of twelve as in our own arrangement, each sign
being an animal or bird or other object identified with a
constellation. In connection with this zodiac they used a
year of only 364 days divided into 13 parts of 28 days each.

The question naturally arises as to how they arrived
at such accurate conclusions without the aid of telescopes.
The scientific perfection is explained by two things; first,
the Mayas did have very accurate means of observation, and
the second factor is their precise records as to the events
of the various days extending over a period of a thousand
years or so. This inclusive record made it possible for
the Mayan astronomers to tell the exact number of days
between recurrences of any phenomena.

The method of observation used was to set up a crotch

¹ Brinton, A Primer of Mayan Hieroglyphics, pp.34-35.
in the darkened chamber of a temple and sight through the chamber door, or window, at the star. Another point on the line of sight was then noted, perhaps a mark on the horizon. Then the star again reached this same position they had its year very accurately marked.

The famous Round Tower of Chichen Itza (or the Caracol as it is called) appears to have been used as an observatory of this type. It has been discovered that three windows that remain in position on the second floor of the building give true west and true south lines on their diagonal lines of sight, and two other diagonals mark certain important phases of the moon. The true west observation furnishes the point of sunset at the vernal and autumnal equinoxes. Another shows the location of the moon at the time of the vernal equinox. The carefully formed window jams of the Round Tower must have been very precisely built into place after astronomical observations had been made to determine the proper angles at which the jams should be placed. Such observations played an important part in the ritualistic work and festivities of the Mayan priests, and probably aided the farmer in his planting and harvesting.\(^1\)

Although the Mayan systems of astronomy, mathematics, and time counts are fairly well ascertained much still remains to mystify the archaeologist as he gazes in fascination at wonderfully wrought stone tablets of carefully

\(^1\) Spinden, "Ancient Mayan Astronomy", \textit{Sci. Am.}, vol. 138, pp. 10-12
proportioned and arranged hieroglyphs, hieroglyphs containing a message that he would give fabulous sums to read. It is all there, not in black and white, but in stone, wood, and plaster.

The famous Rosetta Stone solved the mystery of Egyptian writing and gave mankind a new insight into a wonderfully brilliant old civilization. Is there an old "Rosetta Stone" explaining the ancient Mayan writing system lying buried among their ruins? If so, where? Who shall find it? The finder will surely be enrolled as a member of the Hall of Fame.

Is it not possible that some old Mayan priest learned Spanish and interpreted the writings of his people into that language? Or perhaps an early Catholic father fraternized with a Mayan priest; gaining from him the secrets of the glyphs. Further search may bring startling revelations.
CHAPTER III

THE BUILDINGS AND ARCHITECTURE OF THE MAYAS

The most impressive features of the early Mayan remains are undoubtedly the ruins of their great temples and cities of stone that caused the early Spanish invaders to gasp in astonishment, and today excite the wonder and admiration of all who view them.

In the limited scope of this paper it would be impossible to discuss the ruins of each of the numerous Mayan towns that dotted the regions inhabited by them, so the general plans and styles of buildings found in the various Mayan cities will be discussed.

The materials used in Mayan building construction were limestone, mortar, earth and small stones, wooden beams, and stucco.

The limestone used is quite common to Yucatan regions and is often found in large slabs that have been dissolved by the erosive work of many rivers. These great slabs were well suited to the needs of the Mayan builders who used them as a veneer for the outer surface of the buildings, for the Mayan architects did not, as a rule, use massive pieces of stone set one upon the other as is commonly believed.

The mortar used by the Mayas made their buildings essentially monolithic. It was made by burning the limestone into lime and then, after slaking, it was applied to the center masses of the walls which were composed of broken
Fig. 5.—Transverse section of a typical Yucatec building.

a. Lower wall with doorway.
b. Doorway.
c. Wooden lintels.
d. Communication doorway.
e. Inner face of arch.
f. Capstones of arch.
g. Lower string-course.
h. Decorated entablature.
i. Upper string-course.
j. Flying façade with ornament (sometimes added).
k. Cornice of last.
l. Roof-crest with ornament (sometimes substituted for j).
pieces of limestone and rubble. It also held the surface stones in place.

Wooden beams were used as door lintels. Usually two or three timbers were used over each doorway. One of the favorite woods used was the zapote.¹

In one case we find wooden beams used to support a roof. This was a roof of a second story room in the Square Tower at Palenque.²

The stucco was used as plaster for interior decorative wall designs, and also for filling in, or rounding out, any imperfections in the exterior stone workmanship.

The Mayan buildings can be properly divided into three structural components: The truncated pyramidal base upon which the temples were erected; the building proper; and the superstructure which was a decorative feature.

The style of construction is the same for both the base platforms and the main structure. The facing stones of limestone were smoothed on the outside and left rough-hewn and pointed on the inside. It is likely that these facing stones were held in place between forms, and the lime mortar and rubble filled in between. The facing stones were gripped securely by the internal mass and made the wall of monolithic staunchness. (Fig. 5)

¹ Spinden, H. J., Ancient Civilizations of Mexico, pp. 67-71.
² Joyce, Thomas A., Mexican Archaeology, p. 331.
The bases varied from low platforms that covered a large area and supported several pyramids, which in their turn served to uphold temples, to lofty, truncated pyramids supporting a single temple. The sides of the platform mound are sometimes given a steep slope, or are sometimes built vertically or nearly so, the latter style seeming to be a form characteristic of Yucatan. The pyramids are usually of the stepped variety, and the risers are set in at each succeeding elevation. The flat top of the pyramid was gained by ascending a flight of broad stairs running up the center of one of the faces from the ground to the top. Occasionally a pyramid has been found that had more than one flight of stairs. In such instances one of the flights was apparently considered to be the "front steps" for their decoration was much more intricate. Often these stairways were flanked by elaborately carved balustrades, such as the famous feathered serpents on one of the Chichen Itza mounds. The heads of the serpents are extended on the ground at the foot of the pyramid with the bodies extending to the top of the flight. The rises of the steps were often utilized to display a single row of glyphs. Practically all of the pyramids served as supports for buildings, but a few have been found

1 Ibid., p. 320

2 Balboa Park Museum, restored reproductions, and miniatures, and other valuable material studied by the writer on a trip to San Diego, Calif., Sept. 26-30, 1930.
that had no stairs and were used as burial mounds. For the most part the pyramids are rectangular in shape, but here again exceptions are found where the nature of the terrain selected for the temple site has made it necessary to vary the conventional form, though, because of the widespread distribution of the former, it was probably with a degree of reluctance that the ancient builders adopted the irregular form.

Excavation of some of the mounds has revealed a layer of cement at a considerable depth beneath the later face of the pyramid. This would seem to indicate that the mounds were sometimes enlarged, and the facing stones probably removed to decorate the new structure.

The form of the typical Mayan building was to a great extent conditioned by the fact that the architect was ignorant of the principle of the true arch. The walls, built very thick, were carried up to the desired height, and then the mason began to build inward at a very wide angle, allowing successive courses to overlap, until those on the opposite walls approached near enough for the space to be bridged by single slabs. Meanwhile the outer faces of the walls were carried up vertically, or at a slope, and the exterior of the roof was finished off flat, or with a

1 Joyce, op. cit., pp. 321-322.

2 Ibid., p. 321.

Examples of Maya buildings.

b. Multiple-chambered building.
c. The round tower at Chichen Itza (restored).
d. Building at Chichen Itza with sloping entablature of Palenque type.
e. Palenque type of temple.
f. The square tower at Palenque (restored).

(After Holmes)
very slight gable; see Fig. 6.

The distance between the spring of the vault and the apex was considerable, and this afforded an excellent place on the exterior face for ornamentation. This space, designated as the entablature, Fig. 5, h, is separated from the wall proper by a projecting cornice, Fig. 5, g, called string course. The entablature varies somewhat in design from one Mayan locality to another. For example, in Yucatan it is perpendicular, (Fig. 5, h) at Tikal and Menche it slopes slightly backward, while at Palenque it is quite pronounced.1

These variations are inessential, and it may be said that the Mayan structures were solid, box-like buildings whose vaulted-chamber construction limited the width of the rooms to a maximum width of ten feet, but placed no limitations upon its length.2 Even the more complex edifices are nothing more than an agglomeration of such chambers, and the type holds good for the entire Mayan region. The nature of the Mayan vault embodies the principle of the downward thrust of a load on over-stepping stones, and this thrust was often increased by the addition of a superstructure known as a roof comb. (Fig. 5, 1)3

The roof comb was not necessary to the strength of the

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2 Ibid.
3 Spinden, Ancient Civilizations of Mexico, p. 76.
building, but was usually an artistic decoration that served to give height to the structure. It was composed of two walls inclining slightly toward each other, and placed over the central mass of the building which it crowned. Sometimes it contained very narrow blind chambers. At Palenque where it attained its greatest artistic development it became a very light and airy structure, pierced with open work, and elaborately decorated with stucco reliefs. The Yucatan roof comb was often but a single vertical wall placed over the center of the building. This wall was sometimes moved to directly over the front wall and served to carry the entablature to a greater height. When so placed it was called a flying facade.¹

Probably the first variation from the temple with one rectangular room was the two-roomed structure with one chamber directly behind the other. In this case there were two vaulted compartments separated from each other by a common supporting wall pierced by one or more doorways. The inner room was naturally more dimly lighted than the outer, and, as a result, was modified into a sanctuary, or holy-of-holies, enhanced by sculptures and paintings. The exterior room gradually developed into a portico. The outer wall was cut by more and more doorways till only pier-like sections remained, and finally these piers were

¹ Joyce, op. cit., p. 326.
FIG. 7.—Ground-plans and elevations of Maya temples.

1. Single-chambered building (Fig. 75. a). 5. Temple "El Castillo" at Chichen Itza.
2. ... wall broken by doorways. 6. Temple of Palenque type (Fig. 77).
3. Two-chambered building. 7. Temple at Menché.
4. ... with circular columns. 8. Temple at Piedras Negras.
10. Temple at Copan. 11. Temple at Tikal with single chamber and hollow roof-crest.
replaced by square or round columns.\footnote{Joyce, op. cit., pp. 326-328.} The changed occurred very slowly and the tracing of this architectural development is one of the interesting studies in the stylistic field of Mayan research. (See Fig. 7.) One interesting method of adding to the complexity of one Mayan temple might be mentioned here.

The Temple of the Cross at Palenque has a specially-built cell, or small room, built into the large interior room of the temple. This tiny room has its own special doorway and roof, and served to enshrine the famous mural tablet of the Temple of the Cross.

The massiveness of the Mayan construction was extremely wasteful of space and we find that a computation of the Governor's Palace ground space shows that the building occupies approximately 325,000 cubic feet of space. About 200,000 cubic feet of this edifice is solid masonry, leaving only some 110,000 feet of chamber space. The mass of masonry is to the amount of chamber space as 40 is to 1.\footnote{Ibid., p. 326.}

The above described type of structure made it necessary for the Mayan engineers to confine themselves almost exclusively to buildings of but one story. However, there are two notable exceptions to this rule that merit special attention.

\footnote{Joyce, op. cit., pp. 326-328.}
\footnote{Ibid., p. 326.}
The first is the Round Tower, or Caracol, at Chichen Itza, see Fig. 6, c. This tower is of two stories and circular in shape, as the name implies. The towers are even more wasteful of space than the usual single story structure, for, as in the Round Tower, the second floor is constructed above a core of solid masonry and the larger first floor constructed around this central mass. The architect of this building seems to have taken one step in advance of the usual Mayan developments for a spiralling, narrow, flight of stairs, built around the central supporting core gives, access to the second floor. The probable use of this building was discussed in a previous chapter, (see page 32). The rooms in the Caracol were vaulted after the usual style.¹

The Square Tower, (see Fig. 6, f) is architecturally superior to the Caracol in several respects. In the first place the Square Tower has three stories with two intermediate "blind" stories. That is, between the first and second floor there is a room of dungeon-like darkness that has no openings to the outside. A similar story is found between the second and third floor. These two blind stories do not have as great height as the three regular stories. The Round Tower has vaulted rooms, and the second room is of considerably less diameter than the first floor, but in the Square Tower the same diameter is maintained throughout.

The Mayan architects had at last learned the secret of supporting one wall upon another. The upper stories in the Palenque tower were reached by a narrow flight of stairs that was built into an otherwise solid, square, core of masonry that ran from the ground through to the top of the building. The importance of this core can be realized when it is discovered that it is not only used as a shaft for enclosing the stairs, but that it supports the inner end of the beams that brace the ceiling in place of the usual over-stepping stone, vaulted construction.

A three story building at Santa Rosa Xlabpak, from a structural standpoint, embraces the engineering practices used in both the Square and Round Towers. The ground floor is constructed with a "T" shaped core of solid masonry, around which are grouped twenty rooms. The core maintains its same shape through the second floor, but is diminished in size. This story is composed of just one half as many rooms. Most of them are constructed over the solid core of the lower story, but some of the outside rooms are supported upon the walls of the rooms below. There are five rooms on the third floor. The large main room of this floor is flanked on either side by two smaller rooms; the outer walls of these minor rooms are supported by walls of second story rooms, while the large central room and the inner walls of the flanking room are built above the solid core. The upper floors are reached by a wide flight of stairs built up the outside of the front facade.
The complexity of this thirty-five room building undoubtedly marks the edifice as belonging to the later Mayan period of construction.

As stated above, the Mayan buildings were faced with a veneer of stone blocks on the exterior surface; these were usually cut away behind so that they were securely held by the mortar of the central mass. This style of construction lent itself admirably to the development of elaborate mosaic designs. These designs fall roughly into two classes; geometrical patterns, and grotesque representations of the human face, and elaborated serpent's face. The "mask panels" were constructed to fit rectangular sections of the entablature. In some instances the nose of the face was extended to trunk-like proportions that gave the entablature a hat-rack appearance.2 The geometrical designs seem to be based upon the textile art. One of the favorite motifs is a lattice work broken by narrow mask panels that extend entirely around the building. The geometric designs could be made with stones of like size and were therefore often more easily made than the mask panels, but in most cases it was necessary to carve each stone to fit the particular space that it was to occupy. This fact not only bears witness to the vast amount of patient labor, but also implies

1 Spinden, Memoirs of the Peabody Museum, vol. 6, pp. 102-105. (From page 43)
2 Spinden, op. cit., pp. 116-127.
that the architect was working in accordance with a definite plan prepared beforehand.¹

The majority of mask panels present a direct front view, but sometimes the sides of doorways were used to display a profile of the characters of the mask panels.

The mortar, besides being used in great quantities to hold the central masses of the edifice together, was also used to fill out any imperfections in the stone work, and was extensively used for modelled decoration at certain sites, notably Palenque. The hardness of the limestone in this section made it difficult to work with such tools as the Mayas possessed, and so they developed the use of stucco in both low and high relief. If a god, or any other piece, is done in low relief, then the stucco alone is modelled into shape, but if high relief is deemed necessary to give the desired prominence to a figure, a regular skeleton of lime stone blocks is prepared and the stucco shaped to the desired form over the limestone. Relief work was used for embellishment on both the exterior and interior of their buildings.

Color formed an important aid to Mayan ornament, and was frequently applied to stone carvings. Many reliefs on interior walls still show traces of color, and it must be remembered that if the ancient stucco-workers did cover

¹ Ibid., pp. 127-129.
some beautiful work with gaudy colors, the addition of the pigments would aid to bring out the details of their complicated designs.\(^1\)

The use of color in building decoration did not cease with the coloring of reliefs, but fresco designs in a variety of hues were quite commonly applied to the interior walls of their buildings. The graceful and flowing lines of the frescoes prove that the Maya was no mean artist with the brush. The common subjects of the fresco designs are human, or divine, figures, animals, scrolls, flowers, leaves, and glyphs done in blues, reds, yellows, dark brown, pink, grey and black.\(^2\)

The frescoes and stucco designs will be discussed in greater detail in the following chapter on the art of the Mayas. It was of course necessary to mention it here to convey a more complete picture of the beauty and plan of the Mayan buildings.

This chapter could not be properly brought to a close without the mention of a type of structure that was a truly remarkable piece of work, though not common to the lands of the Maya, the ballcourt, or Tlachtli field. Several of these are found in the Mayan country that come under Mexican influence during the Toltec Period. The most notable court is situated at Chichen Itza.

\(^1\) Ibid. p. 131-132.

This Tlachtli field was composed of two massive parallel stone walls 119 feet apart, 28 feet high, 39 feet thick at the base, and 272 feet long. A beautiful temple stood at each open end. In the middle of each wall, 24 feet above the level of the court's surface and directly opposite each other, is a stone ring. The rings are some 4 feet in diameter, 11 inches in thickness, and the diameter of the hole is 18 inches. The rings are beautifully carved with entwining feathered serpents.

The game played on this court was somewhat akin to our modern game of basketball. Two opposing teams of men attempted to throw a solid rubber ball through the hole in the ring. This was perpendicular to the wall.

The immense size of the bounding walls undoubtedly led to their use as a grandstand. The comparatively small temples at the ends of the court were probably stands for the priests and nobles.

This court, fully as large as a good sized football field, was paved with carefully laid and leveled stones.\(^1\) One can easily let his imagination run back to the time when the court walls were thronged with an interested and colorful group of spectators each cheering enthusiastically for his favorite team or player.

With this discussion of typical Mayan building con-

struction and those that show some particular architectural advancement, or peculiarity, we shall leave this chapter and travel on into a field which has already been slightly touched upon.
Chapter IV

The art of the Mayas

The art of the Mayas was unquestionably a development of a religion that was devoted to the service of the gods. The temples were the sanctuaries of the divinities, the resorts of their mortal servitors, the conjuring places of a numerous priesthood, where the gods were consulted and invoked. Here the people were allowed to gather on festive occasions to take part in elaborate ceremonies that made them realize the power and glory of the gods, thus insuring their willing subjection to the temporal powers. Once again do we see the attempt to rulers to demand the subservience of their people through the combining of their religious and social affiliations. This must be kept in mind during any discussion of Mayan art, for only through such a combination could men be imbued with enough spirit to willingly contribute the wonderful and laborious toil needed to build a civilization the equal of the Maya, if their crude tools were used.

In dealing with art it is difficult to determine what type of orderly sequence should be followed, for it would be easy to describe such magnificent carvings as the justly famous Great Dragon of Quirigua, or some of the stelae of the various regions in the fields of Mayan art, but instead we shall attempt to glimpse the subject as a whole by touch-
ing upon objects that are common to the areas of the Mayas.

As their treatment of the human figure has already been touched upon in connection with their frescoes and modeling with mortar, it will probably be well to deal first with Mayan art as expressed in their stelae, for the human figure is usually the basis for these carved stone columns.¹

The stelae are, in general, huge monolithic monuments, square in shape, sometimes reaching a height of 34 feet. The dimensions of the flat sides often run to 4 or 5 feet in breadth.²

It is marvelous that the Mayan engineers were even able to haul these giant stone masses into place and then to set them upright. Some of them, for example those of Quirigua, were hauled a distance of three miles. Such a task as this would try the skill of modern engineers and engines, yet the ancient Mayas did accomplish such things, not once, but many times, dragging or carrying these large stones across a marshy valley.

The front and back surfaces were carved with human figures in relief, and glyphic inscriptions covered the two sides.³

¹ Corlett, D. S., "The art of the Mayas", *Art and Archaeology*, vol. 18, pp. 143-147.
² Lummis, Chas, F., "Where Stones Come to Life." *Art and Archaeology*, vol. 6, pp. 256-259.
³ Ibid.
The human figures were highly ornamented, and seldom served as ends in themselves, but were seemingly engaged in religious ceremonies and acts of adoration, if they were not the representation of some god. They were clothed in richly woven fabrics. Sometimes the clothing consisted of a wrap of material over the hips, and again of a long cloak falling from the shoulders to the knees. Their headdresses are usually elaborate, especially if of the feathered type. It is evident that the feathered headdress was one of the favorite modes of decoration, for many be-feathered figures appear in Mayan art. The feathers are wonderfully carved and fall with graceful sweep to the waist of the figure.

A religious procession must have been a colorful sight with all the gaily tinted feathered headdresses of the priests, bobbing in unison as they marched along to the beat of drums.

The feathers were so arranged on the steleae that they artistically filled in any spot that might otherwise have marred the balance of the surface.

The steleae carvings also show that ear plugs, and sometimes nose plugs, were a part of the Mayan costume.

The short skirt, hanging from the waist to the knee, was usually woven with varied and intricate designs. The upper edge was of heavier material and often set with designs in shell, stone, and metal. The scarcity of metal, however, made such decoration rather unusual.
Over this skirt an apron of a decorative sort was sometimes worn. In most instances this apron was based upon a woven background with braids ending in multicolored tassels hanging from the girdle. Small stones carved with faces serve as pendants. Groups of three shells are suspended to project out over the rest of the apron. The bottoms of the aprons were also decorated with plumes and braid, or tassels.

A large necklace and breast ornaments of bone, carved stones, and braid hang about the neck and shoulders.

The leg below the knee was often encircled with a woven band from which hung the usual array of braid and plumes. The feet were sandaled. From just above the calf to the ankle the leg was sometimes covered with a very open interlacing of strips of cloth or bark thongs.

The wrists were decorated with bracelets, sometimes woven, and sometimes made of bone, stone, or shell.¹

The raised hands held either the so-called ceremonial bar, or manikin, scepter. The use of the ceremonial bar is unknown. It was commonly held horizontally in the arms of the priest-like figure, and is composed of a double-headed serpent with a flexible, drooping body. In the wide-open jaws of each serpent may be seen a human or grotesque face.

¹ Baler, Teobert, Legends of the Peabody Museum, vol. 2, pp. 46-51 and plates XLI to XXIX.
The ceremonial bar underwent all kinds of changes in decoration from the most simple to the highly elaborated and conventionalized. ¹

The banikin scepter is, as the name implies, a small, grotesque figure held in the hand of the priest, or ruler. A flexible appendage in the form of a snake serves as a handle. The little figure is commonly given a long, overhanging upper jaw, and short under jaw. From the upper jaw protrudes a most ugly, fang-like tooth. The grotesqueness seems to convey the idea that the figure is supposed to be a serpentine character.²

The arrangement of the figures of the stelae were not always the same. The most common view is that of a standing figure from the full face view, but we find numerous variations. Profile presentations occur of single persons, and of two persons facing each other.

Some figures are kneeling as though offering a gift to the gods, others sit Indah-fasion with their ornamental aprons falling in front of their crossed legs.³

An interesting discovery has been made concerning the comparison of the full face figures shown on the front and back surfaces of some of the stelae.

¹ Spinden, Memoirs of the Peabody Museum, vol. 3, pp. 49-50
² Ibid., pp. 50-51.
³ Ibid., pp. 24-31, and later, Memoirs of the Peabody Museum, vol. 2, plates III to IIIX.
The god on the front plate presents a face of calmness and serenity, while the face on the opposite side of the monolith may be of a decidedly malignant cast. The gracious face of the goddess of Rain and Growth is perhaps backed by the dower aspect of Drouth and Famine.¹

A peculiar idea, but certainly a deterrent for a case of hyper-optimism.

The development of the artistic abilities of the Mayas should be touched upon, for the type of art expressed in their stelae is practically the same as that used in their sculptured and frescoed mural work. By far the greatest part of their presentations are of a religious nature, but some carvings are found that present a battle-scene, or the surrender of captives, and occasionally a purely domestic scene is presented. In the latter case it is probably some affair of a ruler or outstanding person that is depicted.

In the matter of perspective the Mayas greatly excelled the Egyptians, since they became sufficiently skilled to draw the entire body in pure profile, besides representing the legs and feet with ease and precision in a variety of sitting and reclining postures. For anyone interested, it would be thoroughly worth while to study the seated figure done in profile, a drawing of which can be found in the Memoirs of the Peabody Museum, vol. 6, p.27, Fig. 14. There is a decidedly esthetic beauty in its simplicity.

In this presentation from Palenque the figure is lightly and plainly clothed, and the profile work is perfect, but in the more ornate works where the body is covered with braided breast ornaments and heavy drapery the difficulties of foreshortening all the details were sometimes beyond the skill of the artists. "In all fairness it must be stated that the difficulty with this detail seems to have been overcome on other monuments at Palenque."

There are few departures in Mayan art from the full face view or the profile, but the departures that do exist are usually free and easy, with very little distortion due to lack of proper foreshortening and perspective. A low relief composition that occurs on a lintel at Yaxchilan pictures two warriors bending over and grasping two partially fallen captives. There is none of the awkwardness of perspective in this scene that is so common in Egyptian work of a like nature. The figure of the warrior on the left presents the profile of his face, while his body is partially turned, about one quarter, forward. The left hand is apparently grasping a device carved upon the wall that serves as a background for the scene, and, although the back of his hand is turned outward, as is also the back of the right, there is no unnaturalness about the turn of the hand, arm, or shoulders."

1 Spinden, "Maya Art", Memoirs of the Peabody Museum, vol. 6, p. 27

2 Ibid., p. 29
The Egyptian or Assyrian never reached the degree of expertise attained by the Mayas in this respect. Although in large groups the Mayas did not give consideration to perspective.

With the exception of the grotesque figures there seemed to be very little in the way of expression that the Mayas tried, although in the few cases where expression is sought, the work is done so well that it is quite likely that the Mayas preferred to deal in generalities rather than with individuals. A very good characterization is found on one side of the doorway to the shrine of the Temple of the Cross at Palenque where an old man is pictured smoking a pipe. The thin lips, stooped back, and prominent facial boney of old age are unmistakably presented.\(^1\)

The composition of the Maya artists shows careful balance in all their works. The favorite type of composition seems to be built upon the pyramidal form. If a single figure is used in an inscription, glyphs, rankin-tars, clothing, feathers, or other objects are grouped around the figure in such a way that the bottom will have the necessary "weight"; diminishing to an apex at the upper edge of the inscription. The tablets of the Palenque Temple of the Cross use the cross as the center of the tablet, flanked by attendant priests of different sizes. To off-

\(^1\) Haudsley, "Biologia Centrali-Americana," *Archaeology Atlas* IV, plate 70.
set this difference blocks of glyphs have been employed to make up for the lack.  ¹

In the tablet of the Foliated Cross it is interesting to note that the figures of the priests are standing upon the backs of small figures. The human pedestal, of the larger priest on the right, has his knees drawn tightly under his body and his stomach parallel to, and almost touching the frame of the tablet, while the smaller priestly figure, on the left, is supported by a figure which is resting upon its hands and knees with its body in a nearly-upright position. This brings the head of the smaller priest to the same level as that of his larger companion, thus preserving the balance, and at the same time, by means of the small crouching figures, gives weight to the bottom of the tablet.² On a stucco panel in House A, also at Palenque, the single central figure has a feather headdress that falls gracefully behind him. To give the proper balance the figure holds a ceremonial staff in an almost upright position and allows the feathers of the staff to fall in front of him.

¹ Ibid., plates 76, 81, and 86.
² Ibid., plate, 83.
The staff gracefully, and cleverly, equals the "weight" of the priestly-headress. Such original and clever composition is worthy of admiration.

Next to the human figure the object that received the greatest amount of attention and development from the Maya artists was undoubtedly the serpent. Representations of the rattlesnake are found in numerous aspects, from serving as gigantic stone balustrades for large flights of pyramidal stairs, to a decorative motif used to fill in.

The religious and social influence of the serpent in the civilization of the Mayas will receive fuller treatment in a later chapter, and so here it will be dealt with as a very prominent feature in Mayan art. Suffice it to say that it probably received its original impetus from the fact that it was deeply rooted in the religious annals of the Mayas, but later it proved to contain such possibilities that its continued use served more for artistic beauty than for religious significance. As the state of culture of the Mayas advanced they probably gave the snake more anthropomorphic qualities. The way to express this idealization of the reptile was to give him the same ornaments that man wore, so we find the snake being given a headdress of feathers and also nose plugs. These decorations could add many more sinuous curves, and

1 Ibid., plates, 311.
added even more to the strength of the reptilian element.

With the continued development of Mayan civilization it
became necessary to give the serpent a yet stronger ant-
thropomorphic representation, for by this time the reptile
form had come to represent the idea of the greatest god,
or perhaps all the gods and not merely a single god. The
tail-like quality was expressed by means of placing a pro-
truding head, and sometimes a hand, in the mouth of the
serpent. This change in the graphic representation of
the serpent was due to a change in idealization. Other ch-
anges followed.¹

As the Mayan artist learned how adaptable the supple
form of the snake was to graceful art expressions, he be-
gan to embellish it with all manner of designs to repre-
sent scales. The larger scales were finally used only un-
on the under side of the snake, while small scales denot-
ed the back. As the embellishment increased the serpent
presentations became so complex that it became necessary
to eliminate certain needless detail, and the reptilian
likenesses became highly conventionalized; and in this for-
they spread to all territory occupied by the Mayas. It be-
came so predominant that it imparts that characteristic
Mayan touch to all their works of art.

6, pp. 34-35.
Wherever the serpent occurs it is always bound to have as prominent parts of its makeup eyes, fangs, an open mouth, and a darting "tongue."  

So great did the elaboration of the serpent become that one unfamiliar with the subject would probably not be able to recognize some of the most prominent forms as being at all adapted from, or related to, the serpent.

The Nayas also used other animals and birds. The jaguar was a close associate of the snake in Mayan art, and in some of the more grotesque forms we find characteristics of the two combined to form double and single headed dragons with clawed forefoot. The quetzal bird often, under the guidance of the Mayan artist, gave the feather designs of his plumage as decoration to the snake. The bird was only paying the debt he owed to one who had been his forefather millions of years previously. Too bad he did not realize that he was making good his debt.

As the material arts of the Mayas have been dealt with in the preceding chapter and in the first part of the immediate one, attention will now be given to their minor arts.

The first to receive attention will be ceramics.

In portions of the New World having the highest culture

1 Ibid., pp. 41-49.
2 Ibid., p. 34.
ceramics often harks to the importance of a major art, and, though finely developed in the Layun area, it sinks into comparative insignificance in view of the sculptured monuments.

The pottery remains found in the Layun region vary from huge oil-like jars to figurines, whistles, tiny animals, moulds, stamps, etc. The wide distribution of certain forms would tend to indicate a method of commercial production and sale.

The Layun potter shaped his pieces with his hands and not with the potter's wheel, although he did set his work upon a flat stone that could be turned to make his work more accessible, but centrifugal force was not used in producing the desired form.¹

The Layas used considerable quantities of course, undecorated, heavy pottery for household purposes. The bowls were usually of black or red color, with flat bottoms and flaring sides. The black color was obtained by firing the vessel in a smothered fire, while the red is produced by baking the piece in an open fire. The American Indians of the pueblo groups use these same methods of obtaining the desired color to this day. This pottery will not be dealt with further, for it does not contain the artistic element present in the potteries used for

¹ Spinden, op. cit., p. 154.
ceremonial and religious functions.

The same types of decoration are used to beautify the pottery that decorated the Upan buildings. The gods, warriors, animal figures, jaguars, avian birds, serpents, plants, geometric designs, and glyphs are all used in glorious array.

Incised pottery made of a fine black or red paste is very wide-spread. Generally the designs are geometric patterns, or simplified hieroglyphs, incised in the soft clay with a sharp instrument. This incised work is carried to a very beautiful degree of artistry by cutting away the background of an elaborate drawing, thus bringing the drawing into relief.¹

A remarkable bowl with this style of decoration is now in possession of the Peabody Museum and show a jaguar upon a background of incised cross lines, with a scarf tied about his neck. The Jaguar's spots were represented in black paint which has now largely disappeared. The sunken background still retains traces of red imbeded in the incisions.

This incised method was used in another way to give a rather pleasant effect. The surfaces of a vessel that were to be cut were coated with a fine white or black sizing.

The pottery then appears to have been burned. After cooling, the outline of the design was incised with a tool, and the background cut away. This left the more or less polished design in black, or white, on a background of red.

Vessels and potsherds having realistic designs, modeled in relief, have been found to be quite common. The designs and figures that decorate this class of pottery are laid on, or built up. Bands, circular strips, flat pieces, and modules of clay are arranged on the sides and rim of an ordinary vessel and modeled to the desired shape while the clay is still wet. After firing, the modeled projections remain attached as though they were an integral part of the vessel.

Pottery vessels made in various natural forms are frequently found. A remarkable example is a vase in the form of a jaguar head. The widely spread jaws of which form the opening, while the under jaw forms one side, with the top of the head and upper jaw of the vessel forming the other side. A tripod vase with the body modified into a bird and a human face seen in the bird's open mouth was excavated at Copan. Gourd-shaped pots are sometimes found.¹

There are numerous kinds of painted pottery.

The coarse household vessels were often painted with crude animal and geometric designs. One fine red ware was painted in black and white.

The most exquisite of pottery in the Mayan area was the polychrome ware. The paste is very smooth and of light weight, so glossy is the surface that it has the appearance of lacquer ware, but this glossy surface is really polished, for the Mayan pottery workers did not know the method of glazing. The lustrous finish is imparted by the use of permanent, very rich colors of black, and various shades of red, yellow, orange, and brown. The background was sometimes made of red, or red-orange, sizing.

An excellent example of this polychrome ware is discussed completely by Seler, Dieseldorff, and Forstemann, not only from the artistic standpoint, but also because of the probable significance of the picture, in beautiful colors, upon its sides.

"The vase is cylindrical; 23.5 centimeters in height; its diameter is 14.8 centimeters at the top and bottom; while the sides are 4 millimeters, and the bottom 5 millimeters, thick."²

The picture presents a group of seven persons, all


² Dieseldorff, op. cit., p. 639.
in elaborate costume, united in a common action. The costumes are typically Maya, and show the participants to be of more than ordinary rank politically or socially. Two of the figures are done in black, while the remainder are done in a sort of brownish-tan color. All figures are standing, with the exception of one person who is kneeling upon the right knee. The various dresses are done in different shades of red, black, and white. Glyphs in red and white are scattered about the picture, while the whole is framed in a black and white border of striking geometric design. ¹ It is certainly a most interesting picture and has caused much discussion, particularly among German students, as to its possible meaning.

Small clay figurines are quite widely spread over all portions of Maya territory. Both human and animal figures are presented; these tiny figures may have been used as household gods or charms. Numbers of small, clay animal figures were made to serve as three or four note whistles.²

Jadeite and other semi-precious stones were much used among the Mayas for beads, amulets, ear and nose


plugs, and other carved objects whose use is unknown.

The use of jadeite caused a long and heated debate among the two early schools of Mayan archaeology who were divided upon the question as to whether the Mayan civilization was developed upon the American continent, or transplanted from some more ancient European or Asiatic civilization. The former school's acceptance of an exclusive American origin and development now seems to be the most properly substantiated theory. For a time the latter group of scientists claimed an Oriental origin for the Mayas; basing such claims upon the belief that such jade as the Mayas used was found only in some portions of China. Careful chemical analysis of jadeite from the various sections of the territory of the Mayas shows that the composition differs considerably from the Chinese jade.¹

The most interesting of the jadeite ornaments are the amulets. They vary in size from rather small triangular shaped pieces to oblong, rectangular slabs some four inches long and two inches across. The front side is usually covered with a face carved in relief, while the back shows a number of hieroglyphs incised on the weather-beaten surface. The fact that the reverse sides of the

amulets show weather stains would soon to indicate that the pieces of jadeite found by these early jewelers was probably rather small. A hole was drilled near the top and center to allow the ornament to be suspended upon a string. Sometimes other holes were drilled into the sides at various angles; probably so that feathers could be placed in them when the place was being worn for some of the numerous Mayan festivals.

When jadeite was used for ear and nose plugs it was also carved, but invariably with simple geometric designs.

Jadeite was a favorite stone for beads. Burial mounds at Copan revealed a number of strings of alternately strung cylindrical and gloular jadeite beads.¹

Vessels of marble and alabaster are occasionally found that show wonderful workmanship and are usually of a bowl-shaped design. A grotesque head protruding from either side serves for the handles of the bowl taken from the Uloa region.² The calcite is of a translucent variety, with the walls cut to one eighth of an inch thickness, and not showing a single tool.

mark. The bowl rests upon a rim about three quarters of an inch in depth. Other specimens that have been found vary little in respect to form and decoration. ¹ Short scrolls carved in low, but rounded relief, with a geometric border around the rim of the vessels form the decorative motifs. Sometimes the rim-like base is cut clear through so that a stone design of face-like fineness remains. Marble fragments show that other styles of jars were made from similar materials. Much more could be said on this particular phase of Mayan art, but it is necessary to go on.²

The Mayan area does not seem to contain many metals, because of its geological youthfulness.

A few small trinkets of gold, silver, copper, and various combinations of gold and jadeite have been found that show that the Mayan workman was skillful in this line of endeavor.

The most widespread object of metal is the bell, which is similar to the common sleigh bell. Such bells of copper have been found in the High Priest's grave at Chichen Itza, and a few gold bells have been found scattered over Mayan territory.³ The decoration of

¹ Ibid., pp. 25 and 46.
² Ibid., p. 26 and plate XXXI, e and f.
these objects was accomplished by cementing designs, formed from gold or copper wire, to the sides of the bell with some kind of metallic cement. Valentine speaks of copper chisels, knives, and axes occurring in Yucatan, but takes the statement of Spaniards who visited the country with Cortez, so it is quite probable that these tools were gotten through trade with the Mexicans who were very proficient in the use of this metal. 1

Gold and copper trinkets built up of wire filigree have been found in Mayan territory, and are very graceful in form and design, but from the writing of Valentine, referred to above, it is probable that the minerals used came from Mexico, thus explaining the scarcity of metal objects of art.

The Mayas so remarkably developed their weaving that textile manufacturing certainly should be mentioned in this chapter. Of course the perishable quality of cloth precludes many pieces or examples of dress being preserved in the Mayan ruins and so we have to study their textile achievements from the various depictions of cloth, and its uses, found in their sculpturing,

1 Valentine, Ph. J. J., "Mexican Copper Tools", American Antiquarian Society Proceedings, no. 73, April 30, 1879, pp. 81-112.
painting, and codices. The clothing that covered the hips and waist of the body have already been discussed earlier in this chapter, and so now attention will be turned towards two different styles of capes.

The first is a blanket-like cape that falls from the shoulders to the heels of its wearer. The most elaborate textile designs are found at their best on these capes. Based upon geometric designs, they appear upon the garment in horizontal, diagonal, perpendicular, and "all-over" patterns. Very often the border of the bottom is differentiated from the design on the remainder of the blanket. Fringes and tassels add grace and color to many of the borders. The other style of cape is much like the large one described above, but falls only to the waist line.¹

The women wore a long loose-fitting, sack-like garment that hung from the shoulders to the ground. The front was embroidered with floral and geometric designs. The same motif was also carried around the bottom to form a border.² In some instances, when the weather permitted, the women wore a skirt that covered only the lower portion of the body, the upper part remaining nude.

It would seem that the skirt was a part of every woman’s attire and that the mantles described were used as an added protection against severe weather. The skirts were very elaborately decorated and designs after the fashion of the mantles.¹

Apparently all classes used the same style of garments, but those of the upper class were of more costly material. Landa speaks of a beautiful red feather cloak worn by a priest to a ceremony of infant baptism.²

The Mayas undoubtedly considered their tattooing as one of their arts, as do other civilized peoples. We can not be sure as to the exact extent that the Mayas tattooed their bodies for we find very few examples of it in their stone work, probably because of the difficulty of properly presenting it in such hard material, and because many needless details were eliminated in the carved presentations. Most of the tattooing centered around the mouth where dots, and straight and curved bars, form simple designs at either side of the mouth; in this fashion:³

¹ Schellhas, op. cit., pp. 609 and 610.
² Ibid., p. 602.
³ Ibid., p. 600 and fig. 116.
The Havas often represented their god of death with the lower jawbone, studded with a few teeth, very prominently displayed. This idea was carried out in the tattooing of the vicinity of the mouth to impart a terrible aspect. The following sketch will reveal the general idea and arrangement. The jawbone and teeth were often used by the Havas in their presentation of a death's head.\(^1\)

![Sketch of a death's head]

The religion of the Havas can safely be given the credit of being the principal motivating force that led this ingenious race of men to develop their arts and building to such a remarkable extent, but to produce such love of art for the sake of beauty, shows as well as anything else that the Havas were surely attaining a high degree of culture when their civilization so mysteriously came to an end.

\(^1\) Ibid., p. 601 and Id., 110, p. 300.
Chapter V.

Religion of the Mayas

Perhaps no other field of man's endeavor has been of such a controversial nature as religion. As this statement is applicable to modern religions it is more surely true of a religion whose adherents have lost their place in the world as an organized society.

The Mayan religion is no exception, and we find marked variance between such authorities as Brinton, Spinden, Schellhas, Forstemann, and Joyce. However, they do agree on the fundamentals, and this paper will select the details for treatment that seem the best substantiated.

It would also be pleasant to let one's mind run from the paths of plain fact to those of philosophical conjecture, for by viewing the philosophy of a race as expressed by their religion one is able to view more intimately the desires and aspirations of a social group that may be rather difficult to understand when judged only upon their physical accomplishments.

To gain an adequate view of the Mayan religion it is necessary to base our study not only upon their architectural remains and inscriptions, but also upon the four codices, Troanus, Cortesianus, Peresianus, and Dresdenis which are described on pages 13 & 14.

The contents of the four manuscripts, which undoubtedly pertains to the calendar system and to the computation of
time in their relation to the Mayan pantheon, and to certain religious and domestic functions, admit of the conclusion, that these figures of gods embody the essential part of the Mayan religious conceptions in a fairly complete form. For here we have the entire ritual year, the whole chronology with its mythological relations and all accessories.

Their religion was a polytheism, but the principal deities were few in number, fifteen, with approximately the same number of animals of mythological importance.¹

The spirit of this religion was dualistic, the gods of life and light, of the sun and day, of birth and food, of fertilizing showers and cultivated fields, being placed in contrast to those of misfortune and pain, of pestilence and famine, of blight and night, darkness and death.

Two interesting depictions throw light upon the cosmical conceptions of the Mayas.

One occurs in the History of Yucatan, by Father Cogolludo, and presents a tree based upon a cubical block as the central figures of the design. The entire drawing is surrounded by a border of thirteen heads which signify the thirteen katunes, or greater cycles of years, see pages following. The number of heads is symbolic of the thirteen parts into which space can be divided. The design within, therefore, depicts Life within Space and Time. Within, and on the bottom

Fig. 8-The Tree of Life or
The Universe According to the Mayas

Tam = Earth, or Alter.
Cum = Heavenly Vessel of Rains, etc.
Che = The Tree of Life.
Yol = The Blossoms—the Immortal Soul of Man.
Mual = The Clouds that cause Life-giving Rains.
Fig. 9-The Adam and Eve of the Mayas
side of, the border is a cubical block, which, according to Mayan mythological conceptions, is the shape of the earth. Above the earth-cube rests a flat vase supported upon four legs. The four legs of the vase are placed so that one leg falls in each of the four quarters of the mundane plane.

The vase is symbolic of the heavens and contains the heavenly waters, the rains, the showers, upon which all vegetation and animal life is dependent. From the bowl grows the Tree of Life, on the extremities of whose branches blossoms the flowers or fruit of life, the soul or immortal principle of man. Above the tree and vase hang heavy rain clouds ready to fill the vessel.¹ See figure 8 (plate here of the tree of life.)

The second attempt of the Mayas to picture life's beginning occurs in the Cortesian Codex where we find a design upon a field divided into the four cardinal points of the compass represented by their appropriate gods.

The central portion of the design is surrounded by the signs of the twenty day glyphs. Inside the border we find the god Kukulcan and goddess Xmucane, the Grandfather and Grandmother of the race, who give reproduction—life. They are seated under the tree of life, and the celestial vessel is in its branches. Clouds hang over all,² see fig. 9.

After death the spirit descended to the realm of Xibalba (sometimes spelled Xibalba) "the one Lord", so called because the spirits of all must first visit his Hades where there good and

¹ Brinton, Primer of Mayan Hieroglyphics, pp. 46-49.
² Ibid., pp. 49-50.
evil deeds are judged. In the underworld one was forced to do penance in a world of cold and hunger for all his evil deeds; having completed his atonement his soul passed on to the heaven of joy where he would live under a great green tree with plenty of food and warm weather. One would rather suspect that the Maya reveals his indolent nature in his conception of heaven. After a long period of time was spent in the realm of joy the spirit could again be born on earth, but without knowledge of the past or future.\(^1\)

Another subject that always strikes the popular fancy is the matter of human sacrifice. The codices picture a few cases of human sacrifice, and one or two Mayan inscriptions depict a sacrificial scene, but we are assured by Spinden, others also mention the fact, "that human sacrifice never reached among the Maya the horrible extreme that it held among the Nahua in Mexico City."\(^2\)

The attempts to choose the Mayan gods, believed by these people to have under their influence the control of various natural phenomena, has caused great debate, but P. Schellhas in his "Representation of Deities in Maya Codices"\(^3\) seems to have kept his imagination within moderate bounds, and, with assisting information from other authorities, we find the following gods

\(^1\) Brinton, op. cit., p. 44.


\(^3\) Schellhas, P., "Representation of Deities in the Maya Codices," vol. 4, pp. 7-47. His classification will be used wherever possible.
listed, and their powers and abilities set forth:

1. "The One Divine", the greatest god of them all, the source of them all, the all-pervading spirit of whom no statue or picture was ever made, for he was incorporeal, universal, and invisible.¹

2. God B. A universal deity called Itzamna. Considered to be the creator and father of all, inventor of writing, the god of light and life, the father of Mayan civilization. In the codices he is always pictured as performing acts beneficial to man; protecting the maize god, etc.² He seems to have control over varied natural phenomena. He is shown holding a torch in his hand as a symbol of fire; sitting in the water, seated in a canoe, standing in the rain, enthroned on the rain clouds of heaven to show his power over water and the rains; seated on the cross of the four compass points, symbolic of his universal power; pictured with a kernel of maize, a fish, a lizard and a vulture to show his power over the four elements of earth, water, fire, and air.³ He is also pictured as seated on the head of the owl, the bird that represents disease and darkness, to show that he can overcome sickness. Symbols of death and misfortune are never pictured near him. The lance

¹Ibid., and Brinton, op. cit., p. 37.
²Spinden, Ancient Civilizations of Mexico, p. 93.
³Schellhas, op. cit., pp. 16-19.
I. Gods.

II. Mythological Animals.

Fig. 10-The Mayan Gods and Mythological Animals
and tomahawk which he often carries are to drive away evil spirits. The serpent god is apparently closely associated with Itzamna.¹

These gods are picked from among the many that are drawn upon the pages of the codices by certain outstanding characteristics that mark them from the rest in all their various activities. By thus selecting them in their varied participation in ceremonies and performances and scholars are able to determine with a fair degree of accuracy the numerous attributes of some of the gods and the limited powers of others.

The outstanding features that distinguish god B (Itzamna) are the features of an old man with no teeth or only one in a distended jaw, two fang-like tongues that protrude from the mouth, one at the front and the other to the side and back, and a large downward-curving nose. Itzamna is the god of the east, the rising sun, the morn of life.² See figure 10, B.

3. God D. This god has caused great controversy as Schellhas considers him as the god of the moon and night, Brinton thinks him Kukulcan, Spinden connects him with the god of war and death, Fewkes and Seler think him another expression of Itzamna.³ We shall satisfy ourselves, for the present

¹ Brinton, Primer of Mayan Hieroglyphics, p. 53.
² Ibid.
³ See op. cit., Spinden, p. 92; Brinton, pp. 55 & 56; Schellhas, pp. 22-24.
with a presentation of his distinguishing characteristics.

His face is that on an old man, with sunken mouth and toothless jaws, except for one tooth in the lower jaw; and attached to his forehead is an ornament bearing the sign of **akbal**, the darkness, with his headdress bearing the ears on an owl.¹

See figure 10, D.

Schellhas considers him the god of night and darkness, and god of the west because he wears the sign of darkness, **akbal**, and owl’s ears, but does not believe him to be a dispenser of death.

Spinden thinks him connected with the god of war and death, because he is associated with the west, the end of day, the eve of life, the opposite of Itzamna, but also declares that he believes there is another death god having greater powers.²

Seler and Fewkes think him another expression of Itzamna, for it has been definitely decided that another death god was enrolled in the Mayan pantheon; they agree that he is lord of the west and an associate of Itzamna (god B).³

Brinton acclaims god D as Kukulcan, the serpent god, and an understudy of Itzamna; having numbers of powers that cor-

¹ Brinton, op. cit., p. 56

² Spinden, op. cit., pp. 93 & 94.

³ Brinton, op. cit., p. 56.
respond to those of Itzamna, and complete or fill them out. Brinton thinks him a beneficent god; believing he wears the symbol of night and the ears of an owl as a symbol of his lordship over the west, not as a death god, for he points out that in no other way is he ever pictured with any other symbol of death, darkness or disease, but is present, with the snail (symbolic of birth) at births, perhaps as an obstetrician. The writer realizes of course that there may be a fallacy in this line of reasoning, for it is possible to believe that a child may have dies at birth, but then it seems more likely that such an unfortunate condition would call for the services of the great death god. He is associated with Itzamna by the fact that he is a god of one of the principal points of the compass, and many of his functions seem similar to those of his greater brother of the east.

4. God E. The maize god is pictured as a youthful deity with a leafy headdress representing an opening head of maize. A kernel of the grain is featured with him a great deal, while the day kan must be devoted to him, for his maize headdress usually eminates from the kan sign.¹ Some other functions of this god were to act as the patron of husbandry and agriculture. The Mayas apparently considered him a rather tender young fellow for he is always accompanied

¹ Spinden, op. cit., p. 96.
by one of the good gods, frequently Itzamna, and never left alone or with an evil deity. He represented prosperity and fruitfulness. See figure 10, E.

5. God A. The death god is the chief malevolent god of the Mayas, and is pictured as having a peculiar body composed of skeletal and full-fleshed parts; making a truly hideous presentation. A skull serves as his head, except for normal ears, with his fleshless ribs and spinal column in dreadful contrast to his full-fleshed appendages. God A was named Apuch. When his ribs were covered his body was sometimes painted with black spots. An ornamentation peculiar to Apuch (lord of death) and his close associate God F (god of war) was a stiff feather collar. God A in the religious ceremonies of course had an important part in rituals of sacrifice, see figure 10, A.

6. God C. The god of the polar star is characterized by a vase-like vessel whose contents are trickling into his mouth. His head occurs frequently in calendric presentations, and is contained in the symbol for north. The name of the polar star deity seems to be Xaman Ek. The figure is

1 Schellhas, op. cit., pp. 24 & 25.

2 Spinden, op. cit., p. 94.

3 Schellhas, op. cit., p. 10-15

associated at times with all four quarters of the world and is a deity of the merchants, for he guides them on their merchandising journeys.¹ See figure 10, C.

7. God M. The god of the merchants, according to Schellhas, is one of the group of black gods. His face is black, except for a redish-brown rim around his lips. His underlip is large and drooping. Ferocious and war-like, he carries a spear, shield, or tomahawk and seems, from the scenes in which he is pictured, to be quite willing to use them. By means of a rope tied around his head he carries a bundle of merchandise. Therefore Schellhas speaks of him as the protecting deity of merchants, the weapons being needed to protect his goods while they are being transported.² Brinton does not agree with Schellhas, but prefers to assign god M the position of leader or king of a group of seven black priests depicted in the codices.³ See figure 10, M.

8. God F. The god of human sacrifice and death by violence is closely associated with the death god, god A. In some instances the codices picture him in attendance with god A at services of human sacrifice. He is pictured in the regalia of a full-dressed warrior, and is distinguished by a black mark that runs perpendicularly down his face behind his

¹ Brinton, op. cit., pp. 58 and 59.
² Schellhas, op. cit., pp. 35-37.
eye, or encircles it, running from the eyebrow around the
eye to his nostril. Death god A is pictured in battle with
god F close beside, setting buildings on fire with a flaming
torch, and then breaking down the flaming houses with his
spear. Apparently he had a somewhat irritable disposition.¹
"He is shown repeatedly at full length, armed with a
flaming torch in one hand and a flint knife in the other,
firing the canopies of princes, his body striped with war-
paint, like his face, following the god of death, who goes
before him beating on a drum and singing a song of war (as
shown by lines issuing from his mouth)".² See figure 10, F.

The gods occurring less frequently, but often enough to
gain recognition as gods of some importance will be dealt
with.

9. God G. The sun god is marked by the sun-sign k'in
which he bears upon his body and an elaborate nose plug
that looks like a strange nose ornament. Schellhas states
that it is surprising that a deity who, from his nature,
must be considered as very important is represented with

¹ Schellhas, "Representation of Deities of Maya Manuscripts",

² Brinton, Primer of Maya Hieroglyphics, p. 66. The above
gods have been dealt with on the basis of the number of
times that they occur in the codices, with the exception
of the first god who, because of his nature, could not
be depicted. For example: god B is pictured 218 times;
god D, 103 times; god E, 98 times; etc. Schellhas, see
footnote above, p. 46.
comparative infrequency. Brinton would assign the name of Kin ich to god G as the god of the meridian sun. The red macaw was symbolic of this god and was supposed to descend at noontime to receive sacrifices made to Kin ich. See figure 10, G.

10. God H. The chicchan-god seems to be a rather indefinite personage, as his representations differ considerably. His one distinguishing feature is a skin-spot or a scale of a serpent on his temple that is shaped the same as the hieroglyph of the day Chicohan, which means serpent; therefore Schellhas believes he must be related to the serpent in some manner as yet undetermined. His particular duties remain a mystery. Brinton calls this figure the young god and Schellhas considers it "an invention of Brinton." As he is quite apparently a minor deity though, debate is rather needless. See figure 10, H.

11. God I. The water goddess is pictured in the Dresden manuscript as an old woman with a headdress mounted with a

1 Schellhas, op. cit., p. 28.
3 Schellhas, op. cit., pp. 28-31
knotted snake. In her hands she holds a vessel from which water is being poured. Her feet are often replaced by claws, and in one place where she appears in a flood scene the crossbones of death are woven into her skirt. Evidently she is the personification of water in its quality of destroyer, a goddess of cloudbursts, of floods. Her body is painted brown in some depictions, but her body is not colored often enough to permit its being called a distinguishing characteristic,¹ see figure 10, I.

12. God K. This god has caused a great amount of controversy. Most of the authorities agree that he represents a star, for he is drawn with god C. Schellhas believes him to be a benevolent deity for he is usually pictured with Itzamna or some other god friendly to man. Brinton thinks he is the same god as god B, Itzamna, for he also is marked by a long proboscis-like nose which, however, is of a somewhat different shape. Forstemann assumes that he is the god of storm and that the large ornamented nose is used to show that he is blowing blasts from his nose, indicative of storms,² see figure 10, K.

13. God L. The old black god is different from god M in that he is black entirely. Apparently his importance is minor, for he is not pictured in the Cortesianus or Paris

¹ Spinden, op. cit., pp. 31 and 32, also Brinton, op. cit. p. 63
² Schellhas, op. cit., pp. 32-34.
codices. His abilities or duties can not be guessed from the few appearances he makes. Forstemann believes him to be the god of Akbal, darkness, night,\(^1\) and Brinton does not attempt to classify him any more than to say that he is one of the group of rather numerous "black gods" represented in the codices.\(^2\) See figure 10, I.

14. God N. The god of the end of the year presents to us the face of an old man with a peculiar head ornament that can be likened to a ventilation shaft on an ocean liner. His headdress contains the sign for the year of 360 days. Forstemann calls god N the god of the five Uayeb days which occur at the end of the year to complete the 365 days necessary to bring the solar year to its proper length.\(^3\) See figure 10, N.

15. Goddess O. This goddess can be clearly distinguished by her features that indicate her to be an old woman. Her face is wrinkled, mouth sunken, and but one tooth left in her lower jaw. She is rarely pictured in the codices and so Schellhas does not deal with her at length.\(^4\) Brinton assigns her considerably more importance; giving her the name of Smucane, the wife or companion of Kukulkan. She shares, with

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\(^1\) Ibid., pp. 34-35.

\(^2\) Brinton, p. 67.

\(^3\) Schellhas, op. cit., pp. 37 and 38.

\(^4\) Ibid., p. 38.
him, the honor of sitting in the west. The personification of Earth seems to be presented by her drooping figure, and perhaps the evening star.\(^1\) Seler agrees with Dr. Brinton in that he believes goddess C to be the personification of the Earth.\(^2\) See figure 10, C.

16. God P. The frog-god receives his name because of the fact that his club-shaped fingers are like the toes of a frog. He is surrounded by blue in a number of instances. The blue is to represent water, or rain. As a deity connected with this element the frog god was also connected with agriculture, and was sometimes pictured planting seeds and digging furrows. His headdress bears the sign of the 360-day year, but his relationship to the calendar is unknown.\(^3\)

Among the minor gods and goddesses we find listed a god with the face of a monkey, who is related to the north star—a god in the form of a bat, although the bat is more common to the inscriptions than to the codices. Itzamna is another goddess who plays a minor part. She is the goddess of the rainbow and perhaps Itzamna's wife. The jade carvers, weavers, and decorators of cloth also had their

\(^1\) Brinton, op. cit., pp. 63 and 64.

\(^2\) Ibid., p. 64.

\(^3\) Ibid., pp. 63 and 64; Schellhas, op. cit., pp. 39 and 40; the classification of the last group of minor gods and goddesses are taken from Schellhas.
more or less deified patronesses.¹

Turning from the human element in the codices one is immediately struck by the pictures of a number of animals and birds. Closer inspection has caused the authorities to believe that these animals are of a religious and mythological nature, for they are pictured with each other and certain gods in a varying number of places and positions that still have enough in common to make it possible to determine the god with which they are particularly associated, and their specific functions.

For example; the moan bird, a member of the falcon family, belongs to the death god, god A or Apuch. He is usually in attendance upon that god. In one instance he is pictured as sitting upon the head of a woman, thus indicating that she is dead, or about to die. Again we find god B (Itzamna, the god of life) sitting upon the moan bird showing the power of life over death.² Undoubtedly this bird was chosen as an omen of ill because he was a killer, a bird of prey.

¹ Spinden, Ancient Civilizations of Mexico, p. 96. The same author also gives an excellent description of the work of correlating the gods as presented in the codices and inscriptions; in Peabody Museum Memoirs, vol. 6, pp. 61-76.

² Schellhas, "Representation of the Deities of the Maya Manuscripts", Peabody Museum Papers, vol. 4, p. 41.
Forstemann believes him to be the symbol of the Pleiades. Seler thinks of him as associated with rain and clouds. Brinton seems to be in agreement with all three. See figure 10, 1.

The horned owl, because he is a bird of night and darkness is associated with the gods of death and war, symbolizes clouds, inauspicious events, and his horns are frequently featured as decoration for the headdress of Kukulcan to indicate the departing sun and night. The number 13 seems to be related to the owl, and he may represent the 13 day period in the calendar.

The vulture is pictured in the codices, with apparently two of the species being represented, the black vulture, and the king vulture.

The king vulture is done in black and white. The head and upper part of the neck are unfeathered except for numerous, short, almost bristle-like plumules. These naked portions are often colored red. A distinguishing feature, probably employed to differentiate the king vulture from the black vulture, is a squarish, fleshy protuberance at the base of the upper ramus of the beak. The king vulture's mythological character is shown by the presentations where the bird's head is placed upon the human body. He is depicted with females in a number of places, and takes part in ceremonies.

1 Brinton, *A Primer of Mayan Hieroglyphics*, p. 74.

2 Ibid., p. 73.

3 Ibid.
of baptism and naming of infants.¹ See figure 10, 4.

The black vulture has the same general shape as the king vulture, but the "fleshy protuberance" is not present on the beak. He is pictured with a number of gods, B, D, and C, and usually appears in connection with death and in the role of a bird of prey. A deer offered as a sacrifice is being devoured by this bird of darkness and grief, and he even stoops so low as to devour the corn that the Maya had laboriously sown."²

The leaf-nosed bat is one of the mammalia that appear to have certain mythological rights, and though he occurs in the codices only a few times, he is pictured quite frequently in the inscriptions.³ His supernatural powers seem to be very limited, however, and the question as to whether or not he should be listed among the mythological mammals has caused considerable discussion. Of course the representations of the bats all show the prominent nose leaf that distinguish this specie of vampire bat. The fact that one of the Mayan months (Zotz, which means bat) is named for this animal, and the glyph which represents the month of Zotz prominently shows the nose leaf of the vampire, would seem to indicate that the bat should be placed in the Mayan pantheon. Bats

² Ibid., pp. 331-334.
³ Schellhas, op. cit., p. 45.
were probably associated with Xibilba, the ruler of the underworld because of their preference for caves and dark chambers as his habitat.¹

Before leaving the field of flying creatures we should discuss a bird of great beauty that is claimed to belong to the Mayan pantheon by some writers, while others seem a little uncertain on this point. Schellhas fails to list the bird among those having mythological significance.² Tozzer and Allen do not definitely state their opinions, but seem to be in favor of a mythological relationship for the quetzal.³ They point out that the quetzal is a bird of brilliant metallic-green color with a straight, stiff, upright crest and beautifully curved, elongated tail feathers that served remarkably well as decoration for headdresses, capes, and general decoration. In many inscriptions beautiful effects are gained by the decorative use of the graceful sweep of quetzal feathers worn in the headdress of some god, ruler, or warrior. The use of the plumage of this bird was forbidden to the common people, and was reserved for nobility and priests. Its feathers are the ones usually associated with the feathered serpent that so often represents

¹ Tozzer and Allen, op. cit., pp. 365 and 366.
² Schellhas, op. cit., pp. 41-45.
the god Kukulcan¹ and imparts the characteristic touch to
the Mayan buildings and inscriptions. See page
It seems most probable that the Mayas looked upon the bust-
zal as a very valuable bird for decoration rather than as
one of the number of birds which they worshiped.

The serpent is one of the most common and most important
mythological animals, and is closely related to different die-
ties, as has already been discussed, page
Apparently it has no independent significance as a deity, but
must appear with some of the gods of the pantheon. Its most
important personification is that in god B, Kukulcan, the fea-
thered serpent. Besides appearing continually in the inscriptions
of the Mayas, the serpent appears in the codices chiefly as the
symbol of water and time². See figure 10, 3. In a number of
codices god B and the serpent are shown together with some
manifestation of rain or water. In the Dresden Codex god B is
pictured holding a snake in water. In Cortesianus Codex god B
and a female figure are pouring water from a jar, a common way
of depicting rain; and both are standing on the back of a ser-
pent.³

That the serpent appears associated with time seems clear
from the fact that long number series in the Dresden.

¹ Ibid., p. 341.
² Schellhas, op. cit., p. 42.
³ Tozzer and Allen, op. cit., pp. 316 and 315.
Codex are inclosed in spaces made by intertwining snakes' bodies, and in the Cortesian Codex four large reptiles appear in connection with a few lines of day signs.  

The dog is the symbol of the death god, god A, and the bearer of lightning. "hen fulfilling his capacity as the companion of god A the dog wears the Akbal sign on his head, see figure 10, 3, and when burdened with lightning we find the Akbal sign in the eye instead of on the forehead. Just as every dog must have his day, according to an old saying, the Mayan dog of the codices has Oc as his day.

Wherever the jaguar ranges it is considered as the most dreaded of carnivorous mammals; it is therefore quite natural that the Mayas held it in great awe, and used it as a symbol of strength and courage. Its depiction sets it apart from the dog because of its claws, short ears and long tail, the tip of which is characteristically black. The body of the jaguar is marked by black spots scattered over the body or there is a line of them down the back. The teeth are often prominent. See figure 10, 5. The mythological character of the jaguar is shown by his association with the gods of the four cardinal points, by his attack on god F. In the Dresden Codex he is carried, in one instance, upon the back of a priest probably to represent one of the year bearers. The


2 Schellhas, "Representation of Deities of the Maya Manuscripts", Peabody Museum Papers, vol. 4, p. 42.
day of the jaguar is Ix. Turtles are quite common in Mayan inscriptions, for we find them placed around the cornice of the Casa de las Tortugas at Uxmal. The turtle is found associated with the toad in the rain in one place in the Cortesian Codex, and alone in the rain in another instance. Forstemann believes him to be associated with the sign for the summer solstice when the sun seems to stand still, but it certainly does not seem logical to associate the turtle with the sun at its summer's height in one case, and then again with rain that is commonly associated with winter.

Aside from the animals dealt with above many others are presented in the codices. Some of them probably have a somewhat mythological nature, but the majority are pictured as animals for sacrifice or as a part of some more important composition, and are depicted in natural aspect. Some insects are also present—the bee for example, which may also have mythological connections. Brinton believes the bee represents Venus.

A further perusal of the animals and insects yields the following list: Centipede, crayfish, crab, spider, scorpion, several kinds of fish, iguana, crocodile, turkey, eagle, blue and red macaw, woodpecker, raven, opossum, armadillo,

1 Tozzer and Allen, op. cit., pp. 355-358.
2 Ibid., pp. 321-324.
3 Brinton, Primer of Mayan Hieroglyphics, p. 75.
deer, peccary, tapir, puma, bear, coyote, and monkey.¹

Having related the names and functions of the Mayan gods and mythological animals it quite naturally follows that the administrators of the numerous religious festivals and rites should be mentioned.

The Mayan priesthood was composed of members of both sexes in goodly quantity, for they are pictured in both the inscriptions and codices as taking part in numerous ceremonies. The learning was restricted to this class and the nobility. The priests often rose to a place of prominence in state affairs, while the civil authorities took part in all the more important religious ceremonies. Such religious activities would serve to strengthen the position of the temporal powers.²

As has been stated previously in this chapter, all the deities had special religious functions in their honor, presided over by the priests with all the pomp and ceremony that they could summon. In addition, practically all of the gods and goddesses, and animals with mythological relations, were made the presiding deities over certain days of the calendar. On this day the god in question received the homage of the Mayan people in a fitting ceremony.

The question always arises as to what could have caused the rapid decline of the Mayan culture when they had had


² Brinton, op. cit., p. 68
such a highly centralized government, a religious system that could induce the construction of such a highly centralized government, a religious system that could induce the construction of such marvelous works of art and architecture, and a knowledge of astronomy and mathematics; all tending to point to the remarkable intellectual attainments of the Mayas that, it would seem, would aid them to avoid the catastrophe that befell their race. Yet, they did fall, as did Egypt, Greece, and Rome.

The theories advanced to account for the downfall of the Mayas are almost as many and as varied as those put forward for the more familiar case of Rome. The disintegration of this group has been attributed to floods, intertribal and city wars, earthquakes, yellow fever, malaria, drought, and other pestilences.¹

To this ever-increasing list the writer would like to add the cause that he believes to be one of the most important factors, namely, religion.

Religion, it is true, was the greatest motivating force during the Mayas' creative period of development, and was certainly a prominent cause of their retrogression, yet there is another side to the story of the functions of the idols and vast religious establishments of the Mayan cities.

Under the undisputed control of an organized body of

wide influence, and a religious and political system, hoary with age, the people doubtless believed themselves working for the common good, and in obedience to the deities whose reality and authority were constantly impressed upon them. They had no means of arriving at a correct knowledge of the truth that the gods of the entire pantheon were mere fictions and that the revered priesthood, although the embodiment of the highest wisdom, the promoters of learning, and the conservators of moral standards, was at the same time a body of organized parasites. Their authority was sustained by the cunning use of stone images and a complex system of festivals connected with the priestly interpretations of the powers of the gods. It was inevitable that the ever-growing requirements of the priestly body in carrying forward their ambitious schemes should absorb the energy and resources of the people in increasing amounts. Not only did they spend more and more energy in quarrying, hewing, transporting, building, carving, providing, and worshiping, but they had to carve, repair, and rebuild in an ever-losing struggle against an ambitious priesthood. Soon the people became so impoverished that the authority of the priesthood and demands of the gods could no longer elicit a response. Disintegration and decay set in. Floods, war, pestilence or some like catastrophe may have aided in precipitating disaster, but the seeds of decay were inherent in the system which placed unlimited power in the hands of alleged representatives of
the gods, as they are inherent in every organization and structure of whatsoever kind that involves the long-continued, ever-growing, and unrequited waste of the energies and resources of a people.

The same religion that had furnished conception, energy, skill, and applied design to stone, taught its devotees that their gods loved beauty as well as the essential. Then too, lines, forms, and colors were pleasing to man. Pleasure in the work itself added to the religious fervor with which the men worked, desired to excel, and the fascination of creating. Thus were the Mayas led irrevocably on until a disheartened people, goaded on by some final calamity, abandoned their structures and culture to the irrepressable jungle that soon buried them beneath the fast-growing flora of a tropical climate.

Man had again failed to establish an enduring social structure, because he had allowed the power that should have been delegated to the many to become wholly concentrated in the hands of a few ambitious, irresponsible persons who desired to gain their own selfish ends rather than work for the good of their civilization.
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